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Article

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Abstract

We assess the relative usefulness of temporal leadership and initiating structure in predicting timely team project completion. Drawing on the functional approach to team leadership as well as the concept of team performance episodes, we hypothesize that two facets of temporal leadership, temporal planning at project initiation and temporal reminders midway through project execution, will be better predictors of timely project completion than will traditional task-oriented leadership in the form of initiating structure delivered at the same two project stages. Results from 62 application development project teams surveyed across the life of a project showed that the two facets of temporal leadership together accounted for 91.7% of the predicted variance in timely project completion, with temporal planning being more important. Initiating structure accounted for the remaining small and nonsignificant amount of the predicted variance. We conclude that temporal leadership is a new construct that is a highly useful approach to leader behavior in the context of teams working on time-limited projects.

Keywords

temporal leadership, initiating structure, project teams, team leadership, functional leadership, contextual leadership, project management

Short-term project work has become increasingly common in many industries (Burke & Morley, 2016). Newly formed project teams often perform novel, interdependent, multidisciplinary, and creative tasks under stringent deadlines which require careful pacing and coordination (Mohammed & Harrison, 2013; Tyssen et al., 2013). Completing projects on time is an essential criterion of project management success for these teams (e.g., Ika, 2009; Sanchez et al., 2017; Serrador & Turner, 2015). However, a large-scale survey found that 60% of software projects experienced time overruns (Standish Group International, 2015). Managing limited temporal resources to meet project deadlines in newly formed multidisciplinary teams is a major challenge for project team leaders.

Rather than considering the specific demands of project work, much of the published research on leadership in project teams has borrowed generic leadership constructs such as transactional and transformational leadership (e.g., Yang et al., 2011), initiating structure and consideration (e.g., Savelsbergh et al., 2015), or standard lists of leader attributes, competencies, and personality traits (e.g., Müller & Turner, 2010; Turner & Müller, 2005). These approaches were developed largely in traditional organizations where individuals or stable teams perform familiar tasks on an ongoing basis. As such, they are not directly aligned with the task and temporal demands inherent in project work (Alipour et al., 2017; Casimir, 2001; Shamir, 2011) and have not proven to be especially useful in predicting project performance (Keegan & Den Hartog, 2004; Tyssen et al., 2013). The task and temporal demands of time-limited project work create a unique context for leadership which may be best served by a leadership style that specifically addresses these demands (e.g., Liden & Antonakis, 2009; Oc, 2018; Osborn et al., 2002). In particular, *temporal leadership*, introduced and defined by Mohammed and Nadkarni (2011, p. 492) as "leader behaviors that aid in structuring, coordinating, and managing the pacing of task accomplishment in a team" (p. 492), seems to be a good fit for the needs of project teams.

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The functional approach to leadership suggests that the leader's job is to do or get done whatever is needed to accomplish the team's goal (Hackman & Walton, 1986; McGrath, 1962; Zaccaro et al., 2001). In new project teams with limited time to perform, needed activities may include planning and scheduling tasks, clarifying timeframes and deadlines, and monitoring and motivating ongoing team performance against plans (Morgeson et al., 2010). The leader may need to provide or encourage these functions in new project teams via temporal leadership as team members may not initially understand project requirements or possess the capability to spontaneously self-regulate and coordinate in a time-pressured environment (Labianca et al., 2005; Mohammed & Harrison, 2013; Rico et al., 2008). In this article, we will first expand the concept of temporal leadership to two facets, temporal planning and temporal reminders, each of which is expected to meet the functional needs of teams in different project stages (Morgeson et al., 2010). Previous studies on temporal leadership have not considered the timing of a leader's temporal behavior in a task cycle, merely conceptualizing and assessing a unidimensional measure of temporal leadership once during the project cycle (Mohammed & Nadkarni, 2011; Maruping et al., 2015). We argue that each type of temporal leader behavior may be most helpful to the team at different stages of the project lifecycle. It is consistent with Marks et al. (2001) recurring phase model of team processes that encapsulates how teams achieve their goals by working through distinct phases of team development across the project lifecycle and Morgeson et al.'s (2010) suggestions about the types of leader inputs that will be functional for teams during these phases. Using a multiwave time-lagged design, we will assess the relative contribution of each facet to the prediction of timely project completion.

Second, we will assess the usefulness of temporal leadership by comparing its predictive power to that of a more generic form of leadership from the same family of leadership constructs. Scholars proposing new leadership constructs must demonstrate that they are not merely "old wine in new wineskins" but are both different and incrementally useful for their intended purpose when compared to relevant established constructs (DeRue et al., 2011; Hoch et al., 2018; Shaffer et al., 2016). DeRue et al. (2011) state that, "proponents of a new leadership theory should explicitly compare and contrast their theory with existing approaches and design empirical tests to demonstrate that an emerging theory of leadership explains incremental variance in leadership effectiveness" (p. 38) (see also Banks et al., 2018; Le et al., 2010). We will explore whether the relatively new construct of temporal leadership meets this standard compared to generic task-oriented leadership in the form of initiating structure when applied to the time-limited project context.

Temporal Leadership

Teams often use time poorly. They fail to effectively regulate their activities by scheduling and coordinating tasks, which results in difficulties in meeting deadlines (Chong et al., 2011; Waller et al., 2001). Gersick (1988) observed that time-to-deadline served as a primary driver of team progress (or lack thereof) and speculated that leader intervention would help teams use their time better and accomplish their tasks more effectively (Gersick, 1988). Drawing on functional leadership theory, Mohammed and Nadkarni (2011) placed the onus on project leaders to manage team temporal resources. They conceptualized temporal leadership as a unidimensional construct by combining the pre-existing constructs of *temporal planning* (Janicik & Bartel, 2003) and *temporal reminders* (Gevers et al., 2006). Temporal planning refers to discussing task priorities and likely durations; creating milestones, deadlines, and criteria for measuring progress; and planning for contingencies to deal with temporal problems that may arise (Janicik & Bartel, 2003). Temporal reminders refer to ongoing monitoring of activities and progress against goals and schedules, as well as reminding team members of important milestones and encouraging them to meet temporal deadlines (Gevers et al., 2006).

The few empirical studies of temporal leadership in project teams have relied on a single mid-project assessment of overall temporal leadership, with results suggesting that it is predictive of team performance and acts by reducing time-related problems in teams (Maruping et al., 2015; Mohammed & Nadkarni, 2011; Santos et al., 2016). While promising, none of these studies have considered that projects unfold over time and that teams may benefit from different kinds of temporal leadership input at different stages in a project. The Project Management Body of Knowledge (PMBOK Guide, 2021) identifies two main project stages: initiation and execution. These two stages map well onto Marks et al. (2001) recurring phase model of team processes. Marks et al. (2001) suggest that teams experience episodic cycles of goal-directed behavior in which different sets of activities are salient at different points in time. At the start of a new performance episode (in this case, the initiation stage of a project), teams must identify the tasks needed to accomplish their mission, specify goals and subgoals, and formulate schedules, plans, and contingency plans. This is followed by an action stage (project execution), in which plans are implemented, progress is monitored, and tasks are coordinated to completion.

Burke et al. (2017) argue that these temporally linked team needs create parallel demands for leader behavior to ensure that the needs are met. Morgeson et al. (2010) suggest specific leadership functions that are important in each stage of a performance episode. In the first (initiation)

stage, the leader must help the team define the mission, establish expectations and goals, and structure and plan how, by whom, and when the work will be done. In the second (execution) stage, key team leader functions include monitoring team performance, solving problems, coordinating actions, and challenging the team to excel. Accordingly, we suggest that leader temporal planning and temporal reminders serve functions useful at the project initiation and execution stages, respectively. In response to DeRue et al.'s (2011) admonition to empirically establish the incremental validity of newer leadership constructs over existing ones, we also compare the predictive power of these two facets of temporal leadership to the generic task-oriented leadership construct of initiating structure.

