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Do Goal Setting and Implementation Intentions Affect Detachment and Next-Day Fatigue?

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Abstract

Several types of interventions to help people detach from work have been tested, but so far, no tests of different types of planning have been conducted. This field experiment tested the effects of goal setting combined with making implementation intentions on psychological detachment in the evening, and its effect on fatigue the next day, compared to an only goal setting condition and a control group without an intervention. The effects of the interventions were measured by means of a daily diary for a period of two weeks. We hypothesized a stronger effect on detachment in the evening and fatigue the next day of the implementation intention intervention for those not habitually planning. Contrary to our expectation, *neither* intervention had a positive effect in comparison to the control group. The daily effects on psychological detachment of the combined goal-setting implementation intention condition were negative for individuals who had a high general tendency to plan, as shown by the significant cross-level interactions of the moderated mediation model. We discuss these results in light of future interventions.

Keywords Field experiment · Implementation Intentions · Diary Study · Experiment · Detachment · Fatigue

Introduction

We are living in a 24/7 world in which one can work anytime, anywhere. For many employees, the omnipresence of work has resulted in the blur of professional and personal life. They find it increasingly difficult to “switch off” from work

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responsibilities at home (cf. Wendsche & Lohmann-Haislah, 2017). Yet, being able to psychologically detach, defined as “refraining from job-related activities and mentally disengaging from work during time off the job” (Sonnentag & Fritz, 2015, p. 72), is crucial for employees’ recovery (Bennett et al., 2018; Sonnentag & Bayer, 2005; Sonnentag et al., 2008). Research consistently shows that employees who feel more detached from work during off-hours are generally better off in terms of well-being: they are more satisfied with their lives, and experience less emotional exhaustion and lower levels of other symptoms of psychological strain, such as poor sleep quality and fatigue (Sonnentag, 2012).

In view of its importance to employee well-being, scholars have recently begun to propose solutions and to develop interventions to facilitate psychological detachment (e.g., joint partner activities during weekends: Hahn et al., 2012; mindfulness: Hülshager et al., 2015; Hülshager et al., 2014; and volunteering: Mojza et al., 2010). This article focuses on one specific well-being outcome, fatigue, because it is one of the main complaints resulting from a lack of psychological detachment (Meijman & Mulder, 1998; Sonnentag & Fritz, 2015). In relation to this outcome, we examine the effectiveness of another solution that has been proposed, namely behavioral planning. Making plans for the next working day, for instance in the form of to-do lists, has been suggested to free cognitive resources and thereby to contribute to the recovery process (Sonnentag & Fritz, 2015). Similar recommendations can be found in the practitioner and popular self-help literature (e.g., Allen, 2015; Cooper, 2014). Unfortunately, these recommendations lack strong empirical evidence, as until now, very few studies have investigated the effect of a planning intervention on psychological detachment and its downstream consequences (for exceptions, see Smit, 2016; Smit & Barber, 2016).

To complicate matters, it is unclear from the literature which type of planning will be most effective in promoting psychological detachment. Some advocated the use of goal setting (Sonnentag & Fritz, 2015), which arguably coincides with research showing positive linkages between goal setting and employee well-being (MacLeod et al., 2008; Nezlek, 2001). However, findings from experimental psychology research also suggest that when wrongly applied, the activation of unfulfilled goals may trigger intrusive thoughts (Masicampo & Baumeister, 2011). As long as our mind perceives a goal as unfulfilled, goal-related cognitive activity will be directed towards this goal, resulting in intrusive goal-related thoughts during unrelated subsequent activities (Syrek & Antoni, 2014; Syrek et al., 2017). This would imply that a simple goal-setting intervention may lead to increased rumination on the activated unfulfilled goals during the evening. Therefore, to facilitate psychological detachment, goal setting additionally needs to include implementation intentions, which specifically indicate the (a) where, (b) when, and (c) how of behavioral goal pursuit (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006). By making such specific plans, the drive to attain the activated goal is suspended, which allows the mind to temporarily cease goal-related cognitive activity until the time specified in the plan (Masicampo & Baumeister, 2011).

Smit and Barber (2016) demonstrated that redirecting attention with the aid of a planning intervention buffered employees from the negative effects of workload on detachment. However, they did not include a control condition in which participants were not asked to list their goals in their study. The present study builds on their findings and aims to make three modest yet unique contributions to the literature

on psychological detachment. First, we provide a test of which goal-setting interventions (i.e., simple goal setting vs. goal setting along with implementation intentions) is more effective in facilitating psychological detachment, and we contrast these with a control condition without an intervention. Second, we investigate the extent to which the effects of the intervention extend beyond the proximal outcome of psychological detachment, and trickle down to more distal downstream outcomes, next-day fatigue in particular. Third, we investigate people's dispositional tendency to engage in planning behavior as moderating the effect of planning interventions on psychological detachment, and test whether this effect trickles down as well on next-day fatigue. We propose that planning interventions are particularly beneficial to employees whose planning skills are underdeveloped; employees for whom planning comes naturally may find little value in applying techniques that are already part of their behavioral repertoire.

To test these ideas, we use a rigorous research design, combining an experimental field study involving three experimental groups (goal setting, implementation intentions, and no treatment) with experience-sampling methodology. In contrast to correlational survey studies, manipulating goal setting and implementation intentions in the field using a sample of working adults allows us to draw causal conclusions while safeguarding external validity. The combination with experience-sampling methodology accounts for the dynamic nature of these variables (Sonnentag et al., 2008) and captures immediate effects of the experimental manipulations on psychological detachment and fatigue as they occur in the flow of everyday life (Bolger et al., 2003).

