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When Daily Planning Improves Employee Performance: The Importance of Planning Type, Engagement, and Interruptions

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Abstract

Does planning for a particular workday help employees perform better than on other days they fail to plan? We investigate this question by identifying two distinct types of daily work planning to explain why and when planning improves employees' daily performance. The first type is time management planning (TMP)—creating task lists, prioritizing tasks, and determining how and when to perform them. We propose that TMP enhances employees' performance by increasing their work engagement, but that these positive effects are weakened when employees face many interruptions in their day. The second type is contingent planning (CP) in which employees anticipate possible interruptions in their work and plan for them. We propose that CP helps employees stay engaged and perform well despite frequent interruptions. We investigate these hypotheses using a two-week experience-sampling study. Our findings indicate that TMP's positive effects are conditioned upon the amount of interruptions, but CP has positive effects that are not influenced by the level of interruptions. Through this study, we help inform workers of the different planning methods they can use to increase their daily motivation and performance in dynamic work environments.

Keywords: planning, motivation, performance, engagement, interruptions, self-regulation, proactivity

In contemporary organizations, employees have more autonomy at work and take on broader roles with many competing tasks and goals (Grant & Parker, 2009; Unsworth, Yeo, & Beck, 2014). This increased dynamism and complexity have generated high self-management demands (Bevins & De Smet, 2013; Schmidt, Beck, & Gillespie, 2013). Not only must employees determine when and how to complete their work (Schmidt & DeShon, 2007; Vancouver, Weinhardt, & Schmidt, 2010), but they must also efficiently adapt to unanticipated events and interruptions that surface throughout their workdays (Jett & George, 2003; O'Leary, Mortensen, & Woolley, 2011). In such environments, daily work planning, such as creating task schedules for the day and making back-up plans, is frequently cited as a way to increase employee daily effectiveness (Diefendorff & Lord, 2008; Frese et al., 2007; Macan, 1994; Mitchell, Harman, Lee, & Lee, 2008; Schmidt et al., 2013; Steel & Weinhardt, in press; Tripoli, 1998). Compared to days where employees start work and reactively switch from task to task without much forethought, daily work planning is said to help these same employees proactively mobilize and allocate time and energy (Parker, Bindl, & Strauss, 2010) to more efficiently accomplish tasks (Allen, 2015; Frese et al., 2007; Gollwitzer & Oettingen, 2016; Tripoli, 1998).

Although the increased dynamism of work is creating a need for employees to plan their days, it is simultaneously making these plans potentially less efficacious. Employees increasingly face interruptions at work—or "incidents or occurrences that impede or delay organizational members as they attempt to make progress on work tasks" (Jett & George, 2003, p. 494). Some estimates suggest that employees are interrupted or are forced to switch tasks an average of every three minutes (González & Mark, 2004). This can create a planning paradox: Employees require greater planning to deal with the complex demands of their jobs in order to sustain or increase their motivation and performance in their daily work. Yet, their planning is

potentially less beneficial because workdays have become inherently unpredictable. In fact, empirically, research shows that the benefits of planning for performance are equivocal (e.g., Sitzmann & Ely, 2011): Whereas, in some studies, planning increased performance (Claessens, Van Eerde, Rutte, & Roe, 2004; Frese et al., 2007), in others, it did not (Macan, 1994; Sitzmann & Johnson, 2012; Vancouver & Kendall, 2006). Thus, questions remain of whether, why, and when work planning at the daily level increases employees' performance.

We propose that greater theoretical precision regarding daily work planning can help address this issue. The mixed results regarding the benefits of work planning are potentially a result of research overlooking how daily planning can come in distinct forms and each form may be differentially effective within a dynamic work context. In particular, we distinguish between two types of daily work planning. The first type, *time management planning* (TMP) (Claessens, Van Eerde, Rutte, & Roe, 2007; Lakein, 1973; Macan, 1994; Tripoli, 1998), involves determining tasks to be performed on a particular day, prioritizing and scheduling the order of such tasks, and sketching out the approximate amount of time to be spent on each task (Claessens et al., 2007; Macan, 1994; Tripoli, 1998). The second type, *contingent planning* (CP), involves thinking about possible interruptions or disruptive events that might transpire on a particular day and outlining alternative courses of actions in case of their occurrence (Frese & Zapf, 1994; Gollwitzer, 1999; Mumford, Schultz, & Van Doorn, 2001). We propose that distinguishing TMP and CP can help explain why and when planning improves employee daily work performance in dynamic job environments.

We draw upon self-regulation as a theoretical lens (Lord, Diefendorff, Schmidt, & Hall, 2010) to suggest that both TMP and CP, in general, enhance employees' daily performance by increasing their daily work engagement—the extent to which individuals invest their energy

(physical, emotional, and cognitive) into their work on a particular day (Christian, Garza, & Slaughter, 2011; Kahn, 1990). We propose that TMP and CP accomplish this by helping employees gain a sense of goal progress (by increasing how much they have accomplished vis-à-vis their task targets on that day) and goal velocity (by enabling them to increase their rate of speed in meeting daily task targets), which fuel engagement (Amabile & Kramer, 2011; Beck, Scholer, & Hughes, in press; Johnson, Howe, & Chang, 2013; Rich, Lepine, & Crawford, 2010). Importantly, we also propose that the interruptions employees confront on a particular day moderate these relationships. We argue TMP's positive effects are dampened when employees face many interruptions in their day because TMP does not explicitly allow employees to foresee and plan for disruptions. Hence, employees who engage in TMP might subjectively sense slower task progress and task velocity during their day. In contrast, CP enables employees to develop flexible plans that enable efficient adaptation to work disruptions. Thus, CP should be useful in preventing any negative effects of high interruptions from manifesting on employee daily engagement and performance.

In developing this theoretical model, we extend research in multiple ways. First, we contribute to knowledge on employee motivation and self-regulation (Lord et al., 2010; Vancouver, 2008) by identifying TMP and CP as two unique self-regulation strategies that are differentially effective in enabling goal pursuit in dynamic work environments. We theorize how TMP enables employees to increase their engagement and performance on days in which limited interruptions occur; however, this proactive technique (Grant & Ashford, 2008) might lose some of its efficacy as interruptions increase. In comparison, we conceptualize how CP can enhance engagement and performance especially on days when the work environment presents frequent interruptions. Second, by theoretically explicating how interruptions can affect the usefulness of

different planning techniques, we introduce a largely overlooked but important moderator to the work planning literature (Frese et al., 2007; Macan, 1994; Sitzmann & Johnson, 2012). Thus, our theory identifies a key contextual factor found in most jobs that could help explain *when* planning has stronger or weaker effects on employee performance. Finally, by delineating work engagement as a mediator of TMP and CP's effects on performance, we underscore how different self-regulation strategies help improve daily performance of employees.

