Being mindfully aware and engaged at work? The role of affect regulative processes for the

relationship between daily levels of mindfulness and work engagement.

EMPIRICAL RESEARCH

Franziska Depenbrock

Maastricht University

Master thesis

1st Supervisor: Dr. Ute R. Hülsheger (Maastricht University)

2nd Supervisor: Dr. J. Reb (Singapore Management University)

ID: i6015145

Total word count: 8,005

Table of contents

Abstract

The present study investigated the relationship between mindfulness, defined as a state of receptive attentiveness to and awareness of the current moment, and employees' engagement at work. Furthermore, the role of affect regulative processes for this relationship was explored: First, positive affect was examined as a mediator between mindfulness and work engagement. Second, mindfulness was examined as a buffer against the detrimental effects of negative affect and negative affective events on work engagement. Seventy-six employees reconstructed their activities and experiences at work episodically on a workday (57% female, M age = 40 years). Results partially confirmed the hypotheses. Multilevel analysis revealed that mindfulness was positively related to work engagement, and, as predicted, this relationship was partially mediated by positive affect. In addition, mindfulness was found to moderate the negative affect-engagement relationship. However, contrary to expectation, negative affect was negatively related to work engagement in highly mindful individuals, while for individuals low in mindfulness negative affect was positively related to work engagement. Practical implications for using mindfulness to foster work engagement and directions for future research are discussed in conclusion.

Keywords: affect; affective events; affective events theory; affective shift model; broaden-and-build theory; day reconstruction method; job demands-resources model; mindfulness; work engagement.

Mindfully Aware and Engaged at Work

Since its debut in Western medicine in 1979, *mindfulness* – a state of being aware of and attending to what is taking place in the present (Brown, Ryan, & Creswell, 2007) – has received a great deal of attention in the clinical and empirical domain (Bodhi, 2011; Glomb, Duffy, Bono, & Yang, 2011). Medical practitioners and clinical psychologists have turned to complementing conventional treatments for a variety of physical and psychological disorders with mindfulness-based interventions (cf. Bishop et al., 2004) such as mindfulness-based stress reduction (Kabat-Zinn, 1982) and mindfulness-based cognitive therapy (Segal, Williams, & Teasdale, 2002). In the last three decades, these therapeutic mindfulness-based interventions have been proven clinically effective in alleviating patients' suffering (see Grossman, Niemann, Schmidt, & Walach, 2004 for meta-analysis). Moreover, a growing body of academic research suggests that they not only benefit clinical populations, but also healthy individuals by enhancing psychological functioning and well-being (see Chiesa & Serretti, 2009 for a meta-analysis). Furthermore, these effects have been established when considering mindfulness as a natural human capacity that can be experienced by individuals who did not participate in mindfulness-based interventions (Brown & Ryan, 2003). To this end, several self-report measures of mindfulness have been developed in the last years (e.g., Baer et al., 2008; Baer, Smith, & Allen, 2004; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003; Hayes & Feldman, 2004; Lau et al., 2006; Walach, Buchheld, Buttenmüller, Kleinknecht, & Schmidt, 2006).

Despite the evidence for its beneficial effects on important life domains such as health and well-being (Brown et al., 2007), mindfulness has only recently been introduced to the field of industrial and organizational (IO) psychology. While studies initially focused on demonstrating the ability of mindfulness to reduce stress and burnout in the workplace, there is now a growing interest in mindfulness at the workplace beyond its impact on mental health (Giluk, 2010). Empirical studies are still scarce. However, initial evidence is promising (Glomb et al., 2011). Mindfulness has been found to have positive effects for a variety of work-related concepts, namely: psychological detachment (Hülsheger et al., 2014), recovery (Marzuq & Drach-Zahavy, 2012), sleep quality (Hülsheger et al., 2014; Klatt, Buckworth, & Malarkey, 2009; Wolever et al., 2012), work-family balance (Allen & Kiburz, 2012), emotional exhaustion (Narayanan, Chaturvedi, Reb, & Srinivas, 2011, as cited in Reb, Narayanan, & Chaturvedi, 2014; Hülsheger, Alberts, Feinholdt, & Lang, 2013), leadership

(Reb et al., 2014), emotion regulation (Hülsheger et al., 2013), job performance (Dane & Brummel, 2013), and job satisfaction (Hülsheger et al., 2013).

The present study aims to extend these findings on the benefits of mindfulness at work by exploring its effects on a concept that has evolved as a core phenomenon of IO psychology, namely *work engagement* (Bakker, Schaufeli, Leiter, & Taris, 2008). When employees are engaged in their work, they are highly energetic, enthusiastic and fully immersed in their job (Schaufeli & Bakker, 2004; Schaufeli, Salanova, González-Romá, & Bakker, 2002). Being in such a state of mind is an important indicator of employee well-being (Bakker & Demerouti, 2008) and enhances the occurrence of behaviors known to promote efficient functioning of the organization (e.g., Rich, Lepine, & Crawford, 2010; Sonnentag, 2003). To be able to fully exploit the potential of a workforce, it is necessary to understand the factors that drive employees' engagement at work. With reference to the job demands-resources (JD-R) model of work engagement (Bakker & Demerouti, 2008; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), the current study proposes mindfulness to be such a driving factor. Different perspectives on how mindfulness impacts work engagement are taken: Both potential direct and indirect effects are investigated. The latter are assumed to be transmitted through mindfulness' association with greater affect regulatory tendencies (e.g., Brown & Ryan, 2003). Effective affect regulation comprises increased positive affect, as well as enhanced capability to recover from negative affect and negative affective events [1]. Investigating these potential indirect effects of mindfulness is important in order to obtain a more complete understanding of its role for work engagement. That is, to specify mediators of the mindfulness-engagement link, as well as the conditions under which mindfulness is expected to foster employees' engagement at work.