The Effects of Goal Setting versus Implementation Intentions on Daily Detachment and Next-Day Fatigue

The recovery literature suggests that psychological detachment, i.e., mentally disengaging oneself from work-related activities, feelings, and thoughts during periods of respite (Sonntag & Fritz, 2007, 2015), helps individuals to replenish their resources (Demsky et al., 2014; Zijlstra et al., 2014). Although work demands and stressors are not actually present once people have left work, they may remain mentally present when employees think about work during leisure time. Accordingly, people may remain cognitively (pre-)occupied with work during their time off (Sonntag et al., 2008). This leads to a mental continuation of work demands and stressors which drains employees' mental energy, hinders recovery, and results in feelings of fatigue, a psychological state characterized by low levels of energy and lack of motivation to exert further effort (Meijman & Mulder, 1998; Zijlstra et al., 2014). In contrast, psychological detachment, the disengagement of work-related activities and thoughts, enables employees to get a break from the demands of work and to replenish their energetic resources. Accordingly, psychological detachment after work hours has consistently been shown to be negatively related to feelings of fatigue as evidenced in two recent meta-analyses (Bennett et al., 2018; Wendsche & Lohmann-Haislah, 2017). Importantly, the positive effects of psychological detachment in the evening are not confined to the same evening but they also extend to the next workday. Accordingly, Sonntag and colleagues (Sonntag et al., 2008)

found that to the extent that employees were able to detach in the evening, they experienced less fatigue the next morning.

Some researchers suggested that goal setting helps to detach from work as part of developing routines (e.g., Sonnentag & Fritz, 2015), but this idea has received little empirical follow-up to date. Fritz and colleagues (Fritz et al., 2011) found that setting new goals as an energy management strategy positively associated with vitality, but not with fatigue. Making plans in the form of to-do lists was unrelated also to well-being outcomes. Zacher and colleagues (Zacher et al., 2014) included setting new goals and making to-do lists into a broader category of work-related strategies, for which they found positive relations with vitality when compared between persons. However, within persons over time, there was no effect on fatigue or vitality. These null findings indicate that simple goal setting interventions may not suffice to eliminate thoughts of unfulfilled goals, and that the experience of unfulfilled goals, instead of repressing, may act as a trigger for rumination (Syrek & Antoni, 2014; Syrek et al., 2017). The reason for this is that merely formulating self-set goals does not guarantee successful goal achievement. After all, people often face various challenges *en route* to goal completion, including getting started, persisting, disengaging from unproductive goal striving, and simultaneously pursuing multiple goals (Gollwitzer & Sheeran, 2006). Without a clear plan about how to deal with such contingencies, the various cognitive processes that serve goal pursuit remain active and continue to consume mental energy (Masicampo & Baumeister, 2011). Put differently, formulating simple self-set goals does not answer crucial questions as to when, where, and how one will act. As these questions linger without resolution, they remain active in people's mind and impede detachment. They may even trigger the activation of unfinished goals, leading to an increase in goal-related rumination (Masicampo & Baumeister, 2011).

Plans that go beyond formulating goal intentions by specifying the where, when, and how of behavioral goal pursuit are referred to as implementation intentions (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006). Implementation intentions take the form of if-then statements, 'If situation x arises, then I will do y!'. As such, plans that include when, where, and how make the intention more concrete and linked to specific events that may occur over time. This in turn facilitates goal pursuit by removing any ambiguity of when, where, and how to act upon the intention. Implementation intentions serve as a reminder of an intention when a particular cue is encountered. They have been shown to be effective in achieving goals in different settings (Gollwitzer & Sheeran, 2006; Webb & Sheeran, 2006).

Implementation intentions may also be important to well-being. Besides the satisfaction and positive effects that may go with goal attainment, implementation intentions may alleviate efforts in accomplishing tasks. Planning may reduce and perhaps even cease the cognitive activity associated with goal striving if plans not only specify what one intends to achieve, but also articulate what one will do under certain circumstances. Implementation intentions may serve to help attain goals using an automatic, or at least a less effortful, process (Gollwitzer, 1999; Webb & Sheeran, 2006). Committing to a plan is helpful in freeing cognitive resources, as it can lead to suspending the drive to attain a goal momentarily, while at the same time providing a way to resume the goal attainment at a later moment (Masicampo

& Baumeister, 2011). That is, goal-directed behavior can be executed without formulating the conscious intent at that point in time. If the place, time, and actions have been determined beforehand, the person only needs to follow this, without spending effort at that point in time to think about how to proceed, or to (impulsively) give in to other tasks that demand attention, thus staying on the intended course of action. Or as Masicampo and Baumeister (2011, p. 668) formulated it: “the effortful control of goal pursuit can be ended by passing control over to automatic responses linked to situational cues.” Thus, adding implementation intentions to self-set goals would increase the likelihood of detachment because the goals may be more easily retrieved and executed with the more specific context in mind. Setting goals without making the implementation intentions may even lead to more difficulty in detachment because the goal becomes accessible without a plan to implement the goal.