Theory and Hypotheses

Overview of Self-Regulation Theoretical Components

We draw upon self-regulation theory to generate hypotheses on the effects of daily work planning. Self-regulation explains the motivational processes (e.g., the direction, intensity, and persistence of effort) through which individuals establish and strive for goals (Lord et al., 2010; Vancouver, 2008), which are internal representations of desired end states (Austin & Vancouver, 1996). A crucial element of self-regulation is the negative feedback loop or goal discrepancy feedback (Diefendorff & Lord, 2008; Vancouver et al., 2010) in which individuals compare environmental inputs (e.g., feedback on their performance) to internal standards (e.g., performance goals) and take corrective actions (e.g., invest more effort) when a discrepancy exists (i.e., current performance is lower than desired performance). The motivational effects of discrepancy feedback are further affected by judgments of goal progress and goal velocity (Beck et al., in press; Johnson et al., 2013). Goal progress reflects employees' perceptions regarding the extent to which they are making or have made progress toward goal accomplishment, whereas goal velocity reflects their rate of progress. For example, an employee with a sales quota of 10 sales per day who makes 4 sales by 3 PM might perceive a middling goal progress of 40% vis-à-vis the daily target. At the same time, having made 3 quick sales in the last one hour, the

employee might perceive a more motivating goal velocity of a sale every 20 minutes. In general, individuals who perceive good progress or high velocity are more engaged at work, invest greater effort, and persist in goal pursuit (Johnson et al., 2013; Kivetz, Urminsky, & Zheng, 2006; Koo & Fishbach, 2012).

In recent years, research has examined self-regulatory processes that impact within-person performance—variations in performance of individuals, for instance, at the daily level (Beal, Weiss, Barros, & MacDermid, 2005; Lord et al., 2010). This research offers insights on self-management techniques, such as work planning, that may help daily work performance, which we define as the total daily value an employee contributes to the organizations' goals (Rich et al., 2010). This focus on daily performance is useful because there is often significant variance in employee behaviors across days (e.g., Foulk, Lanaj, Tu, Erez, & Archambeau, in press; Scott, Matta, & Koopman, 2016), and it is helpful to explicate strategies that employees can use to prevent negative dips in their daily effectiveness. Drawing on this self-regulatory lens, we make predictions for how TMP and CP improve daily performance by increasing work engagement.

Daily Work Planning, Engagement, and Performance

Planning is a critical part of self-regulation (Carver & Scheier, 1998; Frese & Zapf, 1994; Locke & Latham, 1990; Pintrich, 2000; Vancouver, Weinhardt, & Vigo, 2014). During planning, individuals shift from having intentions (Ajzen, 1985) to drawing up a course of action for accomplishing their goals. Given its breadth, scholars have noted the importance of being precise about the type of planning under investigation (e.g., Frese et al., 2007; Sonnentag, 1998). One common type of work planning is TMP in which employees prioritize their tasks and determine which task to focus on when (Claessens et al., 2007; Macan, 1994; Sitzmann & Johnson, 2012).

In line with a self-regulation perspective, we propose that TMP increases performance by increasing work engagement, or the extent to which employees contribute their full effort (e.g., time on task), emotional energy (e.g., enthusiasm and interest), and cognitive capacity (e.g., focus and concentration) into their daily work (Bakker, 2014; Carpini, Parker, & Griffin, in press; Christian et al., 2011).

First, when employees engage in TMP on a day, they create a schedule for their prioritized list of tasks (Claessens et al., 2007). Consequently, in self-regulation terminology, TMP defines goals at the daily level and activates goal discrepancy loops that employees can strive to reduce in the allotted time (Mitchell et al., 2008; Steel & König, 2006; Vancouver et al., 2010). By creating this detailed plan, employees should invest and expend greater personal resources in striving for their targets. Without such deadlines or time allocation, such as days when employees engage in low TMP, they may not feel goal-discrepancy induced pressure or urgency to finish tasks efficiently. Further, employees are frequently distracted from their tasks by off-task cognitions (Beal et al., 2005; Kanfer & Ackerman, 1989), which can lower the amount of attention allocated to the current task and thus slow progress or velocity. Such often self-induced distractions are lower when individuals have a goal (Locke & Latham, 1990) and do not have other goals in mind that can take attention away from that focal goal (Leroy, 2009; Shah, Friedman, & Kruglanski, 2002). TMP should facilitate both these conditions by helping employees prioritize and set apart different tasks and, thereby, reduce off-task cognitions. This enhanced focus and concentration in daily work should increase employees' goal progress and goal velocity and further fuel work engagement.

Second, we argue that TMP also provides the necessary information or checkpoints for employees to infer or understand their goal progress and velocity (Claessens et al., 2007; Macan,

1994). That is, without engaging in work planning, and specifically TMP, it would be challenging for employees to understand the extent to which they have made progress on their daily goals and the pace at which they are doing so (i.e., goal velocity). This information has motivating potential because it can act as a call for action to employees that they need to make more and quicker headway on the targets for the day (Johnson, Chang, & Lord, 2006). Hence, TMP, by helping employees monitor their accomplishment levels, can encourage employees to invest more physical, emotional, and cognitive resources into their work—i.e., increase their work engagement (Rich et al., 2010).

Finally, the detailed cognitive map of one's daily work that arises from TMP not only helps an employee gain information about goal progress and velocity, but also simultaneously helps him or her make progress on daily goals at a faster rate because it should provide the action steps needed to accomplish tasks and achieve such goals (Austin & Vancouver, 1996). That is, when an employee who has engaged in TMP is working on daily tasks, he or she does not need to think about which task to work on at any moment, how long to spend on a task, or how to accomplish the task because these decisions on this front have already been made at the beginning of the day. As a result, on a day in which an employee has engaged in TMP, he or she should efficiently mobilize and use personal and time resources toward work (e.g., Frese et al., 2007), thus enhancing progress, velocity, and ultimately work engagement. Given these arguments, we propose TMP enhances daily performance through work engagement:

H1: TMP positively relates to daily performance mediated by work engagement.

CP is a distinct type of daily work planning. In contrast to TMP, which deals with specifying, prioritizing, and scheduling tasks, CP refers to the extent to which employees seek to anticipate possible disruptions in their upcoming work and plan alternative actions (Buehler,

Griffin, & Ross, 1994; Frese & Zapf, 1994; Mumford et al., 2001). CP is based on the premise that intentions often go awry due to uncontrollable events but that individuals can still plan effectively (i.e., gain motivational benefits from planning) in these dynamic environments by actively building contingencies in their daily work plans (Buehler et al., 1994; Gollwitzer & Sheeran, 2006). For example, an employee who considers a possible delay in a deliverable from a colleague and thinks through what he or she may do if that occurs is engaging in CP.