The present study contributes to both the mindfulness and engagement literature: Both work engagement and mindfulness are conceptualized as experiences that fluctuate within the same individual over the course of time. Proposed relationships are examined at a daily level. By doing so, the present study applies a dynamic view of work engagement. In addition, it provides a closer, more fine-grained examination of one of the central psychological mechanisms underlying the beneficial effects of mindfulness at the workplace, namely affect regulation. In this way, the present study extends first findings on the role of awareness and

---

[1] In the present paper the term *affect*, with its two dominant dimensions positive and negative affect (Watson, Clark, & Tellegen, 1988), is used as an umbrella term referring to short-lived affective processes, discrete emotions, and moods that tend to exist for longer time periods (Bindl & Parker, 2010; Watson et al., 1988).

attention in the engagement context (Leroy, Anseel, Dimitrova, & Sels, 2013), and contributes to a better understanding of proximal antecedents of daily work engagement. Furthermore, it shows possibilities to promote employee engagement at work, which may ultimately benefit employee well-being and stimulate performance improvement.

Mindfulness

Having its roots in Buddhist philosophy, mindfulness has been defined as "receptive attention to and awareness of present events and experiences" (Brown, Ryan, & Creswell, 2007, p. 212; cf. also Brown & Ryan, 2003). However, despite its roots, the concept of mindfulness is nonreligious and nonesoteric (Grossman, 2010). It can be conceptualized as an intrinsic capacity of consciousness that can be approached at the between-person (trait) and at the within-person (state) level (Hülsheger et al., 2013). In addition, mindfulness is frequently associated with mindfulness-based interventions that are aimed at cultivating the state of mindfulness through repeated practice (Shapiro, Carlson, Astin, & Freedman, 2006). Individuals who engage in regular practice and those who have a disposition to be more mindful, are aware of and attend to the here and now more frequently, for longer periods of time, and with greater intensity. However, even these individuals experience moments of mindlessness (Brown & Ryan, 2003).

The mindful state of consciousness has several qualities (Brown et al., 2007): First, being in a mindful state involves bare attention to everything that enters awareness. Ones inner and outer worlds are noticed only, that is, nothing is cognitively processed or otherwise reacted on. Mindfulness is pre-conceptual, thereby allowing individuals to stay in direct contact with reality. Second, being in a mindful state is characterized by its present-orientedness. Mindful individuals neither dwell on past events nor do they worry about the future. They are simply aware of and attend to what is happening in the present moment. Finally, the mindful state of consciousness is qualified by its flexibility, as individuals can be aware of everything taking place in the here and now or attend to situational details.

Possessing these qualities (i.e., pre-conceptuality, present-orientedness and flexibility) has been argued to induce a process referred to as reperceiving or de-coupling of the self from inner experiences and external events (Brown et al., 2007; Glomb et al., 2011; Shapiro et al., 2006). By actively turning attention to the here and now with a non-reactive attitude, mindful individuals objectively observe their thoughts and feelings, without being fully engrossed in them (Bishop et al., 2004). As a consequence, they recognize that their experiences are no valid representations of reality, but rather passing subjective states that are insubstantial in

nature (Bishop et al., 2004; Brown et al., 2007; Chambers, Gullone, & Allen, 2009; Shapiro et al., 2006). In addition, being in a mindful state is assumed to disrupt the automaticity of cognitive processes (Glomb et al., 2011). By simply noticing the current moment, individuals have a wider repertoire of reactions (Brown et al., 2007; Chambers et al., 2009; Evans & Segerstrom, 2011). As a consequence, individuals refrain from mal-adaptive automatic thought and behavior patterns, and respond more effectively (Bishop et al., 2004; Brown et al., 2007; Glomb et al., 2011; Shapiro et al., 2006). That is, mindfulness promotes self-regulation.

The Role of Mindfulness for Work engagement

Defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p. 74), work engagement has evolved as a core phenomenon of IO psychology (Bakker et al., 2008). Its first dimension, *vigor*, is characterized by high effort investment, mental resilience and perseverance at work, even when confronted with obstacles. *Dedication* refers to high levels of job involvement and the experience of meaningfulness, enthusiasm, inspiration, pride, and challenge toward work. Finally, its third dimension, *absorption*, means being fully immersed in one's work, such that time goes by fast and one has difficulties to psychologically detach from work during non-work time. Similar to the concept of mindfulness, work engagement can be conceptualized both as a trait and as a state. Thus, an employee who is generally engaged in his or her work can still experience fluctuations in work engagement and may feel less vigorous, dedicate, and absorbed on some working days than others (Sonnentag, Dorman, & Demerouti, 2010).

Work engagement is considered to be conceptually the opposite of burnout, a work-related mental health complaint characterized by emotional exhaustion, depersonalization and diminished professional efficacy (Maslach, Schaufeli, & Leiter, 2001; Schaufeli et al., 2002). Studies using confirmatory factor analysis have found the two constructs to be negatively related, sharing between ten percent and 38 percent of their variances (Schaufeli & Bakker, 2004; Schaufeli et al., 2002). However, work engagement and burnout are not simply opposite polar ends of a continuum that can be assessed by a single instrument. More specifically, it appears that vigor and dedication, which are considered to constitute the core dimensions of work engagement, are the opposites of the core burnout dimensions exhaustion and cynicism, respectively: Exhaustion and vigor spanning a bipolar dimension labeled energy; cynicism and dedication spanning a bipolar dimension labeled identification (González-Romá, Schaufeli, Bakker, & Lloret, 2006). However, this does not apply for

reduced efficacy and absorption. Those two dimensions are conceptually distinct and thus not opposite poles of an underlying continuum.

