HOW MUCH TIME DO WE HAVE LEFT? : THE EFFECTS OF TIME URGENCY 
DIVERSITY ON TEMPORAL CONFLICT AND LEADERSHIP IN TEAMS 

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Abstract

Although the importance of temporal individual differences has been recognized at the individual-level of analysis, emerging literature is giving increasing attention to the role of temporal orientation at the team-level. In addition, the limited prior work investigating temporal orientation in teams has relied on naturally occurring team composition, not allowing for optimal control regarding how compositional effects affect team processes. Addressing these research needs, this study manipulated time urgency configuration in an experimental design to examine the influence of time urgency composition and diversity on temporal conflict and team temporal leadership, as moderated by extraversion. Results from 81 student teams participating in this lab study revealed that teams composed of more time urgent individuals reported higher team temporal leadership. Extraversion was found to be a significant moderator in that the relationship between time urgency diversity and team temporal leadership was weaker when mean extraversion was lower. There was no significant relationship between time urgency diversity and temporal conflict, nor was this relationship significantly moderated by extraversion.
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How Much Time Do We Have Left?:

The Effects of Time Urgency Diversity on Temporal Conflict and Leadership in Teams

Introduction

Temporal characteristics are considered deeply ingrained and fundamental individual differences (Bluedorn & Denhardt, 1998), and include time urgency (chronically hurried versus relaxed view on time), polychronicity (preference for multitasking), pacing style (how activities are spaced over time: early action, steady, deadline action), and time perspective (bias toward perceiving time through past, present, or future orientations) (Mohammed & Harrison, 2013). From an applied perspective, temporal individual differences matter because they represent task-relevant attributes in today’s business world where effective time management is an imperative for organizations. Although their importance has long been recognized at the individual-level of analysis (e.g., Conte, Landy, & Mathieu, 1995; Conte, Mathieu, & Landy, 1998; Conte & Gintoft, 2005), increasing attention is being given to the role of temporal orientation at the team-level (e.g., Mohammed & Harrison, 2013; Mohammed & Nadkarni, 2014; Waller, Conte, Gibson, & Carpenter, 2001). Teams may be composed of members with similar or dissimilar time-based traits, which has implications for scheduling and allocating time resources (McGrath, 1991; Mohammed & Nadkarni, 2011). Temporal differences have been shown to be an important form of deep-level diversity, with relevance for important team outcomes, including conflict (Mohammed & Angell, 2004) and team performance (Gevers, Claessens, van Eerde, & Rutte, 2009; Mohammed & Nadkarni, 2011, 2014).

Adding to this nascent research, we examine time urgency as the focal time-based individual difference in the current study for two reasons. First, time urgency encompasses a broader spectrum of human behavior (e.g., eating, speaking, waiting, list making) than other
temporal individual differences (e.g., polychronicity, pacing style) that apply more narrowly to task-related activities (Mohammed & Harrison, 2013). Second, Mohammed and Nadkarni (2014) concluded that time urgency has displayed more robust effects in team-level studies as compared to other temporal orientations (e.g. polychronicity, time perspective, and pacing style). For example, previous studies have found that team processes (Mohammed & Angell, 2004), team temporal leadership (Mohammed & Nadkarni, 2011), and shared temporal cognition (Mohammed & Nadkarni, 2014) all moderated the relationship between time urgency diversity on team outcomes, whereas other temporal individual differences exhibited more constrained effects.

The purpose of this research was to examine the effects of time urgency composition and diversity on temporal conflict and team temporal leadership, as moderated by extraversion. Temporal conflict focuses on the disagreements surrounding the allocation of temporal resources (Mohammed, Hamilton, & Lim, 2009). Team temporal leadership is the extent to which team leaders coordinate, schedule, and apportion time resources (Mohammed & Nadkarni, 2011).

This research extends the emerging literature on temporal team composition in several ways. First, whereas previous studies have relied on naturally occurring temporal composition in classroom or field teams (e.g., Gevers et al., 2009; Mohammed & Angell, 2004; Mohammed & Nadkarni, 2011, 2014; Waller, Giambatista, & Zellmer-Bruhn, 1999), the current study was the first laboratory experiment to manipulate time urgency configuration within teams. According to Humphrey and colleagues (2007), relying on naturally occurring team composition not only restricts variance by creating only moderate diversity, but also lacks the controlled setting provided by experiments. In contrast, through “seeding” (uniform method of assigning individuals to teams), variance can be maximized or minimized, allowing researchers to assess
the nuanced effects of varying levels of a particular variable in order to gather information beyond what can be attained from the middle of the distribution (Humphrey, Hollenbeck, Meyer, & Ilgen, 2007).

Second, this study examines multiple team composition models within the same study. Existing team temporal studies have focused solely on one type of aggregation, such as means (Waller et al., 2001); diversity (Mohammed & Angell, 2004; Mohammed & Nadkarni, 2011), or maximum/most time urgent person in the team (Waller et al., 1999). However, by manipulating composition to create teams with zero, one, two, or three time urgent members, both the number of time urgent members as well as the mix of time urgent and time patient members were assessed. In examining multiple aggregation models, this study will provide a more comprehensive assessment of team composition as recommended in a recent review (Mathieu, Tannenbaum, Donsbach, & Alliger, 2014). Moreover, by implementing the seeding methodology, this study is the first to manipulate team composition based on a temporal individual difference (i.e. time urgency), allowing for a finer grained evaluation of its effects.

Whereas previous temporal orientation research in teams has tended to focus on performance (e.g., Mohammed & Harrison, 2013; Mohammed & Nadkarni, 2011, 2014) and timeliness (e.g., Gevers et al., 2009; Waller et al., 2001) as dependent variables, a third contribution is that this study will investigate the impact of time urgency composition on team processes. Multiple authors have called for research to examine the effect of temporal composition on mediating mechanisms (Mohammed & Harrison, 2013; Mohammed & Nadkarni, 2011, 2014), and this study answers that call by exploring temporal conflict and temporal leadership as relevant team outcomes.
Fourth, this study expands the limited research on team temporal leadership in two ways. By measuring team temporal leadership for every team member, I examined the construct from the growing shared/distributed leadership perspective (Carson, Tesluk & Marrone, 2007). Previous team temporal leadership studies have assumed a hierarchical team structure by asking members to rate their designated leader (e.g., Myer & Mohammed, 2012; Mohammed & Nadkarni, 2011). In addition, the current research explored what time urgency team configurations are more and less likely to produce team temporal leadership in teams. Previous research demonstrated that team temporal leadership had a positive influence on team performance (Mohammed & Nadkarni, 2011), however, the antecedents of team temporal leadership have not been examined.

Fifth, this study introduced a new category of moderator for the temporal composition literature: broad personality traits (namely, mean team extraversion). To date, studies have explored mean pacing style (Gevers et al., 2009), team temporal leadership (Mohammed & Nadkarni, 2011), team temporal cognition (Mohammed & Nadkarni, 2014), and team processes (Mohammed & Angell, 2004) as moderators of the relationship between temporal diversity and team outcomes. However, the extent to which time urgency composition fosters temporal conflict and team temporal leadership may depend on other aspects of the team’s composition. Therefore, I examined the moderating effects of team extraversion on the time urgency composition/diversity - team outcome linkage, thereby, responding to the call for studying trait interactions as predictors of team diversity outcomes (e.g., van Knippenberg & Schippers, 2007).
Review of Literature

Time Urgency

*Definition and conceptualization.* Time urgency has been described as a relatively stable personality trait in which individuals feel chronically hurried (Conte, Landy, & Mathieu, 1995; Landy, Rastegary, Thayer, & Colvin, 1991). Time urgent individuals are known to constantly rush and check the clock for the time because they perceive time as the enemy (Price, 1982). They view temporal resources as scarce and attend to the time remaining for the task at hand (Conte et al., 1995; Landy et al., 1991). Because individuals high on time urgency are high on time awareness, they are known to efficiently schedule as many tasks as they can in the allotted time before the deadline (Conte et al., 1995; Friedman & Rosenman, 1974). External deadlines are very important time markers for time urgent individuals in addition to the internal deadlines they set for themselves (Rastegary & Landy, 1993). Friedman and Rosenman (1974) determined that the central factor characterizing Type A behavior pattern was how individuals used time and had a time urgent life style (Conte, Mathieu, & Landy, 1998; Rastegary & Landy, 1993).

Time urgency can be viewed on a continuum from non-time urgent (i.e. time patient) to time urgent. Time patient individuals feel less hurried and do not view time resources as scarce (Waller et al., 2001). Because time patient individuals underestimate the passage of time, and do not feel constrained by time, they tend to work slower than time urgent individuals (Waller et al., 2001; Rastegary & Landy, 1993).

*Team-level conceptual research.* Time urgency composition in teams has been discussed in terms of means as well as diversity. For instance, Waller and colleagues (2001) proposed that teams that had time urgent individuals would successfully meet deadlines under deadline conditions. More specifically, teams with more future oriented time urgent members were
postulated to meet deep future deadlines, whereas teams with more present oriented time urgent members were expected to meet short future deadlines.

Whereas Waller and colleagues (2001) emphasized mean time urgency in teams, Mohammed and Harrison (2013) focused on time urgency diversity. Assuming a speed-accuracy tradeoff, time patient individuals focus more on quality and time urgent individuals focus more on speed. Certain types of tasks require specific temporal individual difference configurations in order for the team to perform well, which stems from the person-environment fit model (Mohammed & Harrison, 2013). Mohammed and Harrison (2013) proposed that when teams are working under highly complex situations (necessitating both speed and accuracy) involving decision-making and action-oriented tasks, more diversity on time urgency would improve performance. In contrast, in situations requiring high coordination and precise timing, low diversity on time urgency would work best for team performance. Although this work was conceptual, the current study will empirically examine the effect of manipulated time urgency composition on team processes.

**Team-level empirical research.** Empirically, time urgency has been shown to have important implications for team outcomes. Several studies have examined time urgency at the individual level within a team context. Waller, Giambatista, and Zellmer-Bruhn (1999) demonstrated that there was a negative relationship between individual time urgency and group polychronicity (i.e. engaging in multiple tasks simultaneously) across conditions in twenty-six laboratory teams (Waller et al., 1999). Time urgency has also been explored within the context of person-group fit. Jansen and Kristoff-Brown (2005) examined the effects of individual time urgency on satisfaction, helping behavior, and psychological strain depending on fit or misfit with the group. They found that when an individual’s level of time urgency matched that of their
team members, they were more satisfied and exhibited more helping behavior, but if they were lower or higher on time urgency than the group, they felt more strain (Jansen & Kristoff-Brown, 2005).