Hypothesis 1: A goal setting intervention along with an implementation intention intervention has a positive effect on psychological detachment in the evening, while a goal setting intervention alone has a negative effect on psychological detachment, compared to a no-intervention control condition.

The effort-recovery model (Meijman & Mulder, 1998) is particularly helpful to understand the role of psychological detachment as an explanatory mechanism in the relation between planning behavior and fatigue. According to the effort-recovery model, efforts in response to work demands elicit a series of short-term physiological and psychological reactions (also called ‘strain reactions’), which manifest experientially as feelings of acute fatigue. To allow functional systems activated in strain reaction processes to return to baseline levels, recovery experiences are needed. Without opportunities for recovery, a buildup effect of work demands on fatigue, and a cycle of fatigue building up into longer-term negative effects, such as chronic fatigue and burnout, is to be expected. Several factors have been pointed out to help recovery (for an overview of effective interventions, see Verbeek et al., 2019), such as breaks during a workday (e.g., Zacher et al., 2014), relaxation (De Bloom et al., 2017), and positive feelings related to mastery and relatedness, such as volunteer work (Mojza et al., 2010). The beneficial effects of these factors are at least partly due to the fact they facilitate psychological detachment (de Vries et al., 2017).

Given the role of psychological detachment in the preservation and replenishment of resources, especially mental energy, we expect that goal setting and implementation intentions influence next-day fatigue via psychological detachment. Psychological detachment from work demands, such as we aim to achieve through our interventions, will reduce the taxing effects on individuals, which will then lead to lower fatigue levels. Specifically, we posit that psychological detachment in the evening carries the negative effect of daily goal setting and the positive effect of daily implementation intentions in combination with goal setting on next-day fatigue.

Hypothesis 2: A goal setting intervention along with an implementation intention intervention has a negative effect on next morning fatigue via enhanced psycho-

logical detachment, while a goal setting intervention alone has a positive effect on next morning fatigue via decreased psychological detachment, compared to a no-intervention control condition.

Moderating Effects of Planning Tendency

Planning tendency, or the individual difference between people in their propensity to make plans before acting (very closely related to the idea of planfulness, Frese et al., 1987; Ludwig et al., 2018) may be important when considering the effects of goal setting and implementation intention on psychological detachment. Specifically, we propose that individuals with a high tendency for planning already have developed various cognitive and behavioral strategies that serve the same purpose as the ones triggered by our planning interventions, making the contribution of these interventions minimal.

Individuals with a high tendency for planning are better in adhering to self-set goals and directing attention to matters that are important to goal attainment (Frese et al., 1987), and away from matters that hinder individuals in their goal pursuit, such as work demands (Demerouti et al., 2001). Put differently, individuals with a high tendency for planning may have learned to use cognitive strategies involved in planning and forming implementation intentions to deal with work demands. For example, they may have learned that thoughts that detract from detachment can be “parked” for a later point in time that is more appropriate. This would help them to have more cognitive room to enjoy the here and now and to detach from work-related thoughts more easily. Moreover, engaging in habitual planning activities has been positively associated with perceived control of time, which can serve as a buffer against feelings of overload resulting from goal activation (e.g., Claessens et al., 2007; Macan, 1994).

Individual differences in planning may also be seen as a difference between people in proactive coping. This type of coping is associated with higher positive affect and well-being (Greenglass & Fiksenbaum, 2009) and might also help detachment to a larger extent. Thus, the processes meant to be brought about by implementation intentions and the general tendency to plan influence recovery similarly. Specifically, they each serve to reduce goal-related unfulfilled thoughts, and thus enable individuals to detach from work during off-work time. Therefore, by influencing similar processes, the general tendency and the interventions are likely to be substitutable rather than additive, such that there is little advantage in combining the two.

Probing the proposed interaction more closely, we propose that individuals with low (versus high) planning tendency lack the appropriate mechanisms for structuring their goal-related thoughts. In contrast, individuals with high planning tendencies already possess the appropriate mechanisms. As such, the latter will not be impacted differentially by the goal-setting intervention, nor by the goal setting and implementation intention intervention.

Hypothesis 3: The effects of (a) goal setting plus implementation intentions and (b) goal setting on psychological detachment are moderated by individuals’ gen-

eral tendency to plan, such that the effects of both interventions on detachment are stronger for individuals low on planning tendency.

Hypothesis 4: The indirect effects of (a) goal setting plus implementation intentions and (b) goal setting on next morning fatigue are moderated by individuals' general tendency to plan, such that indirect effects are stronger for individuals low on planning tendency than for individuals high on planning tendency.

Method

Sample and Procedure

This study was approved by the Ethics Review Committee of the Faculty of Psychology and Neuroscience of the University of Maastricht (no. ECP-125.06.02.2013). Data were collected within a larger data collection effort. Participants holding a broad range of jobs were recruited individually by research assistants or directly through the social network of the researchers. In order to have a homogenous sample consistent with our research design, we used two inclusion criteria: 1) participants had a full-time job, working five days a week; and 2) they did not work in shifts. A total of 169 participants signed up for the study, of which 114 supplied at least one matching data point (completion of the intervention and the outcome measure). Of these participants 63 were female and 51 were male. Their mean age was 35.5 years ($SD=11.0$), and mean tenure was 6.9 years ($SD=7.14$). 43.9% of the participants had finished higher education, and 39.4% had finished secondary vocational education. Participants worked in various occupations, such as middle management, nursing specialist, teacher, civil servant, and PhD candidate, the latter having work contracts in this setting. Participants received a gift-card of €25 if they completed at least 50% of the measures.