Initiating Structure

Initiating structure is one of the two main dimensions of leader behavior from the classic Ohio State leadership studies in the 1950s. Fleishman and Harris (1962) defined initiating structure as a style in which leaders unilaterally assign tasks to subordinates, impose clear expectations, establish standard ways of getting things done, and ensure adherence to performance standards. Judge et al. (2004, p. 36) noted that the Ohio State leader behavior dimensions had fallen out of favor and called them "the forgotten ones" in leadership research. However, their comprehensive meta-analytic review verified the predictive validity of initiating structure for group/organizational effectiveness (rho = .30) and rated leader effectiveness (rho = .39). Similar results for initiating structure were reported in a meta-analysis of leadership and team performance by Ceri-Booms et al. (2017). Keller (2006) found that initiating structure predicted the technical quality of team outputs and performance against time and cost goals above and beyond transformational leadership and several substitutes for leadership and concluded that "it is time to bring initiating structure back into models of leadership for teams" (p. 209). Figure 1 presents the number of mentions of initiating structure in the abstracts of Scopus-indexed journals in management and psychology every 10 years from 1960 through 2020. After a steady fall, initiating structure is now attracting increased attention.

We chose initiating structure for comparison with temporal leadership for several reasons. First, initiating structure is arguably the foundation construct in task-oriented leadership (Burke et al., 2006; Ceri-Booms et al., 2017). Second, team leadership meta-analyses have found that initiating structure is moderately predictive of team performance (Burke et al., 2006; Ceri-Booms et al., 2017). Third, temporal leadership belongs to the family of task-oriented leadership approaches (Mohammed & Alipour, 2014) so it is desirable to assess its incremental contribution beyond the most established construct in the same domain. Fourth, as would be expected of constructs in the same family, temporal leadership, and initiating structure are positively correlated but far from identical, sharing <25% of their variance (Mohammed & Nadkarni 2011; Myer & Mohammed, 2012). Myer and Mohammed (2012) found that temporal leadership accounted for incremental variance in perceived leader effectiveness and willingness to follow a leader beyond initiating structure. Below, we discuss why we hypothesize that facets of temporal leadership at each project stage should predict timely project completion better than initiating structure delivered at the same stage.

Temporal Planning Versus Initiating Structure at Project Initiation. Because project teams are composed to suit the unique demands and scope of each specific project, members may not have a history of working together, may lack shared norms and routines, and may not initially understand the requirements of the new project in terms of subtasks, priorities, schedules, coordination requirements, and deadlines. Such teams may experience temporal problems due to differences in perceptions of deadlines and habitual preferences regarding the pace and schedule of work (Waller et al., 2001). Evidence from the self-managed teams literature demonstrates the importance of early temporal planning for team success. Leader temporal planning helps team members understand the time available for task completion, the schedule of activities, interim deadlines and milestones, and priorities and sequences of interdependent tasks. This facilitates the development of time awareness norms within the team (Janicik & Bartel, 2003). Teams that engage in extensive task planning while working on complex interdependent tasks are better at handling coordination problems and achieving team goals (Mathieu et al., 2000; Salas et al., 2008).

Leader temporal planning addresses the functional needs of teams in the initial stage of a project by assuring that teams develop an understanding of task and subtask priorities and durations, temporal milestones, deadlines, the pace and sequence of activities needed for success, and contingency plans for temporal problems that may arise (Mohammed & Nadkarni, 2011; Morgeson et al., 2010). When leaders inspire the early adoption of specific temporal plans and goals, members should be more likely to initiate and sustain coordinated goal-directed efforts, respond more effectively to temporal setbacks, waste less time, and experience fewer temporal conflicts, leading to a greater likelihood of final success (Kleingeld et al., 2011; Locke & Latham, 1990, 2013; Santos et al., 2016). Especially in the project context, leader input in the form of temporal planning at project initiation should help teams use their limited time effectively from the very beginning, leading eventually to on-time project completion.

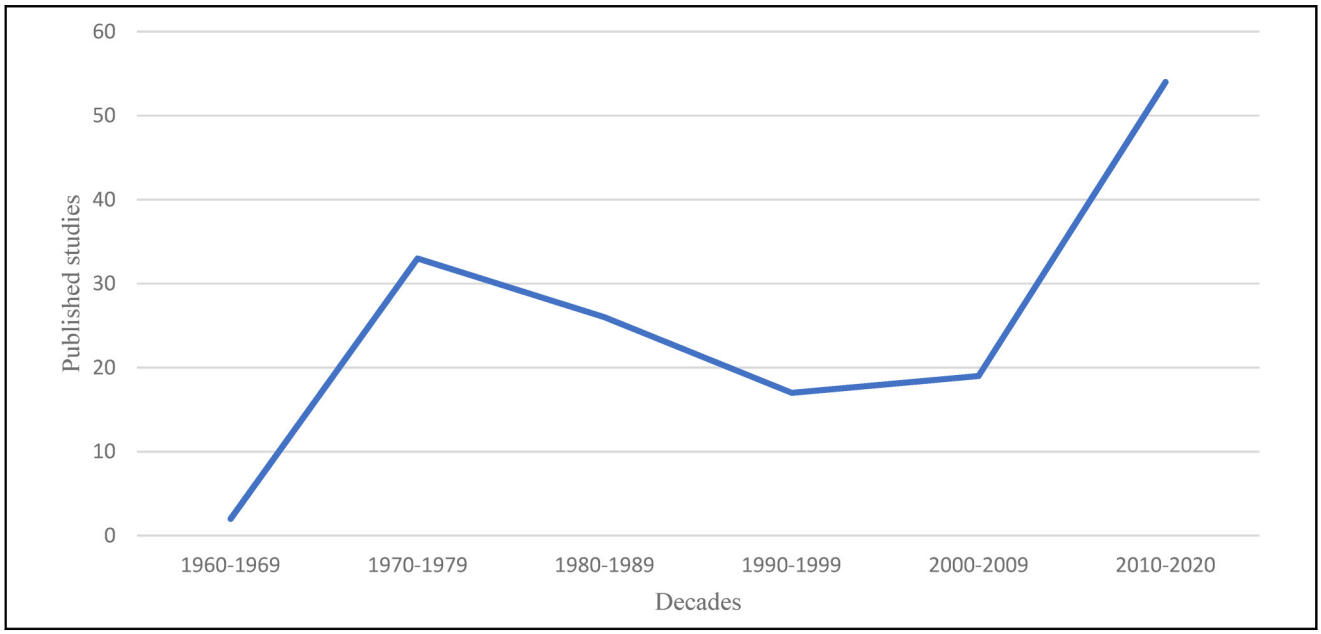

Figure 1. Number of published studies on initiating structure since 1960.

In contrast, leader initiating structure is a proactive and task-oriented style in which the leader assigns tasks, dictates specific routines, and sets and enforces performance standards (Korman, 1966; Pearce et al., 2003). It reflects the extent to which a leader defines performance standards, sets task goals, reduces obstacles associated with achieving these goals (Fleishman, 1973; Fleishman & Harris, 1962; House et al., 1971), and directs and structures team member tasks (Pearce et al., 2003). However, leader-initiating structure lacks a central focus on proactive and early planning for the use and management of time, so it seems less likely to meet the functional needs of new teams on a time-limited project. In a project context, teams require proactive time management from the leader, while the focus of the leader initiating structure is to set standards and achieve performance goals. This style of leadership may induce avoidance motivation, which has been shown to harm performance when time pressure is high (Roskes et al., 2013). Thus:

Hypothesis 1: Leader temporal planning during the project initiation stage will be a stronger predictor of timely project completion than will concurrent initiating structure.