Although limited, a few studies have noted the effects of time urgency on team outcomes. Mohammed and Angell (2004) looked at the effect of time urgency diversity and relationship conflict as moderated by team processes (i.e. leadership, coordination, communication) within forty-five student project teams. Specifically, this study revealed that team processes reduced the negative effects of time urgency diversity on relationship conflict (Mohammed & Angell, 2004). Mohammed and Nadkarni (2011) examined the relationship between time urgency diversity on performance as moderated by team temporal leadership in seventy-one teams in a business process outsourcing firm in India (Mohammed & Nadkarni, 2011). The results demonstrated that time urgency diversity was more positively related to team performance when there was stronger team temporal leadership (Mohammed & Nadkarni, 2011).

Temporal Conflict

Three primary types of conflict have been identified: task, relationship, and process (e.g., Jehn & Mannix, 2001). Task conflict is described as disagreements on opinions and ideas for a team task, whereas relationship conflict is interpersonal tensions among members of a team that elicit animosity and frustration. Process conflict is awareness and disagreement regarding how a task will be executed.

In his Time, Interaction, and Performance (TIP) theory, McGrath (1991) noted that time-based problems in teams arise from disagreements about synchronizing or timing tasks, allocating temporal resources, and differences in temporal requirements. In turn, Mohammed, Hamilton, and Lim (2009) suggested a time-focused view on conflict, which brought about the
conceptualization of temporal conflict. Temporal conflict is a component of process conflict that focuses specifically on time-related issues and stems from divergent opinions regarding scheduling and how work should be paced within a set timeframe for a task (Mohammed et al., 2009; Zhang, 2009). Mohammed and colleagues (2009, p.330) state that “failure to meet deadlines not only may result from disagreements about who should do what but also may be an outgrowth of differences in opinion regarding when work should be accomplished.” This construct embodies team member disagreements surrounding what kind of pace to follow, how to divide time amongst different parts of a task, and how to budget time resources (Zhang, 2009).

Although previous research has suggested that temporal diversity gives rise to conflict about task pacing and time allocation (Mohammed & Harrison, 2013; Mohammed & Nadkarni, 2011, 2014), this relationship has not been adequately tested for time urgency. Time urgency diversity has been linked with relationship conflict as moderated by team processes (e.g. communication, cooperation, and leadership) according to Mohammed and Angell (2004). However, the present study seeks to extend this research and test whether time urgency diversity has a positive relationship with temporal conflict.

**Team Temporal Leadership**

Although McGrath’s (1991) TIP theory proposed that solutions to temporal problems include synchronizing, scheduling, and allocating time resources, who would provide these solutions was unaddressed. Responding to the call for integrating temporal elements into leadership, Mohammed and Nadkarni (2011) demonstrated that leaders play an important role in synchronizing team members so that work is completed on time. Specifically, team temporal leadership is “the degree to which team leaders schedule deadlines, synchronize team member behaviors, and allocate temporal resources” (Mohammed & Nadkarni, 2011, p.489-490).
Examples of team temporal leadership behaviors include pacing the team, setting milestones, reminding team members of deadlines, encouraging timeliness, and coordinating team members in order to finish on time (Mohammed & Nadkarni, 2011). In addition to the task related components, Myer and Mohammed (2012) expanded team temporal leadership in order to include a relationship dimension where the team temporal leader helps to resolve temporal conflicts among members and seeks team member contributions for establishing a time structure. Given a laboratory experiment context, the present study focuses on the more relevant task-related aspects of team temporal leadership.

Team temporal leadership is a relatively new construct. Mohammed and Nadkarni (2011) surveyed 71 teams in a business processing outsourcing firm in India. This study examined team temporal leadership in teams as a moderator for the relationship between time urgency diversity on performance such that this relationship was more positive under conditions of stronger team temporal leadership (Mohammed & Nadkarni, 2011). Mohammed and Nadkarni (2011) also found that team temporal leadership had a positive main effect on team performance. Although this study provided support for team temporal leadership as a moderator for temporal diversity and team performance, no known research has been conducted on its antecedents. The present study is intended to fill that gap.

**Moderating Effect of Extraversion**

*Definition and conceptualization.* Personality has been characterized in terms of the Five Factor Model (FFM), which includes conscientiousness, extraversion, agreeableness, neuroticism, and openness to experience (Barrick & Mount, 1991). These personality dimensions have been studied in the team composition literature, more commonly examining the aggregate mean level (e.g., Barrick, Stewart, Neubert, & Mount, 1998; Neuman & Wright, 1999), but also
exploring the variance on the personality trait (e.g. Barry & Stewart, 1997; Neuman, Wagner, & Christiansen, 1999; Mohammed & Angell, 2004). In this study, the focus will be on the effect of extraversion as a new type of moderator for the time urgency composition - team outcome linkage. Examining extraversion in teams is important, as it has been noted as one of the more interpersonal constructs from the Five Factor Model due to the sociability facet (Costa & McCrae, 1992). One of the main characteristics that extraverts have is that they desire to work with others (Barrick et al., 1998). Furthermore, the interdependent nature of the team task in the current study raises the salience of extraversion (e.g. talkativeness, assertiveness, and social interaction). Extraverts are described as sociable, energetic, expressive, self-assured, and assertive (Costa & McCrae, 1992). Sub-facets within the personality dimension of extraversion include warmth (interest in and friendliness toward others), excitement-seeking (need for stimulation from the environment), assertiveness (dominance and confidence), gregariousness (talkative and seek out social interaction), activity (energy and pace for life activities), and positive emotions (tendency toward optimism and enthusiasm).

Hypotheses

In this study I examine the effects of time urgency diversity on team temporal conflict and the effects of time urgency diversity as well as continuous time urgency composition on team temporal leadership. Specifically, in order to assess diversity I use categorical time urgency, which represents the heterogeneous (teams with 1 time urgent member/2 time patient member teams and 1 time patient member/2 time urgent members) or homogeneous (teams with 3 time urgent members and 3 time patient members) time urgency conditions in order to examine its effects on team temporal conflict as will be discussed in Hypotheses 1, and 2 and its effects on team temporal leadership as proposed in Hypothesis 5. I use continuous time urgency
composition, which represents the number of time urgent members ranging from 0 time urgent members to 3 time urgent members in order to examine Hypotheses 3 and 4 focusing on its effects on team temporal leadership.

**Time Urgency Diversity and Temporal Conflict**

Time urgent individuals have been observed to impose strict schedules on their teams for each task that needs to be completed with high attention to the passage of time (Waller, Giambatista, & Zellmer-Bruhn, 1999). Contrastingly, time patient individuals are not as attentive to time or deadlines and therefore are more likely to take their time before beginning a task or substantively working on a project (Waller et al., 2001). Therefore, when there are such apparent disparities in attitudes towards time, team members are more vulnerable to misunderstandings, reduced coordination, and increased conflict (Mohammed & Harrison, 2013).

Furthermore, verbal accounts of temporal individual differences in team members have demonstrated negative effects on synchronization and task completion. Although the focus of her qualitative study was on punctuated equilibrium as a model of group development, Gersick (1989) noted that one of the groups that did not perform well on the task experienced conflict related to time. One of the members of the team kept urging the other members to finish one task in order to move on to the next and additionally made several time comments throughout (e.g., “We have 45 minutes left”, “I think we have to do this right now..”), but the other team members mentioned that they could not work at that pace (e.g., “Moved to start working on it too soon”). There was also another team that did not successfully complete the task in this study where an individual kept rushing his team members to complete the task (e.g., “We’ve got have an hour left to put this thing together”, “Are we ready to move on...?”). However, teammates were not on the same page as him, which caused tension and disagreement in relation with the
task direction (“But we were still in the discussion mode instead of whatever mode you got into…”), “We had been trying to extend the time”). Although Gersick (1989) did not measure time urgency or temporal conflict, these accounts demonstrate that different members budgeting their time differently can caused friction among team members and negatively impact team progress. I therefore hypothesized that team heterogeneous on time urgency would be more likely to experience conflict due to struggles getting on the same temporal page.

Hypothesis 1: Teams heterogeneous on time urgency (one time urgent member and two time urgent member conditions) experience higher levels of temporal conflict, than teams homogenous on time urgency (zero time urgent member and three time urgent member conditions).

**Extraversion Moderating the Time Urgency Diversity and Temporal Conflict Linkage**

The team diversity (e.g., Horowitz & Horowitz, 2007), team conflict (e.g., Korsgaard et al., 2008), and temporal individual difference (e.g., Mohammed & Nadkarni, 2011, 2014) literatures all underscore the importance of adopting a contingency perspective in investigating relationships between variables. Therefore, the current study will explore mean extraversion as a moderator between time urgency composition and team processes. I hypothesized that the relationship between time urgency and team temporal conflict would be stronger in teams with higher levels of extraversion. By nature, extraverts are more talkative and self-assured (Humphrey, Hollenbeck, Meyer, & Ilgen, 2011). Therefore, if a team with high time urgency diversity also has a higher score on mean extraversion, then team members would likely vocalize time-based disagreements. In contrast, teams low on mean extraversion would be more likely to have members that are more reserved and reticent, and thus less likely to offer verbal opposition or bring up points of contention (Neuman et al., 1999). Therefore, mean extraversion may help
determine the extent to which frustration caused by time urgency diversity escalates into temporal conflict in the team.

Mohammed and Angell (2004, p.1020) suggested that having “extraverts within the group may also be disadvantageous because of the propensity to pursue social interactions at the expense of task demands.” Therefore, the time urgency diversity- temporal conflict linkage may also be strengthened because teams higher on mean extraversion may prioritize socializing over task accomplishment.