Potential participants received an email that explained the procedure and purpose of the study, including a link via which they could sign up for the study. An email with a link to a pre-questionnaire was sent immediately when participants registered for the study. This pre-questionnaire assessed general variables at the individual level, including demographics and the general tendency to plan. In addition, they were asked to indicate at what time they generally rose in the morning, at what time they finished work and at what time they went to bed during the week and in the weekend. This information was used to time the subsequent two-week diary questionnaire: participants received an email with a link to the questionnaire half an hour after they got up, half an hour after they finished their work and half an hour before they went to bed (for a similar approach, see Smit & Barber, 2016). During the weekend they received only one email with a questionnaire link, half an hour after they rose in the morning.

The study was a two-week diary design with three experimental conditions. The research design is depicted in Fig. 1. Participants were randomly assigned to the control group, the goal setting intervention group, or the planning intervention group. In the control group, participants did not receive any intervention; they were

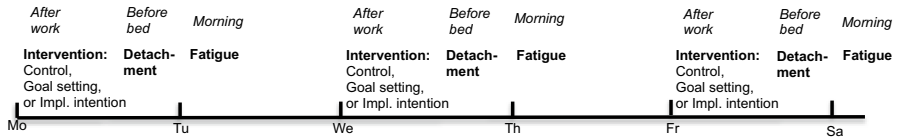


Fig. 1 Depiction of the research design

only asked to fill in the measures of the diary study. In the intervention conditions participants additionally received a link to the intervention on Mondays, Wednesdays, and Fridays, half an hour after the time they had indicated they generally finished working.

The interventions (see [Appendix](#)) were modeled after the interventions used in a series of laboratory experiments of Masicampo and Baumeister (2011) on the effects of planning on goal-related intrusive thoughts. In the goal setting intervention, participants were told to consider which important work goals they would like to work on in the coming two weeks. They were asked to make a list with short descriptions of the five most important goals they would like to make progress on. We asked participants to exclude routine tasks from the planning intervention to remain close to the manipulation developed by Masicampo and Baumeister (2011). For routine tasks, people may have already developed specific times and actions for executing them, and therefore individuals would likely benefit less from plans related to such tasks. We decided to implement the intervention three times per week (instead of daily) so that participants would not be overburdened and to increase the likelihood that new goals would come up. We used a two-week perspective, in order to also provide the opportunity to set goals and make plans for the near future.

The planning intervention was designed according to an implementation intention format, requesting the participants to specify how, when, and where they would complete the goals (Gollwitzer & Sheeran, 2006). In this condition, participants received the same instructions as in the goal setting condition, but additionally, they were asked to specify for each of these goals: 1) to describe as specifically as possible what the first concrete action was that they could take in order to make progress on this goal; 2) to indicate as concretely and detailed as possible when they would execute this action; and 3) to indicate as concretely as possible where they would execute this action.

We assessed adherence to the intervention over the six instances on which the intervention was administered. Of all the respondents in the goal condition, 3 (6.8%) described their goals on all six intervention days, 14 (31.8%) described goals on five out of six of the intervention days, 4 (9.1%) wrote goals on four of the intervention days, 5 (11.4%) wrote goals on three of the intervention days, 8 (18.2%) wrote goals on two of the intervention days, 3 (6.8%) wrote goals on one intervention day, and 7 (15.9%) did not write goals on any of the intervention days. Of the respondents in the planning condition, 5 (10.9%) described their plans on all six intervention days, 7 (15.2%) described plans on five out of six of the intervention days, 6 (13.0%) wrote plans on four of the intervention days, 10 (21.7%) wrote plans on three of the intervention days, 5 (10.9%) wrote plans on two of the intervention days, 7 (15.2%)

wrote plans on one intervention day, and 6 (13.0%) did not write plans on any of the intervention days. In order to test whether adherence to the intervention differed between groups, we conducted an independent sample t-test between the goal setting and the implementation intention condition on the number of times the participants completed the intervention. The results show no significant difference between the groups (Adherence mean goal setting condition = 3.58, Adherence mean implementation intention condition = 3.40, $t=0.479$, $p=0.633$).¹

We only included data points on the dependent variable data (detachment and next morning fatigue) in the intervention conditions when participants completed the intervention on the respective day. In the implementation intention condition, we had 38 individuals with at least one matching data point (a completed planning exercise plus a response on the next morning outcome measures) and a total of 117 matching datapoints. In the goal setting condition 35 participants had at least one matching data point and a total of 121 matching datapoints. In the control condition we had 41 individuals, and a total of 200 data points.

Measures

General planning was measured in the pre-questionnaire with an eight-item scale adjusted by Claessens et al. (2004) from the setting goals and priorities' subscale of the Time Management Behavior Scale (TMBS; Macan et al., 1990). Items refer to the extent to which participants engaged in these experiences in general. Examples of items included are: 'I set myself short-term goals' and 'I plan my daily work activities.' Responses were made on a five-point scale ranging from 'completely disagree' (1) to 'completely agree' (5). (Cronbach's $\alpha=0.80$).

Psychological detachment was assessed in the bedtime survey referring to experiences during the evening. We used four items adapted from the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007). Responses were made on a five-point scale ranging from 'completely disagree' (1) to 'completely agree' (5). Examples of items include 'This night after work, I did not think about work at all' and 'This night after work, I got a break from the demands of work' The average Cronbach's α of the measure was 0.91.