Temporal Reminders Versus Initiating Structure. Project teams often experience difficulties coordinating and synchronizing interdependent task activities while a project is in progress (Jansen & Kristof-Brown, 2005; Mohammed & Alipour, 2014). They tend to waste time early in the project, thus increasing time pressure as the deadline approaches (Gersick, 1988). A team's ability to meet task deadlines becomes worse when teams work under extreme time pressure, resulting in temporal conflicts (Gevers & Peeters, 2009; Santos et al., 2016). Evidence from the self-regulated teams literature demonstrates that the spontaneous intragroup exchange of reminders about deadlines and inquiries about task progress during the middle (but not initial) stages of a project helps build shared understandings of time-related issues and synchronize team efforts toward successful task completion (Gevers et al., 2006, 2009).

Therefore, temporal reminders from leaders should be particularly useful during the project execution stage, as these leader behaviors involve monitoring progress against plans, reminding team members of schedules established earlier, and encouraging members to meet deadlines (Gevers et al., 2006). These activities are consistent with the leadership functions that Morgeson et al. (2010) identify as important during the middle stages of a team effort. In such situations, leader temporal reminders should increase attention to previously agreed schedules and deadlines, promote a sense of urgency, and enhance goal-oriented effort and self-regulation among team members (Locke & Latham, 2013).

In contrast, leader initiating structure involves unilaterally assigning roles and responsibilities, imposing standard procedures, providing clear and largely one-way communication about routines and expectations, and pushing for performance (Fleishman & Harris, 1962). While initiating structure includes a small amount of attention to schedules and deadlines along with other structuring activities, "temporal aspects are peripheral rather than central to the

conceptualization and measurement of initiating structure" (Mohammed & Nadkarni, 2011, p. 492). Further, the single construct of initiating structure does not specify differing leader behaviors across project stages as we do by differentiating temporal planning from temporal reminders. The more nuanced attention to helping teams use their limited time effectively via leader temporal reminders should meet the functional needs of teams better than initiating structure during the project execution stage. Thus:

Hypothesis 2: Leader temporal reminders during the project execution stage will be a stronger predictor of timely project completion than will concurrent initiating structure.

Mohammed and Nadkarni (2011, p. 492) suggest that leader temporal behaviors "are closely interrelated and together form the temporal structure for team activities." We have suggested that temporal planning produces the agreed schedules and deadlines needed during the project

Table 1. Items Used to Operationalize Temporal Planning, Temporal Reminders, and Initiating Structure.

	Temporal planning
1	To what extent does your team leader prioritize tasks and allocate time to each task?*
2	To what extent does your team leader discuss any deadlines?
3	To what extent does your team leader prepare and build-in time for contingencies, problems, and emerging issues?*
4	To what extent does your team leader discuss how often the team is going to meet?
5	To what extent does your team leader discuss how long each particular task would take?
6	To what extent does your team leader set milestones to measure progress on the project?*
7	To what extent does your team leader compare team member's personal schedules for meetings, project-related tasks, etc.?

Note. Items adapted to the leadership context from Janicik and Bartel's (2003) seven-item team temporal planning scale.
*Items also appearing in Mohammed and Nadkarni's (2011) temporal leadership scale.

	Temporal reminders
1	To what extent does your team leader urge team members to finish subtasks on time?*
2	To what extent does your team leader prompt team members to stick to agreements about deadlines?
3	To what extent does your team leader make enquiries about task progress?
4	To what extent does your team leader remind team members of important milestones and deadlines?*

Note. Items were adapted to the leadership context from Gevers et al.'s team temporal reminders scale (2006, 2009).
*Items also appearing in Mohammed and Nadkarni's (2011) temporal leadership scale.

	Initiating structure
1	My leader makes his/her attitudes clear to the group*
2	My leader tries out his/her new ideas with the group*
3	My leader rules with an iron hand
4	My leader criticizes poor work
5	My leader speaks in a manner not to be questioned
6	My leader assigns group members to particular tasks*
7	My leader schedules the work to be done*
8	My leader maintains definite standards of performance*
9	My leader emphasizes the meeting of deadlines
10	My leader encourages the use of uniform procedures*
11	My leader makes sure that his/her part in the organization is understood by all group members*
12	My leader asks that group members follow standard rules and regulations*
13	My leader lets group members know what is expected of them*
14	My leader sees to it that group members are working up to capacity
15	My leader sees to it that the work of group members is coordinated

Note. Initiating structure items from the Leader Behavior Description Questionnaire (Halpin, 1957).
*Items also appearing in the Leader Behavior Description Questionnaire (LBDQ) Form XII (Stogdill, 1963), with one new item: Decides what shall be done and how it shall be done.

Table 2. Means, Standard Deviation, and Correlations at Team Level.

		Mean	SD	1	2	3	4	5	6
1	Team size	3.62	1.14						
2	Project duration	8.38	3.37	.62**					
3	Temporal planning (project initiation)	3.36	.78	−.09	−.01				
4	Initiating structure (project initiation)	3.68	.43	.00	−.17	.47**			
5	Temporal reminders (project execution)	3.48	.88	−.23	−.14	.74**	.50**		
6	Initiating structure (project execution)	3.60	.51	−.27*	−.17	.31**	.67**	.53**	
7	Timely project completion	3.46	1.76	−.19	−.37*	.59**	.24	.55**	.19

Note. N = 62 teams (225 team members, 62 team leaders); project duration measured in weeks.
**$p < .01$.
*$p < .05$.

initiation stage. In contrast, temporal reminders increase the likelihood that time will be used effectively and that earlier plans will be successfully carried out during the execution stage. These two forms of temporal leadership are targeted at the functional needs of teams likely to be most salient at different points in the life of a project (Marks et al., 2001; Morgeson et al., 2010). Therefore, we predict that each facet of temporal leadership will be independently beneficial in accomplishing projects on time. Further, due to the time-focused specificity of temporal leadership facets, we suggest that each will be superior to generic task-oriented leadership in initiating structure. Thus:

Hypothesis 3: Temporal planning at project initiation and temporal reminders during project execution will each contribute uniquely to the prediction of timely project completion, and do so more strongly than initiating structure delivered during the same project stages.

Method

Research Setting, Sample, and Procedure

We collected data from project team members and their leaders in four app development companies in Pakistan. These companies use temporary project teams with assigned project leaders to develop Android gaming applications for clients worldwide. All 332 members of the 90 teams that commenced new projects during the data collection window were approached to participate. In the first week of a new project (project initiation stage), team members completed an online survey describing their assigned leader's temporal planning and initiating structure regarding the new project. Halfway through the scheduled project duration (project execution stage), members rated their leader's use of temporal reminders and initiating structure. After completing the project, team leaders reported whether the project was completed on time.

Teams in which at least two members responded to the project initiation and execution surveys and the team leader provided a rating of timely completion at the end of the project were retained for analyses. Sixty-two teams (225 member respondents and 62 team leaders) met these criteria. The team size averaged 3.6 members (range 3–6), not counting the team leader. Eleven teams had short projects of 2 weeks duration; the balance was 5 to 12 weeks long (mean duration of 8.3 weeks). These project durations are typical of the competitive contract app development market, where the speed of producing new products is essential. The final sample of team members was 72% male, with 71% male leaders. Seventy percent of members had bachelor's degrees, with most of the rest possessing master's degrees.

Measures

Team member responses were aggregated to form team scores on the leadership variables in the project initiation and execution stage surveys.