\textit{Hypothesis 2: Mean extraversion will moderate the relationship between time urgency diversity and team temporal conflict, such that the positive relationship between time urgency diversity and team temporal conflict will be more positive for teams with members higher on extraversion than lower on extraversion.}

**Time Urgency Composition and Team Temporal Leadership**

Team temporal leadership effectively addresses temporal problems and coordinates the team’s effort and time. Based on the descriptions provided by the literature, teams higher on time urgency may contribute to higher team temporal leadership in the team. According to Landy and colleagues (1991), time urgent individuals are more concerned over time and allocating temporal resources, thus, suggesting that they would try harder to keep everyone on schedule. Also, time urgent individuals tend to check the time remaining often and create an internalized schedule, which would make them the natural timekeepers for the team (Friedman & Rosenman, 1974; Rastegary & Landy, 1993). In addition to task organization, time management, and deadline sensitivity, individuals high on time urgency are associated with Type A personality, which suggests high achievement and control (Price, 1982). Combined, these characteristics of time urgent individuals predispose them to taking on temporal leadership roles. Therefore, teams with
more time urgent members, would be more likely to consider temporal factors and share in the responsibilities of delineating how long the team would spend on each part of the task and building in contingency time in order to avoid time-related issues. In this manner, teams with more time urgent members would likely develop shared leadership in formulating and asserting a time structure, thus leading to higher team temporal leadership.

Because more time patient individuals are less accurate when gauging the passage of time and are not as concerned with time constraints (Waller et al, 2001), they would probably not effectively schedule and synchronize teammate efforts on the task toward meeting deadlines. Moreover, time patient individuals are oriented more toward quality than speed (Mohammed & Harrison, 2013), therefore, they may prefer that the team spend longer on tasks to improve accuracy rather than working as a group to meet the due date. If a team has more individuals that are time patient, the team would be less likely to come together in order to create a time table for the team to follow and would be less assertive in enforcing the team pace and schedule. Thus, teams with more time patient individuals would be less concerned with time constraints and sharing in the responsibility as timekeepers for the team’s progress leading to lower team temporal leadership than teams with more time urgent members.

Hypothesis 3: Teams with more time urgent members will report higher team temporal leadership than those with fewer time urgent members.

Extraversion Moderating the Time Urgency Composition and Team Temporal Leadership Linkage

Two of the primary characteristics of extraversion are sociability and assertiveness/dominance (Costa & McCrae, 1992), which overlap with conventional leadership
perceptions (Eagly et al., 2003; Humphrey et al., 2011). Given that teams with individuals high on extraversion are also more likely to exert leadership and have a higher preference for group work (Littlepage, Schmidt, Whisler, & Frost, 1995), extraversion should strengthen the relationship between time urgency composition and team temporal leadership. If there are more time urgent members, there would be a higher team focus on time and tracking the passage of time. In turn, these teams would likely distribute temporal responsibilities and share in leading the group toward the deadline. Specifically, teams with more time urgent members are more likely to work as a group in order to allocate temporal resources appropriately and synchronize efforts if the team is also predisposed to be socially interactive, engage in higher communication, and act as a dominant unit. These features would be highlighted if the team is higher on extraversion because it leverages the pre-existing penchant for directing the time related aspects of a task by having the team engage in those communication and leadership behaviors at a higher level. Thus, if there are more time urgent members in the team not only is there a greater emphasis on time and taking on a managerial role over time, but the relationship with team temporal leadership would be stronger with the presence of higher mean extraversion. In contrast, if the team is introverted (i.e. low on extraversion), it is less likely that team temporal leadership will be high for that team.

_Hypothesis 4_: _Mean extraversion will moderate the relationship between time urgency composition and team temporal leadership, such that the positive relationship between time urgency composition and team temporal leadership will be more positive for teams with members higher on extraversion than lower on extraversion._
Extraversion Moderating the Time Urgency Diversity and Team Temporal Leadership Linkage

Providing a more comprehensive assessment of team composition, I not only examine the number of time-urgent team members, but also time-urgency diversity with regard to team temporal leadership, as moderated by extraversion. Teams diverse on time urgency may struggle to get on the same temporal page and coordinate efforts because time urgent and time patient individuals differ on their attitudes toward time and deadlines unlike their homogeneous counterparts which may already be on the same page due to similarity on time urgency. However, if there is a higher level of mean extraversion, the heterogeneous teams would note these disparities and would articulate and assert a plan (Littlepage et al., 1995) for coordinating efforts. This idea is reinforced by literature demonstrating that extraverts are more likely to offer up more suggestions and exert higher levels of influence on group decisions (Littlepage et al., 1995; Eagly et al., 2003), which would translate to higher leadership.

Therefore, higher levels of mean extraversion in teams would act as a mitigating factor to the possible negative impact of time urgency diversity on team temporal leadership because it would create a team that would more readily take the initiative in order to address differences and assert a plan of action in order to move expeditiously toward the deadline. Whereas teams with low levels of mean extraversion, may not take the lead in engaging in conversations in order to confront temporal issues, work together in order to assert and reinforce timelines, or vocalize whether the team is meeting milestones. In turn, by not engaging in these behaviors, team temporal leadership would be impacted more negatively because the team would be engaging in lower levels of shared leadership over the temporal aspects of the team task. These dynamics would more specifically relate to heterogeneous teams because teams with a mix of time urgent
and time patient members may more readily sense differences in work pace and desire to synchronize behaviors in comparison with homogeneous teams (zero time urgent member and three time urgent member conditions) and their level of extraversion would determine the degree of team temporal leadership that would emerge.

Hypothesis 5: Mean extraversion moderates the relationship between time urgency diversity and team temporal leadership such that time urgency diversity will be more positively related to team temporal leadership for teams with members higher on extraversion than lower on extraversion.

*Figure 1. Study model.*
Methods

Participants

The data for this study was collected from undergraduate psychology students enrolled at a large, Mid-Atlantic university. Participants were compensated with course credit amounting up to 2% of their final grade. Eighty-one, three-member teams were gathered and included in the final sample. Because gender composition may exert significant effects at the team-level (e.g., Rogelberg & Rumery, 1996), teams were composed of all female members or all male members (i.e. no gender mixed teams). Of the eighty-one teams, sixty-five teams were composed of all female members and sixteen teams were composed of all male members. The mean age of these students was 19.69 (SD = 1.67), and their average level of part-time work experience was 3.45 years. Of the students that participated 79 percent were female, and 68.3 percent were Caucasian, with the remaining students being Asian (14 percent), African American (8.6 percent), Hispanic (6.2 percent), and other ethnicities (2.9 percent).

Pre-screening for Time Urgency

This study was conducted to examine diversity and compositional effects by seeding teams in the manner proposed by Humphrey and colleagues (2007) and carried out by Humphrey and colleagues (2011). Specifically, the effects of time urgency were assessed by pre-screening 1,463 participants on a 12-item measure of time urgency (Landy et al., 1991) and composing teams of individuals scoring high and/or low on time urgency. Individuals scoring in the top one third were categorized as high on time urgency and those scoring in the bottom one third were categorized as low on time urgency, also known as time patient.

The top and bottom one third were used to categorize individuals most representative of each end of the distribution as well as to maintain a similar number of individuals within each
category (e.g., Barry & Stewart, 1997; Mueller-Hanson, Heggestad, & Thornton III, 2003). For female participants, the cut-off scores for the top one third were 3.67-5.00 (including individuals scoring 3.67) and the cut-off scores for the bottom one third were 1.00-3.25 (including individuals scoring 3.25). For male participants the cut-off scores for the top one third were 3.50-5.00 (including individuals scoring 3.50) and the cut-off scores for the bottom one third were 1.00-3.08 (including individuals scoring 3.08). Participants scoring in the moderate range on time urgency, between the cut-off scores noted above, were not included in the analyses. Of the 1,463 individuals that completed the pre-screening time urgency measure, 584 were invited to participate in the study because they met the cut-off requirements, and 252 individuals participated in the lab study (84 teams with 3 members each). Individuals scoring high and low on time urgency were placed in one of the following four team conditions based on their responses: three time patient members, two time patient members and one time urgent member, one time patient member and two time urgent members, and three time urgent members.

**Final Sample**

The pre- and post-task surveys contained three attention check items and careless responding items (e.g., Please select the “Disagree” or “agree” option for this question). According to Maniaci and Rogge (2014), individuals answering only one of the items incorrectly should not be removed, and none of the participants answered more than one attention check item incorrectly. Therefore, no students were removed from the final sample due to careless responding.

Additionally, the pre-task and post-task surveys were evaluated for missing data, as well as to ensure that students accurately identified their two teammates by their assigned letters (Member A, Member B, or Member C) to complete the dyadic ratings. Three teams were
dropped from the final sample because of substantial missing data, incorrectly specified dyadic ratings, or a combination of both (2 all female and time urgent members, 1 all male and time urgent members). Therefore, the final sample size used in the analyses included 81 teams (i.e. 65 female teams and 16 male teams). The four time urgency conditions consisted of: three time patient members ($N=14$), two time patient members and one time urgent member ($N=18$), one time patient member and two time urgent members ($N=24$), and three time urgent members ($N=25$).

**Team Commercial Task**

*Task Overview.* In this study, students were asked to take on the role of advertising consultants in a well-known advertising firm. They were tasked with producing the pilot version of a sixty-second television commercial for University Textbooks, a fictional, online student textbook company. The team needed to discuss and generate ideas for the commercial following the evaluation criteria provided by University Textbooks (e.g., not exceeding the budget, incorporating creativity, and appealing to/persuading the appropriate audience). They had 50 minutes to design the commercial within the budget and time constraints stipulated, using music, sound bites, and props provided (see Appendix B). At the end of the 50 minutes, they were asked to act out their pilot version of the commercial, which was videotaped.

During the task, participants had an instant messenger chatbox open where they were able to contact the University Textbooks chief of marketing with questions or concerns about the commercial. A research assistant in another room, which participants were never able to physically see or speak to, played the role of the University Textbooks chief of marketing and responded to questions about the commercial task using scripted responses.
Materials for Commercial Task. Participants had access to the University Textbooks website at a single computer station in order to derive background information on the company and its products. The second website tab listed the evaluation criteria University Textbooks wanted them to follow in order to make the commercial according to their vision. Teams were also provided with two paper forms at their team task station. They were given a budget log form where they needed to record the songs, sound bites, props, and other materials they incorporated into the pilot commercial to track their expenses. Teams were also given a scene setting document where they could write background on their pilot such as elaborating on the setting, the types of characters, and draft a script. Additionally, they had a large digital timer on a second computer screen so they could keep track of how much time they had left for the task.