We propose that CP also has positive effects on work engagement and, thereby, on daily performance. First, when employees engage in CP, they have a general sense of the tasks they want to accomplish for the day (Mumford et al., 2001). Thus, CP, as a form of daily work planning similar to TMP, can help provide the needed information on daily tasks for employees to understand or ascertain their goal progress and goal velocity. This information can be motivating as it helps employees interpret the extent to which they are meeting their goals for the day and the speed with which they are doing so, which allows for effective self-regulation. Second, CP helps employees think through the possible disturbances that may occur in their work (Frese & Zapf, 1994; Vancouver et al., 2014). Anticipation and planning of such possible disruptions could motivate people to work harder, work smarter, and make greater progress at a faster rate before interruptions potentially occur on those days where CP is used. Indeed, Vancouver et al. (2014) highlight how individuals modify or intensify their effort in response to anticipated interruptions. Essentially, expected interruptions can create a larger discrepancy in the goal feedback loop, or in the "meta-loop" that provides desired standards for goal velocity (Beck et al., in press), which can lead to greater effort and speed (Vancouver et al., 2014). In contrast, on days without planning of possible threats to getting work done, employees may feel less urgency to accomplish their work.

Third, many individuals neglect to consider interruptions or disruptions when developing their plans and set unrealistic goals for themselves (Buehler et al., 1994). This is because employees are often overly optimistic in assuming that their work will not be interrupted unexpectedly by external events (Jett & George, 2003). When employees engage in CP, they are pushed to account for historical information (e.g., past daily interruptions) in order to envision eventualities (Buehler et al., 1994; Mumford et al., 2001). Therefore, on days in which employees engage in CP, they are likely more realistic about what is possible and set more feasible or attainable goals for their day. In that context, CP increases the chances of actually achieving the daily expected rate of goal progress and goal velocity on their planned work. As a result, employees are more likely to experience greater work engagement on these days because they feel less frustration or anxiety about not meeting their planned goal progress or goal velocity (Beck et al., in press; Johnson et al., 2013). In contrast, on days where employees fail to engage in CP, they may be overly optimistic and less accurate and feel more stymied in their progress or velocity. Consequently, when employees engage in CP, they should demonstrate increased work engagement and, thereby, higher daily performance.

H2: CP positively relates to daily performance mediated by work engagement.

The Moderating Role of Interruptions

Work interruptions represent work-related "incidents or occurrences that impede or delay organizational members as they attempt to make progress on work tasks" (Jett & George, 2003, p. 494). Interruptions occur in many forms and include, but are not limited to, requests by colleagues for information or help, managers assigning new tasks, colleagues providing updates or information, or coworkers stopping by to socialize. Interruptions are increasingly common in modern organizations as work is becoming more dynamic, complex, and socially interdependent

(Grant & Parker, 2009; O'Leary et al., 2011). By their very nature, interruptions can impede employees' self-regulation by interfering with their efforts to maintain goal progress and goal velocity (Beck et al., in press; Jett & George, 2003; Perlow, 1999). Thus, interruptions can lower work engagement and prevent employees from meeting their daily performance targets. We propose that the extent to which such negative effects of interruptions manifest depends on the nature of daily work planning in which employees engage.

We hypothesize that interruptions moderate the effects of TMP such that the positive relationship between TMP and work engagement is weakened when interruptions are higher. First, interruptions can prevent employees from making progress or having a fast velocity on their planned to-do lists (Jett & George, 2003). For example, an employee who planned to work two hours on his or her presentation in the morning, but then is interrupted by a colleague or boss regarding a new proposal, will feel a lower sense of goal progress and goal velocity than if he or she had not been interrupted and had been able to finish more of the presentation (Beck et al., in press). Second, because TMP provides clear benchmarks and progress markers, any hindrance or disruption due to interruptions would be acutely perceived and felt by employees when they engage in TMP as they would more clearly visualize their lack of accomplishment vis-à-vis their planned daily targets. Thus, the motivational benefits that accrue from time schedules and to-do lists specified during TMP can be stymied on days when employees face high interruptions.

Third, interruptions distract people from their current task goal and make salient a new task or goal that was not previously considered (Jett & George, 2003; Monk, Trafton, & Boehm-Davis, 2008). Thus, interruptions create new goal discrepancies that can pull employees' attentional focus away from focal goals and cause decrements in performance from switching tasks (e.g., Meiran, Chorev, & Sapir, 2000). Hence, interruptions can interfere with the

attentional focus that is often enhanced by to-do lists and task schedules. Consequently, under such interruptions, TMP is less able to keep employees focused on their tasks and achieve goal progress and goal velocity. Therefore, when days are filled with many interruptions, the positive effects of TMP on work engagement will diminish and, thereby, employees will not able to derive as much performance-benefits from TMP. In contrast, when interruptions are low, employees will be able to enact their detailed plans as expected without much delay or disruption, thus enhancing their progress, velocity, and overall engagement. In other words, TMP's strong benefits for daily engagement and performance that we outlined for its main effects are more likely to occur when interruptions are low. Thus, we propose:

H3a: Interruptions interact with TMP such that the positive effects of TMP on daily work engagement are weakened when interruptions are high.

H3b: Engagement mediates the interactive effects of TMP and interruptions on daily performance such that TMP has a weaker positive indirect effect on daily performance via daily work engagement when interruptions are high.

In contrast to TMP, we propose that CP buffers employees from any adverse consequences of daily interruptions and, hence, will be especially useful in encouraging employees' work engagement and performance on days where they face more interruptions. When employees engage in CP, they think through the possible disruptions they may encounter during their day and outline actions they will take if any interruptions occur (Mumford et al., 2001). Thus, when interruptions occur, CP should help employees more effectively respond to such disturbances (Frese et al., 2007; Mumford et al., 2001). Research shows that if individuals engage in CP prior to goal pursuit and face obstacles or disturbances, they are more likely to accomplish their planned goal compared to those who do not engage in CP (Fishbach &

Hofmann, 2015) as well as are more likely to have less sizable decrements in performance as they switch from task to task (Meiran et al., 2000). In the context of daily work planning, this suggests that on days employees engage in CP, they can make progress on goals and maintain velocity on their planned tasks even when they are interrupted because such employees have already thought through ways to handle interruptions (Vancouver et al., 2014).

