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Being mindful at work and at home: Buffering effects in the stressor–detachment model

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In this daily diary study, we examined the moderating role of employee domain-specific mindfulness within the stressor–detachment model (Sonnentag & Fritz, 2015, *Journal of Organizational Behavior*, 36, 72). According to the stressor–detachment model, emotional and quantitative demands should be associated with decreased psychological detachment after work, which in turn is associated with decreased well-being (i.e., low positive affect and high negative affect) at bedtime. Moreover, we proposed that both mindfulness at work and home should buffer the relations between job demands and psychological detachment and between psychological detachment and well-being. Sixty-five employees completed two daily surveys (i.e., after work and before going to bed) over five workdays. Results of multilevel analyses revealed that job demands did not predict psychological detachment, which in turn did not predict well-being at bedtime. However, the relation between emotional demands and psychological detachment was buffered by both mindfulness at work and at home while the relation between quantitative demands and psychological detachment was moderated by mindfulness at home only. Moreover, we found that mindfulness at home moderated the relation between psychological detachment and positive affect at bedtime. Our study demonstrates the buffering role of daily mindfulness within the stressor–detachment model and highlights the value of considering domain-specific mindfulness.

Practitioner points

- Being mindful at work and at home buffers the negative relationships between job demands and psychological detachment after work.
- Promoting mindfulness both in the work and home domain can help employees psychologically detach from work despite high job demands.

In our fast-paced 24/7 economy with blurring boundaries between work and private life, many employees find it difficult to unwind from job stress and relax during their off-job time. Switching off from work during non-work time (i.e., psychological detachment from work) is essential for employee recovery, well-being and productivity because it allows individuals to replenish resources that were depleted by dealing with job demands (e.g., Binnewies, Sonnentag, & Mojza, 2010; Sonnentag, 2012; Wendsche & Lohmann-Haislah, 2016).

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Previous research suggests that employees find it particularly difficult to psychologically detach from work when they need it most, that is, when they experience high job demands such as a high workload or emotional demands (Sonnentag, 2012; Wendsche & Lohmann-Haislah, 2016). Sonnentag and Fritz (2015) reviewed research on psychological detachment and offered a conceptual framework – the stressor–detachment model – that suggests that job demands are associated with reduced psychological detachment, which in turn is associated with impaired well-being. Given that psychological detachment plays a crucial role in employee recovery (Sonnentag & Fritz, 2007), it is important to identify factors that (1) buffer the negative associations between high job demands and psychological detachment and (2) that alleviate the negative relationship between a lack of psychological detachment and well-being to maintain employee health and well-being (Sonnentag & Fritz, 2015). Sonnentag and Fritz (2015) suggested that factors influencing primary and secondary appraisals of job stressors (see Lazarus & Folkman, 1984) such as employees' attentional processes may moderate the link between job stressors and psychological detachment. Specifically, Sonnentag and Fritz (2015) proposed mindfulness (i.e., a state of consciousness that is characterized by paying attention to the present moment with a non-judgmental attitude; Bishop *et al.*, 2004; Brown, Ryan, & Creswell, 2007) as moderator. Mindfulness – a concept originally rooted in Buddhist tradition – has broadly positive effects on human functioning (Brown *et al.*, 2007). Also, in the organizational context, mindfulness appears to improve several aspects of workplace functioning such as performance, social relationships and well-being (e.g., Good *et al.*, 2016; Sutcliffe, Vogus, & Dane, 2016).

In this study, we integrate research on mindfulness and the stressor–detachment model. Building on the theoretical ideas of Sonnentag and Fritz (2015), we propose that mindfulness buffers the relationships between job demands and psychological detachment on the one hand and between psychological detachment and well-being on the other hand. Importantly, we distinguish between the experience of mindfulness in different life domains, namely the work and the home domain. We hypothesize that both mindfulness at work and at home should moderate the link between job stressors and psychological detachment whereas only mindfulness at home should moderate the link between psychological detachment and well-being.

We contribute to the literature in several ways. First, we answer calls for more research on the moderating conditions that determine (1) whether job demands impact psychological detachment and (2) whether a lack of psychological detachment is equally detrimental for everyone in all situations (Sonnentag, 2012; Sonnentag & Fritz, 2015). Thereby, we provide initial evidence for the twofold moderating role of mindfulness in the stressor–detachment model by testing the propositions forwarded by Sonnentag and Fritz (2015). Second, we further refine Sonnentag and Fritz' propositions by investigating the unique abilities of mindfulness in two different domains to moderate the job stressor–detachment and detachment–well-being links. Third, investigating domain-specific mindfulness also contributes to the mindfulness literature. Up to our knowledge, mindfulness literature has not explicitly distinguished between mindfulness in different life domains or contexts. This is important however, as the possibilities to act mindful and the key mechanisms of mindfulness buffering the effects of stressors on detachment and, in turn, on well-being may differ at work and at home.

Theoretical background

The stressor–detachment model

Psychological detachment (hereafter, *detachment*) refers to ‘the individual’s sense of being away from the work situation’ (Etzion, Eden, & Lapidot, 1998; p. 579). It implies refraining from job-related activities (e.g., not checking work emails) and mentally disengaging from work during off-job time (e.g., forgetting about a workplace conflict; Sonnentag, 2012). Within the stressor–detachment model, detachment is conceptualized as a mediator; that is, detachment is seen as a mechanism that can explain why job demands lead to impaired well-being.¹ Job demands refer to the physical, psychological, social, and organizational aspects of a job that require sustained physical, cognitive, and emotional effort and are therefore associated with physiological and psychological costs (Bakker & Demerouti, 2007). In this paper, we focus on quantitative and emotional job demands. Quantitative demands imply a high workload and time pressure (Sonnentag, Binnewies, & Mojza, 2010). Emotional demands result from emotionally demanding interactions with other people at work such as supervisors, colleagues, or customers (de Jonge & Dormann, 2003).

The stressor–detachment model suggests that stressors impede detachment as they are associated with increased negative activation that spills over from the work to the home domain (Ilies *et al.*, 2007). This increased negative activation makes it more difficult for employees to detach from work during off-job time (cf. van Wijhe, Peeters, Schaufeli, & Ouwenel, 2013) because it will prompt ruminative thoughts about negative experiences during the workday. Consequently, employees may stay occupied with work-related tasks, trying to engage in problem-solving, or continue to worry about the stressor. Moreover, after stressful workdays, employees might anticipate that the next day will be stressful as well and worry about upcoming stressful situations.