Next-morning fatigue was measured in the morning survey referring to their state on that specific morning. We used four items ("fatigued", "tired", "exhausted", "spent") of the Profiles of Mood Scales (McNair et al., 1971). Participants responded to the items on a 5-point scale ranging from 'completely disagree' (1) to 'completely agree' (5). The average Cronbach's alpha of the measure was 0.88.

¹ Based on a recommendation from one of the reviewers, we conducted supplementary analyses, testing for possible adherence effects. We created separate groups for each of the two intervention conditions distinguishing between low (one to three interventions completed) and high adherence (four to six interventions completed). We created five groups (the control group plus a low and high adherence group for both intervention conditions). We ran multilevel models testing the effects these groups on psychological detachment and next morning fatigue. The results show no significant differences between the other groups relative to the high adherence – implementation intentions group, suggesting that adherence to the intervention did not have a significant impact on the effect of the interventions.

Analyses

Given the multilevel nature of our data, we tested the hypotheses using path analysis in a multilevel structural equation modeling framework using Mplus 8 (Muthén & Muthén, 2017). The dependent variables psychological detachment and fatigue were measured at the day level, while general planning was measured at the person level. Furthermore, the experimental manipulation (into two types of interventions: goal setting, and goal setting along with implementation intentions) versus a control group was operationalized at the between-person level. The three experimental conditions were dummy coded. Specifically, we created two dummy variables, with the first dummy (D1) coded as 0=control group, 1=goal setting, 0=implementation intentions and the second dummy (D2) coded as 0=control group, 0=goal setting, 1=implementation intentions.

To test Hypothesis 1, we used D1 and D2 as predictors of psychological detachment at the between-person level (see Table 2, Model 1). To test Hypothesis 3, we added interaction terms between D1 and D2 with general planning (grand mean centered) respectively to the model and computed simple slopes for the goal setting and the implementation intentions group at low (-1 SD) and high ($+1$ SD) levels of general planning (see Table 2, Model 2). To test Hypotheses 2 and 4 regarding mediated effects of the experimental conditions on next morning fatigue via psychological detachment, we extended Model 1 and Model 2 to include next morning fatigue as the dependent variable; psychological detachment functioned as the mediating variable. Using model constraints, we estimated the indirect effect of D1 and D2 on next morning fatigue via psychological detachment at low (-1 SD) vs. high ($+1$ SD) levels of general planning. Following recommendations from Preacher et al. (2010), we tested indirect effects using parametric bootstrapping procedures, of which the confidence intervals are reported in Table 2.

Results

The descriptive statistics and zero-order correlations between the variables are presented in Table 1. The results of the hypothesis tests are presented in Table 2. As can be seen from Table 2 (Model 1), neither the implementation intentions condition (estimate = -0.24 , $p = 0.24$), nor the goal setting (estimate = 0.01 , $p = 0.96$) affected psychological detachment. Only general planning tendency was a significant negative predictor of psychological detachment in the evening (estimate = -0.36 , $p < 0.05$). Hypothesis 1 was thus rejected. Accordingly, Hypothesis 2, stating that implementation intentions and goal setting would have an effect on next morning fatigue via psychological detachment was also rejected, as can be seen from the non-significant indirect effects of D1 (upper CI = 0.08 ; lower CI = -0.11) and D2 (upper CI = 0.16 ; lower CI = -0.05) via detachment on fatigue in Model 3.

Furthermore, we tested general planning tendency as a boundary condition, as stated in Hypotheses 3 and 4. As can be seen from Model 2, general planning did not significantly interact with the goal setting intervention (estimate = 0.02 , $p = 0.95$) in predicting psychological detachment. However, general planning did interact

Table 1 Means, Standard Deviations, Reliabilities and Intercorrelations between Study Variables

	M	SD	Cronbach's Alpha	General Planning	Psychological Detachment
General Planning	3.84	.52	.80		
Psychological detachment	3.58	1.02	.91	-.21*	
Next Morning Fatigue	1.77	.75	.88	.10	-.63***

n = 124 individuals, 548 observations

Table 2 Multilevel models testing effects of experimental condition on psychological detachment and next morning fatigue

	Psychological detachment		Next morning fatigue	
	Model 1	Model 2	Model 3	Model 4
Fixed effects between level				
Intercept	3.63*** (.14)	3.60*** (.13)	2.64*** (.31)	2.73*** (.32)
D1	.01 (.19)	.04 (.18)	-.04 (.09)	-.03 (.09)
D2	-.24 (.21)	-.27 (.19)	-.15 (.11)	-.16 (.12)
General Planning	-.36* (.15)	.09 (.25)	-.04 (.09)	.10 (.13)
Detachment			-.23** (.08)	-.27** (.08)
D1*Planning		.02 (.34)		-.09 (.19)
D2*Planning		-1.09*** (.30)		-.31 (.13)
Random effects				
Intercept SD	.56*** (.08)	.48*** (.08)	.05 (.04)	.04 (.04)
Residual SD	.45*** (.06)	.45*** (.06)	.47*** (.04)	.47*** (.04)
Model Constraints				
		Simple Slopes	Indirect Effects	Moderated Indirect Effects
Indirect effect D1 ¹			.00 (.04)	
Indirect effect D2 ²			.05 (.05)	
Implementation Intentions Group				
General Planning high		-.82** (.26)		.22** (.08)
General Planning low		.29 (.22)		-.09 (.07)