In addition, when employees engage in CP, they likely set more realistic goals for their workday. Consequently, the negative effects of interruptions are already factored into their plans—i.e., employees' goals are already adjusted for possible delays and disruptions (Frese et al., 2007; Mumford et al., 2001). Thus, interruptions might fail to make a dent on goal progress or goal velocity of employees who have engaged in CP on that day. Further, CP can help employees view daily interruptions as part of their work as opposed to seeing them as distractions. Because CP involves considering disruptions and creating contingencies, these aspects become part of the planning space. For example, a manager who plans to complete a new investment plan and thinks through how his or her peers may interrupt this work for help on other tasks, may start seeing such helping as an unavoidable aspect of his or her role. Thus, an employee who has engaged in CP would consider interruptions to be expected features of his or her work that day and will likely maintain goal progress and goal velocity (and, therefore, higher engagement) even when he or she confronts frequent interruptions. In other words, when employees plan for interruptions on a particular day, and those interruptions occur, this context triggers the planned responses and allows employees to make progress at a rate of speed as they expected or anticipated. However, if interruptions do not occur or are few on a particular day, then employees' CP may not impact work engagement as much because employees can stay engaged (despite their level of CP) given the lack of disturbances or disruptions to their work.

Putting these arguments together, we propose that CP can buffer against the possible negative effects of interruptions on daily engagement. Therefore, it is highly useful to employees when they face workdays with greater levels of interruptions and allows employees to maintain adequate levels of work-engagement and performance despite such interruptions. CP is more likely to increase daily engagement and performance under high interruptions because it is specifically designed to anticipate disruptions in order to detail actions to effectively manage them. In contrast, under low interruptions, employees may be able to maintain higher levels of daily engagement and performance despite their level of CP because they do not face serious impediments and delays in accomplishing their work. Thus, we hypothesize:

H4a: The positive effects of CP on daily work engagement are more likely under conditions of high interruptions rather than low interruptions.

H4b: Engagement mediates the interactive effects of CP and interruptions on daily performance such that the positive indirect effect of CP on performance via daily work engagement is more likely when interruptions are high rather than low.

Methods

Sample & Procedure

Our sampling strategy consisted of recruiting full-time employees from a wide range of organizational contexts and jobs in order to increase the generalizability of our findings. To accomplish this, we relied on the services provided by Clear Voice Research (www.clearvoiceresearch.com) to help recruit participants (see N. P. Podsakoff, Maynes, Whiting, & Podsakoff, 2015 for a similar approach). Clear Voice is a professional research company that maintains a large panel of hundreds of thousands of respondents who actively participate in research studies. In the first stage, we used a pre-screening survey to recruit

participants that matched our study's criteria. Participants were selected who were (a) full-time employees, (b) worked in the Eastern Time Zone of the United States, (c) typically started their workday between 6:00-9:00 AM and ended their workday between 4:00-7:00 PM, (d) indicated they were very fluent in English, and (e) passed attention checks. We aimed to recruit 215 participants in this first stage, and we ended up with 221 participants who passed these criteria. These participants then filled out demographic information for sample statistics and were paid $7 for successful completion of the pre-screen survey.

In the second stage, which occurred approximately one week later, we employed an experience sampling methodology (ESM) (Beal & Weiss, 2003). This gave us the opportunity to measure TMP, CP, interruptions, engagement, and performance each day over the course of two work weeks. For 10 consecutive work-days, participants were sent an email at 10:00 AM and 3:30 PM with a link to two different surveys. The morning survey contained the measures of TMP and CP. In advance of data collection, we learned from interviews that most employees plan in the morning right before or at the start of work. Thus, in order to capture employees' TMP and CP, we measured this variable close to when employees actually did their daily planning. The afternoon survey contained the remaining measures of performance, engagement, interruptions, and control variables. We used three categories of incentives to motivate participants to complete the daily surveys throughout the 10 days: Participants were awarded a $10 bonus if they completed 5-6 full days (i.e., both the morning and afternoon surveys), $20 if they completed 7-9 full days, and $25 if they completed all 10 full days. The final sample consisted of 187 employees with 1465 completed daily level measures (7.83 days of completed data per employee). Participants in this sample were 71% female, 82% Caucasian, had an average age of 44 (rounded to nearest integer), and had an average tenure in their jobs of 10.23

years (SD = 7.96). Employees worked in a wide range of organizational contexts including engineering, operations, education, retail, financial, medical, government, and non-profit.

Measures

We used short measures because we were administering these surveys each day and needed to reduce the load on participants. All scales were self-reported by participants.

TMP. TMP consists of specifying tasks, prioritizing those tasks, and determining when to accomplish them. We used previously published TMP scales in the education literature (Britton & Tesser, 1991; Macan, Shahani, Dipboye, & Phillips, 1990) to guide our development of items to tap these behaviors. Specifically, we measured TMP with the following six items on a scale of 1= "*Not at all*"; 7= "*To a very great extent*": "I made a list of all the things I have to do today"; "I determined the tasks I want to accomplish today"; "I set priorities for my tasks today"; "I prioritized the tasks I want to accomplish today"; "I made a schedule of the activities I have to do today"; and "I decided how much time to spend on each of my tasks today." The average Cronbach's alpha across the 10 days was .93.

CP. Although, to our knowledge, no established scale of CP exists, some past studies discuss CP and include several items that measure this type of planning (Earley, Lee, & Hanson, 1990; Smith, Locke, & Barry, 1990). We used this work as a basis to generate three items that measure CP that fit our study's daily context. Participants rated the extent to which (1= "*Not at all*"; 7= "*To a very great extent*") they engaged in CP for their workday: "I thought through possible interruptions or disruptions to my tasks today and planned for them"; I developed alternative courses of action in case my tasks are interrupted or disrupted today"; and "I made my plans flexible today to cover any unforeseen events." Average Cronbach's alpha was .91.

Work interruptions. We used five items to measure the amount of work interruptions employees faced during their day. In advance of the study, we interviewed employees who worked in dynamic environments to learn more about the common interruptions they faced. To this end, we conducted around 30 interviews with employees from a bank and general contractor who worked in various operations, marketing, finance, project management, and general management roles. Based on these interviews as well as Jett and George's (2003) conceptualization of interruptions, we created items that tap the different possible ways that employees could be interrupted at work. Participants were asked to report how frequently (1= "*Never*"; 7 = "*Most of the time*") they were interrupted during their work day by responding to the following items: "I was interrupted by people seeking information from me"; "I was interrupted by people seeking my help"; "I was interrupted by people who gave or assigned a new task to me"; "I was interrupted by people who provided me work-related updates or information"; and "I was interrupted by people for non-work related matters (e.g., socializing)." A multilevel confirmatory factor analysis (CFA) of the measure indicated that a one-factor model fit the data well: $\chi^2(10) = 46.36$, $p < .001$, CFI = .97, $SRMR_{within} = .03$, $SRMR_{between} = .06$, and RMSEA = .05. Average Cronbach's alpha was .87.

Engagement. We adapted four items from the job engagement scale (Rich et al., 2010) to the daily level. Participants reported how much they agreed (1 = "*Strongly Disagree*"; 7 = "*Strongly Agree*") with descriptions about their engagement at work for the day using the following items: "I felt energetic at my job today"; "I was excited about my job today"; "I focused a great deal of attention on my job today"; and "I had good concentration at work today." Average Cronbach's alpha was .90.