Temporal Leadership. Mohammed and Nadkarni's (2011) unidimensional temporal leadership scale uses subsets of the items from two original source measures: Janicik and Bartel's (2003) team temporal planning scale and Gevers et al.'s (2006, 2009) team temporal reminders scale, with items adapted to describe leader rather than teammate behavior. We followed the same approach, but to obtain a more precise measurement of the two facets of temporal leadership we used all the items from each original source measure, as shown in Table 1. Leader temporal planning was measured during the project initiation stage using the seven items shown in Table 1 rated on a 5-point scale with anchors 1 = Not at all to 5 = A great deal. The results showed satisfactory construct reliability and aggregation statistics ($\alpha = 0.85$; inter-class correlation (ICC) (1) = .31; ICC (2) = .90; mean $r_{wg} = .85$) (Bliese, 2000). Leader temporal reminders was measured during the middle of the project (project execution stage) using the four items shown in Table 1. The construct reliability and aggregation statistics were satisfactory ($\alpha = 0.81$; ICC (1) = .55; ICC (2) = .95; mean $r_{wg} = .89$) (Bliese, 2000).

Initiating Structure. Team members reported leader initiating structure with respect to the current project during the project initiation stage and again in the middle of the project. We used all 15 items from the original Leader Behavior Description Questionnaire (LBDQ, Halpin, 1957), answered on a 5-point scale from 1 = Never to 5 = Always. The reliability and aggregation statistics for initiating structure at project initiation ($\alpha = .81$; ICC (1) = .31; ICC (2) = .90; mean $r_{wg} = .92$) and during project execution ($\alpha = .83$; ICC (1) = .18; ICC (2) = .86; mean $r_{wg} = .94$) (Bliese, 2000).

Timely Project Completion. Team leaders reported their team's time-related performance just after the project's completion using a single item, "This project was completed on schedule," on a 5-point Likert scale. Conversations with human resource specialists in the participating organizations confirmed that completing projects on schedule was an extremely important and objective criterion for evaluating and rewarding both teams and leaders. Intended project durations were clearly established before project commencement, making it easy for leaders to accurately report whether or not the project was completed on time.

Control Variables. We included team size and project duration as control variables in the study as both are negatively associated with project team performance (e.g., Aga et al., 2016; Maruping et al., 2015). Dummy variables representing the four organizations that participated were also included.

Analytical Strategy

The analyses were conducted in two stages. First, we performed confirmatory factor analyses (CFA) to establish the discriminant validity of the temporal leadership facets and initiating structure. Second, we tested our hypotheses at the team level using relative weights analysis (Johnson & LeBreton, 2004). Relative weights analysis (RWA) assesses the relative contributions of temporal leadership facets and initiating structure in predicting timely project completion (Johnson, 2000; Johnson & LeBreton, 2004). RWA detects the extent to which each predictor accounts for nontrivial variance in the criterion even in the presence of substantial correlations between predictors, and thus represents an advance over traditional multiple regression and is the preferred approach in this case (Tonidandel & LeBreton, 2015). We used the RWA tool and approach that Tonidandel et al. (2009) recommended. We also conducted multiple regression analyses with controls for team size, project duration, and organization.

Results

Table 2 displays descriptive statistics and intercorrelations of variables at the team level.

Discriminant Validity

We conducted a series of CFAs to assess the discriminant validity of the measures. First, given the significant correlation between temporal planning and temporal reminders ($r = 0.74$, $p < .01$), we performed a CFA on both leadership constructs. As shown in Table 3, the CFA results demonstrated that a two-factor model with temporal planning and temporal reminders as separate constructs better fit the data than a one-factor model in which the two facets were combined. We used Bagozzi & Phillips' (1991) nested model method to assess the discriminant validity of temporal planning and temporal reminders. Using this method, the results of the chi-square difference test ($\Delta\chi^2$ [1] = 5.86, $p < .05$) further supported the discriminant validity of temporal leadership facets (Bagozzi & Phillips, 1991). Second, as presented in Table 3, CFA results showed that a two-factor model of temporal planning and initiating structure (measured at project initiation) better fit the data than a one-factor model in which temporal planning and initiating structure were loaded on a single latent construct. Likewise, we found that a two-factor model of temporal reminders and initiating structure (measured at project execution) better fit the data than a one-factor model. Finally, we compared four alternate models that included all four leadership constructs. As presented in Table 3, in the first model, we ran a four-factor model with all items measuring temporal planning, temporal reminders, initiating structure (measured at project initiation), and initiating structure (measured at project execution) loaded on separate latent factors. In the second alternate model, we ran a three-factor model with temporal planning and temporal reminders loaded on a single latent factor and initiating structure (measured at project initiation) and initiating structure (measured at project execution) loaded on two separate latent constructs. In the third alternate model, we loaded temporal planning and temporal reminders on two different latent factors and initiating structure (all items across both times) loading on a single latent factor. In the fourth and final alternate model, we loaded temporal planning and temporal reminders on a single latent factor and initiating structure (all items across both times) also loaded on a single latent factor. The model fit values are presented in Table 3, which shows that the four-factor model better fits the data than the three alternate models. Overall, these results provide evidence of the discriminant validity of our leadership measures.

Hypothesis Tests

Table 4 presents the results of hypothesis tests using RWA in the left pane and multiple regression analysis (with controls) in the right pane. Hypothesis 1 suggested that temporal planning during the project initiation stage would predict timely project completion more strongly than initiating

Table 3. Evaluation of Alternative Models: Temporal Leadership and Initiating Structure.

Models	χ^2	*p*	*df*	CFI	TLI	RMSEA	Chi-square difference test
Temporal planning and temporal reminders: one-factor model	167.87	<.001	44	0.87	0.84	0.11	$\Delta\chi^2$ [1] = 74.6, $p < .01$
Temporal planning and temporal reminders: two-factor model	93.20	<.001	43	0.94	0.93	0.07	
Temporal planning and initiating structure (project initiation): one-factor model	723.74	<.001	209	0.63	0.59	0.10	$\Delta\chi^2$ [1] = 267.84, $p < .01$
Temporal planning and initiating structure (project initiation): two-factor model	455.90	<.001	208	0.82	0.80	0.07	
Temporal reminders and initiating structure (project execution): one-factor model	666.00	<.001	152	0.62	0.57	0.12	$\Delta\chi^2$ [1] = 163.55, $p < .01$
Temporal reminders and initiating structure (project execution): two-factor model	502.45	<.001	151	0.75	0.72	0.10	
Temporal planning, temporal reminders, initiating structure (project initiation), and initiating structure (project execution): four-factor model	1524.74	<.001	773	.76	.74	.06	
Temporal leadership[a], initiating structure (project initiation), and initiating structure (project execution): three-factor model	1630.06	<.001	776	.72	.71	.07	$\Delta\chi^2$ [3] = 105.32, $p < .01$
Temporal planning, temporal reminders, and initiating structure[b] (project initiation and project execution): three-factor model	1781.92	<.001	776	.68	.66	.07	$\Delta\chi^2$ [3] = 257.18, $p < .01$
Temporal leadership[a] and initiating structure[b]: two-factor model	1868.55	<.001	778	.65	.63	.07	$\Delta\chi^2$ [5] = 343.81, $p < .01$

Note. Temporal planning and temporal reminders loaded on a single latent factor; [b]initiating structure measured at project initiation and execution loaded on a single latent factor. CFI = cummulative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation.

structure delivered in the same project stage. RWA showed that the weighted linear combination of temporal planning and initiating structure explained 35% of the variance in timely project completion. Temporal planning was a stronger and highly significant predictor of timely project completion, accounting for 91.4% of this predicted variance. In contrast, initiating structure accounted for a nonsignificant 8.5% of the predicted variance in timely project completion. Multiple regression analyses led to the same conclusion, with both analyses supporting Hypothesis 1.