Participants had open access to internet sources (e.g. GrooveShark and YouTube) in order to find the music and sound bites for their commercial. Teams were also able to “purchase” props from a box next to their computer station (e.g., textbooks, notebooks, back packs, cell phones, party hats, or water bottles).

Comparison to Gersick’s (1989) task. The creative task used in this study was adapted and updated from Gersick’s (1989) laboratory study where she asked eight MBA teams to develop a radio airline commercial. Participants in Gersick’s (1989) study were given a folder with a background report for the airline company, a sheet with a description of the requirements for the commercial, and a budget stating how much the commercial cost. They were also provided with an audio tape player, four music tapes, and two sound effects. In order to update Gersick’s (1989) task, the instructions, company information, music, and task materials were all provided on a website or on the computer in the current study. To increase experimental realism, the task venue was changed from an airline to a web-based textbook company.
In addition, whereas Gersick (1989) had two phone numbers where participants could reach the two “airline company vice presidents” if they had any questions or concerns about the commercial or the budget, the current study included an instant messenger chatbox where participants could contact the chief of marketing for University Textbooks. The current study not only seeded teams based on time urgency, but also introduced a deadline change (i.e. initially telling participants they have 50 minutes total and then changing it to 40 minutes), whereas, Gersick’s (1989) task did not incorporate any manipulations and provided participants with 60 minutes in order to develop the 60-second commercial. Moreover, our study not only video-taped participants during the 40-minute commercial planning period, but the 60-second pilot commercial was filmed as well. The original study using this task only video-taped participants during the commercial development time and then audio-taped the 60-second radio commercial (Gersick, 1989).

**Procedure**

Students scoring in the upper or lower third of the prescreened time urgency scale distribution were scheduled to come into the lab, and teams were composed according to one of the four time urgency composition conditions (three time patient members, two time patient members and one time urgent member, one time patient member and two time urgent members, and three time urgent members). Three-person teams were run through the experiment where they completed an online pre-task survey at individual computer stations, measuring extraversion and demographic information. At the end of the survey, a memo from University Textbooks provided the instructions for the task (see Appendix A). The team of three participants was taken to the “team task computer station” where three chairs were assembled around a single computer. The research assistant then highlighted the different tabs available on the University Textbooks...
website (i.e. commercial evaluation criteria, budget log, instant messenger with the Chief of Marketing, and digital timer), indicated the location of the prop box, and asked if there were any questions.

The research assistant reminded participants that had 50 minutes to complete this task and at the end of the 50 minutes, they were going to act out the 60-second pilot version of the commercial. The participants were also made aware that a research assistant was going to be present in order to oversee the task and record their 60-second commercial. At this point, the research assistant began recording participants engaging in the task of developing a commercial. However, 10 minutes into the task, the chief of marketing from University Textbooks sent an instant message to the team stating that the team now only had 40 minutes total for the task instead of the 50 minutes they were told initially (i.e. 30 minutes left to complete the task instead of 40 more minutes). This change in timelines was adapted from Waller and colleagues (2002) and was implemented to increase the salience of time in the task.

At the end of the 40 minutes, the research assistant stopped the team from working on the task and asked them to get into position for the filming of the pilot commercial. Participants were told to say “Action!” when they were ready for the research assistant to begin recording and say “Cut!” when they finished acting out the 60-second pilot commercial. After the commercial task was videotaped, participants completed an online post-task survey at the individual computer stations, measuring temporal conflict, temporal leadership, and the time urgency manipulation check items (refer to Appendix C). Research assistants then debriefed the participants.

**Measures**

**Time Urgency.** ($\alpha = .81$) Time urgency was assessed using twelve items from the general and task-related hurry sub-scales of the Time Urgency Scale created and validated by Landy and
The general hurry and task-related hurry items focus on the degree to which individuals are concerned over time, feel chronically hurried, and the speed with which they carry out their tasks (Landy et al., 1991). Respondents rated the twelve items on a Likert scale from 1= “strongly disagree,” to 5= “strongly agree.” An example item is, “I often feel very pressed for time.” These subscale items have been used in previous research to represent the construct of time urgency (e.g., Jansen & Kristof-Brown, 2005; Mohammed & Nadkarni, 2011). See Appendix C for a full list of the items for the scale.

**Extraversion.** ($\alpha = .89$) Extraversion was measured using the International Personality Item Pool or IPIP-NEO, which is based off of Costa and McCrae’s (1992) five factor model of personality. The 10 item short-form of the extraversion IPIP-NEO was administered, along with the 10-item assertiveness and 10-item gregariousness sub-facets of the 300-item IPIP-NEO. Respondents rated themselves on a Likert scale from 1= “strongly disagree,” to 5= “strongly agree.” An example is, “Am skilled in handling social situations.” An example item from the 10-item assertiveness sub-facet of extraversion from the long-form IPIP-NEO scale is, “Try to lead others” and a sample item from the gregariousness sub-facet of extraversion is “I involve others in what I am doing.” See Appendix C for a full list of the items for the scale.

**Temporal Conflict.** ($\alpha = .86$) Temporal conflict was assessed using three items from Zhang (2009) and adapted from the process conflict sub-scale (Jehn & Mannix, 2001). An example item is, “We disagreed about how long to spend on specific tasks in our team.” See Appendix C for a full list of the items for the scale. Respondents rated these items on a Likert scale from 1= “strongly disagree,” to 5= “strongly agree.” Participants rated each dyadic pairing in the three-person team on each of the three temporal conflict items (i.e. “To what extent did you experience what is stated below with Team Member A…. with Team Member B”).
Team Temporal Leadership. \((\alpha = .90)\) Team temporal leadership was assessed using the seven-item Team Temporal Leadership Scale that was developed and validated by Mohammed and Nadkarni (2011). This measure was initially adapted from items present in the scales for temporal planning (Janicik & Bartel, 2003), temporal reminders (Gevers, Rutte, & van Eerde, 2006), time-based aspects of leaders proposed by Ancona et al. (2001), and the idea of scheduling and allocating time for tasks in teams (McGrath, 1991). Respondents rated items on a 5-point Likert scale from 1 = “not at all,” to 5 = “a great deal.” An example item is, “To what extent does this team member act as a task leader in pacing the team so that work is finished on time?” See Appendix C for a full list of the items for the scale. Participants were asked to rate themselves as well as each of the other two members on each of the seven items of the team temporal leadership scale.

Control variable. Although there was a block on gender, team gender was used as a control variable in hypothesis testing. A dummy coded team gender variable (0 = male teams, 1 = female teams) was created in order to be entered in Step 1 for each of the hypotheses.

Manipulation Checks

Time Urgency Manipulation Categorizations

In order to examine both diversity and compositional effects of time urgency within teams, I distinguish between categorical time urgency diversity and continuous time urgency composition. Testing Hypotheses 1, 2, and 5, categorical time urgency diversity was composed of heterogeneous or homogeneous time urgency conditions. The heterogeneous condition combined the following mixed combinations: 1 time urgent member/2 time patient member teams and 1 time patient member/2 time urgent members. The homogeneous condition combined the following non-mixed combinations: 3 time urgent members and 3 time patient members.
Testing Hypotheses 3 and 4, continuous time urgency composition treats time urgency composition as a continuous variable ranging from 0 time urgent members to 3 time urgent members.

**Time Urgency Manipulation Check**

In order to ensure that the time urgency diversity manipulation was sufficiently salient, two items adapted from Rico, Sanchez-Manzanares, Antino, and Lau (2012) were measured. Participants rated the extent to which they perceived differences on time urgency on the following items: “Team members worked at the same speed”, and “Differences among members in how they used time created the feeling of us versus them within the team.” Each item’s response was mean aggregated from the individual level to the team level.

A t-test was conducted in order to examine heterogeneous teams versus homogeneous teams using the categorical time urgency diversity variable. Heterogeneous teams were significantly less likely to report that team members worked at the same speed ($M=3.89$) than homogenous teams ($M=4.11$; $t(79)=2.21$, $p<.01$). Similarly, the second manipulation check item was also statistically significant $t(79)=-1.25$, $p<.05$, revealing that heterogeneous teams reported higher perceptions of differences among members in how they used time which created a “us versus them” feeling within the team ($M=1.88$) than homogenous teams ($M=1.72$).

A one-Way ANOVA was conducted in order to examine differences between the 4 composition conditions in relation with the manipulation check items. The results demonstrated that there were no significant differences in responses across the four time urgency composition conditions regarding whether team members worked at the same speed, $F(3, 77)=1.72$, $p=.16$. Although results were non-significant, the means were trending in a similar direction as the t-test where homogeneous teams, including the 3 time urgent member teams ($M=4.15$) and the 3 time
patient member teams \((M=4.05)\), reported higher levels of members working at the same speed in comparison with the heterogeneous teams including one time urgent member teams \((M=3.90)\) and two time urgent member teams \((M=3.91)\). Additionally, results revealed that there were no significant differences in responses across the four composition conditions regarding whether there were differences among team members in how they used their time creating an “us versus them” feeling within the team, \(F(3, 77)= 1.02, p=.39\). Although the results were also non-significant for this item, the teams with 1 time urgent and 2 time patient members reported the highest perceptions of time urgency diversity \((M=1.94)\) with the least amount of diversity perceived by the 3 time urgent member teams \((M=1.65)\).

**Gender Differences**

Because teams were composed of all female members or all male members, a 2 (time urgency heterogeneity versus homogeneity) X 2 (male teams versus female teams) ANOVA was conducted for each manipulation check item. There was no statistically significant interaction between time urgency diversity and team gender on whether the team reported that team members worked at the same speed, \(F(1, 77)= .11, p=.75\). Additionally, there was no statistically significant interaction between time urgency diversity and team gender on whether there were differences among members in how they used time which creating a “us versus them” feeling within the team, \(F(1, 77)= .52, p=.47\). However, there was a significant simple main effect for team gender, \(F(1, 77)= 4.32, p<.05\), demonstrating that female teams \((M=1.88)\) reported more differences among members in how they used time than male teams \((M=1.55)\), likely due to the slightly different cut scores for males and females.