Performance. We measured performance using four items from the role performance scale (Williams & Anderson, 1991) adapted to the daily level. Participants reported the extent (1= "*Not at all*"; 7= "*To a very great extent*") to which they fulfilled their job requirements. The items were "I fulfilled all the responsibilities specified in my job description today"; "I consistently met the formal performance requirements of my job today"; "I conscientiously performed tasks that were expected of me today"; and "I adequately completed all of my assigned duties today." Self-reported performance is often used for experience sampling studies as it is a valid way to capture changes in within-person performance and behaviors over time (Beal & Weiss, 2003; Rodell & Judge, 2009). Average Cronbach's alpha was .95.

Controls. Finally, we controlled for two variables that could confound the relationships in our model. First, we controlled for negative affect (Watson, Clark, & Tellegen, 1988; average Cronbach's alpha = .91). That is, employees reported on the extent to which they felt "stressed", "frustrated", or "annoyed" during their day (1= "*Never*"; 7="*Most of the time*"). Controlling for negative affect helped us reduce common method bias (P. M. Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) as well as rule it out as a possible confound that simultaneously effects employees' engagement and ratings of performance. Second, we controlled for daily task complexity. Participants indicated the extent to which they agree (1 = "*Strongly Disagree*"; 7 = "*Strongly Agree*") with three items from the Work Design Questionnaire adapted to the daily level (Morgeson & Humphrey, 2006; average Cronbach's alpha = .80). An example item was "My tasks were simple and uncomplicated today" (reverse-scored). Task or job complexity not only impacts engagement and performance (Christian et al., 2011; Humphrey, Nahrgang, & Morgeson, 2007), but it could also influence how much and the type of planning (e.g., TMP versus CP) that employees engage in. Thus, it was important to control for task complexity.

Analytical Approach

We used multilevel modeling (Bliese, 2002) to analyze the daily level model nested within individuals using a maximum likelihood estimator in Mplus 7.3 (Muthén & Muthén, 2017). We modeled the within-person slopes (effects) as fixed[1], and we group-mean centered TMP, CP, work interruptions, and control variables for all model tests (Preacher, Zyphur, & Zhang, 2010). To test the hypothesized indirect relationships, we used the MODEL CONSTRAINT procedure in Mplus 7.3 to calculate confidence intervals for the proposed effects (Lau & Cheung, 2012; Muthén & Muthén, 2017).

Results

Means, standard deviations, ICC(1) values, and correlations among variables are reported in Table 1. ICC(1) values indicated that all focal variables in our study had substantial within-person variance (ranging from 27% to 51% of total variance), justifying our focus on within-person (i.e., daily) level relationships. Prior to testing hypotheses, we conducted a multilevel confirmatory factor analysis (Dyer, Hanges, & Hall, 2005) in MPlus 7.3 in which we simultaneously examined the factor structure of the measured constructs at the within- and between-person levels in order to determine whether the variables assessed were distinct. The seven-factor model (TMP, CP, interruptions, engagement, performance, negative affect, and task complexity) with items loading on their respective factors showed good fit ($\chi^2(658) = 2024.51$, $p < .001$, CFI = .93, $SRMR_{within} = .04$, $SRMR_{between} = .08$, and RMSEA = .04). Also, it was superior to an alternative model where the within-person correlation between TMP and CP was set to 1 ($\chi^2(659) = 2847.69$, $p < .001$, CFI = .88, $SRMR_{within} = .05$, $SRMR_{between} = .08$, RMSEA =

[1] To test the robustness of our regression models, we also specified hypothesized within-person slopes as randomly varying (rather than fixed) across individuals. The results using such random slopes were substantially identical. We report results where the within-person slopes were treated as fixed as they represent more parsimonious models.

.05; $\Delta\chi^2$ (Δdf) = 823.16(1), $p < .001$), and an alternative model where engagement and performance were set to correlate at 1 at the within-person level ($\chi^2(659) = 2845.63$, $p < .001$, CFI = .88, $SRMR_{within}$ = .05, $SRMR_{between}$ = .07, RMSEA = .05; $\Delta\chi^2$ (Δdf) = 821.12 (1), $p < .001$). Thus, the results support the theoretical constructs being distinct.

Hypothesis 1 stated that daily engagement mediated the positive relationship between TMP and daily performance. Results (see Table 2) revealed that TMP positively related to engagement ($\gamma = .20$ [SE = .03]; $p < .001$) and engagement also had a significant, positive relationship with performance ($\gamma = .53$ [SE = .02]; $p < .001$). Further, although TMP had a direct effect on performance ($\gamma = .08$ [SE = .02]; $p < .001$), the mediated, indirect effect of TMP on performance via engagement was significant (estimate = .11 [SE = .01]; 95% CI = [.08, .13]). Hence, Hypothesis 1 was supported.

Hypothesis 2 indicated that engagement mediates the positive relationship between CP and daily performance. Results indicated support for this hypothesis as CP positively related to engagement ($\gamma = .08$ [SE = .03]; $p < .01$), engagement positively related to performance ($\gamma = .53$ [SE = .02]; $p < .001$), and indirect effects analysis showed CP had a positive indirect effect on performance via engagement (estimate = .04 [SE = .01]; 95% CI = [.01, .07]).

Hypothesis 3a stated that interruptions moderate the relationship between TMP and engagement such that the relationship is weaker under high interruptions. As seen in Table 3, TMP significantly interacted with interruptions to predict engagement ($\gamma = -.10$ [SE = .03]; $p < .01$). Figure 1 illustrates this interaction pattern. A simple slopes test revealed that although TMP positively related to engagement at high interruptions ($\gamma = .13$ [SE = .04]; $p < .001$; + 1 SD), the relationship was significantly stronger at low interruptions ($\gamma = .27$ [SE = .04]; $p < .001$; –1 SD). Probing this further, a region of significance analysis (Preacher, Curran, & Bauer, 2006)

indicated that the positive relationship between TMP and engagement was no longer statistically significant for values of interruptions greater than 4.11 in our sample (1.56 SD above the mean). Thus, Hypothesis 3a was supported.

Hypothesis 3b stated that daily engagement mediates the interactive effects of TMP and interruptions on performance. At high interruptions, the indirect effect of TMP on performance via engagement was positive (estimate = .07 [SE = .02]; 95% CI = [.03, .11]). However, at low interruptions, the indirect effect was significantly stronger (estimate = .14 [SE = .02]; 95% CI = [.11, .18]): the difference between TMP's indirect effect at high versus low levels of interruptions was statistically significant (difference = .075 [SE = .03]; 95% CI = [.02, .13]). Thus, Hypothesis 3b was supported.