Hypothesis 2 predicted that leader temporal reminders during the project execution stage would predict timely project completion more strongly than initiating structure delivered in the same project stage. As shown in the center pane of Table 4, temporal reminders and initiating structure collectively explained 32% of the variance in timely project completion. Temporal reminders were more important than initiating structure, accounting for 91.8% of the predicted variance. In contrast, initiating structure accounted for a nonsignificant 8.1% of the predicted variance in timely project completion. Multiple regression analyses led to the same conclusion, with both analyses supporting Hypothesis 2.

Hypothesis 3 suggested that each facet of temporal leadership would contribute uniquely to predicting timely project completion and do so more strongly than initiating structure. We included all four leadership predictors in the RWA to test this hypothesis. As shown in the bottom left panel of Table 4, temporal planning, temporal reminders, and initiating structure (at both stages) jointly explained 39% of the variance in timely project completion. Temporal planning was the most important predictor of timely project completion, accounting for a significant 52.2% of this variance. The second most important predictor, also significant, was temporal reminders which explained 39.5% of the predicted variance. Initiating structure at project initiation accounted for 4.7% of the predicted variance and initiating structure during project execution accounted for 3.3% of the predicted variance in timely project completion. These were both nonsignificant. Multiple regression analyses confirm a significant weight for temporal planning, though the weight for temporal reminders failed to reach significance due to multicollinearity. Initiating structure weights were again nonsignificant. Bearing in mind the superiority of RWA analyses in the case of correlated predictors, these results lend support to Hypothesis 3.

Supplementary Analysis: Time or Tone

Taken together, the results provide strong support for the incremental contribution of both facets of temporal leadership compared to initiating structure in predicting timely project completion. We have suggested that the focus on time embodied in the temporal leadership construct is the reason for these results, which is consistent with temporal process findings by Mohammed and Nadkarni (2011), Maruping et al. (2015), and Santos et al. (2016). However, a possible alternative explanation might lie in the tone of items measuring the constructs. Some of the initiating structure items in the original version of the LBDQ used here describe an autocratic, critical, and demanding

Table 4. Relative Weights Analysis and Multiple Regression Analysis Predicting Timely Project Completion.

		Relative weight analysis				Multiple regression analysis			
						Step 1		Step 2	
	Predictors	RW	CI-L	CI-U	RS-RW %	β	SE	β	SE
Hypothesis 1	Team size					.07	.26	.16	.21
	Project duration					−.42*	.08	−.50**	.06
	Organization 1					−.04	.63	−.00	.49
	Organization 2					−.07	.72	.00	.55
	Organization 3					.00	.57	−.05	.45
	Initiating structure (*project initiation*)	.030	−.01	.11	8.5%			−.16	.48
	Temporal planning (*project initiation*)	.327*	.08	.56	91.4%			.69**	.24
R^2	0.35*					0.15		0.52**	
Hypothesis 2	Team size					.07	.26	.11	.22
	Project duration					−.42*	.08	−.41**	.06
	Organization 1					−.04	.63	−.13	.57
	Organization 2					−.07	.72	−.10	.60
	Organization 3					.00	.57	−.13	.50
	Initiating structure (*project execution*)	.026	−.08	.07	8.1%			−.19	.50
	Temporal reminders (*project execution*)	.293*	.06	.50	91.8%			.65**	.24
R^2	0.32*					0.15		0.45**	
Hypothesis 3	Team size					.07	.26	.22	.22
	Project duration					−.42*	.08	−.51**	.06
	Organization 1					−.04	.63	−.02	.55
	Organization 2					−.07	.72	−.00	.57
	Organization 3					.00	.57	−.11	.46
	Initiating structure (*project initiation*)	.018	−.02	.06	4.7%			−.26	.60
	Temporal planning (*project initiation*)	.205*	.06	.36	52.2%			.54**	.35
	Initiating structure (*project execution*)	.013	−.02	.06	3.3%			.08	.58
	Temporal reminders (*project execution*)	.155*	.04	.28	39.5%			.25	.33
R^2	0.39*					0.15		0.55**	

Note. N = 62 teams, RW = raw relative weight; RS = rescaled weight; CI-L = lower bound of the confidence interval used to test the statistical significance of the raw weight; CI-U = upper bound of the confidence interval used to test the statistical significance of the raw weight; RS-RW = relative weight rescaled as a percentage of predicted variance in the criterion variable attributed to each predictor; β = standardized beta coefficient; SE = standard error. *$p < .05$, **$p < .01$.

leadership style (Schriesheim et al., 1976) which may have suited blue-collar workers in the 1950s but be less appropriate for highly educated IT employees in the 21st century. The temporal leadership items lack this dictatorial feel, so tone may be part of the reason that temporal leadership was more effective than initiating structure. We undertook a supplementary analysis with a modified measure of initiating structure to unconfound time and tone.

Stogdill (1963) revised and shortened the LBDQ to create the LBDQ Form XII. This version excludes some items reflecting critical and autocratic behavior that appear in the original initiating structure measure, for example, whether the leader "rules with an iron hand," "criticizes poor work," or "speaks in a manner not to be questioned." The original LBDQ we used contained nine of the 10 items on the newer Form XII. To assess whether it was time or tone that mattered, we repeated the analyses in Table 4 using these nine items to operationalize initiating structure. Regarding Hypothesis 1, the RWA showed that the weighted linear combination of temporal planning and initiating structure at project initiation (revised scale) explained 35.9% of the variance in timely project completion. Temporal planning was a stronger and highly significant predictor of timely project completion, accounting for 93.1% of the predictable variance. In contrast, initiating structure accounted for a nonsignificant 6.9% of the predictable variance in timely project completion. In multiple regression, temporal planning was the only significant predictor of timely project completion ($\beta = 0.67$; $p < .01$), while the beta weight for initiating structure was nonsignificant ($\beta = -.11$; $p > .05$). In Hypothesis 2, the RWA showed that temporal reminders and initiating structure during project execution (revised scale) explained 32% of the variance in timely project completion. Temporal reminders were the only significant predictor of timely project completion, accounting for 89.8% of the predictable variance. In contrast, initiating structure accounted for a nonsignificant 10.2% of the predictable variance in timely project completion. We found corresponding results

from the multiple regression analysis, as temporal reminders positively and significantly predicted timely project completion ($\beta = 0.66$; $p < .01$), while the beta weight for initiating structure was nonsignificant ($\beta = -0.18$; $p > .05$).

Concerning Hypothesis 3, the RWA showed that the weighted linear combination of all four leadership constructs in one equation explained 39.6% of the variance in timely project completion. Temporal planning was the most important predictor of timely project completion, accounting for a significant 52.6% of the predictable variance. The second most important predictor, also significant, was temporal reminders which explained 38.7% of the predictable variance. The RWA showed that initiating structure at project initiation accounted for 4.1% of the variance, and initiating structure during project execution accounted for 4.6% of the predictable variance in timely project completion. These were both nonsignificant. In the multiple regression analysis, only temporal planning had a positive and significant relationship with timely project completion ($\beta = 0.52$; $p < .01$), while temporal reminders ($\beta = 0.24$; $p > .05$), initiating structure at project initiation ($\beta = -0.23$; $p > .05$), and initiating structure during project execution ($\beta = 0.10$; $p > .05$) did not significantly predict timely project completion. Thus, we conclude that the leader's temporal behavior rather than the tone of the items matters to timely project completion.