In accordance with its conceptualization, research has found work engagement to be beneficial for both individuals and organizations, contrary to burnout, which is associated with decreased job satisfaction, reduced work commitment, and various forms of job withdrawal (Maslach et al., 2001). Among others, work engagement has been found to be predictive for employees' organizational commitment (Bakker & Bal, 2010; Hakanen, Bakker, & Schaufeli, 2006), turnover intentions (Harter, Schmidt, & Hayes, 2002; Schaufeli & Bakker, 2004) and job performance indicators, such as financial returns (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009), customer satisfaction (Harter et al., 2002; Marisa Salanova, Agut, & Peiró, 2005), productivity (Harter et al., 2002), and organizational citizenship behavior (Rich et al., 2010). It has been argued that these beneficial effects result from the fact that engaged employees experience better health and often positive emotions, and are able to create their own resources (Bakker & Demerouti, 2008).

Thus, in today's fast paced economy engaged employees are indispensable for organizational success. Consequently, the construct of work engagement has gained special attention from both academics and practitioners (Macey & Schneider, 2008). To be able to fully exploit the potential of a workforce, it is necessary to understand the factors that drive and hinder employee engagement. The present study focuses on exploring the role of mindfulness in driving employee engagement.

Mindfulness, Resources and Work engagement

When being exposed to demands and challenges at work, employees need to expend effort in order to meet these. Effort investment, however, involves the depletion of employees' physical, cognitive and emotional resources, which ultimately may harm health and well-being (Hobfoll, 1989; Meijman & Mulder, 1998). According to the JD-R model of work engagement (Bakker & Demerouti, 2008; Demerouti et al., 2001), the work environment, in terms of resources and demands, is particularly relevant to determine how engaged employees are in their work. Resources can be job characteristics or individual characteristics, also referred to as job and personal resources, respectively (Bakker & Demerouti, 2008). Research of work engagement has found both to be important predictors of employees engagement at work, owing to their motivating potential (e.g., Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Hakanen et al., 2006; Weigl et al., 2010; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007; Xanthopoulou et al., 2009). In other words,

employees are more energetic, enthusiastic and immersed in their job on days when more resources are available. Conversely, a lack of resources as a result of effort expenditure at work is associated with less engagement at work.

The mindful state of consciousness is proposed to be positively related to work engagement, as it is considered to help employees to obtain, retain and protect the resources needed to be energetic, enthusiastic and immersed in their job: First, through the process of reperceiving and the shift in perspective it fosters, mindfulness promotes autonomous regulation of behavior (i.e., self-regulation; Ryan & Deci, 2008) (Brown & Ryan, 2003; Glomb et al., 2011; Shapiro et al., 2006). In this way, mindfulness preserves resources. Whereas engaging in self-controlling regulation of behavior to confront the demands at work is depleting resources, autonomous regulation does not. Instead, it maintains vitality and energy (Ryan & Deci, 2008). Second, by disrupting the automaticity of thought and behavior patterns, mindfully attending to the here and now allows individuals to act in accord with their actual values, needs and interests (Brown & Ryan, 2003; Shapiro et al., 2006). Satisfying one's needs and acting in alignment with one's values and interests in turn engenders resources in the form of vitality and energy (Ryan & Deci, 2008).

Research provides evidence for the resource-conserving and obtaining effects of mindfulness. Individuals who have the disposition to be more mindful have been found to experience greater vitality (Allen & Kiburz, 2012; Brown & Ryan, 2003). Similarly, mindfulness-based interventions have been shown to increase daily energy levels (Smith et al., 2008) and to counteract the deleterious effects of self-controlling regulation of behavior on resources (Friese, Messner, & Schaffner, 2012). Moreover, mindfully coping with emotions has been found to drain fewer resources compared to self-controlled attempts of coping (Alberts, Schneider, & Martijn, 2012).

To the author's knowledge, to date, only one empirical study has investigated whether mindfulness is linked to work engagement (Leroy et al., 2013). Using a growth-modeling approach, Leroy and colleagues (2013) were able to show that participation in an eight-week in-company mindfulness training was related to substantial increases in employees' engagement at work. Moreover, they found authentic functioning to mediate the relationship between mindfulness and work engagement. Thus, there is theoretical and initial empirical support that mindfulness may be positively related to work engagement. In contrast to Leroy and colleagues' (2013) intervention study, the present study focuses on natural variations in mindfulness. Moreover, it takes a dynamic approach on work engagement by assessing the relationship between mindfulness and daily levels of work engagement, rather than

individuals' levels of work engagement over longer periods of time. As to whether an employee is engaged at work on a specific day is particularly influenced by feelings, events and conditions that arise in temporal proximity to the experience (Sonnentag, Dorman, et al., 2010). Accordingly, the present study focuses on daily levels of mindfulness rather than on mindfulness as a trait. It is expected that mindful employees will be more engaged at work.

Hypothesis 1: Day levels of mindfulness will be positively related to day levels of work engagement.

Role of Affect Regulative Processes for the Relationship between Mindfulness and Work engagement

In addition to its direct effects on an individual's work engagement, mindfulness is likely to affect the extent to which workers are energetic, enthusiastic and immersed in their jobs indirectly, through more proximal processes. In the last years, there have been repeated calls (and theoretical attempts to answer these calls) for an understanding of the processes and potential mechanisms behind the beneficial effects of mindfulness (Bishop et al., 2004; Glomb et al., 2011; Shapiro et al., 2006). Authentic functioning is probably only one of them. The present research aims to empirically test a mechanism which has consistently been emphasized as being one of the core processes in the mindfulness literature, namely affect regulation (Bishop et al., 2004; Brown et al., 2007; Glomb et al., 2011; Shapiro et al., 2006). As work engagement, on the other hand, is particularly dependent on affect (Bledow, Schmitt, Frese, & Kühnel, 2011; Schaufeli et al., 2002), it is reasonable to examine the role of affect regulative processes for the relationship between mindfulness and work engagement. Specifically, the present study will investigate the role of positive affect as a mediator of the mindfulness-engagement relationship. Furthermore, mindfulness will be explored as a moderator of the relationship of negative affect and negative affective events with work engagement.

Positive affect as a mediator of the link between mindfulness and work engagement.