D1 coded as control group=0, goal setting group=1, implementation intentions group=0; D2 coded as control group=0, goal setting group=0, implementation intentions group=1; ¹ D1 → detachment → fatigue; ² D2 → detachment → fatigue. Note that Models 3 and 4 testing effects of predictor variables on fatigue via detachment include all paths used in Model 1 or Model 2; they are omitted here for the sake of readability. *n* = 107 individuals, 368 observations

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

with the implementation intentions intervention in predicting psychological detachment (estimate = -1.09, $p < 0.001$). A simple slopes analysis shed light on the form of interaction. For individuals with high levels of general planning, the intervention was negatively associated with psychological detachment (estimate = -0.82,

$p < 0.01$), while the intervention had no effect on psychological detachment for individuals low on general planning (estimate = 0.29, $p = 0.20$). The pattern of the interaction was thus opposite to our prediction. Hypothesis 3 was therefore rejected.

In Hypothesis 4, we posited that indirect effects of implementation intentions and goal setting on next day fatigue via evening psychological detachment would be moderated by individuals' general tendency to plan. We therefore tested the indirect effects of the implementation intentions intervention on next-morning fatigue via psychological detachment at low vs. high levels of general planning (Model 4). The results revealed a significant positive indirect effect of implementation intentions on next-morning fatigue via psychological detachment for individuals with a high general tendency to plan (estimate = 0.22, lower CI = 0.06; upper CI = 0.40). The indirect effect was not significant for individuals with a low general tendency to plan (estimate = -0.09; lower CI = -0.25; upper CI = 0.03). This pattern of results was opposite to the expected direction. Since there was no significant interaction between the goal setting intervention and general planning on psychological detachment, we did not test moderated indirect effects for the goal setting condition. Hypothesis 4 was thus rejected.

Supplementary Analyses

Given the unexpected non-significant and counterintuitive effects of the implementation intentions intervention, we conducted two supplementary analyses.² First, we tested whether both interventions may actually lead to decreased detachment. Therefore, we ran a multilevel structural equation model comparing the effects of the two interventions relative to the control group. We created a dummy variable (D3) coded as 0 = control group, 1 = goal setting, 1 = implementation intentions, and we tested the effect of D3 on detachment as well as the moderating effect of general planning. As can be seen in Table 3, the effects of D3 are comparable to those of D2 (contrasting implementation intentions to the two other conditions) in the original analysis, only with lower Beta's and slightly less pronounced results. This suggests that the negative effect of the interventions on detachment relative to the control group is mainly driven by the implementation intentions group.

Second, one may wonder whether repeated exposure to and practice with the intervention may be required to achieve the desired effects (e.g., Hülshöger et al., 2015). In order to investigate such learning effects, we conducted a Random Coefficient Growth Model in R with the timing of the intervention as a moderating factor in the relationship between the dummy-coded conditions and the outcome variables (Bodner & Bliese, 2018). This analysis assesses whether the experimental conditions as a between-person factor predicts linear change in psychological detachment and fatigue over the study period. We also included the three-way interaction between condition dummies, time, and general planning, to assess for possible differential learning effects due to previous planning experience. As can be seen in

² We would like to thank one of our reviewers for this suggestion.

Table 3 Multilevel models testing effects of experimental condition on psychological detachment and next morning fatigue

	Psychological Detachment	
	Model 1	Model 2
Fixed effects Between Level		
Intercept	3.63*** (.14)	3.60*** (.13)
D3	-.12 (.17)	-.10 (.17)
General Planning	-.35* (.15)	.09 (.25)
Detachment		
D3*Planning		-.67* (.30)
Random effects		
Intercept <i>SD</i>	.45*** (.06)	.45*** (.06)
Residual <i>SD</i>	.57*** (.08)	.54*** (.08)
Model constraints		
Goal Setting + Implementation Intentions		
General Planning high		-.44 (.24)
General Planning low		.24 (.20)

D3 coded as control group=0, goal setting group=1, implementation intentions group=1; Note that Models 3 and 4 testing effects of predictor variables on fatigue via detachment include all paths used in Model 1 or Model 2; they are omitted here for the sake of readability. $n = 107$ individuals, 368 observations

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

Table 4, the results do not show significant effects for the interactions with Time, providing no evidence of a learning effect. The only significant effect was the interaction between D2 (the implementation intentions condition versus the other conditions) and general planning, similar to the previous analysis.

Discussion

This study was designed to investigate the effect of two behavioral planning interventions, a goal setting intervention and a goal setting combined with making implementation intentions intervention, on psychological detachment in the evening, and fatigue the next day. Contrary to our hypotheses, we did not find the expected effects of the interventions, as both had no effect on detachment in comparison to the no-intervention condition. All participants experienced lower fatigue the next day when psychological detachment was high on the evening before, confirming only part of our mediation hypothesis. Also, opposite to our reasoning, we found that the tendency to plan strengthened the negative relation between implementation intentions and psychological detachment.