Hypothesis 4a stated that CP and work interruptions interact such that CP is especially effective when employees confront more frequent daily interruptions. As seen in Table 3, this hypothesis was not supported as CP did not significantly interact with work interruptions (γ = -.04 [SE = .03]; *ns*). Given this, Hypothesis 4b was also not supported as the conditional indirect effect of CP on performance via engagement at high levels of interruptions was not significant (γ = .02 [SE = .02]; 95% CI = [-.01, .06]). Overall, these results suggest that although the benefits of TMP are moderated by daily interruptions, CP seems to provide similar motivational benefits regardless of the levels of interruptions. We explore this theme further in the discussion[2].

[2] In an exploratory fashion, we examined two additional interactions. First, we examined whether TMP and CP had an interactive effect on engagement. Results indicated that the interaction term was significant (γ = -.07 [SE = .03]; $p < .05$), and suggested that TMP and CP may substitute for one another (e.g., TMP's positive effect on engagement weakened when CP was higher). Second, we examined whether a three-way interaction comprising of TMP, CP, and interruptions influenced engagement. Results indicated that this interaction was significant (γ = -.07 [SE = .02]; $p < .05$). With TMP as the focal predictor and CP and interruptions as the two moderators, all simple slopes were positive and identical except that the slope of TMP on engagement was significantly lower when interruptions and CP were both higher, which again suggests a substitution pattern. However, because the theoretical focus of our study was on delineating TMP's and CP's independent effects, we had not developed theory for these two interactions. Hence, we advocate caution in interpreting these findings and suggest that future research examine these more complex interactions in a more systematic and confirmatory manner (see discussion).

Robustness Checks

We ran several robustness checks. First, to rule out possible serial dependence or time trends (e.g., Judge & Ilies, 2004; Sonnentag & Starzyk, 2015; To, Fisher, Ashkanasy, & Rowe, 2012), we reran the model tests controlling for lagged (Day – 1) endogenous variables as well as a time index representing day of data collection. All results of our hypotheses tests remained the same when including these additional control variables. Second, based on scholars' recommendations (e.g., see Becker, 2005, p. 286), we reran the model tests without any control variables, and the results do not differ. Third, following past studies, we examined whether our results were robust to the number of times (days) we sampled individuals during our data collection (cf., da Motta Veiga & Gabriel, 2016; Trougakos, Hideg, Cheng, & Beal, 2014). Therefore, we checked whether our results varied when we only consider individuals who had provided us with data for at least three days. Results were substantially unchanged, which makes sense given that 85% of employees in our sample provided at least five days or more of data. These additional checks help rule out possible threats to our findings.

Discussion

In a complex and dynamic work environment, daily work planning is often assumed to benefit employee performance (Birkinshaw & Cohen, 2013; Mitchell et al., 2008; Schmidt et al., 2013; Steel & Weinhardt, in press). However, evidence regarding its positive effects has been mixed (Claessens et al., 2004; Frese et al., 2007; Macan, 1994; Sitzmann & Johnson, 2012). We sought to bring clarity to this issue by investigating *why* and *when* two distinct types of daily work planning (i.e., TMP and CP) influence performance in dynamic contexts. Results supported our prediction that TMP and CP positively and uniquely influence daily performance through enhanced work engagement. Further, we found that TMP's positive effects are weaker (although

still significant) when employees confront higher interruptions. In contrast, our results show unconditional (i.e., not moderated) positive effects of CP on work engagement and performance. Through this study, we extend the literatures on employee motivation, self-regulation, and daily work performance and offer a number of future research directions.

Theoretical Contributions

First, by highlighting unique effects of TMP and CP on work engagement and daily performance, we contribute to the literature on self-regulation (Kanfer & Heggestad, 1999; Lord et al., 2010; Schmidt et al., 2013; Vancouver et al., 2010). Although past research has acknowledged that distinct types of planning exist (e.g., Tripoli, 1998), many studies have often conceptualized work planning broadly and have not sufficiently explicated the distinctions across different elements of planning (e.g., Earley et al., 1990; Frese et al., 2007; Sitzmann & Ely, 2011). Because of this, we lacked knowledge on *when* different elements of planning are likely to be more efficacious. By utilizing self-regulation theory (Johnson et al., 2013; Lord et al., 2010; Vancouver et al., 2014), we explicate how TMP and CP have independent positive effects on work engagement and daily performance under varying levels of interruptions. As a result, we demonstrate that (a) TMP and CP independently increase employees' engagement and performance in their daily work; (b) the positive effects of TMP are less strong under high levels of daily interruptions; and (c) on days when employees utilize CP, they have similar levels of motivation and performance regardless of the level of interruptions. Consequently, we show that focusing on specific planning types adds precision to theoretical predictions on how daily work planning helps employees perform more effectively.

Second, our findings also speak to the importance of studying work planning at the daily level. TMP and CP were more highly correlated (r = .74) at the between-person level than at the

daily level (r = .34). This suggests that although employees who engage in higher TMP also tend to engage in higher CP on average, the deployment of these two strategies is less likely to co-vary at the daily level. Thus, the independent effects of TMP and CP at the daily level may not occur at the between-person level. To substantiate this point, we ran a single-level regression analysis using the average values of the theoretical constructs. In this case, when only considering between-person values, results showed that CP's effects disappeared while TMP's effects remained significant. Thus, our daily ESM study provides insights that would have otherwise been missed if work planning were only studied at the between-person level.

Third, we identify work interruptions as a key moderator of the effects of TMP on daily performance. Past research has shown mixed results on whether TMP strategies enhance performance of individuals (Claessens et al., 2004; Claessens, Van Eerde, Rutte, & Roe, 2010; Macan, 1994; Sitzmann & Ely, 2011). In our study, we highlight how work interruptions might be an important contextual factor that influences the strength of the relationship TMP has with engagement and performance. Our results indicated that TMP's positive effects on engagement and performance reduce in strength when employees face high interruptions. Although TMP still has a significant positive association with engagement under high daily interruptions (+1 SD above the mean), this effect is significantly weaker than at low interruptions. Further, TMP's effects on engagement and performance become insignificant for days in which employees subjectively reported interruptions of 4.11 or higher on a 1-7 Likert scale (+1.56 SD above the mean level of interruptions). To put this into perspective, employees reported this level of interruptions on 275 days or 19% of the time. This means that TMP has no positive effect on daily engagement and performance approximately one-fifth of the work days in which employees face a very high level of interruptions. As a result, our study helps illuminate the

conditions under which TMP is more (and less) strongly beneficial to employees seeking to increase their daily productivity at work (Allen, 2015; Birkinshaw & Cohen, 2013; Claessens et al., 2007; Steel & Weinhardt, in press) and offers interruptions as a daily contextual feature that reduces its positive effects.