Discussion

Prior research using a unidimensional measure of temporal leadership did not consider that team needs for particular leader behaviors may change as teams move through a project lifecycle. We hypothesized and found that leader temporal planning delivered during the initiation stage of a new project and leader temporal reminders delivered during the implementation stage both explained unique variance in timely project completion. Marks et al. (2001, p. 369) recommend that researchers "consider a team's temporal rhythms" when collecting measures. We followed this advice by measuring each facet of temporal leadership during the project stage in which it was expected to meet team needs best. We found that temporal planning at project initiation had a higher relative weight than temporal reminders during project execution. Leaders need to start off on the right foot in a new project, as up-front temporal planning will result in clear and specific goals for time use throughout the project. Given initial temporal planning, team leaders should be better able to remind team members about the planned pace and necessity of meeting the agreed deadlines and schedules, making their mid-project temporal reminders more effective.

Temporal Leadership and Initiating Structure

DeRue et al. (2011) note that "the leadership literature suffers from construct proliferation…many supposedly distinct leadership traits and behaviors overlap theoretically and empirically…certain leader traits and behaviors lose much of their predictive validity when considered in conjunction with other leadership traits and behaviors" (pp. 37–38). Therefore, the goal of this study was to establish that temporal leadership, a member of the family of task-oriented leadership styles, is distinct from and incrementally useful compared to the foundation construct of initiating structure. Confirmatory factor analyses showed that the leadership constructs were distinct. Relative weights analyses convincingly demonstrated that each facet of temporal leadership substantially outperformed initiating structure in predicting timely project completion in the short-term project context. In fact, initiating structure failed to predict this criterion at all, either alone or in conjunction with temporal leadership. Our findings support the distinctiveness and usefulness of the relatively new construct of temporal leadership.

Context, Leadership, and Generalizability

Oc (2018) recently reminded leadership scholars that "Context makes a difference" (p. 230), while Osborn et al. (2002) stated, "Change the context and leadership changes as does what is sought and whether specific leadership patterns are considered effective" (pp. 797–798; see also Liden & Antonakis, 2009). Some researchers have begun to study specific and narrowly focused leadership constructs that align with teams' needs and goals in particular contexts. For instance, leader provision of structural support, including quality of information and communication management, is particularly beneficial to virtual teams (Hoch & Kozlowski, 2014). Leader behavior that creates a climate of compassion may facilitate the important context-relevant outcome of employee wellbeing for teams in caregiving occupations (Barsade & O'Neill, 2014). Still, other leader behaviors are needed to predict success among teams operating in extreme or high-risk contexts (e.g., Burke et al., 2018; Olinover et al., 2022).

In this study, the time-limited project context led us to suggest that the more specific construct of temporal leadership in the form of temporal planning at project initiation and temporal reminders during project execution would predict timely project completion better than the generic construct of initiating structure, and this was indeed the case. However, this should not be read as evidence that temporal leadership will always be a strong predictor of team performance. Other contexts may create different team needs and feature different criteria for team success. For instance, leaders of much larger, longer, and more complex projects (e.g., developing and installing a new IT system for a large company, or designing a new aircraft) must often coordinate multiple teams and negotiate with outside constituencies to satisfy a far wider range of performance criteria (e.g., fulfill strategic organizational needs, meet business goals for value generation, and be fully implemented and accepted

by users) over a much longer period of time (Ika, 2009; Lech, 2013). Success on such complex projects will likely require a broader and more sophisticated range of leader traits, competencies, and skills (Heaslip, 2014; Müller & Turner, 2010; Tyssen et al., 2014). For complex projects, the importance of temporal leadership to overall project success would be expected to be reduced as that of higher-level adaptive and strategic leadership skills increased.

Another context might be leading stable ongoing teams performing routine tasks in nonproject-based organizational structures. Given lower time urgency and a higher likelihood of pre-existing clarity among long-term team members about familiar tasks, roles, procedures, and goals, the effectiveness of temporal leadership may decline compared to initiating structure or other more context-specific approaches. In sum, leadership researchers pay attention to context, consider developing more specific leadership constructs that suit the teams' needs and the context-specific criteria they are working to achieve, and test the incremental contributions of these constructs beyond similar existing/generic constructs. The desire for generalizability across all contexts embodied in generic leadership approaches may have inhibited the understanding of leadership needs in specific contexts, hence the utility of findings for leaders in particular contexts.

Practical Implications

The global application development software market has been proliferating and is forecast to be worth $733.5 billion US dollars by 2028 (Grand View Research, 2022). Because less than half of the software projects are completed on time (Standish Group International, 2015), an approach to project leadership that improves this dismal result would have great applied value. Work contexts involving temporary organizations and other forms of time-limited projects are increasingly common across many industries and even within otherwise traditionally structured organizations (Burke & Morley, 2016; Tyssen et al., 2013), so our results may have applicability well beyond app development teams.

Our findings suggest that training and encouraging project leaders to engage in temporal planning early in a new project, followed by temporal reminders while the project is underway, may be part of the answer to improving timely project completion. These actions by the leader may help teams avoid or overcome typical problems such as wasting time before the project midpoint (Gersick, 1988) and experiencing dysfunctional temporal conflict (Gevers & Peeters, 2009; Santos et al., 2016). We conclude that temporal leadership is a useful leadership construct that has value for a growing number of leaders.

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References

Aga, D., Noorderhaven, N., & Vallejo, B. (2016). Transformational leadership and project success: The mediating role of team-building. *International Journal of Project Management*, *34*(5), 806-818. https://doi.org/10.1016/j.ijproman.2016.02.012

Alipour, K. K., Mohammed, S., & Martinez, P. N. (2017). Incorporating temporality into implicit leadership and followership theories: Exploring inconsistencies between time-based expectations and actual behaviors. *The Leadership Quarterly*, *28*(2), 300-316. https://doi.org/10.1016/j.leaqua.2016.11.006

Bagozzi, R., Yi, Y., & Phillips, L. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, *36*(3), 421-458. https://doi.org/10.2307/2393203

Banks, G., Gooty, J., Ross, R., Williams, C., & Harrington, N. (2018). Construct redundancy in leader behaviors: A review and agenda for the future. *The Leadership Quarterly*, *29*(1), 236-251. https://doi.org/10.1016/j.leaqua.2017.12.005

Barsade, S., & O'Neill, O. (2014). What's love got to do with it? A longitudinal study of the culture of companionate love and employee and client outcomes in a long-term care setting. *Administrative Science Quarterly*, *59*(4), 551-598. https://doi.org/10.1177/0001839214538636

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In K. J. Klein, & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 349-381). Jossey-Bass.

Burke, C. M., Georganta, E., & Hernandez, C. (2017). The importance of time in team leadership research. In E. Salas, W. B. Vessey, & L. B. Landon (Eds.), *Team dynamics over time: Advances in psychological theory, methods and practice* (Vol. 18, pp. 95-122). Emerald Publishing Limited.