The results extend the literature on experimental work on the effects of implementation intentions (e.g., Masicampo & Baumeister, 2011) to a field setting. The findings also contribute to the literature on detachment and fatigue to show that

Table 4 Random coefficient growth models testing effects of condition on slopes of psychological detachment and next morning fatigue

	Psychological detachment			Next morning fatigue		
	Estimate	SE	SD	Estimate	SE	SD
Fixed effects						
Intercept	3.41***	0.15		1.50***	0.10	
Time	0.08*	0.04		0.12***	0.03	
D1	0.10	0.23		-0.02	0.15	
D2	-0.13	0.23		-0.10	0.15	
General Planning	0.04	0.32		0.05	0.20	
Time*D1	-0.01	0.06		0.00	0.05	
Time*D2	-0.05	0.06		0.02	0.05	
Time:Planning	0.03	0.08		0.01	0.06	
D1*Planning	-0.11	0.48		-0.26	0.33	
D2*Planning	-1.16**	0.43		0.03	0.28	
Time*D1*Planning	0.11	0.13		0.07	0.11	
Time*D2*Planning	0.02	0.10		-0.02	0.08	
Random effects						
Intercept			0.30			0.74
Time			0.00			0.10
Residual			0.66			0.63

D1 coded as control group=0, goal setting group=1, implementation intentions group=0; D2 coded as control group=0, goal setting group=0, implementation intentions group=1; Time is the timing of the intervention. $n = 107$ individuals, 368 observations

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

goal setting may not be useful, and that implementation intentions may even have detrimental effects for some people. At least three plausible explanations may be provided for the findings. First, one explanation is related to how implementation intentions may direct attention, and whether this is conducive to detachment. Even though the intervention was meant to “park” actions to a later point in time, as planning is meant to do, the opposite may have happened. If this were the case, the intervention would result in making tasks more salient and accessible rather than helping to distance from them. Incomplete goals may lead to more rumination and lower detachment, particularly when people are highly involved in their jobs (Smit, 2016). In other words, forming an implementation intention increases the activation of the mental representation of the situational cues specified in the if–component (Parks-Stamm et al., 2007). However, if the then-process cannot be implemented yet, the respondents are “stuck in the if-process”. Thus, rather than helping to shift mental processing to the concrete time and place intended, the notion that the action needs to take place has become more salient, leading to less detachment. We have no indication whether this actually happened, but it is a potential explanation for our findings. We suspect that the interaction effect

occurs only in the implementation group because it is for these participants that the action plan is most concrete and that unfulfilled goals are most salient (akin to the Zeigarnik effect: persistence in the mind of unfulfilled tasks and goals, Zeigarnik, 1927). In addition to directing attention to unfulfilled goals, planning interventions may also help to enhance control and mastery experiences (Hahn et al., 2011), which may come at the cost of psychological detachment and relaxation.³ Based on the above, we conclude that our planning interventions are unlikely to lead to short-term recovery as we suggested, as they are likely to trigger psychological processes that could interfere with detachment and could even have adverse effects. Further research is needed to identify and compare these processes.

Second, whereas the experimental design using daily measurements is a strong point of our study, there may be some drawbacks when measuring the outcomes of interventions. Meier et al. (2016) argued that time intervals are important to consider. That is, the instructions of the intervention may first create changes that are not indicative of psychological detachment yet, but they may only show at a later point in time, when “the dust has settled”, and the respondents may have learned that this strategy was helpful. Possibly, the timing of our measurement, in the evening, was not ideal and may have constituted an interval too short after work. Although we did not find the expected results, we maintain that a strong point of the study is the diary format, with a high ecological validity. The indicators in our study provide information on things as they happen. The exact sequence of experiences may be more complicated than anticipated.

The third explanation for our findings pertains to the distinction between global detachment and goal-level psychological detachment (Smit, 2016). Our interventions are primarily targeted toward facilitating goal-related detachment, but given the multifaceted nature of detachment it may well be that our intervention did not affect other facets of detachment that were even more important.

Although the interventions did not work out as we hoped, the failure of interventions meant to increase wellbeing is by no means unique. Our findings resonate with a study in which those with high job demands who used daily strategies to organize more felt most emotionally exhausted (Parker et al., 2017). Also, Gupta and colleagues (Gupta et al., 2018) found adverse effects of their intervention on balancing demands and resources, obtaining poorer recovery and reduced work ability in the intervention compared to a control group. They concluded that interventions may need a more personal and more closely monitored approach to account for the specific needs of individuals within the intervention group.

The results may imply that planning and organizing may not always be the right strategy to deal with detachment and emotions. Perhaps these outcomes necessitate other strategies. Instead of cognitive strategies, emotion-control strategies may be needed, related to affect associated with distraction from work-related thoughts rather than focusing on them, even temporarily. Thus, our study urges to rethink both the timing and content of the strategies needed for detachment and whether self-set

³ We would like to thank one of our reviewers for this suggestion.

goals and planning are helpful at all. But the findings may also imply that interventions need to be more specific about who needs exactly which type of intervention.