We predicted that CP would be especially effective in enhancing work engagement and performance when employees face frequent interruptions on a particular day. However, we did not find support for this prediction. Instead, our results indicated that CP had similarly positive effects on employees' daily engagement regardless of the level of interruptions that they confronted at work. Although this finding was unexpected, one possible post-hoc explanation is that work in most modern organizations is filled with substantial levels of interruptions (e.g., González & Mark, 2004). It is possible that, given a certain base level of interruptions, CP is generally a helpful self-regulation strategy for employees to use. In other words, rather than being especially useful on days with a high frequency of interruptions, CP may be unconditionally useful in most contemporary workplaces and enhances employees' motivation and performance in their daily work. Another possibility is that employees who engage in CP consider interruptions and proactively adjust their daily goals accordingly. As a result, they might be demonstrating achievement of modified goals at a steady pace irrespective of the level of interruptions. Future research needs to investigate these possibilities. Regardless, in demonstrating CP's independent effects, we highlight the usefulness of CP as an additional type of planning and self-management technique (as opposed to the more popular TMP) to help employees improve their engagement and performance in their daily work.

Finally, we explicate work engagement as the mechanism connecting TMP and CP with daily performance. We build theory regarding how TMP and CP improves work engagement by

proactively allowing employees to define time-bound goals or by anticipating interruptions and setting realistic goals for the day. Hence, we bring clarity regarding how the effects of TMP and CP transmit to performance, an insight currently missing in extant literature that has largely focused on the direct effects of work planning on various outcomes (see Claessens et al., 2007; Frese et al., 2007; Tripoli, 1998). As a byproduct, our findings contribute to research on daily work engagement and proactivity by identifying TMP and CP as specific strategies employees can use to proactively increase their daily engagement at work (Bakker, 2014; Grant & Ashford, 2008; Lanaj, Johnson, & Barnes, 2014; Parker et al., 2010; Sonnentag, 2003).

Practical Implications

Our results provide specific guidance to employees in their day-to-day work. First, employees should understand that TMP and CP are two independent but distinctly useful strategies that allow them to increase daily engagement and performance at work. That is, on days in which they engage in either TMP or CP, employees can see gains in their ability to stay engaged on their tasks, which enhances their performance. TMP has beneficial effects because it allows employees to prioritize their tasks and determine which tasks to focus on when. CP has positive effects because it enables employees to anticipate and manage work interruptions that are often an unavoidable part of work-life. This is important because employees often neglect to consider potential disruptions to their work and set unrealistic goals for themselves that they fail to achieve (Buehler et al., 1994). Second, our research indicates that TMP, although still useful, might have reduced efficacy when employees confront high interruptions at work on any particular day. Given this, if employees can structure their day to avoid interruptions (e.g., working from home or working with their email closed or office door shut), then they can realize stronger benefits of TMP. CP, by contrast, provides similar gains in work engagement and

performance irrespective of the level of interruptions that employees face on a daily basis. Thus, our findings highlight how, in dynamic work environments, employees can engage in CP as this strategy can add to the benefits provided by TMP and help them to maintain high engagement and performance.

Limitations and Future Research

We note several limitations and future research directions of our study. First, causality between planning types and engagement cannot be entirely inferred from our study. Although the longitudinal ESM design, time separated measures, and lagged analyses help reduce concerns of causality, a randomized experiment would be needed to determine the true causal order among planning types and engagement. Second, some of the theoretical processes outlined to explicate the effects of planning types on engagement (e.g., goal progress and goal velocity) were not empirically captured. Although the unique effects we find from these first-stage relationships help increase confidence in the proposed theory, future research can directly examine these mediating processes.

Third, our theory and study treated interruptions broadly as work-related disruptions or incidents that delay or impede work, but we did not consider more specific types of interruptions that may alter the proposed effects (Jett & George, 2003). For example, one common type of work interruptions is meetings (Rogelberg, Leach, Warr, & Burnfield, 2006). Although meetings can be disruptive to employees' work progress (Rogelberg et al., 2006), because meetings are typically scheduled in advance, these types of interruptions may be more easily anticipated and planned for by employees than other types of interruptions such as unexpected requests or delays (Perlow, 1999). Further, our measure of interruptions focused exclusively on interpersonal interruptions (i.e., being interrupted by other people). Yet, as Jett and George (2003) note,

interruptions can also occur from non-interpersonal events (e.g., equipment failure), from self-initiated actions (e.g., taking breaks; Trougakos, Beal, Green, & Weiss, 2008; Trougakos et al., 2014), or from distractions created by the mind (e.g., day dreaming). Therefore, future research can theoretically and empirically examine different types of interruptions in conjunction with TMP and CP to investigate how specific interruptions may interact with daily planning to predict engagement and performance.

Fourth, our measure of daily performance captured employees' report of the extent to which they fulfilled their duties and responsibilities for the day. Another viable approach would be to assess daily performance in terms of how much employees accomplished compared to their specific daily work goals or planned goals for the day. Future studies that use this approach would also help in identifying our theorized effects of goal progress and goal velocity.

Finally, there are several new research directions that result from our study. For one, it is likely that employees differ in their ability to engage in TMP or CP or differ in how much they benefit from planning. For example, CP may require greater skill and foresight than TMP, and its effectiveness might vary as a function of individual difference moderators such as cognitive ability or conscientiousness. Given that studies often find within-person relationships differ as a function of between-person variables (Lanaj, Johnson, & Lee, 2016; Scott, Barnes, & Wagner, 2012), future studies can examine how key individual differences moderate the effects of daily TMP or CP on motivation and performance outcomes. Future research could also investigate the differential antecedents of TMP and CP. Because these two highly correlate at the between-person level and only moderately correlate at the daily level, this suggests that the day-to-day features of work may matter more for predicting differences in TMP and CP than stable individual or job characteristics. For example, because CP may require more skill or effort, if

employees are short on time or energy, they may simply engage in TMP without considering interruptions or contingencies. Thus, it will be important to examine the different daily antecedents of TMP and CP. In addition, future studies should also consider theory regarding the interactive effects of different planning types. For instance, exploratory analysis (see footnote 2) showed that TMP and CP may interact to predict engagement. This finding, along with the possibility of a three-way interaction among the planning types and interruptions, suggests future studies should investigate more complex theory for the joint effects of daily work planning and contextual factors. Such theory would help further explicate when different planning strategies are more or less beneficial to employee motivation and performance.

Conclusion

Contrary to most conventional wisdom, planning may not be a one-size-fits-all self-regulation strategy that universally enhances employee daily performance. Instead, in an experience sampling investigation, we found that certain planning types (TMP) have greater efficacy when employees face less disruptions at work whereas other planning types (CP) have positive effects that are not conditioned on the level of interruptions in the daily work context. We hope such findings encourage future research to examine specific types of self-regulation strategies, in conjunction with the contextual conditions under which they operate, to help inform employees how and when to improve their daily work performance.