A 4 (0 time urgent, 1 time urgent, 2 time urgent, and 3 time urgent conditions) X 2 (male teams versus female teams) ANOVA was also conducted for each manipulation check item.
There was no statistically significant interaction between time urgency composition condition and team gender on whether the team reported that team members worked at the same speed, $F(4, 73)= .15, p=.93$. There was also no statistically significant interaction between time urgency composition condition and team gender on whether the team reported that team members worked at the same speed, $F(4, 73)= .29, p=.83$.

In addition to the manipulation check items, several t-tests were conducted in order to examine possible gender differences on extraversion, temporal conflict, and temporal leadership. Results revealed that there were no statistically significant gender differences found between teams on extraversion ($t(79)= -.98, p=.33, M_{Females}= 3.58, M_{Males}= 3.48$), temporal leadership ($t(79)= -.43, p=.67, M_{Females}=3.46, M_{Males}= 3.41$), or temporal conflict ($t(79)= -1.12, p=.27, M_{Females}= 1.61, M_{Males}= 1.47$). Therefore, male and female teams were combined in analyses.

**Preliminary Analyses**

**Data Aggregation**

Hypotheses were analyzed at the team level. Therefore, individual-level extraversion responses were aggregated to the team-level by computing mean scores for each team. Dyadic ratings on temporal conflict and round robin ratings on temporal leadership were matched to each member on the three-person team and aggregated to the individual level by mean. For example, team member A’s score on temporal leadership was comprised of team member B’s and team member C’s ratings. Self-ratings of leadership are often inflated by leniency bias (Fleenor, Smither, Atwater, Braddy, & Sturm, 2010); therefore, only peer ratings were included in the reported analyses for temporal leadership. However, results did not vary when temporal leadership included self-ratings. For temporal conflict dyadic ratings, team member A’s score was based on the level of temporal conflict member B reported with A and the level of temporal
conflict member C reported with A. Individual scores on both variables were then aggregated to the team level by mean.

ICCs and rwgs were used to assess the suitability of aggregating temporal conflict and temporal leadership responses to the team-level (LeBreton & Senter, 2008). ICCs compare within-team and between team response variance (ICC1) and the reliability of team-level means (ICC2); Bliese, 2000). The rwg(j) index assesses the level of agreement in the ratings of different team members (LeBreton & Senter, 2008). Different measurement models informed the data aggregation strategies used an additive measurement model was used for team extraversion, thus it was not necessary to justify aggregation. Temporal conflict and team temporal leadership followed a consensus measurement model, thus necessitating agreement statistics (ICC and rwg(j)) to justify aggregation (LeBreton & Senter, 2008). The temporal leadership measure had an ICC(1) of .19, $F(80, 162) = 1.73, p < .001$, an ICC(2) of .42, and an rwg(j) of .93. Additionally, the ICC(1) for temporal conflict was .54, $F(80, 162) = 4.50, p < .001$; the ICC(2) was .78; and the rwg(j) was .93. Therefore, we concluded that it was appropriate to aggregate the temporal leadership and temporal conflict scales to the team level.

**Descriptive Statistics**

Table 1 provides the means, standard deviations, and correlations for the key study variables at the team-level of analysis. Mean extraversion was positively correlated with mean team temporal leadership ($r = .28, p < .05$). Consistent with Hypotheses 3 and 4, continuous time urgency and mean team temporal leadership were positively correlated ($r = .27, p < .05$).
Table 1
Means, Standard Deviations, and Correlations Between All Group-Level Variables

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Team Gender</td>
<td>0.79</td>
<td>.41</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Continuous Time Urgency</td>
<td>1.74</td>
<td>1.08</td>
<td>-.10</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Time Urgency Diversity</td>
<td>0.52</td>
<td>.50</td>
<td>-.19**</td>
<td>-.16</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Mean Extraversion</td>
<td>3.56</td>
<td>.40</td>
<td>.11</td>
<td>.08</td>
<td>.01</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Mean Temporal Leadership</td>
<td>3.45</td>
<td>.46</td>
<td>.05</td>
<td>.27*</td>
<td>-.15</td>
<td>.28*</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>6. Mean Temporal Conflict</td>
<td>1.58</td>
<td>.47</td>
<td>.13</td>
<td>-.05</td>
<td>.11</td>
<td>.07</td>
<td>-.13</td>
<td>--</td>
</tr>
</tbody>
</table>

Note. N= 81, Time urgency diversity is dummy coded as Homogeneous=0 and Heterogeneous=1. Team gender is also dummy coded as Male teams=0 and Female teams=1. * p < .05. **p < .01.

Test of Hypotheses

To test Hypotheses 1 and 2, a moderated regression procedure was conducted. In Step 1, the dummy coded team gender variable (0= male teams, 1= female teams) was entered. In Step 2, the dummy coded time urgency diversity variable (0= time urgency homogeneous teams, 1= time urgency heterogeneous teams) was entered. In Step 3, mean team extraversion was entered as the moderating variable and in Step 4 the interaction of time urgency diversity and mean extraversion was entered. Hypothesis 1 proposed that teams heterogeneous on time urgency would experience higher levels of temporal conflict, than teams homogenous on time urgency. As shown in Table 2, there was not support for heterogeneous teams experiencing significantly higher levels of temporal conflict than homogeneous teams (b=.13, p=.20).

Hypothesis 2 stated that extraversion would moderate the relationship between time urgency diversity and temporal conflict. Team extraversion was mean centered in Step 3 in order to enhance interpretability of the results (Aiken & West, 1991). The results revealed that the interaction between dummy coded time urgency diversity and extraversion on temporal conflict was not statistically significant (b=.32, p=.34). The results are shown in Table 2.
Table 2

Multiple Regression Analysis Testing the Moderating Effect of Extraversion on the Relationship Between Time Urgency Diversity and Temporal Conflict Controlling for Team Gender

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>R²</th>
<th>ΔR²</th>
<th>F</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Team Gender</td>
<td>0.15</td>
<td>0.13</td>
<td>0.13</td>
<td>.016</td>
<td>.016</td>
<td>1.26</td>
<td>1.26</td>
</tr>
<tr>
<td>2.</td>
<td>Team Gender</td>
<td>0.18</td>
<td>0.13</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Urgency Diversity</td>
<td>0.13</td>
<td>0.11</td>
<td>0.14</td>
<td>0.03</td>
<td>.018</td>
<td>1.37</td>
<td>1.48</td>
</tr>
<tr>
<td>3.</td>
<td>Team Gender</td>
<td>0.17</td>
<td>0.13</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Urgency Diversity</td>
<td>0.13</td>
<td>0.11</td>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extraversion</td>
<td>0.06</td>
<td>0.13</td>
<td>0.05</td>
<td>.037</td>
<td>.003</td>
<td>0.98</td>
<td>0.21</td>
</tr>
<tr>
<td>4.</td>
<td>Team Gender</td>
<td>0.17</td>
<td>0.13</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Urgency Diversity</td>
<td>0.13</td>
<td>0.11</td>
<td>0.14</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Extraversion</td>
<td>-0.11</td>
<td>0.18</td>
<td>-0.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TimeUrgDiv*</td>
<td>0.35</td>
<td>0.27</td>
<td>0.20</td>
<td>.058</td>
<td>.022</td>
<td>1.18</td>
<td>1.75</td>
</tr>
</tbody>
</table>

Note. N=81, Time urgency diversity is dummy coded as Homogeneous=0 and Heterogeneous=1. Team gender is also dummy coded as Male teams=0 and Female teams=1. *p <.05. **p<.01.

To test Hypotheses 3 and 4 a moderated regression analysis using a four-step procedure was conducted. In Step 1, the dummy coded team gender variable (0= male teams, 1= female teams) was entered. In Step 2, continuous time urgency composition was entered. In Step 3, mean centered extraversion was added to the model. Finally, in Step 4, the cross-product between continuous time urgency composition and mean extraversion was added. Variables were centered as they were in the previous analyses in order to improve the interpretability of the results (Aiken & West, 1991).

Hypothesis 3 proposed that teams with more time urgent members would report higher team temporal leadership than those with fewer time urgent members. In support of Hypothesis 3, regression analyses demonstrated that there was a significant main effect for continuous time
urgency composition \((b=0.11, p<.05)\). Therefore, as the number of time urgent members on the team increased, higher levels of team temporal leadership were reported. There was also a significant main effect between extraversion \((b=0.29, p<.05)\) and team temporal leadership, which was not hypothesized.

Hypothesis 4 stated that extraversion would moderate the relationship between time urgency composition and team temporal leadership, such that the relationship between time urgency composition and team temporal leadership is stronger when the team members are more extraverted. Hypothesis 4 was unsupported because the interaction between continuous time urgency composition and extraversion did not significantly predict team temporal leadership \((b = -0.08, p =.50)\). These results are shown in Table 3.