Consistent with the notion that mindfully attending to the here and now promotes decoupling and decreased automaticity of cognitive processes (Bishop et al., 2004; Brown et al., 2007; Glomb et al., 2011), research suggests that mindfulness is associated with greater adaptive affect regulatory tendencies: Self-report measures of mindfulness have been related

with strengthened awareness and acceptance of emotions, and emotion regulation (Baer et al., 2004, 2006; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007), and enhanced capability to tolerate experienced affect, irrespective of its affective tone or intensity (Eifert & Heffner, 2003; Levitt, Brown, Orsillo, & Barlow, 2004). Furthermore, they have been negatively related with scales measuring difficulties in emotion regulation (Roemer et al., 2009) and in identifying and describing feelings (Baer et al., 2004; Brown & Ryan, 2003).

Being able to regulate one's affective experiences effectively comprises the generation and maintenance of positive affect (Glomb et al., 2011). Accordingly, individuals with a disposition to be more mindful have been found to report higher levels of trait positive affect (Giluk, 2009). Similarly, mindfulness meditation practices have been found useful in increasing the experience of positive affect in a variety of non-clinical samples (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Giluk, 2010; Jain et al., 2007; Nyklíček & Kuijpers, 2008; Schroevers & Brandsma, 2010; Shapiro, Brown, & Biegel, 2007). In addition, Davidson and colleagues (2003) have found areas of the brain that are associated with positive emotions to be more activated after four months of mindfulness-based training. Thus, through mindfully attending to the present moment individuals are more emotionally aware and better able in regulating their emotions, thereby enhancing the experience of positive affect (Glomb et al., 2011).

Positive affect plays an important role for the emergence of high work engagement. According to Fredrickson's (1998, 2001) broaden-and-build theory, positive affect momentarily broadens people's thought-action repertoires, thereby widening the range of ideas and actions that come to mind and, in turn, building individuals' personal resources. The JD-R model of work engagement (Bakker & Demerouti, 2008; Demerouti et al., 2001) posits that personal resources are important predictors of work engagement. Accordingly, work engagement has been found to be particularly dependent on positive affect: The more positive affect employees experience, the more engaged they are (e.g., Fredrickson, Tugade, Waugh, & Larkin, 2003; Langelaan, Bakker, van Doornen, & Schaufeli, 2006). Furthermore, studies have confirmed that, in line with broaden-and-build theory and the JD-R model, employees experiencing positive affect are more likely to be engaged at work, precisely because they experience enhanced personal resources (e.g., Ouweneel, Le Blanc, Schaufeli, & van Wijhe, 2012; Ouweneel, Blanc, & Schaufeli, 2012).

Given the link between mindfulness and positive affect, and the role of positive affect for work engagement, it is reasonable to assume that mindfulness may positively influence work engagement through its affect-enhancing effects. Accordingly, in a work setting,

Fredrickson and colleagues (2008) found a mindfulness-related mediation practice to induce increments in daily experiences of positive emotions, which, in turn, built a wide range of personal resources. However, a subsequent impact of the increments in positive emotions and personal resources on participants' engagement at work was not assessed.

The present study aims to extend these findings by investigating the role of positive affect for the link between mindfulness and work engagement. With reference to the interrelations between mindfulness, positive affect and work engagement, the JD-R model of work engagement (Bakker & Demerouti, 2008; Demerouti et al., 2001), and B&B theory (Fredrickson, 1998, 2001), positive affect is proposed to mediate the link between mindfulness and work engagement. More specifically, it will be expected that those employees high in daily mindfulness will report higher daily work engagement levels as compared to less mindful employees, as they experience more positive affect.

Hypothesis 2: Positive affect will mediate the relationship between daily levels of mindfulness and work engagement.

Mindfulness as a moderator of the link between negative affective events, negative affect and work engagement.

In contrast to positive affect, negative affect is associated with a narrowed mindset, that is, tightened thought-action repertoires (Fredrickson, 2004). As such, negative affect is incompatible with being energetic, enthusiastic and immersed in one's job. Nevertheless, negative affect serves an important role for employees' engagement, as it can lead to increases in work engagement under certain conditions (Bledow et al., 2011). Recently, Bledow and colleagues (2011) developed an affective shift model of work engagement which postulates that work engagement arises from the dynamic interaction of positive and negative affect. According to their model, the experience of negative affect results in work engagement if followed by the experience of positive affect. That is, following a down-regulation of negative affect and an up-regulation of positive affect, referred to as an affective shift. The experience of negative affect itself is considered not to result in an increase in work engagement and even has detrimental consequences for employees' engagement at work. Only with a subsequent experience of positive affect its motivating potential can unfold.

Using a daily diary design, Bledow and colleagues (2011) demonstrated that negative affect experienced in the morning of a working day was associated with high work engagement if participants experienced high positive affect later that day. Similar results were

obtained for the experience of negative affective events. In line with affective events theory (Weiss & Cropanzano, 1996), which posits that that the experience of affective events generates affective states, Bledow and colleagues (2011) found negative affective events to be conducive for employee engagement if followed by the experience of positive affect. However, as with negative affect, the experience of negative affective events was negatively related to work engagement if no subsequent shift in affect had taken place. They concluded that "it is not only the level of positive and negative affect that matters [for work engagement] (...) but also the temporal sequence and regulation of positive and negative affect" (p.1254).

From these findings it follows, that individuals that are able to quickly shift to positive affect after the experience of negative affect and negative affective events, should be more engaged at work compared to individuals having difficulties to do so (Bledow et al., 2011). Without a subsequent shift to positive affect, that is, successful down-regulation of experienced negative affect, in particular, negative affect has detrimental consequences for employees' engagement at work. As this is the case, mindfulness is suggested to serve as a buffer against the adverse effects of negative affect and negative affective work events for work engagement, thereby promoting employees' engagement at work indirectly.