In line with the predictions of the stressor–detachment model (Sonnentag & Fritz, 2015), we propose that quantitative and emotional job demands are negatively related to detachment. Results from diary studies support the idea that quantitative job demands (e.g., long working hours, high workload) and emotional job demands (e.g., social conflicts with customers) are associated with impaired detachment (e.g., Clinton, Conway, & Sturges, 2017; Sonnentag & Bayer, 2005; Volmer, Binnewies, Sonnentag, & Niessen, 2012).

Hypothesis 1: (a) Quantitative job demands and (b) emotional job demands are negatively associated with psychological detachment after work.

The stressor–detachment model further proposes that poor detachment from work during off-job time is associated with impaired well-being. Dealing with job demands depletes an individual’s resources and leads to strain reactions (Meijman & Mulder, 1998). Recovery from job stress undoes these strain reactions and reduces negative effects of job demands (Meijman & Mulder, 1998). According to the effort–recovery model (Meijman & Mulder, 1998), recovery from job stress can occur when employees are no longer exposed to the job demands that depleted their resources and impaired their well-being. When employees do not detach from work, the job demands remain mentally present and

¹ The stressor–detachment model also suggests detachment to be a moderator buffering the relationship between job demands and impaired well-being. However, in this study, we focus on the paths (1) between job demands and detachment and (2) between detachment and well-being as we expect mindfulness to be a moderator of these specific paths.

recovery cannot occur. Hence, when employees do not mentally distance themselves from work during off-job time, their well-being will be impaired.

In line with previous diary research (e.g., Sonnentag, Binnewies, & Mojza, 2008), we focus on employees' positive and negative affect at bedtime as indicators of well-being in this study. Positive affect is characterized by a state of feeling active, strong, and alert (Watson, Clark, & Tellegen, 1988). Negative affect refers to a state of feeling tense, distressed, and angry (Watson *et al.*, 1988). Building on the stressor–detachment model, we propose that detachment during off-job time is associated with increased positive affect and decreased negative affect at bedtime. Findings support the idea that detachment is associated with increased positive affective states and decreased negative affective states (Feuerhahn, Sonnentag, & Woll, 2014; Sonnentag & Bayer, 2005; Sonnentag *et al.*, 2008).

Hypothesis 2: Psychological detachment after work is positively associated with (a) increased positive affect and (b) decreased negative affect at bedtime.

The moderating role of mindfulness at work and at home in the stressor–detachment model

Moreover, Sonnentag and Fritz (2015) suggested that moderators may influence the links between stressors and detachment on the one hand and between detachment and well-being on the other hand. They used the transactional stress model (Lazarus & Folkman, 1984) as a framework to derive these moderators such as the concept of mindfulness. Mindfulness is defined as a state of consciousness where one pays attention to and is aware of present-moment experiences in a non-judgmental way (Bishop *et al.*, 2004; Brown *et al.*, 2007), thereby enabling individuals to separate the event from internal interpretations of the event that may cause emotional suffering (Kabat-Zinn, 2003).

Mindfulness practice is rooted in Buddhist tradition and has been discovered for training of clinical patients in Western societies in the late 1970s (Kabat-Zinn, 2003). Also in an organizational context, mindfulness has elicited great interest in the past years (Good *et al.*, 2016; Hyland, Lee, & Mills, 2015; Sutcliffe *et al.*, 2016). Mindfulness at work has been studied not only as a *skill* that can be trained through interventions, but also as a more stable personality trait (*trait mindfulness*; e.g., Hülshager, Alberts, Feinholdt, & Lang, 2013; Reb, Narayanan, & Chaturvedi, 2014) or a momentary state (*state or daily mindfulness*; e.g., Hülshager *et al.*, 2013, 2014).

In the present work, we focus on daily mindfulness as a moderator of the job demands–detachment and the detachment–well-being links. Notably, we distinguish between daily mindfulness at work and at home (i.e., during leisure after work) in this study. Employees may experience different levels of mindfulness at work and at home because the factors facilitating or hampering mindfulness may be different across work and home contexts. For example, organizational factors (e.g., climate) may hinder mindful working (Hülshager, 2015), but employees may have the chance to be mindful at home where they may have more autonomy to craft an environment that supports their mindfulness. Vice versa, when being mindful at home is difficult due to family duties, employees may be able to lessen job stress via being mindful at work. Relatedly, the primary psychological processes involved in the moderating function of mindfulness at work and home may differ for the proposed links, due to the specific context. Whereas mindfulness at work may primarily benefit employees' detachment by fostering a non-judgmental attitude and attenuating strong emotional reactions to job stressors, mindfulness at home may be used as a cognitive–emotional segmentation strategy (Michel, Bosch, & Rexroth, 2014) by

deliberately focusing one's attention on the present moment in the non-work domain. In sum, we believe that mindfulness at work and mindfulness at home represent two different resources with potentially different accessibility for employees to buffer the detrimental effect of work demands.

Mindfulness at work may help employees to watch events, thoughts, and emotions that occur without evaluating them and to separate the self from external or internal experiences (i.e., *cognitive decentring*; Bishop *et al.*, 2004), thereby facilitating a more objective appraisal of work demands. Rather than being immersed in the negative interpretation of and associated emotional reaction to a stressful event, employees are able to stand back and simply witness what *is* without judging it (Shapiro, Carlson, Astin, & Freedman, 2006). As a consequence, employees who are mindful at work are more likely to remain calm in the face of stressful events and experience less negative cognitive and affective reactions, thus coping with work demands more effectively, and better detach from work (Glomb, Duffy, Bono, & Yang, 2011). Empirical studies have already supported the moderating effect of mindfulness in the relation between adverse work situations and negative psychological reactions (Grover, Teo, Pick, & Roche, 2017; Long & Christian, 2015; Schultz, Ryan, Niemiec, Legate, & Williams, 2015). In sum, focusing one's attention in a non-judgmental way on the present moment may mitigate the negative impact of quantitative and emotional job demands on the ability to psychologically detach from work by regulating one's emotional responses. Thus, we propose that:

Hypothesis 3: Mindfulness at work moderates the relation between (a) quantitative and (b) emotional job demands and psychological detachment after work. The relation is weaker when mindfulness at work is high.