Table 3

<table>
<thead>
<tr>
<th>Step</th>
<th>b</th>
<th>S.E.</th>
<th>(\beta)</th>
<th>(R^2)</th>
<th>(\Delta R^2)</th>
<th>F</th>
<th>(\Delta F)</th>
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<tbody>
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<td>1. Team Gender</td>
<td>0.05</td>
<td>0.13</td>
<td>0.05</td>
<td>.002</td>
<td>.002</td>
<td>0.18</td>
<td>1.26</td>
</tr>
<tr>
<td>2. Team Gender</td>
<td>0.08</td>
<td>0.12</td>
<td>0.07</td>
<td>0.12*</td>
<td>0.05</td>
<td>0.27</td>
<td>.076</td>
</tr>
<tr>
<td>Time Urgency Composition</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Team Gender</td>
<td>0.05</td>
<td>0.12</td>
<td>0.04</td>
<td>0.11*</td>
<td>0.05</td>
<td>0.25</td>
<td></td>
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<tr>
<td>Time Urgency Composition</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.29*</td>
<td>0.12</td>
<td>0.25</td>
<td>.139</td>
<td>.063</td>
<td>4.16</td>
<td>0.21</td>
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<tr>
<td>4. Team Gender</td>
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<td>0.12</td>
<td>0.05</td>
<td>0.11*</td>
<td>0.05</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>Time Urgency Composition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.28*</td>
<td>0.13</td>
<td>0.24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TimeUrgComp* Extraversion</td>
<td>-0.08</td>
<td>0.11</td>
<td>-0.08</td>
<td>.145</td>
<td>.005</td>
<td>3.21</td>
<td>1.75</td>
</tr>
</tbody>
</table>

*Note. \(N=81\), Team gender is dummy coded as Male teams=0 and Female teams=1. *\(p <.05\). **\(p<.01\).
Testing Hypothesis 5, a similar moderated regression procedure was conducted as described in the procedures for Hypotheses 3 and 4, except with time urgency diversity. Step 1, the dummy coded team gender variable (0= male teams, 1= female teams) was entered. In Step 2, the dummy coded time urgency diversity variable was entered. In Step 3, centered mean team extraversion was added and in Step 4 the interaction of time urgency diversity and centered mean extraversion was entered. There was a significant interaction between time urgency diversity and mean extraversion ($b=0.50, p<.05$) on team temporal leadership (see Table 5). A simple slope analysis revealed that when teams were high on mean extraversion (+1SD), the relationship between time urgency diversity and team temporal leadership showed a positive trend, but was not significant ($b = .06, t(79) = .43, p >.05$). At low levels of mean extraversion (-1SD), the relationship between time urgency diversity and team temporal leadership was significant and negative ($b = -.34, t(79) = -2.47, p < .05$). Thus, the form of the interaction is consistent with what was stated in Hypothesis 5 (see Figure 2).
Table 4
Multiple Regression Analysis Testing the Moderating Effect of Extraversion on the Relationship Between Time Urgency Diversity and Team Temporal Leadership Controlling for Team Gender

<table>
<thead>
<tr>
<th>Step</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>R²</th>
<th>ΔR²</th>
<th>F</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Team Gender</td>
<td>0.05</td>
<td>0.13</td>
<td>0.05</td>
<td>.002</td>
<td>.002</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>2. Team Gender</td>
<td>0.02</td>
<td>0.13</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Urgency Diversity</td>
<td>-0.13</td>
<td>0.10</td>
<td>-0.15</td>
<td>.023</td>
<td>.020</td>
<td>0.10</td>
<td>1.63</td>
</tr>
<tr>
<td>3. Team Gender</td>
<td>-0.01</td>
<td>0.12</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Urgency Diversity</td>
<td>-0.14</td>
<td>0.10</td>
<td>-0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.32*</td>
<td>0.13</td>
<td>0.28</td>
<td>.101</td>
<td>.078</td>
<td>2.88</td>
<td>6.69</td>
</tr>
<tr>
<td>4. Team Gender</td>
<td>-0.01</td>
<td>0.12</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time Urgency Diversity</td>
<td>-0.14</td>
<td>0.01</td>
<td>-0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.01</td>
<td>0.17</td>
<td>0.08</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.50*</td>
<td>0.25</td>
<td>0.29</td>
<td>.146</td>
<td>.045</td>
<td>3.25</td>
<td>4.02</td>
</tr>
</tbody>
</table>

Note. N=81, Time urgency diversity is dummy coded as Homogeneous=0 and Heterogeneous=1. Team gender is also dummy coded as Male teams=0 and Female teams=1.
*p < .05. **p < .01.

Figure 2. Time Urgency Diversity x Extraversion on Team Temporal Leadership
Ancillary Analyses

Gender Differences. To further examine possible gender differences in results, hypotheses were tested with only female teams ($N=64$). Results remained the same as when both male and female teams were used in the analyses. Hypothesis 1 ($b=.16$, $p=.20$), Hypothesis 2 ($b=.32$, $p=.96$), and Hypothesis 4 ($b=-.09$, $p=.42$), were all unsupported whereas Hypothesis 3 ($b=.13$, $p<.05$) remained statistically significant and Hypothesis 5 ($b=.47$, $p=.12$), was marginally significant. Although Hypothesis 5 was only marginally significant when tested with only female teams, the plot of the interaction was in the same form as the interaction plotted using teams of both genders (see Appendix D).

Assertiveness and Gregariousness Facets of Extraversion. Assertiveness and gregariousness are cited as two of the subdimensions of extraversion that appear to be the most related with general leadership perceptions at the individual-level (Eagly et al., 2003; Humphrey et al., 2011). Therefore, both of these sub-dimensions were explored at the team-level in the current dataset. Mean gregariousness was positively correlated with mean assertiveness ($r=.45$, $p<.01$). Mean gregariousness was only marginally correlated with team temporal leadership ($r=.20$, $p=.06$). However, mean assertiveness was positively correlated with team temporal leadership ($r=.40$, $p<.01$).

Moderated hypotheses were re-tested using assertiveness and gregariousness instead of the global extraversion measure. To test Hypothesis 4 a moderated regression analysis using a three-step procedure was conducted. In Step 1, continuous time urgency composition was entered. In Step 2, mean gregariousness was entered as the moderating variable. The interaction between continuous time urgency composition and mean gregariousness was added in Step 3, in which the variables were mean centered. Results revealed no support for the interaction between
continuous time urgency composition and gregariousness predicting team temporal leadership \((b = 0.07, p = .55)\). This same procedure was also followed in order to test assertiveness as a moderator, except in Step 2 mean assertiveness was entered and in Step 3 the interaction was between continuous time urgency composition and mean assertiveness. Again, results revealed no support for the interaction between continuous time urgency composition and assertiveness predicting team temporal leadership \((b = 0.01, p = .92)\).

To test Hypothesis 5, the same three-step moderated regression analysis was conducted with both sub-facets like for Hypothesis 4 except replacing continuous time urgency composition with time urgency diversity in Steps 1 and 3. The results demonstrated that the interaction between time urgency diversity and mean gregariousness was marginally supported \((b = 0.41, p = .10)\). Similarly, the interaction between time urgency diversity and mean assertiveness was marginally supported \((b = 0.43, p = .08)\). However, as indicated by the results, using gregariousness and assertiveness as moderators for the time urgency diversity-team temporal leadership linkage do not yield statistically significant results as when extraversion served as the moderator (see Appendix D).

**Discussion**

The current study demonstrated that as the number of time urgent members on the team increased, higher levels of team temporal leadership were reported. Time urgent individuals have a higher awareness of time and tend to be the natural timekeepers for the team (Waller et al., 1999). Moreover, time urgent individuals attend to temporal resources and effectively budget their time leading up to the deadline (Conte et al., 1995). Therefore, with a greater number of individuals attending to the passage of time at a high level and engaging in timekeeping and pacing behaviors, more temporal leadership emerged in the team. These results support the
proposition that positive outcomes from tasks that are more action-oriented and time pressured would be improved by greater time urgency (Mohammed & Harrison, 2013).

Additionally, higher mean levels of extraversion predicted higher temporal leadership in teams. Although this relationship was not predicted, it aligns with the findings from the leadership literature. For example, in the review article by Judge and colleagues (2002) examining the Big Five in relation with leadership, it was noted that extraversion was most consistently and strongly related with both leadership emergence and leadership effectiveness. In the article different aspects of leadership are discussed such as guiding the team toward the goals sets over time and completing tasks (Judge, Bono, Illie, & Gerhardt, 2002). This reflects a relationship between extraversion and the part of leadership concerning temporal management, which corresponds to many of the key components of temporal leadership delineated before (e.g. scheduling, reinforcing timelines, and pacing followers in order to meet goals).

As predicted, extraversion also significantly moderated the relationship between time urgency diversity and team temporal leadership. The negative relationship between time urgency diversity and team temporal leadership was stronger when mean extraversion was low. Therefore, having team diversity on time urgency (i.e. including a mix of time urgent and time patient members) was particularly harmful to team temporal leadership when extraversion was low. Had harmful effects on team temporal leadership for teams, but especially for teams diverse on time urgency. Based on the simple slopes analysis, only lower extraversion affected the relationship between time urgency diversity and team temporal leadership. Higher extraversion did not significantly reduce the negative relationship between time urgency diversity and team temporal leadership suggesting that perhaps other personality traits or task-related factors may maximize the benefits of time urgency diversity. Additionally, teams homogeneous on time
urgency did not seem to differ substantively on team temporal leadership depending on the level of extraversion in the team. This is likely because the teams in the homogeneous category include teams that are either all time urgent or all time patient. In turn, the team members have similar perspectives on deadlines, temporal resources, and the speed with progress should be made on tasks. Specifically, if a team is solely composed of time urgent members, it is likely that these individuals will share temporal perceptions such as time passing quickly, feeling rushed, and the deadline looming. In this case, team members would likely work together in order to move quickly toward task completion and not perceive themselves as distinct from their team members in pacing or temporal rhythms. If efforts are coordinated and there are no salient differences, then there are no issues to verbalize and no need to assert an agreed-upon timeline because one is already in place. In turn, homogeneous teams already shared temporal attitudes and norms so synchronizing mechanisms are less necessary, thus level of extraversion did not impact the emergence of team temporal leadership for these teams.

Although it was expected that time urgency diversity would lead to higher temporal conflict, this main effect was not significant, nor was it moderated by mean extraversion. One reason for the lack of support may be due to range restriction for temporal conflict, which can attenuate relationships. The average report of temporal conflict in this study was very low and the restriction in range can cause the underestimation of the effects for a relationship between two variables because there is not enough variability in the variable (i.e. temporal conflict) to accurately estimate its effects. Given that most participants did not report a high level of temporal conflict, it is also possible that feelings of annoyance or frustration may not have manifested as active conflict with team members. (Jehn, 1995; Jehn, Rispens, Jonsen, & Greer, 2013).
In addition to these factors, the level of analysis of team conflict may also impact ratings of conflict. Researchers have begun to note that conflict may not manifest at the team level, but instead at the dyadic level (Jehn et al., 2013). Reporting conflict at the team-level may dilute the results because conflict may not be occurring with every member on the team, but rather just between two individuals. For example, although members A and C are having a disagreement, members A and B and members B and C may not be experiencing conflict with each other. In turn, if each member is asked to rate the level of conflict in the team more globally or if these ratings are aggregated to the team level the conflict experienced between members A and C may not show through because it has been washed out when averaging the ratings. Furthermore, extraversion was not a significant moderator for the relationship between temporal diversity and temporal conflict. It is important to consider examining other personality traits (e.g. conscientiousness and agreeableness) as possible moderators for this relationship as they may align more with the type of task being performed.