Through mindfully attending to and being aware of the present moment, individuals are better able to regulate their affective experiences effectively. This does not only result in enhanced positive affect, as described above, but also in "healthy engagement" with negative affective experiences (Chambers et al., 2009, p. 566). Mindful individuals simply observe and label negative events and experiences, instead of being fully immersed in them. Negative experiences are neither elaborated on nor tried to be altered. As a consequence, the experience, expression, and time needed to recover from these is reduced (Bishop et al., 2004; Brown & Ryan, 2003; Chambers et al., 2009; Glomb et al., 2011; Kabat-Zinn, 1990). Accordingly, measures of mindfulness have been found to have a strong, negative relationship with trait negative affect (Giluk, 2009), and to be related with an enhanced capability to recover from unpleasant mood states (Baer et al., 2004; Brown & Ryan, 2003). Furthermore, negative affect has been reported to increase after both short guided mindfulness meditation practice (Broderick, 2005) and four to 10-week mindfulness-based therapy in a variety of non-clinical samples (Giluk, 2010; Ortner et al., 2007; Schroevers & Brandsma, 2010; Sears & Kraus, 2009; Shapiro et al., 2007; Tipsord, 2009; Vieten & Astin, 2008). FMRI research has corroborated these findings by demonstrating that areas of the brain that are associated with faster recovery from negative affective events are more activated after four months of mindfulness-based training (Davidson et al., 2003). In addition, observing and labeling

stimuli of negative affective valence has been found to reduce the reactivity to these stimuli by reducing limbic system activation (Hariri, Bookheimer, & Mazziotta, 2000) and enhancing prefrontal cortical inhibition (Creswell, Way, Eisenberger, & Lieberman, 2007).

Given these findings, mindful individuals are proposed to be better able to unfold the motivating potential inherent in negative affect and negative affective events, compared to less mindful individuals. That is, they should be better able to shift to positive affect after negative affect and negative affective events have been experienced. Consequently, the relationship between negative affect and work engagement, and negative affective work events and work engagement is expected to be less negative for these individuals. Again, daily levels of mindfulness are considered, as individuals that have the disposition or that regularly practice to be more mindful can experience days of mindlessness, as well (Brown & Ryan, 2003). Figure 1 summarizes all hypothesized relationships.

Hypothesis 3a: Daily levels of mindfulness will moderate the relationship between negative affect and daily levels of work engagement, such that the relationship will be more negative for individuals low in daily mindfulness.

Hypothesis 3b: Daily levels of mindfulness will moderate the relationship between negative affective work events and daily levels of work engagement, such that the relationship will be more negative for individuals low in daily mindfulness.
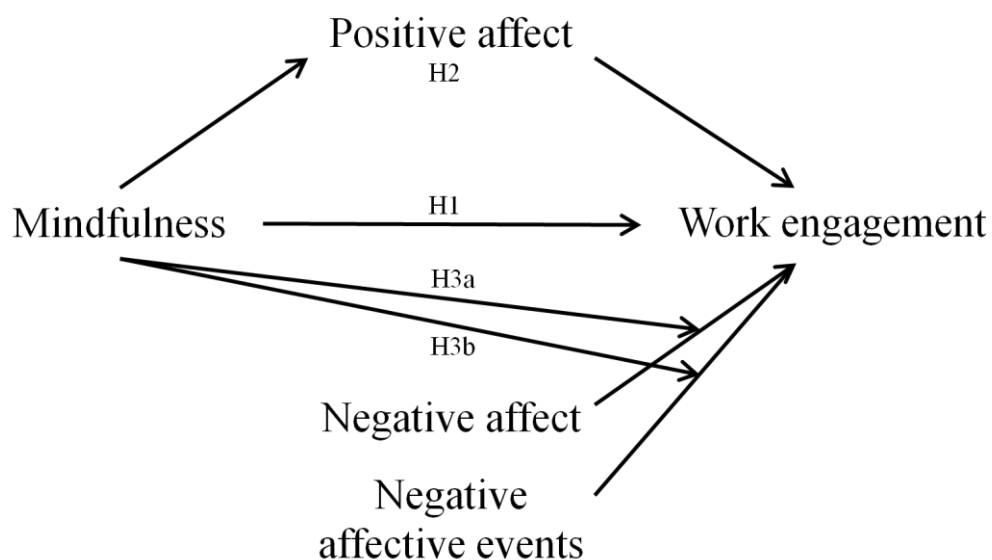

Figure 1. Hypothesized relationships.

Method

The present study was part of a larger joint project on the benefits of mindfulness at work conducted by the Department of Work- and Organizational Psychology at Maastricht University and the Organizational Behavior and Human Resources faculty at Singapore Management University.

Sample and Procedure

German full- and part time employees of both genders were invited to participate in the study. They were recruited by means of online advertising (e.g., calls for participation posted in social networks and online forums) and the snowballing technique (i.e., employed adults known by the author were asked to participate and to recommend other individuals for participation by email). A total of 276 emails were distributed to potentially interested persons, containing information on the study's purpose and set-up, and survey links. The study was introduced as dealing with well-being at the workplace. The topics mindfulness, affect, and work engagement were not mentioned. As incentive, participants were offered to take part in a lottery to win one of ten shopping coupons from an American international electronic commerce company in the amount of ten Euros.

A total of 76 employees completed the first day of the survey, representing a response rate of 28%. Despite reminders, only 37 of these filled in the second day of the survey (i.e., 49% of the original sample). The comparatively low response rate for both parts of the survey may be due to several reasons: First, participants were recruited via email only. Each participant received a standardized message instead of being approached personally. Moreover, some received this message by intermediaries only. As a consequence, recipients' commitment to participate might have been reduced. In addition, uncertainties regarding the study (if present) could not be eliminated immediately but had to be formulated via email first, which participants might have considered too cumbersome. Second, both parts of the study were quite time-consuming. Completion times were introduced to range between at least 15 (day 2) to 30 (day 1) minutes. This might also have discouraged individuals to participate. In addition, on average, individuals who participated took longer than estimated to fill in the first day of the survey ($M = 41$ minutes, range: 13-86, $SD = 16.9$). This might have caused them to refuse completing the second part of the survey. Moreover, the study required participants to complete the surveys directly after work (i.e., on the same day), which might have been untenable for individuals who worked late. Finally, parts of the recruitment took

place during the summer holiday season. Accordingly, many of potentially interested individuals were unavailable and unable to participate.