In addition to the salutary effects of mindfulness *at work*, mindfulness *at home* may also function as a buffer for the detrimental effects of job demands on detachment. As suggested in the stressor–detachment model (Sonnentag & Fritz, 2015), mindfulness may help to mitigate the detrimental effects of work demands on detachment by deliberately directing one's attention towards life domains outside work. When work demands are high, full attention and awareness of the present moment at home can help to reduce the likelihood that employees are immersed with thoughts about work due to these demands. While high work demands pull people's mind towards the work-related past (e.g., a workplace conflict) or towards the work-related future (e.g., a difficult meeting with a client), thereby hindering detachment from work, mindfulness pulls people's attention away from work, towards the present experiences at home (Lutz, Slagter, Dunne, & Davidson, 2008). Consequently, being mindful at home should buffer the negative effects of work demands on detachment from work.

Psychological detachment from work shares similarities with mindfulness as both direct employees' attention away from work. However, while mindfulness implies that attention is directed to the present moment, detachment merely implies that attention is directed towards non-work-related areas (Sonnentag & Fritz, 2015). Hence, it is theoretically possible to psychologically detach in a non-mindful way, for example, when an employee thinks about a family birthday on the upcoming weekend while preparing dinner.

In addition, when work demands are high and a person is more inclined to think about work while at home, an employee's mindfulness at home helps to maintain a non-judgmental attitude and accept the situation as it is or was, thereby also buffering the negative effect of work demands on detachment via cognitive decentring. Mindfulness theory and research support the idea that mindfulness improves self-regulation of both psychological and

behavioural reactions (Brown *et al.*, 2007; Glomb *et al.*, 2011) and that it functions as a cognitive–emotional segmentation strategy to allow for better detachment from work and work–life balance despite high work demands (Michel *et al.*, 2014). Thus, we propose:

Hypothesis 4: Mindfulness at home moderates the relation between (a) quantitative and (b) emotional job demands and psychological detachment after work. The relation is weaker when mindfulness at home is high.

Finally, we suggest that mindfulness at home may also function as a moderator of the relationship between detachment and well-being. As suggested by Sonnentag and Fritz (2015), the effect of job-related thoughts at home (i.e., low detachment) on well-being may be moderated by the specific content and valence of these thoughts. Similar to the beneficial role of mindfulness at work for distressing internal or external events, mindfulness at home may help individuals to better accept and cope with negative work-related thoughts during non-work time (i.e., low detachment). Through cognitive decentring (Bishop *et al.*, 2004), individuals are able to witness their thoughts without judgement (i.e., more objectively) and separate them from their ego (Glomb *et al.*, 2011), thereby attenuating the negative affective reactions to these thoughts. In addition, noticing these thoughts while maintaining a non-judgmental attitude may buffer the detrimental effects of low detachment on well-being as one refrains from judging one's incapability to detach in addition to the content of these thoughts that may be stressful in the first place. Attending to and acceptingly observing thoughts and emotions just as they are reduce them much more effectively than trying to alter them (Alberts, Thewissen, & Raes, 2012; Glomb *et al.*, 2011; Marcks & Woods, 2005).

In addition, theoretical and empirical work also suggests that mindfulness may promote *positive reappraisal* (Garland, Farb, Goldin, & Fredrickson, 2015; Garland, Gaylord, & Fredrickson, 2011; Garland, Gaylord, & Park, 2009), an emotion-focused cognitive coping strategy through which events are re-perceived as beneficial or meaningful (Lazarus & Folkman, 1984). In the 'mindful coping model' (Garland *et al.*, 2009) as well as in 'mindfulness-to-meaning theory' (Garland *et al.*, 2015), Garland *et al.* suggest that mindfulness allows individuals to cognitively decentre from a stressful experience and enter a state of conscious reflection in which automatic reactions are interrupted and individuals are able to reappraise or reframe their experience as meaningful or even beneficial, thereby promoting the experience of positive emotions. Also, Sonnentag and Fritz (2015) suggest that thinking about negatively evaluated work events during non-work time may lose its detrimental effect on well-being when these events are re-appraised in a positive way. In sum, we propose that a more accepting, objective, and/or even positive reappraisal of negative events at work through mindfulness will buffer the detrimental effect of low detachment on well-being.

Hypothesis 5: Mindfulness at home moderates the relation between psychological detachment after work and (a) increased positive affect and (b) decreased negative affect at bedtime. The relation is weaker when mindfulness at home is high.

Method

Sample and procedure

We used a diary design to test our hypotheses. Data were collected in Germany from February to March 2015. Participants were recruited from diverse organizations and

occupations by the third author through her personal networks. The study was announced to be on 'work and well-being'. As an incentive for study participation, participants were promised to receive feedback on the results of the study and entered a lottery drawing of three gift cards (for the local cinema, theatre, or bookstore) worth 20 Euros.

Participants who had agreed to participate in the study received a paper-and-pencil survey package with a pre-stamped return envelope consisting of the general survey and a diary booklet including two daily surveys from Monday to Friday. Participants were instructed to first complete the general survey assessing demographic information before completing the daily surveys twice a day over five consecutive workdays. The first daily survey had to be answered at the end of the workday and assessed participants' job demands, mindfulness at work, and momentary positive and negative affect at the end of the workday. The second daily survey was completed right before going to bed and assessed mindfulness at home, psychological detachment, and momentary positive and negative affect at bedtime.

Overall, 79 paper-and-pencil survey packages were distributed to employees who had volunteered to participate in the study. Sixty-five completed survey packages were returned. Most participants (59 participants) had completed the daily surveys on all 5 days, while two participants had completed the daily surveys on 4 days and four participants had completed the surveys on 3 days, resulting in 315 (of possible 325) daily surveys for data analysis. We checked whether participants had complied with our instructions by inspecting participants' self-reported completion times of the surveys. We found that all participants had followed our instructions. On average, the after-work survey was answered at 5:39 pm ($SD = 1:54$) and the bedtime survey was answered at 10:24 pm ($SD = 1:04$).