**Theoretical and Practical Implications**

This study is the first to manipulate time urgency within a lab setting by seeding teams. This is of import because seeding teams within a laboratory context allowed for composition variance to be systematically maximized and minimized in a controlled setting (Humphrey et al., 2007). In using random sampling, it has been found that few individuals will be on the high or low ends of a scale particularly if the sample is normally distributed (McClelland, 1997), thus seeding addresses concerns regarding suboptimal designs and the underestimation of effects for the variable of interest. Specifically, this methodology allows for a finer grained analysis of the impact of time urgency diversity on outcomes than has been possible in field studies.
Seeding also allowed this study to assess multiple composition models (i.e. continuous time urgency composition and categorical time urgency diversity) in order to provide a more complete picture of the effects they can yield on key team outcomes. The first type of model the study evaluated was the continuous time urgency composition model, which allowed for the evaluation of the influence of minimum and maximum levels of time urgency in teams (i.e. zero time urgent members, one time urgent member, two time urgent members, and three time urgent members). Including categorical time urgency diversity was also important because it provided data on the role of team member variability on team outcomes such as temporal conflict and leadership. Having both of these models provided a comparison between the effects that minimum and maximum levels and/or diversity versus homogeneity on a variable can have on a team. In the current study, examining continuous time urgency composition and categorical time urgency diversity had differential effects within the team such that main effects resulted for the former, whereas moderated effects resulted for the latter. Additionally, the current study highlights the importance of examining interactions among temporal individual differences and other personality traits as predictors of team diversity outcomes (van Knippenberg & Schippers, 2007). Our findings suggest that researchers should seek to understand how different personality traits might accentuate or attenuate team diversity.

In addition to contributing to the temporal individual difference literature by examining various team configurations and considering a new category of moderator, findings also established time urgency and extraversion as antecedents to team temporal leadership. In doing so, this study applied shared/distributed leadership perspective (Carson et al., 2007) by examining the emergence of temporal leadership at the team level. This study had each team member rate their fellow members on temporal leadership within the team, which was
aggregated up to the team level in order to observe how much the team was engaging in temporal leadership overall. This is in direct contrast with the Mohammed and Nadkarni (2011) study in which temporal leadership was not shared in a team, but derived from the designated team leader’s self-report as well as external ratings from client coordinators. The current study diverges from the more traditional single leader paradigm and follows a shared perspective by examining leadership for the team stemming from the rated contributions of team members. Furthermore, in exploring the influence of team diversity and composition, this study considered the compositional effects on leadership which has been more recently been advocated for in the literature (Hunter et al., 2012).

From a practical standpoint, organizations should recognize the importance of temporal leadership and its antecedents in teams where time is particularly salient. Based on previous findings, team temporal leadership has demonstrated a positive relationship with team performance (Mohammed & Nadkarni, 2011). In turn, temporal leadership has important implications for performance, thus establishing its predictors and the conditions under which it emerges at higher levels is critical to understanding the dynamics under which individuals and teams meet deadlines, engage in effective processes, and perform well on assigned tasks.

Organizations with deadline-bound, project teams may want to encourage team members to attend to time, communicate differences in pace and work styles, and take the initiative to suggest ways to synchronize efforts effectively possibly through a team charter (e.g., Mathieu & Rapp, 2009). In these ways managers can apply behaviors consistent with time urgency and extraversion that would likely increase team temporal leadership as indicated by the main effects found in this study. This study also has implications for seeding teams based on individual differences, namely time urgency. The results revealed that teams with more time urgent
members contributed to higher team temporal leadership, which managers may want to keep in mind when composing their teams for tasks where time is a salient contextual factor. Moreover, because time urgency diversity can have a negative impact on the team (i.e. lower team temporal leadership), managers and organizations can consider ways in which to avoid factors (e.g. low extraversion) that may exacerbate the deleterious effects of diversity on team outcomes and processes.

**Limitations and Future Directions**

The use of teams within an academic setting that disbanded after one session limits generalizability for longer-term teams. Therefore, tracking the impact of temporal composition over time would be a fruitful future avenue for research. For example, Gersick (1988) conducted a qualitative study where she examined eight teams and established a different view on group development, which was more task focused. Her new model was punctuated equilibrium, a process in which groups experience a lot of activity or a “period of inertia” during the first phase of the task until the midpoint (i.e. the time period between the start and deadline) which acts as a transition phase in which the team reevaluates their progress on the task causing a change in processes and initiating the second phase of inertial activity until the deadline (Gersick, 1988; 1989). This model not only focuses on the structure of the task, but also highlights contextual influences such as group composition, attention to time, and team pacing. In this regard, it raises the question of how temporal individual differences serve as contextual factors. Thus, do teams higher on time urgency reach the midpoint of task progress sooner than teams lower on time urgency? Are teams lower on time urgency less likely to move toward the transitional phases that are critical to task performance?
Assessing team composition over time would also allow for researchers to examine the impact of team member change or turnover on team dynamics. How do teams adapt temporally to the loss of time urgent members or members who have contributed heavily to temporal leadership in a time pressured context? In addition, how does temporal leadership evolve over time? Are there certain stages of group development where the absence of temporal leadership is particularly detrimental or the presence of temporal leadership is particularly helpful?

In relation with temporal conflict, there is still much to be established in relation with this construct. As mentioned before, conflict has been noted to be inherently dyadic (Jehn et al., 2013). In this study, temporal conflict was examined at the team-level, however, assessing this process at the dyadic level may yield more promising results in the future. Additionally, measuring conflict at different points in time throughout the task may provide more nuanced information about when temporal conflict becomes salient, how it emerges, and between whom it emerges, and how it evolves during the different stages of the task leading up to the deadline.

The task in this study was constrained by time (participants were told that they would be given 50 minutes to complete the task) and time pressure was also introduced with the unexpected change in deadline for the task (time allotted was changed from 50 minutes to 40 minutes deadline changed). Therefore, the results for this study occurred in a context where time was salient, but not all settings are temporally laden. It is important to note that these results may not generalize to every work environment making the context in which teams are engaging in task works a key consideration future research. Moreover, research should also continue to examine what other temporal individual differences (e.g. polychronicity, synchrony preference, and time perspective) and moderating factors influence team temporal leadership. Finding other antecedents and the circumstances under which they increase positive processes like team
temporal leadership is a fruitful avenue of future research in attempting to answer the critical questions of how, when, and what makes a good team?
References


Mohammed, S., & Harrison, D. (2013). The clocks that time us are not the same: A theory of temporal diversity, task characteristics, and performance in teams. *Organizational Behavior and Human Decision Processes*, 122(2), 244-256.


Appendix A: University Textbooks Memo Task Instructions

To: Mid Atlantic Advertising Team

From: Alex Thompson, University Textbooks Chief of Marketing

Re: University Textbooks YouTube Commercial

Hello Team,

I want to welcome you aboard as our advertising consultants for our new project. You have been hired by University Textbooks, an online company that buys, sells, and rents textbooks to college students, to produce a high-quality YouTube commercial. Below I have provided more details for your team.

Task:

You are being asked to brainstorm ideas and produce a 60 second YouTube commercial that will be used by the University Textbooks website. In order to deliver a clear and concise message to our customer base, it is important that your team’s YouTube commercial falls within the 60-second time constraints. You have 50 minutes to complete this task. After the 50 minutes are up, the commercial your team develops will be recorded and timed. You will not be able to edit it in any way when you are being recorded.

Materials Provided:

Throughout the duration of your task, you will have access to the University Textbooks website, the internet for any resources you may need, any music internet sources (i.e. GrooveShark, YouTube, etc.), the budget, and a box of props to choose from.

Evaluation:
Your commercial will be evaluated by the marketing team at a later time based on criteria such as creativity, appealing to students, increasing textbook sales, and more. The criteria will be further explained in a document at the computer station when the task begins.

**Questions?**

If you have any questions or concerns about the commercial, contact me via the instant messenger chatbox. Please solely contact me, the Chief of Marketing for University Textbooks, with questions.
Appendix B: University Textbooks Budget Log and Time Constraints

UNIVERSITY TEXTBOOKS

Commercial Budget Log

VIDEO RECORDING/ FINAL EDITING FEE:
Cost of recording assistant in the room + Editing fee = $850.00

SONGS:
Number of Songs: ____ x $1,500.00 = ________
• *Included in this price are the following fees University Textbooks needs to pay to the music source:
  o Artist/royalty fees: $1,250.00
  o Music editing fee: $250.00

SOUND BYTES:
Number of Sound Effects: ____ x $400.00 = ________
• *Included in this price are the following fees University Textbooks needs to pay to the sound byte source:
  o Royalty fees: $350.00
  o Editing fee: $50.00

PROPS:
Clock: _______ x $5.00 = ________
Party Hats: _______ x $5.00 = ________
Sun Visor: _______ x $8.00 = ________
Baseball Cap: _______ x $8.00 = ________
Water Bottles: _______ x $8.00 = ________
Backpack: _______ x $30.00 = ________
Polka Dot bag: _______ x $10.00 = ________
Cell phones: _______ x $40.00 = ________
Binder: _______ x $10.00 = ________
Textbooks: _______ x $50.00 = ________

Total Production cost (amount your team spent): ________

*Total Production Cost Allotted= $2,750.00 (total allotted including the video recording/editing)

***What is filmed during this session by the recording assistant will be sent to the Chief of Marketing, Alex Thompson and the marketing team at University Textbooks to evaluate. If they select this commercial the marketing team will make final edits and post it up on YouTube ***
Appendix C: Measures

**Time Urgency Scale (General and Task-Related Hurry items from Landy et al., 1991)**

*Please indicate your level of agreement as to how characteristic the following items are of you.*

1. I find myself hurrying to get places even when there is plenty of time.
2. I often work slowly and leisurely.
3. People that know me well agree that I tend to do most things in a hurry.
4. I tend to be quick and energetic at work.
5. I often feel very pressed for time.
6. My family and close friends would rate me as definitely relaxed and easy going.
7. I am slow at doing things.
8. I usually work fast.
9. I ordinarily work quickly and energetically.
10. I like work that is slow and deliberate.
11. I never feel in a rush, even under pressure.
12. I glance at my watch frequently during the day.