Burke, C. M., & Morley, M. J. (2016). On temporary organizations: A review, synthesis and research agenda. *Human Relations*, *69*(6), 1235-1258. https://doi.org/10.1177/0018726715610809

Burke, C. S., Shuffler, M. L., & Wiese, C. W. (2018). Examining the behavioral and structural characteristics of team leadership in extreme environments. *Journal of Organizational Behavior*, *39*(6), 716-730. https://doi.org/10.1002/job.2290

Burke, C. S., Stagl, K. C., Klein, C., Goodwin, G. F., Salas, E., & Halpin, S. M. (2006). What type of leadership behaviors are functional in teams? A meta-analysis. *Leadership Quarterly*, *17*(3), 288-307. https://doi.org/10.1016/j.leaqua.2006.02.007

Casimir, G. (2001). Combinative aspects of leadership style: The ordering and temporal spacing of leadership behaviors. *Leadership Quarterly*, *12*(3), 245-278. https://doi.org/10.1016/s1048-9843(01)00079-0

Ceri-Booms, M., Curseu, P., & Oerlemans, L. A. (2017). Task and person-focused leadership behaviors and team

performance: A meta-analysis. *Human Resource Management Review*, *27*(1), 178-192. https://doi.org/10.1016/j.hrmr.2016.09.010

Chong, D., Van Eerde, W., Chai, K. H., & Rutte, C. G. (2011). A double-edged sword: The effects of challenge and hindrance time pressure on new product development teams. *IEEE Transactions on Engineering Management*, *58*(1), 71-86. https://doi.org/10.1109/TEM.2010.2048914

DeRue, D. S., Nahrgang, J. D., Wellman, N. E. D., & Humphrey, S. E. (2011). Trait and behavioral theories of leadership: An integration and meta-analytic test of their relative validity. *Personnel Psychology*, *64*(1), 7-52. https://doi.org/10.1111/j.1744-6570.2010.01201.x

Fleishman, E. A. (1973). Twenty years of consideration and structure. In E. A. Fleishman, & J. G. Hunt (Eds.), *Current developments in the study of leadership* (pp. 1-40). Southern Illinois University Press.

Fleishman, E. A., & Harris, E. F. (1962). Patterns of leadership behavior related to employee grievances and turnover. *Personnel Psychology*, *15*(1), 43-56. https://doi.org/10.1111/j.1744-6570.1962.tb01845.x

Gersick, C. J. (1988). Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal*, *31*(1), 9-41. https://doi.org/10.2307/256496

Gevers, J. M., & Peeters, M. A. G. (2009). A pleasure working together? The effects of dissimilarity in team member conscientiousness on team temporal processes and individual satisfaction. *Journal of Organizational Behavior*, *30*(3), 379-400. https://doi.org/10.1002/job.544

Gevers, J. M., Rutte, C. G., & Van Eerde, W. (2006). Meeting deadlines in work groups: Implicit and explicit mechanisms. *Applied Psychology*, *55*(1), 52-72. https://doi.org/10.1111/j.1464-0597.2006.00228.x

Gevers, J. M. P., Van Eerde, W., & Rutte, C. G. (2009). Team self-regulation and meeting deadlines in project teams: Antecedents and effects of temporal consensus. *European Journal of Work & Organizational Psychology*, *18*(3), 295-321. https://doi.org/10.1080/13594320701693217

Grand View Research (2022). Application Development Software Market Report, 2028. https://www.grandviewresearch.com/industry-analysis/application-development-software-market-report?utm_source=prnewswire&utm_medium=referral&utm_campaign=ict_20-september-21&utm_term=application_development_software_market&utm_content=rd

Hackman, R. J., & Walton, R. E.. (1986). Leading groups in organizations. In P. S. Goodman Associates (Eds.), *Designing effective work groups*. Jossey-Bass.

Halpin, A. W. (1957). The leader behavior and effectiveness of aircraft commanders. In R. M. Stogdill, & A. E. Coons (Eds.), *Leader behavior: Its description and measurement* (pp. 52-64). Bureau of Business Research.

Heaslip, R. (2014). *Managing complex projects and programs: How to improve leadership of complex initiatives using a third-generation approach*. Wiley.

Hoch, J. E., Bommer, W. H., Dulebohn, J. H., & Wu, D. (2018). Do ethical, authentic, and servant leadership explain variance above and beyond transformational leadership? A meta-analysis. *Journal of Management*, *44*(2), 501-529. https://doi.org/10.1177/0149206316665461

Hoch, J., & Kozlowski, S. (2014). Leading virtual teams: Hierarchical leadership, structural supports, and shared team leadership. *Journal of Applied Psychology*, *99*(3), 390-403. https://doi.org/10.1037/a0030264

House, R. J., Filley, A. C., & Kerr, S. (1971). Relation of leader consideration and initiating structure to R and D subordinates' satisfaction. *Administrative Science Quarterly*, *16*(1), 19-30.

Ika, L. A. (2009). Project success as a topic in project management journals. *Project Management Journal*, *40*(4), 6-19. https://doi.org/10.1002/pmj.20137

Janicik, G., & Bartel, C. (2003). Talking about time: Effects of temporal planning and time awareness norms on group coordination and performance. *Group Dynamics: Theory, Research, and Practice*, *7*(2), 122-134. https://doi.org/10.1037/1089-2699.7.2.122

Jansen, K. J., & Kristof-Brown, A. L. (2005). Marching to the beat of a different drummer: Examining the impact of pacing congruence. *Organizational Behavior & Human Decision Processes*, *97*(2), 93-105. https://doi.org/10.1016/j.obhdp.2005.03.005

Johnson, J. W. (2000). A heuristic method for estimating the relative weight of predictor variables in multiple regression. *Multivariate Behavioral Research*, *35*(1), 1-19. https://doi.org/10.1207/S15327906MBR3501_1

Johnson, J. W., & LeBreton, J. M. (2004). History and use of relative importance indices in organizational research. *Organizational Research Methods*, *7*(3), 238-257. https://doi.org/10.1177/1094428104266510

Judge, T. A., Piccolo, R. F., & Ilies, R. (2004). The forgotten ones? The validity of consideration and initiating structure in leadership research. *Journal of Applied Psychology*, *89*(1), 36-51. https://doi.org/10.1037/0021-9010.89.1.36

Keegan, A. E., & Den Hartog, D. N. (2004). Transformational leadership in a project-based environment: A comparative study of the leadership styles of project managers and line managers. *International Journal of Project Management*, *22*(8), 609-617. https://doi.org/10.1016/j.ijproman.2004.05.005

Keller, R. T. (2006). Transformational leadership, initiating structure, and substitutes for leadership: A longitudinal study of research and development project team performance. *Journal of Applied Psychology*, *91*(1), 202-210. https://doi.org/10.1037/0021-9010.91.1.202

Kleingeld, A., van Mierlo, H., & Arends, L. (2011). The effect of goal setting on group performance: A meta-analysis. *Journal of Applied Psychology*, *96*, 1289-1304. https://doi.org/10.1037/a0024315

Korman, A. K. (1966). "Consideration," "initiating structure" and organizational criteria—A review. *Personnel Psychology*, *19*(4), 349-361. https://doi.org/10.1111/j.1744-6570.1966.tb00310.x

Labianca, G., Moon, H., & Watt, I. (2005). When is an hour not 60 minutes? Deadlines, temporal schemata, and individual and task group performance. *Academy of Management Journal*, *48*(4), 677-694. https://doi.org/10.5465/AMJ.2005.17843945

Le, H., Schmidt, F. L., Harter, J. K., & Lauver, K. J. (2010). The problem of empirical redundancy of constructs in organizational research: An empirical investigation. *Organizational*

Behavior and Human Decision Processes, *112*(2), 112-125. https://doi.org/10.1016/j.obhdp.2010.02.003

Lech, P. (2013). Time, budget, and functionality?—IT project success criteria revised. *Information Systems Management*, *30*(3), 263-275. https://doi.org/10.1080/10580530.2013.794658

Liden, R. C., & Antonakis, J. (2009). Considering context in psychological leadership research. *Human Relations*, *62*(11), 1587-1605. https://doi.org/10.1177/0018726709346374

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Prentice-Hall.

Locke, E. A., & Latham, G. P. (2013). *New developments in goal setting and task performance*. Routledge.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review*, *26*(3), 356-376. https://doi.org/10.5465/amr.2001.4845785

Maruping, L. M., Venkatesh, V., Thatcher, S. M. B., & Patel, P. C. (2015). Folding under pressure or rising to the occasion? Perceived time pressure and the moderating role of team temporal leadership. *Academy of Management Journal*, *58*(5), 1313-1333. https://doi.org/10.5465/amj.2012.0468

Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology*, *85*(2), 273-283. https://doi.org/10.1037/0021-9010.85.2.273

McGrath, J. E. (1962). *Leadership behavior: Some requirements for leadership training*. U.S. Civil Service Commission, Office of Career Development.