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Table 1

Means, Standard Deviations, ICC(1) Values, and Correlations among all Variables

Variable	M	SD	ICC(1)	1	2	3	4	5	6	7
1. Performance	5.74	1.04	.49	(.95)	.66***	.38***	.18*	-.06	-.24**	.08
2. Engagement	5.12	1.28	.61	.58***	(.90)	.52***	.31***	-.04	-.38***	.02
3. TMP	4.09	1.65	.70	.24***	.26***	(.93)	.74***	.26***	.13	.14
4. CP	3.16	1.69	.73	.12***	.16***	.34***	(.91)	.36***	.22**	.01
5. Work Interruptions	2.99	1.23	.62	-.02	-.10***	.04	.09**	(.87)	.57***	.27***
6. Negative Affect	2.53	1.43	.57	-.11***	-.21***	-.02	.00	.45***	(.91)	.30***
7. Task Complexity	4.32	1.54	.64	-.12***	-.08**	.00	-.05	.16***	.16**	(.80)

Note: Level-1 (within-person) correlations are reported below the diagonal (*n* is 1465); Level-2 (between-person) correlations are reported above the diagonal (*n* is 187). The average Cronbach's alphas for the daily variables are reported on the diagonal. ICC(1) values represent the percentage of between-person variance.
* $p < .05$ ** $p < .01$ *** $p < .001$

Table 2

Results of Multilevel Modeling for Unconditional Daily-Level (Within-Person) Effects

	Engagement			**Performance**		
	Estimate	*SE*	*t*	Estimate	*SE*	*t*
Intercept	5.07	.08	67.90***	5.69	.06	102.65***
Negative Affect	-.16	.03	-6.38***	.01	.02	.81
Task Complexity	-.04	.02	-1.53	-.07	.02	-3.65***
Work Interruptions	-.03	.03	-.83	.04	.03	1.67
TMP	**.20**	**.03**	**8.14****	.08	.02	4.01***
CP	**.08**	**.03**	**2.91****	-.01	.02	-.39
Engagement				**.53**	**.02**	**23.73****
Level-1 Residual Variance	.57	.02	25.01***	.35	.01	25.29***
Pseudo-R^2	.077			.22		

Note: Unstandardized estimates provided. Maximum likelihood estimator used. Level-2 n = 187 and Level-1 n = 1465. All predictor variables were group-mean centered except for engagement. Pseudo-R^2 indicates percentage of the total variance (i.e., within and between person) in the dependent variable accounted by all predictor variables (cf. Snijders & Bosker, 1999).
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3

Results of Multilevel Modeling for Conditional Daily-Level (Within-Person) Effects

	Engagement			**Performance**		
	Estimate	*SE*	*t*	Estimate	*SE*	*t*
Intercept	5.07	.08	67.93***	5.69	.06	102.35***
Negative Affect	-.16	.03	-6.28***	.01	.02	.23
Task Complexity	-.03	.02	-1.44	-.07	.02	-3.65***
Work Interruptions	-.03	.03	-1.07	.04	.03	1.67
TMP	.20	.03	8.17***	.08	.02	4.02***
CP	.07	.03	2.81**	-.01	.02	-.38
TMP × Work Interruptions	**-.10**	**.03**	**-2.90****			
CP × Work Interruptions	**-.04**	**.03**	**-1.24**			
Engagement				**.52**	**.02**	**23.70*****
Level-1 Residual Variance	.56	.02	25.01***	.35	.01	25.29***
Pseudo-R^2	.081			.22		

Note: Unstandardized estimates provided. Maximum likelihood estimator used. Level-2 $n = 187$ and Level-1 $n = 1465$. All predictor variables were group-mean centered except for engagement. Pseudo-R^2 indicates percentage of the total variance (i.e., within and between person) in the dependent variable accounted by all predictor variables (cf. Snijders & Bosker, 1999).

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

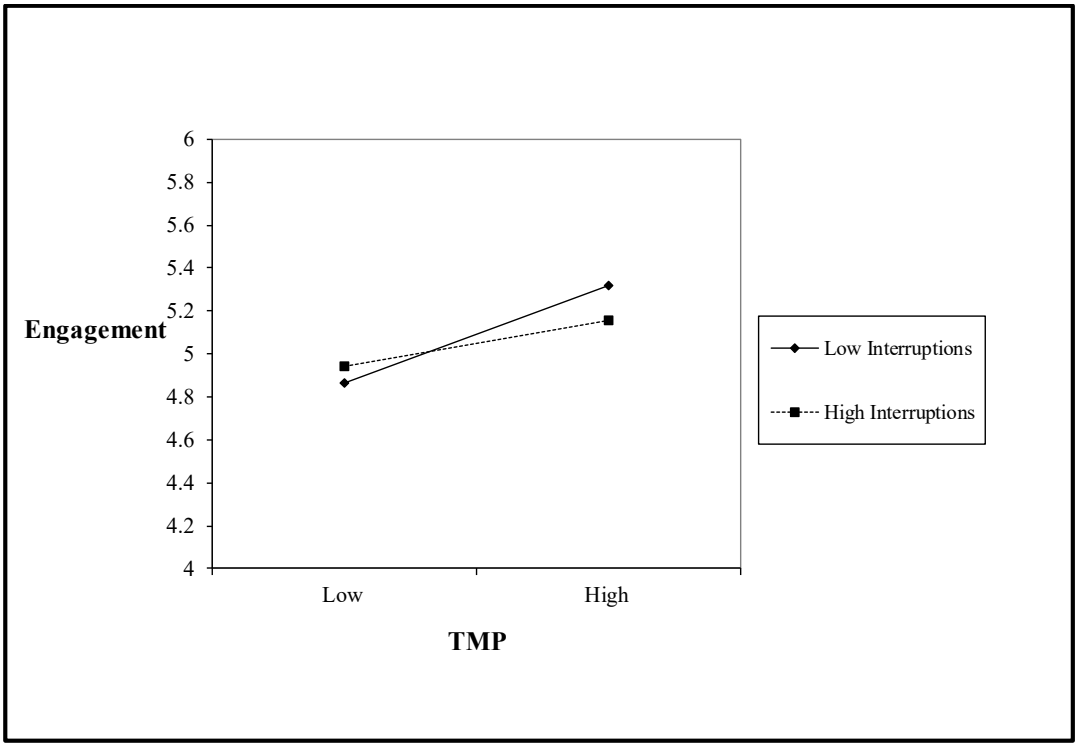

*Figure 1***.** The interactive effects of TMP and interruptions on engagement.