The final sample comprised 65 participants (51.6% females) with a mean age of 34.6 years ($SD = 12.8$). In terms of educational backgrounds, 38.1% had a university degree, 42.9% had completed a 2- to 3-year professional training, 14.3% had completed a 2- to 3-year professional training and had obtained an additional professional degree, and 4.8% had no professional degree. Participants worked in diverse organizations and occupations (e.g., nurse, mechanic, psychologist). Participants worked 41.5 hr per week on average ($SD = 9.8$) and had 11.7 years ($SD = 12.6$) of job experience. Among all participants, 35.5% had a leadership position. In terms of living arrangements, 25% lived alone, 31% lived with a partner, 25% lived with a partner and children, and the remaining participants lived in another arrangement.

Measures

All items had a five-point Likert scale ranging from '1 = *not at all*' to '5 = *extremely*'. We calculated Cronbach's alpha for each day separately and report the range across the 5 days.

Quantitative job demands

We assessed quantitative demands with three items developed by Semmer (1984) and Zapf (1993). A sample item was 'Today, I was required to work fast at my work'. Cronbach's α ranged between .85 and .92.

Emotional job demands

We assessed emotional demands with three items of the respective subscale of the German version of the demand-induced strain compensation questionnaire (DISQ) (for a recent validation study see Bova, De Jonge, & Guglielmi, 2015; De Jonge *et al.*, 2004). A sample item was 'I had to deal with persons who got angry at me easily'. Cronbach's α ranged between .61 and .78.

Mindfulness at work and at home

Daily levels of mindfulness were assessed with the German version (Michalak, Heidenreich, Ströhle, & Nachtigall, 2008) of the five-item state measure of the Mindful Attention and Awareness Scale (Brown & Ryan, 2003). Participants indicated their mindfulness levels with respect to 'Today at work' and 'This evening after work'. A sample item was 'I found it difficult to stay focused on what was happening in the present' (reverse coded). Cronbach's α ranged between .82 and .87 for mindfulness at work and between .83 and .89 for mindfulness at home.

To test whether mindfulness at work and mindfulness at home represent distinct constructs, we performed multilevel confirmatory factor analysis using Mplus 7.3 (Muthén & Muthén, 1998-2014). Results showed that the two-factor model had a good fit ($\chi^2 = 79.09$, $df = 69$, $p < .191$, CFI = .97, RMSEA = .02) and fit the data better than the one-factor model ($\chi^2 = 133.44$, $df = 70$, $p < .001$, CFI = .87, RMSEA = .05), $\Delta\chi^2(1) = 54.35$, $p < .001$. Hence, mindfulness at work and at home represents distinct constructs.

Psychological detachment

We used the German version from the respective four-item subscale of the Recovery Experience Questionnaire (Sonnentag & Fritz, 2007) to measure psychological detachment. A sample item was 'Tonight, I forgot about work'. Cronbach's α ranged between .87 and .90.

Positive and negative affect at bedtime

We used items from the German version (Krohne, Egloff, Kohlmann, & Tausch, 1996) of the Positive and Negative Affect Schedule (Watson *et al.*, 1988). Participants had to answer items regarding how they felt 'at the moment, at bedtime'. In line with previous research (e.g., Sonnentag & Binnewies, 2013), to limit participant burden, we used six items to assess positive affect (e.g., active, interested, excited) and six items to assess negative affect (e.g., distressed, upset, irritable). Cronbach's α ranged between .89 and .90 for positive affect and between .71 and .91 for negative affect.

Control variables

We controlled for participants' positive and negative affect after work in the models predicting positive and negative affect at bedtime. We used the same 12 items as used for assessing positive and negative affect at bedtime. Participants had to answer items regarding how they felt 'at the moment, right after work'. Cronbach's α ranged between .82 and .91 for positive affect and between .78 and .89 for negative affect.

Data analyses

To take the non-independence of the day-level data nested within persons into account, we used hierarchical linear modelling techniques to analyse our data (Bryk & Raudenbush, 1992) with the HLM software (Raudenbush, Bryk, & Congdon, 2013).

Before testing our hypotheses, we centred day-level predictor and day-level control variables at the respective person mean (i.e., averaged across all days of data collection). Centring day-level variables at the person mean implies that between-person variance is removed from these data and that findings are not attributable to interindividual differences.

Results

Preliminary analyses

Before testing our hypotheses, we examined the degree of within-person and between-person variation of our day-level variables by calculating intraclass correlations (ICC). Results showed that 58% of the variance of detachment, 66% of positive affect at bedtime, and 61% of negative affect at bedtime were accounted for at the within-person level. Intercorrelations between all study variables, means, and standard deviations are displayed in Table 1.

Hypotheses testing

Hypotheses 1a and 1b proposed that quantitative and emotional job demands are negatively associated with detachment after work. Hypotheses 3a and 3b and 4a and 4b proposed that mindfulness at work and at home attenuate the relations between job demands and detachment. To test these hypotheses, we started the analysis with an intercept-only model (null Model). The results are presented in Table 2. In Model 1, we entered quantitative and emotional demands as well as mindfulness at work and at home as predictors. This model fit the data better than the null model. Neither quantitative (Estimate = -0.09 , $p = .254$) nor emotional demands (Estimate = -0.10 , $p = .263$) were significantly related to detachment. Hence, hypotheses 1a and 1b were not supported.

In Model 2a (mindfulness at work as moderator), we entered the interactions between quantitative demands and mindfulness at work and between emotional demands and mindfulness at work. The interaction between quantitative demands and mindfulness at work was not significant (Estimate = 0.03 , $p = .881$) whereas the interaction between emotional demands and mindfulness at work was significant (Estimate = 0.51 , $p = .048$). To gain more insight into the nature of this interaction effect, we conducted simple slope tests using the multilevel tool developed by Preacher, Curran, and Bauer (2006). For low levels of mindfulness at work (1 *SD* below the mean), emotional demands were negatively associated with detachment whereas for high levels of mindfulness at work (Estimate = -0.40 , $SE = 0.17$, $t = -2.39$, $p = .018$) emotional demands were unrelated to detachment (Estimate = 0.14 , $SE = 0.16$, $t = 0.89$, $p = .371$). The interaction pattern is displayed in Figure 1. Thus, Hypothesis 3a was not supported while Hypothesis 3b received support.