**Extraversion (IPIP-NEO, based off of Costa and McCrae, 1992)**

*Please indicate your level of agreement as to how characteristic the following items are of you.*

**IPIP Extraversion Short Form: 10-item scale**

- Feel comfortable around people.
- Make friends easily.
- Am skilled in handling social situations.
- Am the life of the party.
- Know how to captivate people.
- Have little to say.
- Keep in the background.
- Would describe my experiences as somewhat dull.
- Don’t like to draw attention to myself.
- Don’t talk a lot.

**IPIP Extraversion- Gregariousness and Assertiveness Sub-facets:**

**Gregariousness**

- Love large parties.
- Talk to a lot of different people at parties.
- Enjoy being part of a group.
- Involve others in what I am doing.
- Start conversations.

- Prefer to be alone.
Want to be left alone.
Don't like crowded events.
Avoid crowds.
Seek quiet.

**Assertiveness**
Take charge.
Try to lead others.
Can talk others into doing things.
Seek to influence others.
Take control of things.
Wait for others to lead the way.
Keep in the background.
Have little to say.
Don't like to draw attention to myself.
Hold back my opinions.

**Temporal Conflict (adapted from the Jehn & Mannix Process Conflict Scale, 2001)**

*In the following questions you will be rating your teammates. Please indicate your level of agreement with each statement in relation to each of your team members.*

<table>
<thead>
<tr>
<th></th>
<th>Member B</th>
<th>Member C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>We disagreed about time allocation in our work team (how much time to spend on tasks).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There was conflict about how we should pace task activities in our team.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We disagreed about how long to spend on specific tasks in our team.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Team Temporal Leadership (Mohammed & Nadkarni, 2011)

To what extent did you and your teammates: (rate yourself, team member B, and team member C)

<table>
<thead>
<tr>
<th></th>
<th>You</th>
<th>Member B</th>
<th>Member C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Act as a task leader in reminding members of important deadlines for the commercial.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Act as a task leader by prioritizing tasks and allocating time to each task for the commercial.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Act as a task leader in preparing and building in time for contingencies, problems, and emerging issues.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Act as a task leader in pacing the team so that work was finished on time.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Act as a task leader by urging members to finish subtasks for the commercial on time.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Time Urgency Manipulation Check Items (adapted from Rico, Sanchez-Manzanares, Antino, & Lau, 2012)

*Indicate your level of agreement with each statement in relation with team as a whole. (1=strongly disagree to 5=strongly agree)*

1. Team members worked at the same speed.
2. Differences among members in how they used time created the feeling of “us versus them” within the team.
### Gender Differences:

#### Table 1
*Multiple Regression Analysis Testing the Moderating Effect of Extraversion on the Relationship Between Time Urgency Diversity and Temporal Conflict in Female Teams*

<table>
<thead>
<tr>
<th>Step</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>R²</th>
<th>ΔR²</th>
<th>F</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time Urgency Diversity</td>
<td>0.16</td>
<td>0.12</td>
<td>0.16</td>
<td>.027</td>
<td>.027</td>
<td>1.72</td>
<td>1.72</td>
</tr>
<tr>
<td>2. Time Urgency Diversity Extraversion</td>
<td>0.16</td>
<td>0.12</td>
<td>0.16</td>
<td>-0.01</td>
<td>0.27</td>
<td>.000</td>
<td>0.85</td>
</tr>
<tr>
<td>3. Time Urgency Diversity Extraversion</td>
<td>0.16</td>
<td>0.12</td>
<td>0.16</td>
<td>-0.12</td>
<td>0.20</td>
<td>-0.10</td>
<td>0.32</td>
</tr>
<tr>
<td>TimeUrgDiv* Extraversion</td>
<td>0.32</td>
<td>0.34</td>
<td>0.15</td>
<td>.042</td>
<td>.015</td>
<td>0.87</td>
<td>0.92</td>
</tr>
</tbody>
</table>

*Note. N=81, Note. N= 81, Time urgency diversity is dummy coded as Homogeneous=0 and Heterogeneous=1.*

* *p < .05. **p < .01.

#### Table 2
*Multiple Regression Analysis Testing the Moderating Effect of Extraversion on the Relationship Between Continuous Time Urgency Composition and Team Temporal Leadership in Female Teams*

<table>
<thead>
<tr>
<th>Step</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>R²</th>
<th>ΔR²</th>
<th>F</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time Urgency Composition</td>
<td>0.13*</td>
<td>0.05</td>
<td>0.32</td>
<td>.102</td>
<td>.102</td>
<td>7.02</td>
<td>7.02</td>
</tr>
<tr>
<td>2. Time Urgency Composition Extraversion</td>
<td>0.12*</td>
<td>0.05</td>
<td>0.29</td>
<td>0.22</td>
<td>0.14</td>
<td>0.19</td>
<td>0.135</td>
</tr>
<tr>
<td>3. Time Urgency Composition Extraversion</td>
<td>0.12*</td>
<td>0.05</td>
<td>0.29</td>
<td>0.35</td>
<td>0.21</td>
<td>0.29</td>
<td>-0.09</td>
</tr>
</tbody>
</table>

*Note. N=81*

* *p < .05. **p < .01.

#### Table 3
*Multiple Regression Analysis Testing the Moderating Effect of Extraversion on the Relationship*
### Table 1
**Multiple Regression Analysis Testing the Moderating Effect of Gregariousness on the Relationship Between Continuous Time Urgency Composition and Team Temporal Leadership**

<table>
<thead>
<tr>
<th>Step</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>F</th>
<th>$\Delta F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time Urgency Diversity</td>
<td>-0.20</td>
<td>0.11</td>
<td>-0.22</td>
<td>.048</td>
<td>.048</td>
<td>3.15</td>
<td>3.15</td>
</tr>
<tr>
<td>2. Time Urgency Diversity Extraversion</td>
<td>0.27</td>
<td>0.14</td>
<td>0.23</td>
<td>.100</td>
<td>.052</td>
<td>3.40</td>
<td>3.53</td>
</tr>
<tr>
<td>3. Time Urgency Diversity Extraversion</td>
<td>-0.20</td>
<td>0.11</td>
<td>-0.22</td>
<td>.100</td>
<td>.052</td>
<td>2.63</td>
<td>3.26</td>
</tr>
</tbody>
</table>

**Note.** $N=81$, Time urgency diversity is dummy coded as Homogeneous=0 and Heterogeneous=1. *$p < .05$. **$p < .01$.**
Table 2
Multiple Regression Analysis Testing the Moderating Effect of Assertiveness on the Relationship Between Continuous Time Urgency Composition and Team Temporal Leadership

<table>
<thead>
<tr>
<th>Step</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>R²</th>
<th>ΔR²</th>
<th>F</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time Urgency Composition</td>
<td>0.11*</td>
<td>0.05</td>
<td>0.27</td>
<td>0.071</td>
<td>0.071</td>
<td>6.04</td>
<td>6.04</td>
</tr>
<tr>
<td>2. Time Urgency Composition Assertiveness</td>
<td>0.07</td>
<td>0.05</td>
<td>0.15</td>
<td>0.40*</td>
<td>0.13</td>
<td>0.167</td>
<td>0.096</td>
</tr>
<tr>
<td>3. Time Urgency Composition Assertiveness</td>
<td>0.07</td>
<td>0.05</td>
<td>0.15</td>
<td>0.40*</td>
<td>0.14</td>
<td>0.167</td>
<td>0.096</td>
</tr>
<tr>
<td>TimeUrgComp* Assertiveness</td>
<td>0.01</td>
<td>0.13</td>
<td>0.01</td>
<td>0.40*</td>
<td>0.20</td>
<td>0.27</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Note. N=81
*p < .05. **p < .01.

Table 3
Multiple Regression Analysis Testing the Moderating Effect of Gregariousness on the Relationship Between Time Urgency Diversity and Team Temporal Leadership

<table>
<thead>
<tr>
<th>Step</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>R²</th>
<th>ΔR²</th>
<th>F</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time Urgency Diversity</td>
<td>-0.14</td>
<td>0.10</td>
<td>-0.15</td>
<td>0.022</td>
<td>0.022</td>
<td>1.81</td>
<td>1.81</td>
</tr>
<tr>
<td>2. Time Urgency Diversity Gregariousness</td>
<td>-0.16</td>
<td>0.10</td>
<td>-0.18</td>
<td>0.22</td>
<td>0.12</td>
<td>0.20</td>
<td>0.061</td>
</tr>
<tr>
<td>3. Time Urgency Diversity Gregariousness</td>
<td>-0.16</td>
<td>0.10</td>
<td>-0.17</td>
<td>0.01</td>
<td>0.18</td>
<td>0.00</td>
<td>0.094</td>
</tr>
</tbody>
</table>

Note. N=81, Time urgency diversity is dummy coded as Homogeneous=0 and Heterogeneous=1.
*p < .05. **p < .01.
Table 4
Multiple Regression Analysis Testing the Moderating Effect of Assertiveness on the Relationship Between Time Urgency Diversity and Team Temporal Leadership

<table>
<thead>
<tr>
<th>Step</th>
<th>b</th>
<th>S.E.</th>
<th>β</th>
<th>R²</th>
<th>ΔR²</th>
<th>F</th>
<th>ΔF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time Urgency Diversity</td>
<td>-0.14</td>
<td>0.10</td>
<td>-0.15</td>
<td>.022</td>
<td>.022</td>
<td>1.81</td>
<td>1.81</td>
</tr>
<tr>
<td>2. Time Urgency Diversity Assertiveness</td>
<td>-0.13</td>
<td>0.10</td>
<td>-0.14</td>
<td>.45**</td>
<td>.165</td>
<td>.143</td>
<td>7.72</td>
</tr>
<tr>
<td>3. Time Urgency Diversity Assertiveness</td>
<td>-0.13</td>
<td>0.10</td>
<td>-0.14</td>
<td>.21</td>
<td>.18</td>
<td>.18</td>
<td>0.43</td>
</tr>
</tbody>
</table>

Note. N=81. Time urgency diversity is dummy coded as Homogeneous=0 and Heterogeneous=1. *p <.05. **p <.01.