The mean age of the respondents was 40 years (range: 21-63 years, *SD* = 14.6). Fifty-seven percent of them were female, 43 percent were male. Sixty-four percent had a university degree. On average, they worked 36 hours per week (range: 4.5-60 hours, *SD* = 13.3). The sample comprised broad range of professions, including 14 percent teachers. Twenty-eight percent of the respondents had a leading position.

Measures

Data collection consisted of a modified online version of the DRM (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004), which participants were instructed to complete after work on two consecutive work days. In this way, features of experience sampling, time-budget measurement and the diary method were combined, thereby allowing to jointly asses events and experiences during work on a daily basis, in temporal proximity to the work process, but without disturbing it. As a consequence, retrospective reporting errors and biases are reduced and relationships among variables that are assumed to fluctuate within the same individual over short periods of time can be assessed (Kahneman et al., 2004; Ohly, Sonnentag, Niessen, & Zapf, 2010).

On the first day, the DRM procedure began with a general questionnaire assessing, among others, demographic variables (age, gender, educational level, working hours per week, profession). Next, as well as on the second day, participants were asked to reconstruct their past working day in a diary. They were instructed to

> think of your day as a continuous series of scenes or episodes in a film. Give each
> episode a brief name that will help you remember it (...). Write down the approximate
> times at which each episode began and ended. The episodes people identify usually
> last between 15 minutes and 2 hours. Indications of the end of an episode might be
> going to a different location, ending one activity and starting another, or a change in
> the people you are interacting with. (Kahneman et al., 2004, p. 1777)

Participants were then encouraged to draw on these diary notes to describe each episode by answering structured questions about negative work events encountered, their levels of positive and negative affect, work engagement, and mindfulness. Unless otherwise indicated,

items were answered on 5-point rating scales ranging from 1 (= does not apply at all) to 5 (= fully applies). All items were in German. Cronbach's alphas are depicted in Table 1. Cronbach's alphas were calculated individually for each day, and then the respective two reliabilities were averaged. Participants reported a mean of 8.4 episodes on the first day of the survey, and 7.2 episodes on the second day.

Mindfulness. Mindfulness was assessed with the five-item state measure of the Mindfulness Attention and Awareness Scale (MAAS; Brown & Ryan, 2003). Sample items are "I rush through activities without being really attentive to them," and "I find myself preoccupied with the future or the past." Answers were recoded such that higher scores reflected greater levels of mindfulness.

Work engagement. Work engagement were assessed with the short version of the Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, & Salanova, 2006). It consists of nine items, for example "My job inspires me", and "I feel happy when I am working intensely".

Positive and negative affect. A list of 11 positive and negative affect adjectives (Gabriel, Diefendorff, & Erickson, 2011) was used to assess the extent to which participants had experienced positive and negative affect. The adjectives assessing positive affect were *calm*, *excited*, *happy*, *proud*, and *relaxed.* The negative affect adjectives were *angry*, *frustrated*, *helpless*, *anxious*, *irritated* and *sad*. The 11 adjectives refer to both low and high activation emotions, and are therefore considered to be more reflective of hedonic tone (positive vs. negative) than other affect measures commonly used in the extant published literature (Gabriel et al., 2011).

Negative work events. A negative work event scale was developed by drawing on studies of Bledow and colleagues (2011) and Bono, Glomb, Shen, Kim, and Koch (2013). It consists of seven items, for example "I made a mistake" and "I received information that negatively affected my work schedule, duties, or pay". Participants rated the occurrence of these events. Following Bledow and colleagues (2011), answers were scored as 1 if participants indicated that they had encountered the event, and as 0 if they did not. In addition, participants were given the opportunity to mention additional negative events they had experienced in an open-ended question. Each additional event listed was scored with 1. A composite measure reflecting the number of negative events encountered was developed.

Data Analysis

For simplicity, episodic data was aggregated to the day level. Accordingly, data on

Table 1

Cronbach's α, Means, Standard Deviations, and Zero-Order Correlations Between Study Variables

Variable	Cronbach's α	*M*	*SD*	1	2	3	4	5
Day level[a]								
1. Mindfulness	0.79	4.60	.45	–				
2. Work engagement	0.94	2.79	.75	.404**	–			
3. Positive affect	0.74	3.02	.70	.323**	.742**	–		
4. Negative affect	0.71	1.24	.25	-.458**	-.209*	-.274**	–	
5. Negative affective events	–	1.20	.61	-.011	-.189	-.166	.244*	–

Note. Cronbach's α was calculated individually for each day, and then the respective two reliabilities were averaged.

[a] *N* = 37-113.

p < .05 (two-tailed). **p* < .01 (two-tailed).

two rather than three levels were available: on the day level and on the person level, with the day level data being nested within the person level data. Given the hierarchical structure of the data, hypotheses were tested with multilevel modelling. All models were random intercept, fixed slope models. For data analysis,IBM SPSS Statistics 21.0 software was used. Predictor variables at the day level were grand-mean-centered.

Results

Means, standard deviations, and zero-order correlations between the study variables are displayed in Table 1. Multilevel analysis investigating a direct relationship between mindfulness and work engagement revealed that, compared to the null model, which included the intercept only, a model including mindfulness as a predictor of work engagement showed a significantly smaller likelihood ratio (difference of $-2*\log = 17.86$, $df = 1$, $p < .001$). Mindfulness significantly predicted work engagement ($\beta = 0.64$; $SE = 0.14$, $t = 4.43$ $p < .001$). Hypothesis 1 was thus fully supported.