In Model 2b (mindfulness at home as moderator), we entered the interactions between quantitative demands and mindfulness at home and between emotional demands and mindfulness at home. Both interaction terms were significant (quantitative demands: Estimate = 0.43 , $p = .021$; emotional demands: Estimate = 0.41 , $p = .035$). Again, we

Table 1. Means, standard deviations, internal consistencies, and intercorrelations of the study variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1 Quantitative demands	2.51	1.09	(.88)	.15	-.26*	.01	.53***	-.30*	-.19	.10	.49***
2 Emotional demands	2.02	0.91	.16**	(.70)	-.17	.08	.16	-.17	-.15	.01	.14
3 Mindfulness at work	4.29	0.53	-.22***	-.08	(.85)	.21	-.46***	.08	.74***	.10	-.42**
4 Positive affect after work	2.78	0.82	-.01	.03	.19**	(.88)	-.22	.19	.26*	.62***	-.24*
5 Negative affect after work	1.58	0.65	.42***	.14*	-.32***	-.22***	(.83)	-.46***	-.29*	-.11	.80***
6 Psychological detachment	3.23	1.10	-.24**	-.14*	.11	.15**	-.32***	(.88)	.05	.03	-.40**
7 Mindfulness at home	4.34	0.56	-.14*	-.12*	.51***	.26**	-.24***	.08	(.86)	.02	-.34**
8 Positive affect at bedtime	2.00	0.77	.02	-.05	.12*	.44***	-.11	.02	.09	(.90)	-.06
9 Negative affect at bedtime	1.38	0.53	.35***	.10	-.27***	-.21***	.60***	-.27***	-.33***	-.02	(.83)

Note. Within-person correlations are displayed below the diagonal (*N* = 331 days). Between-person correlations are displayed above the diagonal (*N* = 65 persons). Cronbach's alpha values (calculated for each day and averaged across the 5 days of the study) are displayed in parentheses on the diagonal.
p* < .05; *p* < .01; ****p* < .001.

Table 2. Multilevel estimates for models predicting psychological detachment after work

	Model 0			Model 1			Model 2a			Model 2b		
	Est.	SE	t	Est.	SE	t	Est.	SE	t	Est.	SE	t
Intercept	3.21	0.11	30.02***	3.21	0.11	30.03***	3.21	0.11	29.58***	3.23	0.10	30.86***
Quantitative demands (QD)				-0.09	0.08	-1.14	-0.09	0.08	-1.12	-0.08	0.08	-0.96
Emotional demands (ED)				-0.10	0.09	-1.12	-0.13	0.09	-1.50	-0.11	0.08	-1.35
Mindfulness at work (MW)				0.19	0.16	1.20	0.18	0.16	1.19	0.22	0.15	1.47
Mindfulness at home (MH)				0.13	0.14	0.91	0.14	0.14	1.01	0.11	0.13	0.88
QD × MW							0.03	0.17	0.15			
ED × MMW							0.51	0.26	1.99*			
QD × M MH										0.43	0.19	2.32*
ED × M MH										0.41	0.19	2.12*
-2 × log (lh)	838.45			829.30			825.81			821.02		
Diff -2 × log (lh)				9.15 ⁺			3.49			8.28*		
Df				4			2			2		
Within-person variance	0.58	0.05		0.56	0.05		0.55	0.05		0.54	0.05	
Between-person variance	0.62	0.13		0.63	0.13		0.63	0.13		0.59	0.12	

Note. ⁺*p* < .1; * *p* < .05; ** *p* < .01; *** *p* < .001.

conducted simple slopes tests. For low levels of mindfulness at home (-1 SD), quantitative demands were negatively associated with detachment (Estimate = -0.31 , $SE = 0.11$, $t = 2.99$, $p = .003$) whereas for high levels ($+1$ SD) of mindfulness at home quantitative demands were unrelated to detachment (Estimate = 0.17 , $SE = 0.15$, $t = 1.10$, $p = .272$). The interaction pattern is displayed in Figure 2. For low levels of mindfulness at home, emotional demands were negatively associated with detachment (Estimate = -0.48 , $SE = 0.18$, $t = 2.70$, $p = .008$) whereas for high levels of mindfulness at home, emotional demands were unrelated to detachment (Estimate = 0.26 , $SE = 0.21$, $t = 1.24$, $p = .215$). Figure 3 shows the interaction pattern. Thus, hypotheses 4a and 4b were supported.

Hypothesis 2a and 2b stated that detachment is associated with increased positive affect and decreased negative affect at bedtime. Hypothesis 5a and 5b proposed that mindfulness at home moderated the relation between detachment and positive and negative affect. To test these hypotheses, we started with an intercept-only model. In Model 1, we entered positive affect (negative affect) after work. In Model 2, we entered detachment and mindfulness at home. In Model 3, we entered the interaction between detachment and mindfulness at home. Results for positive affect as outcome are displayed in Table 3 and for negative affect in Table 4. Detachment was neither associated with positive (Estimate = -0.02 , $p = .711$) nor with negative affect (Estimate = -0.02 , $p = .546$). Thus, hypotheses 2a and 2b were not supported. However, we found mindfulness at home to be negatively associated with negative affect (Estimate = -0.25 , $p = .005$) but not with positive affect (Estimate = 0.14 , $p = .246$). The interaction term between detachment and mindfulness at home significantly predicted positive affect (Estimate = -0.25 , $p = .001$) but not negative affect (Estimate = 0.13 , $p = .176$). Simple slopes tests revealed that at low levels of mindfulness at home (-1 SD), detachment was positively associated with positive affect (Estimate = 0.12 , $SE = 0.05$, $t = 2.16$, $p = .032$) while detachment was negatively associated with positive affect at high levels ($+1$ SD) of mindfulness at home (Estimate = -0.16 , $SE = 0.06$, $t = 2.54$, $p = .012$). The interaction pattern is displayed in Figure 4. Although we did find a significant interaction effect, the pattern of the interaction was not as predicted. Hence, neither hypothesis 5a nor 5b were supported.

Figure 1. The interaction between emotional demands and mindfulness at work predicting psychological detachment after work.

Figure 2. The interaction between quantitative demands and mindfulness at home predicting psychological detachment after work.

Figure 3. The interaction between emotional demands and mindfulness at home predicting psychological detachment after work.