With regard to the moderating effect of the individual differences in planning, we note that an earlier study showed that the effect of a similar intervention was moderated by differences between individuals. Smit (2016) found that a planning intervention was primarily effective among employees who typically have difficulty detaching from work during leisure time, leaving those who already knew how to do it unaffected by the intervention. Our study showed that those who did not need more planning actually suffered from the intervention. We reasoned that providing opportunities for planning would help those who would not normally do so. The opposite occurred, and we also found that general planning was negatively related to detachment. Trait-activation theory (Tett et al., 2021)⁴ may account for this effect: providing explicit instructions to plan may trigger the activation of the trait which might imply an “always on” readiness for goal pursuit, rather than a cognitive strategy to postpone and schedule future actions in order to permit detachment. This may also explain why the self-set goals did not help, but also might not have been specific enough to trigger a negative effect. It reinforces the idea that interventions should be targeted toward specific individuals, based on their particular needs. For the practical application of intervention efforts, the message is clear: There may be harm in a superfluous intervention. Apart from the content of an intervention, its intensity may also be changed in future endeavors. Planning dynamically in daily settings appears to have different effects from the one-time formation of implementation intentions as has been done in previous lab studies.

The strengths of our study are the experimental design and the multiple measurements of detachment and fatigue. Although we see strengths in the research design, we also acknowledge its limitations. Limitations of the study include the relatively “light” interventions that were provided to the participants without follow-up or personal advice adjacent to the instructions. This may have contributed to the unfavorable outcomes. As pointed out above, several issues may have led to undesirable outcomes of the interventions. Besides interventions that incorporate more personal contact, or that would have more advice in combination with the cognitive strategies, instructions are needed on decision rules when it is time to stop thinking about tasks, and to detach and transition to a state of recovery. Interventions should involve feedback and monitoring as well. Also, some studies showed that people find defining self-set goals difficult (e.g., Alessandri et al., 2020), because they may confuse goals with tasks or purposes. We targeted the cognitive processes associated with self-control (cf. planfulness, Ludwig et al., 2018), but detachment may not be served sufficiently by these. This is not to say that other recovery mechanisms would not be served by implementation intentions. Mastery and control have been shown to be positively affected by cognitive processes, such as positive work reflection (Sonnentag et al., 2021) or problem-solving pondering (Weigelt et al., 2019).

Another limitation was that only fatigue was included as a next day indicator of wellbeing. Other outcomes, as identified in the stressor-detachment model, could

⁴ We would like to thank one of our reviewers for this suggestion.

have been included, as well as positive outcomes, such as vitality, flourishing, thriving, and physical health. Future research may also focus on goal completion or performance by setting goals and implementation intentions via detachment.⁵ However, as explained above, we considered fatigue as a good indicator of day-to-day wellbeing, whereas other manifestations of well-being may only become apparent after repeated cycles of fatigue over a longer period. The timing of the interventions and measurements within the study may also be a limitation, such as offering the intervention three times per week, framing the goals for the coming days rather than specifically on the next day, or the timing of the outcome measure after a finishing work. Other studies included another outcome at bedtime, for example, and an intervention directly before rather than after finishing work (e.g., Sonnentag & Fritz, 2015). However, we were interested whether we could find any consequences the next day, to assess whether detachment would provide a prolonged effect. Future research may shed light on the optimal time frames for assessment, and the precise processes that take place in the interventions, possibly including both cognitive and affective measures.

Concluding, our study did not support our expectations regarding the interventions, although the relation between detachment in the evening and fatigue the next morning was in accordance with earlier studies. Our unexpected moderation even showed that an intervention may mean a negative outcome for certain individuals. Therefore, we urge researchers and others who plan interventions to enhance detachment to carefully consider our study.

Appendix

Manipulations in the Goal Setting (1) and Goal Setting and Implementation Intentions (2) Conditions

1. Goal Setting

Time 1:

Take your time to consider on which important work goals you would like to work in the coming two weeks. Now please make a list with a short description of **the five most important** goals/projects on which you want to make progress (e.g. writing a report, making an appointment with a client, purchasing a program). You can leave out the tasks that are a part of your normal routines.

Times 2—6:

Take your time to consider on which important work goals and projects you would like to work in the coming days. Now please make a list with a short description of **the five most important** goals/projects on which you want to make progress (you can leave out the tasks that are a part of your normal routines). These can be but do not necessarily have to be the same goals/projects you listed in the previous session.

⁵ We would like to thank one of our reviewers for this suggestion.

2. Goal Setting + Implementation Intentions

Time 1:

Take your time to consider on which important work goals you would like to work in the coming two weeks. Now please make a list with a short description of **the five most important** goals/projects on which you want to make progress (e.g. writing a report, making an appointment with a client, purchasing a program). You can leave out the tasks that are a part of your normal routines.

Times 2—6:

Take your time to consider on which important work goals and projects you would like to work in the coming days. Now please make a list with a short description of **the five most important** goals/projects on which you want to make progress (you can leave out the tasks that are a part of your normal routines). These can be but do not necessarily have to be the same goals/projects you listed in the previous session.

###now participants will receive each task they indicated one by one on their screen##

For this goal ## name of goal 1##:

1. Please indicate the first concrete action you can take in order to make progress on this goal/project (For instance, a concrete action could be, searching for specific information, writing a text, or sending an email to a colleague). Try to describe as specifically as possible what specific action you could execute to make progress on the goal/project.
2. Now, indicate when you will execute this specific action. You can indicate a date and time or a concrete moment (for instance, “when I see the specific colleague”). Try to describe as concrete and detailed as possible when you will execute the action.
3. Now, indicate as concrete as possible where you will execute this action (for instance, at the office behind your desk or on your way home in the train)

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Data availability The data will be available at Dataverse at www.dataverse.nl

Code availability Not applicable.

Declarations

Additional declarations for articles in life science journals that report the results of studies involving humans and/or animals.

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