To test Hypothesis 2, Baron and Kenny's (1986) analytical approach was utilized to examine an indirect effect of mindfulness on work engagement through positive affect. In order to confirm mediation, four steps must be followed. The first two steps are to confirm that the independent variable (mindfulness) is significantly related to both the dependent variable (work engagement) and the mediating variable (positive affect). The third step is to demonstrate the significance of the relationship between the mediating variable and the dependent variable, controlling for the independent variable. The final step is to confirm that the strength of the relationship between the independent variable and the dependent variable is significantly reduced in the presence of the mediating variable. As a measure for the indirect effect of the independent variable on the dependent variable, a Sobel z test has to be conducted. For testing mediation with multilevel modelling, different nested models were compared. Results are depicted Table 2. The relationship investigated in step 1 was already successfully demonstrated by testing hypothesis 1. In step 2 of the mediation analysis process, mindfulness was a significant predictor of positive affect. In Step 3, positive affect, controlled for mindfulness, was found to significantly predict work engagement. In the final step, multilevel analysis revealed that, controlling for positive affect, mindfulness was still a significant predictor of work engagement. However, the effect was meaningfully reduced. The Sobel z test provided support for partial mediation ($z = 3.80$, $p < .001$). Hypothesis 2 was thus partially supported.

To test Hypotheses 3a a number of nested models were compared. Results are

Table 2

Multi-level Estimates of the Mediating Effect of Positive Affect on the Relationship between Mindfulness and Work Engagement

Variable	Step 1			Step 2			Step 3/4		
	Estimate	*SE*	*t*	Estimate	*SE*	*t*	Estimate	*SE*	*t*
Mindfulness	0.635	0.144	4.425[a]**	0.579	0.142	4.089**	0.276	0.114	2.420*
Positive affect							0.671	0.072	9.379[b]**

Note. $N = 79$ participants, and $N = 116$ data points. Step 1: Mindfulness as predictor of work engagement; Step 2: Mindfulness as predictor of positive affect; Step 3/4: Mediation model with mindfulness as predictor of work engagement in the presence of positive affect.

* $p < .05$ (two-tailed). ** $p < .001$ (two-tailed).

[a] Consistent with analysis testing hypothesis 1.

[b] Partial mediation effect.

shown in Table 3a. In Model 1, negative affect and mindfulness were entered as predictor variables. Compared to the null model, Model 1 showed a significant improvement in model fit (difference of -2*log = 18.62, *df* = 2, *p* < .001). In Model 2, the interaction term between negative affect and mindfulness was added. Model fit further increased (difference of -2*log = 3.88, *df* = 1, *p* < .05) and the interaction term was significant. In contrast to Hypothesis 3a, negative affect showed a positive relationship with daily work engagement levels for employees with low levels of daily mindfulness. For employees with high levels of daily mindfulness, negative affect was negatively related with daily work engagement levels. Figure 2 displays this interaction pattern. Hypotheses 3a was thus not supported.

To test Hypotheses 3b, the same hierarchical procedure was applied as for testing hypotheses 3a. Results are depicted in Table 3b. In Model 1, negative affective events and mindfulness were entered as predictor variables. Compared to the null model, Model 1 showed a significantly smaller likelihood ratio (difference of -2*log = 82.94, *df* = 2, *p* < .001). Mindfulness was the only significant predictor in this model. In Model 2, the interaction term between the two predictor variables was entered. The likelihood ratio was not significantly reduced, nor was the interaction term significant. Hypotheses 3b was thus not supported.

Discussion

The present study examined the relationship between daily levels of mindfulness and work engagement. Specifically, the role of affect regulative processes for the relationship between the two constructs was explored. Results partially confirmed the hypotheses. Mindfulness and work engagement were found to be positively related (Hypothesis 1), and, as predicted, this relationship was (partially) mediated by positive affect (Hypothesis 2). These results expand previous research on the beneficial effects of mindfulness in the work context (e.g., Hülsheger, et al., 2013; Reb et al., 2014; Hülsheger et al., 2014), and are in line with earlier studies that examined the relationship of mindfulness with positive affect (e.g., Fredrickson et al., 2008; Giluk, 2009, 2010). Furthermore, they confirm and extend findings from initial research on the role of attention and awareness for work engagement (Leroy et al., 2013), that showed that mindfulness is positively related to work engagement and that this relationship is mediated by authentic functioning. The present study further contributes to the mindfulness-engagement literature, as it focused on daily levels of work engagement and mindfulness. By doing so, it applied a dynamic view on employees' engagement at work and investigated micro-mechanisms through which mindfulness transmits its beneficial effects.

In contrast to what was stated in Hypothesis 3a, the negative affect-engagement

Table 3

a)

Multi-level estimates of the Moderating Effect of Mindfulness on the Relationship between Negative Affect and Work Engagement

Variable	Model 1			Model 2		
	Estimate	*SE*	*t*	Estimate	*SE*	*t*
Intercept	2.755	0.076	62.387	2.706	0.007	34.997
Negative affect	-0.225	0.153	-0.876	-0.265	0.254	-1.040
Mindfulness	0.586	0.256	3.831**	0.718	0.163	4.401**
Negative affect × Mindfulness				-1.049	0.522	-2.010*
-2*LL	196.907			193.025		
diff -2*LL (*df*)	18.619 (2)**			3.882 (1)*		

Note. LL = log likelihood; diff = difference. Model 1 was compared to the null model with the intercept as the only predictor ($\gamma = 2.742$; *SE* = 0.083; *t* = 32.848; -2*LL = 215.526).

$N = 79$ participants, and $N = 116$ data points.

$p < .05$ (two-tailed). **$p < .001$ (two-tailed).

b)

Multi-level estimates of the Moderating Effect of Mindfulness on the Relationship between Negative Affect Events and Work Engagement.