Additional analyses

We conducted a number of additional analyses to further explore our data. First, in addition to the two-way interactions between job demands and mindfulness at work or at home predicting detachment, we also tested whether mindfulness at work and at home interacted in their ability to moderate the relation between job demands and detachment. One might think that being mindful both at work and at home may be particularly beneficial to employees' detachment or that being mindful at home may compensate for a lack of mindfulness at work (or vice versa). Hence, we tested three-way interactions between quantitative (emotional) job demands, mindfulness at work, and mindfulness at home predicting detachment. However, we did not find any significant three-way interactions. Second, drawing on the Yerkes–Dodson law and activation theory, Germeys and De Gieter (2016) suggested a negative curvilinear relationship between workload and detachment: employees might best detach on days when they have medium levels of workload (i.e., quantitative demands) as very low levels of workload may hinder detachment as employees feel bored whereas very high levels of workload may hamper detachment as employees feel overwhelmed by their workload. We tested this

Table 3. Multilevel estimates for models predicting positive affect at bedtime

	Model 0			Model 1			Model 2			Model 3		
	Est.	SE	t	Est.	SE	t	Est.	SE	t	Est.	SE	t
Intercept	2.00	0.07	30.14***	2.00	0.07	30.14	2.00	0.07	30.14***	2.01	0.07	30.36***
Positive affect after work				0.27	0.07	3.92***	0.25	0.07	3.52***	0.24	0.07	3.46***
Psychological detachment (DT)							-0.02	0.04	-0.37	-0.02	0.04	-0.49
Mindfulness at home (MH)							0.14	0.12	1.16	0.09	0.13	0.72
DT × M MH										-0.25	0.08	-3.30***
-2 × log (lh)	677.82			660.47			657.91			652.06		
Diff -2 × log (lh)				17.34***			2.56			5.84**		
Df				1			2			1		
Within-person variance	0.39	0.03		0.36	0.03		0.36	0.03		0.35	0.03	
Between-person variance	0.20	0.05		0.21	0.05		0.21	0.05		0.21	0.05	

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

Table 4. Multilevel estimates for models predicting negative affect at bedtime

	Model 0			Model 1			Model 2			Model 3		
	Est.	SE	t	Est.	SE	t	Est.	SE	t	Est.	SE	t
Intercept	1.38	0.47	29.36***	1.38	0.05	29.36***	1.38	0.05	29.36***	1.38	0.05	29.33***
Negative affect after work				0.30	0.08	3.64***	0.35	0.07	3.39***	0.25	0.08	3.32***
Psychological detachment (DT)							-0.02	0.03	-0.61	-0.02	0.03	-0.69
Mindfulness at home (MH)							-0.25	0.09	-2.82**	-0.22	0.09	-2.51*
DT $\times$ MH										0.13	0.09	1.36
-2 $\times$ log (lh)	422.04			390.01			369.77			365.95		
Diff -2 $\times$ log (lh)				32.03***			20.23***			3.82*		
Df				1			2			1		
Within-person variance	0.17	0.02		0.15	0.01		0.14	0.01		0.13	0.01	
Between-person variance	0.11	0.03		0.11	0.03		0.11	0.03		0.11	0.02	

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

Figure 4. The interaction between psychological detachment and mindfulness at home predicting positive affect at bedtime.

proposition with our data but did not find a significant negative quadratic (i.e., inverted u-shaped) relationship between quantitative demands and detachment.

Discussion

In this diary study, we examined the twofold buffering role of mindfulness at work and home in the stressor–detachment model. First, we did not find support for the basic predictions of the stressor–detachment model as in our study neither quantitative nor emotional job demands were associated with decreased detachment; neither was detachment associated with increased well-being. This pattern of results underlines the importance of considering moderators of these relations as suggested in the extended stressor–detachment model (Sonnentag & Fritz, 2015). Second, we found that mindfulness at work and at home moderated the relation between job demands and detachment. Specifically, the relationship between emotional demands and detachment was moderated by both mindfulness at work and at home while the relationship between quantitative demands and detachment was moderated by mindfulness at home only. Job demands only impaired employees’ detachment when mindfulness levels at work or home were low. This was not the case when mindfulness was high. Hence, our findings support the merit of integrating both mindfulness at work and at home as moderators in the stressor–detachment model.

Third, we examined mindfulness at home as moderator of the detachment–well-being relation. While mindfulness at home did not moderate the relation between detachment and negative affect at bedtime, it indeed moderated the relation between detachment and positive affect at bedtime. However, the pattern of the interaction was unexpected. We found that detachment was positively associated with positive affect when mindfulness at home was low, whereas it was negatively associated with positive affect when mindfulness at home was high.

Job demands, detachment, and well-being

Our findings did not support two of the basic predictions of the stressor–detachment model. This is surprising given that a recent meta-analysis (Wendsche & Lohmann-Haislah,

2016) largely supported the relation between job demands and detachment on the one hand and between detachment and well-being outcomes on the other hand. We suggest that there may be three particular reasons why we could not confirm these results in our present study: (1) potential differences on different levels of analyses, (2) the possibility of nonlinear relations and (3) additional moderators that might conceal our main effects.

First of all, although the meta-analysis by Wendsche and Lohmann-Haislah (2016) did not find any significant differences in effect sizes between diary studies and cross-sectional or longitudinal studies, it is important to note that most support for the stressor–detachment model stems from between-person studies. Research on other work-related phenomena, such as the link between job satisfaction and performance, has largely confirmed that relationships may differ on different levels of analysis (see Ohly, Sonnentag, Niessen, & Zapf, 2010). As can be inferred from allostatic load theory (McEwen, 1998), mainly chronically high job demands may negatively affect individuals on the long run whereas the experience of high demands on a particular day must not necessarily lead to detrimental consequences on that day, such as low detachment, if people do not experience high job demands on a regular basis. As there is only limited (and less consistent) evidence from within-person studies (e.g., Sonnentag & Bayer, 2005; Volmer *et al.*, 2012), we suggest that future studies should further investigate the propositions of the stressor–detachment model regarding within-person relations with diary and experience sampling designs.

Further, a second explanation for the non-significant main effects of job demands on employees' detachment could be seen in the possibility that the job demands–detachment relationship is actually a nonlinear one as suggested by a recent study by Germeys and De Gieter (2016). Germeys and De Gieter (2016) found a negative quadratic effect of workload on detachment in addition to a significant negative linear effect. In our study, we did not find support for a quadratic effect of quantitative demands on detachment. However, this result might also be due to a lack of power as the sample size in our study was relatively small for testing nonlinear effects. More research, particularly with larger sample sizes, is needed to answer the question whether the stressor–detachment model should include curvilinear relationships, at least with regard to certain kinds of stressors.