Mohammed, K. K., & Alipour (2014). It's time for temporal leadership: Individual, dyadic, team, and organizational effects. *Industrial and Organizational Psychology*, *7*(2), 178-182. https://doi.org/10.1111/iops.12128

Mohammed, S., & Harrison, D. A. (2013). The clocks that time us are not the same: A theory of temporal diversity, task characteristics, and performance in teams. *Organizational Behavior & Human Decision Processes*, *122*(2), 244-256. https://doi.org/10.1016/j.obhdp.2013.08.004

Mohammed, S., & Nadkarni, S. (2011). Temporal diversity and team performance: The moderating role of team temporal leadership. *Academy of Management Journal*, *54*(3), 489-508. https://doi.org/10.5465/amj.2011.61967991

Morgeson, F. P., DeRue, D. S., & Karam, E. P. (2010). Leadership in teams: A functional approach to understanding leadership structures and processes. *Journal of Management*, *36*(1), 5-39. https://doi.org/10.1177/0149206309347376

Müller, R., & Turner, J. (2010). *Project-oriented leadership*. Gower Publishing. https://doi.org/10.4324/9781315245874

Myer, A. T., & Mohammed, S. (2012). Team temporal leadership: Construct development and validation. Poster presented to the 27th Annual Conference of the Society for Industrial and Organizational Psychology, San Diego, CA.

Oc, B. (2018). Contextual leadership: A systematic review of how contextual factors shape leadership and its outcomes. *The Leadership Quarterly*, *29*(1), 218-235. https://doi.org/10.1016/j.leaqua.2017.12.004

Olinover, M., Gidron, M., Yarmolovsky, J., Lipschits, O., & Geva, R. (2022). Predicting leadership success in extreme organizations: A prospective study from pre-recruitment through leading in real-life. *Journal of Leadership & Organizational Studies*, *30*(1), 71–89. https://doi.org/10.1177/15480518221117886

Osborn, R., Hunt, J., & Jauch, L. (2002). Toward a contextual theory of leadership. *The Leadership Quarterly*, *13*(6), 797-837. https://doi.org/10.1016/S1048-9843(02)00154-6

Pearce, C. L., Sims, H. P.Jr, Cox, J. F., Ball, G., Schnell, E., Smith, K. A., & Trevino, L. (2003). Transactors, transformers and beyond: A multi-method development of a theoretical typology of leadership. *Journal of Management Development*, *22*(4), 273-307. https://doi.org/10.1108/02621710310467587

PMBOK Guide (2021). *Project management body of knowledge*. 7th ed. Project Management Institute.

Roskes, M., Elliot, A. J., Nijstad, B. A., & De Dreu, C. K. W. (2013). Time pressure undermines performance more under avoidance than approach motivation. *Personality & Social Psychology Bulletin*, *39*(6), 803-813. https://doi.org/10.1177/0146167213482984

Rico, R., Sánchez-Manzanares, M., Gil, F., & Gibson, C. (2008). Team implicit coordination processes: A team knowledge-based approach. *The Academy of Management Review*, *33*(1), 163-184. https://doi.org/10.5465/AMR.2008.27751276

Salas, E., Cooke, N., & Rosen, M. (2008). On teams, teamwork, and team performance: Discoveries and developments. *Human Factors: The Journal of Human Factors and Ergonomic Society*, *50*(3), 540-547. https://doi.org/10.1518/001872008X288457

Sanchez, O., Terlizzi, M., & de Moraes, H. (2017). Cost and time project management success factors for information systems development projects. *International Journal of Project Management*, *35*(8), 1608-1626. https://doi.org/10.1016/j.ijproman.2017.09.007

Santos, C. M., Passos, A. M., Uitdewilligen, S., & Nübold, A. (2016). Shared temporal cognitions as substitute for temporal leadership: An analysis of their effects on temporal conflict and team performance. *Leadership Quarterly*, *27*(4), 574-587. https://doi.org/10.1016/j.leaqua.2015.12.002

Savelsbergh, C., Poell, R., & van Der Heijden, B. (2015). Does team stability mediate the relationship between leadership and team learning? An empirical study among Dutch project teams. *International Journal of Project Management*, *33*(2), 406-418. https://doi.org/10.1016/j.ijproman.2014.08.008

Schriesheim, C. A., House, R. J., & Kerr, S. (1976). Leader initiating structure: A reconciliation of discrepant research results and some empirical tests. *Organizational Behavior & Human Performance*, *15*(2), 297-321. https://doi.org/10.1016/0030-5073(76)90043-x

Serrador, P., & Turner, R. (2015). The relationship between project success and project efficiency. *Project Management Journal*, *46*(1), 30-39. https://doi.org/10.1002/pmj.21468

Shaffer, J., Degeest, D., & Li, A. (2016). Tackling the problem of construct proliferation: A guide to assessing the discriminant validity of conceptually related constructs. *Organizational Research Methods*, *19*(1), 80-110. https://doi.org/10.1177/1094428115598239

Shamir, B. (2011). Leadership takes time: Some implications of (not) taking time seriously in leadership research. *Leadership Quarterly*, *22*(2), 307-315. https://doi.org/10.1016/j.leaqua.2011.02.006

Standish Group International (2015). Chaos Report 2015. Retrieved from https://www.standishgroup.com/sample_research_files/CHAOSReport2015-Final.pdf

Stogdill, R. M. (1963). *Manual for the leader behavior description questionnaire, Form XII*. Bureau of Business Research, Ohio State University.

Tonidandel, S., & LeBreton, J. (2015). RWA Web: A free, comprehensive, web-based, and user-friendly tool for relative weight analyses. *Journal of Business & Psychology*, *30*(2), 207-216. https://doi.org/10.1007/s10869-014-9351-z

Tonidandel, S., LeBreton, J. M., & Johnson, J. W. (2009). Determining the statistical significance of relative weights. *Psychological Methods*, *14*(4), 387-399. https://doi.org/10.1037/a0017735

Turner, J. R., & Müller, R. (2005). The project manager's leadership style as a success factor on projects: A literature review. *Project Management Journal*, *36*(2), 49-61. https://doi.org/10.1177/875697280503600206

Tyssen, A. K., Wald, A., & Heidenreich, S. (2014). Leadership in the context of temporary organizations: A study on the effects of transactional and transformational leadership on followers' commitment in projects. *Journal of Leadership & Organizational Studies*, *21*(4), 376-393. https://doi.org/10.1177/1548051813502086

Tyssen, A. K., Wald, A., & Spieth, P. (2013). Leadership in temporary organizations: A review of leadership theories and a research agenda. *Project Management Journal*, *44*(6), 52-67. https://doi.org/10.1002/pmj.21380

Waller, M. J., Conte, J. M., Gibson, C. B., & Carpenter, M. A. (2001). The effect of individual perceptions of deadlines on team performance. *Academy of Management Review*, *26*(4), 586-600. https://doi.org/10.5465/amr.2001.5393894

Yang, L., Huang, C., & Wu, K. (2011). The association among project manager's leadership style, teamwork and project success. *International Journal of Project Management*, *29*(3), 258-267. https://doi.org/10.1016/j.ijproman.2010.03.006

Zaccaro, S. J., Rittman, A. L., & Marks, M. A. (2001). Team leadership. *The Leadership Quarterly*, *12*(4), 451-483. https://doi.org/10.1016/S1048-9843(01)00093-5