As a third explanation, the non-significant relations between job demands and detachment and between detachment and well-being outcomes could mirror the importance of considering certain boundary conditions in the stressor–detachment model. As Sonnentag and Fritz (2015) suggested, there may be situations when high job stressors do not predict poor detachment and when a lack of detachment is not associated with poor well-being. The meta-analysis by Wendsche and Lohmann-Haislah (2016) indeed revealed a large dispersion and heterogeneity in the effects sizes which underlines the need to consider moderators of the aforementioned relations. Thus, although we do not question the general assumptions of the stressor–detachment model *per se*, we believe it is important that future studies consider moderators of the postulated relations, particular with regard to within-person relations, in order to fine-tune the predictions of the stressor–detachment model. Besides mindfulness at work and at home, other individual as well as contextual factors could play a moderating role in the stressor–detachment model, thereby explaining our non-significant main effects. For example, findings from a recent study by Haun, Haun, and Himmel (2017) suggest that partner's social support may alleviate the effects of job demands on detachment. In our study, half of the participants lived with a partner, pointing to the possibility that one such factor

helping employees to cope with their daily job demands could be their partner's social support.

With regard to the detachment–well-being link, Sonnentag and Fritz (2015) proposed that the content of employees' work-related thoughts could be a central moderator. When employees think about positive work events or when their job-related thoughts help to solve work-related problems, thinking about work during leisure time may be actually associated with increased well-being (Meier, Cho, & Dumani, 2016; Sonnentag & Grant, 2012). Further, the positive effects of detachment on well-being could be compromised when employees completely forget about their work during the evening due to a negative event in their private life (e.g., a conflict with the partner) that absorbs their full attention (Sonnentag & Fritz, 2015). Hence, future studies should take a closer look at the cognitions and emotions employees have when they do not detach from work, but stay mentally connected to their jobs.

Finally, a lack of detachment may be particularly stressful under certain circumstances. As outlined above, effects of lack of detachment may only show in the short term (i.e., in diary studies) if employees are particularly vulnerable, for example, when they suffer from stressful job conditions over a longer period of time (McEwen, 1998). Research by Syrek, Weigelt, Peifer, and Antoni (2017) has shown that individuals with a higher overall level of unfinished tasks over 3 months (i.e., accumulated/chronic stress) reported significantly more sleep impairment as reaction to acute stress (i.e., weekly amount of unfinished tasks) than those with lower overall levels of unfinished tasks. Thus, we suggest that future studies should also take the chronic stress level of employees into account when investigating daily recovery processes in the stressor–detachment model.

The role of mindfulness as moderator

Our findings could confirm the role of mindfulness at work as a moderator of the emotional demands–detachment link. When employees were mindful at work, high emotional demands experienced at work did not impair detachment after work. This result is in line with the stressor–detachment model (Sonnentag & Fritz, 2015) suggesting that personal resources should influence employees' appraisal of job demands when being at work, leading to less impairment in well-being when resources are high. Further, we build upon findings that show that mindfulness influences the reactivity to emotional stimuli (Arch & Craske, 2010; Creswell, Way, Eisenberger, & Lieberman, 2007) through a shift in emotional appraisal (i.e., cognitive decentring; Bishop *et al.*, 2004). Individuals being mindful at work are less judgmental of the emotional demands at work, show consequently less intense emotional reactions, and are thus less caught up in work-related thoughts at home.

In contrast, the interaction effect of quantitative demands and mindfulness at work on detachment was not significant. Employees who experienced high quantitative demands at work did not show differential detachment patterns due to their mindfulness level at work. This is contradictory to findings suggesting that an accepting and non-judgmental attitude and present-moment awareness as experienced in meditation are associated with a subjective perception of slowing down of time, less time pressure, and less time urgency (Harris, Jennings, Katz, Abenavoli, & Greenberg, 2016; Schötz *et al.*, 2016; Wittmann & Schmidt, 2014). Future studies should therefore further investigate the role of mindfulness for the perception of time pressure in employees' daily work processes.

Further, our findings support the moderating function of mindfulness at home in the relationship between quantitative and emotional demands with detachment. When

employees were mindful at home, quantitative and emotional demands experienced at work did not significantly impair detachment. These findings build on recent research suggesting that employees' ability to effectively redirect attention away from work-related goals during leisure time buffers the detrimental effects of high workload on detachment (Smit & Barber, 2016) and that mindfulness functions as a cognitive–emotional segmentation strategy to separate work and private life domains in order to facilitate recovery and work–life balance (Michel *et al.*, 2014).

Taken together, our findings show that job stressors do not always impair detachment, but that this was only the case on days when mindfulness at work or at home was low. While mindfulness at home buffered the relation between both quantitative and emotional demands and detachment, mindfulness at work only buffered the relation between emotional demands and detachment, but not between quantitative demands and detachment. Hence, our findings suggest that the effects of job stressors on detachment may particularly be moderated by the attention an individual pays to these stressors when being at home. These differential effects additionally highlight the importance of distinguishing between mindfulness in different contexts, as the power of mindfulness to buffer the quantitative demands–detachment link seems to differ between the work and home domain.

Interestingly, in additional analyses, we did not find any significant three-way interactions between job demands, mindfulness at work, and at home predicting detachment. These findings suggest that there is no compensation between mindfulness at work and at home regarding their ability to moderate the job demand–detachment relation. Neither seems there to be an additional benefit of being mindful both at work and at home. Hence, our results suggest that the domain-specific abilities to be mindful may represent different independent options employees can utilize as a personal resource to buffer the negative effects of work demands on detachment. However, given that three-way interactions are difficult to detect due to a lack of power, these findings should be interpreted with caution and replicated in future research with larger sample sizes.

Finally, our findings indicate that the interaction between mindfulness at home and detachment significantly predicted positive affect, but not negative affect. When employees' mindfulness at home was low, detachment was positively associated with positive affect. However, when mindfulness was high, detachment and positive affect were not only slightly positively related or unrelated as we had expected, but were negatively associated. This unexpected finding warrants replication in future studies to clarify the question whether high levels of mindfulness indeed compromise the beneficial effects of detachment. It might have been the case that mindfulness at home dampened the beneficial effects of positive non-work-related thoughts or experiences individuals had while they detached from work. Although a recent meta-analysis has shown that in general mindfulness is related to a less negative and more positive emotional tone (Eberth & Sedlmeier, 2012), neurological studies have evidenced that mindfulness may also dampen emotional reactions to positive stimuli (Brown, Goodman, & Inzlicht, 2012; Desbordes *et al.*, 2015). In addition, being mindful may also have put the focus on more unpleasant aspects in one's non-work time while detaching from work, such as errands one needs to run or one's physical exhaustion and emotional strain. Although mindfulness also incorporates a non-judgemental attitude towards unpleasant stimuli, this non-evaluative attitude may well lead to a decrease in positive affect (i.e., more neutral feelings), as has been found in our study.

Interestingly, although mindfulness at home did not moderate the link between detachment and negative affect, we found mindfulness at home to be associated with

reduced negative affect. This result suggests that being mindful in the home domain constitutes an effective recovery strategy in its own right, though it does not compensate a lack of detachment.

Limitations and directions for future research

For this study, we chose to use paper-and-pencil surveys in order not to exclude potential participants without internet access or basic computer skills from study participation (cf. Ohly *et al.*, 2010). The use of paper-and-pencil surveys does not allow objectively checking if participants filled in the diaries at instructed time frames. We asked participants to indicate the date and time of diary completion. Participants' self-reported completion times showed that participants indeed filled in the surveys at the instructed time frames. However, ultimately, we cannot rule out the possibility that participants did not fill in the surveys at the right times and did not provide exact completion times.

In our study, we only focused on positive and negative affect – both states of high activation – as well-being outcomes, thereby neglecting affective states of low activation.

However, affective states of low activation such as serenity might be particularly suited for studying affective well-being at bedtime as employees who have recovered successfully after a stressful day at work should feel calm and at ease (i.e., they should experience high serenity) when going to bed (Hahn, Binnewies, & Dormann, 2014). Moreover, as recent findings suggest that antecedents of low activated versus high activated affect might differ (e.g., Sonnentag & Grant, 2012), future research should examine both high and low activated affective states as well-being outcomes to get a more complete picture of the detachment–well-being relations.

In this study, we derived theoretical propositions on the primary psychological routes (e.g., attention vs. acceptance) of how mindfulness in different domains buffers the detrimental effects of stressful external and internal events (i.e., thoughts and cognitions), but could not explicitly test these propositions in this study. Hence, future studies should particularly pay attention to the psychological mechanisms involved in domain-specific mindfulness using multidimensional measures that explicitly tap the different aspects of mindfulness in order to gain more fine-grained results and test whether our theoretical propositions hold true.

Further, future studies could not only account for domain-specific mindfulness but also differentiate between domain-specific demands and domain-specific detachment (cf. Sanz-Vergel, Demerouti, Bakker, & Moreno-Jiménez, 2011). Specifically, studies could investigate whether home demands impair detachment from home while being at work and, in turn, well-being and potentially work performance in the same way as work demands impair detachment from work and, in turn, well-being. It seems likely to us that the involved mechanisms would be simply reversed. For example, keeping one's attention and awareness focused on the present moment (the particular job task) may help to buffer the effect home demands have on detachment from home while being at work.

In addition, as research has evidenced that both the effects of detachment and mindfulness may be impacted by different boundary conditions, it is worthwhile to investigate the complex interplay of detachment, mindfulness, and additional moderators in more detail. As noted by Good *et al.* (2016), studies on workplace mindfulness should include adequate measurement of organizational context variables (e.g., task characteristics or team climate) that may moderate the relation between mindfulness and workplace outcomes. Further, detachment may significantly hamper useful problem-solving processes

and prevent employees from capitalizing on pleasant work events, thereby decreasing their well-being and recovery (Sonnentag & Binnewies, 2013). Employees who are fascinated by their work may not want to engage in detachment-promoting strategies as it may be an important source of identity. Mindfulness may in the same spirit prevent employees from positively reflecting about successes and positive feedback at work, thereby extinguishing an important source of positive affect but also of feelings of meaningfulness. Thus, future studies should apply more fine-grained analyses to specify the specific boundary conditions in more detail.

Practical implications

The results of our study indicate that it is a fruitful endeavour for organizations to foster mindfulness within their employees at work and at home in order to increase their detachment. Organizations may enhance employees' mindfulness primarily via interventions, which have been shown to increase mindfulness in employees (Hülshager, Feinholdt, & Nübold, 2015; Hülshager *et al.*, 2013) and to be beneficial to detachment from work (Michel *et al.*, 2014). As our results show that employees with low levels of mindfulness are at risk for not being able to detach from work, resulting in impaired well-being, organizations should pay special attention to identifying such risk group and offer mindfulness training to them. Research has found some support for the idea that meditation training (Jacobs *et al.*, 2011) and resource-oriented interventions (e.g., Clauss *et al.*, 2016) are most effective for employees with low baseline levels in mindfulness and a high need for recovery, respectively. Offering interventions to those who need and benefit from an intervention the most is important in order to streamline health programs and invest organizational resources wisely.

Further, mindfulness training could also be combined with other interventions, such as stress management interventions (Wolever *et al.*, 2012), or could be enriched with additional components, for example, additional behavioural or temporal segmentation strategies (e.g., Michel *et al.*, 2014) to maximize their effectiveness in enhancing detachment and recovery. Finally, as our research hints to the possibility that mindfulness at work and mindfulness at home may follow different psychological pathways and mechanisms, mindfulness training should empower individuals to autonomously and flexibly use skills like deliberate control of attention, self-regulation, and a non-judgmental attitude in order to adapt the strategy to the specific situation and context.

Besides training employees to be more mindful and delegating all responsibility to them, organizations should also pay attention to contextual and organizational variables that may impact the ease with which employees are able to engage in mindful behaviour in the first place (Hülshager, 2015). Organizations may not only provide employees with adequate opportunities for mindfulness practice (e.g., by planning in time for practice during work hours and providing designated rooms), but also enable employees to be mindful via job design and shaping a supportive environment.

Conclusion

Our study emphasizes the importance of identifying moderators in the stressor-detachment model to fine-tune the basic propositions of the model. To this end, we provide first evidence for the moderating roles of mindfulness at work and at home. Particularly, our results show that mindfulness in different life domains has the power to moderate the links between job demands and detachment on the one hand and

detachment and well-being on the other hand. We thus hope that our study stimulates future research to investigate further boundary conditions of the predictions of the stressor–detachment model and to gain more insight into the functions and benefits of mindfulness in different life domains.

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