Variable	Model 1			Model 2		
	Estimate	*SE*	*t*	Estimate	*SE*	*t*
Intercept	2.706	0.083	32.790	2.708	0.082	32.869
Negative affective events	-0.176	0.098	-1,809	-0.171	0.100	-1.711
Mindfulness	0.683	0.154	4.152**	0.643	0.154	4.179**
Negative affective events × Mindfulness				-0.092	0.265	-0.348
-2*LL	132.589			132.473		
diff -2*LL (*df*)	82.937 (2)**			0.116 (1)		

Note. LL = log likelihood; diff = difference. Model 1 was compared to the null model with the intercept as the only predictor ($\gamma = 2.742$; *SE* = 0.083; *t* = 32.848; -2*LL = 215.526).

$N = 79$ participants, and $N = 116$ data points.

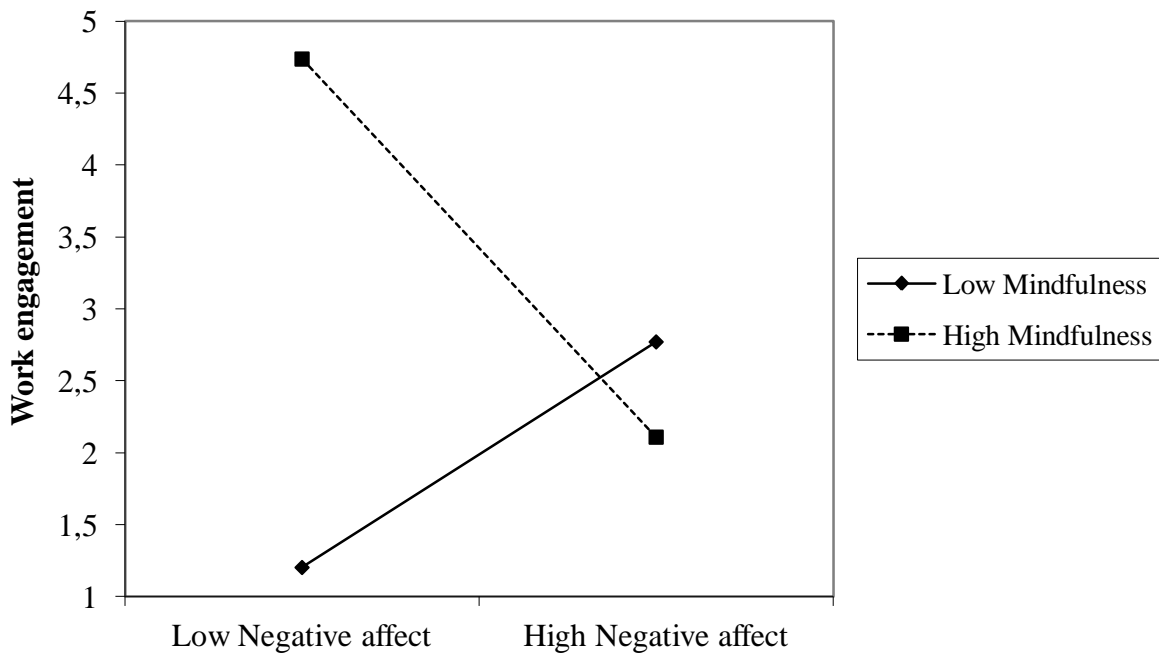$p < .05$ (two-tailed). **$p < .001$ (two-tailed).

Figure 2. Interaction effect of mindfulness and negative affect on work engagement.

relationship was not more negative for individuals low in daily mindfulness. Quite the contrary, analyses showed a strong negative relationship between the experience of negative affect and daily work engagement for individuals high in daily mindfulness. For individuals low in daily mindfulness the relationship was reversed; negative affect was positively related with individuals' daily work engagement levels. This is surprising, given that Bledow and colleagues (2011) found negative affect to be less detrimental for individuals that were better able to regulate their affective experiences (i.e., individuals high in positive affectivity). As reviewed above, mindfulness has repeatedly been associated with enhanced affect regulation (e.g., Baer et al., 2004, 2006; Feldman et al., 2007; Roemer et al., 2009). Accordingly, similar findings to those made by Bledow and colleagues (2011) were expected. Instead, individuals low in mindfulness, that is, individuals inferior in affect regulation, were even found to be more engaged at work under conditions of high negative affect, compared to a) conditions of low negative affect, and b) more mindful individuals. Conversely, this seems to imply that being mindful may be detrimental for employees' engagement at work under conditions of high negative affect. There are different explanations that may account for these findings: First, the present study focused on natural variations of mindfulness. Participants were rather inexperienced in mindfulness meditation or any other relaxation technique (64.5 % of the sample were without any mediation experience, 13% actively mediated). So, possibly

participants were mindful to the extent that they were more aware and attentive to their negative emotions, but overwhelmed by their experience at the same time. Hence, mindfulness may be associated with some discomfort, thereby hindering work engagement. However, in contradiction with this explanation, previous research has found naturally occurring mindfulness to have beneficial effects on various work-related outcomes, especially for individuals in emotionally demanding occupations (e.g., Goodman & Schorling, 2012; Hülsheger et al., 2013). A second explanation might be as follows: One might assume that mindful individuals down-regulate negative affect very early, even before being aware of it. If they experience negative affect consciously, however, they initially may have some trouble coping with it, or mindfully remain in this (disengaged) state for some time before shifting to positive affect. Individuals low in mindfulness, on the contrary, appear to rely on negative affect to be engaged at work. That is, they react with high effort investment to negative affect, resulting in increased work engagement. Negative affect serves as a signal that the rate of goal progress is insufficiently and that enhanced effort investment is required (Carver & Scheier, 1990). Apparently, individuals low in mindfulness are not aware of that without negative affect indicating it. In line with this, supplementary analyses found mindfulness to be negatively related with negative affect in the present sample ($\beta = -.23$, $SE = .05$, $p < .001$). All in all, these inconsistent findings invite a reasonable belief that the relationships between mindfulness, negative affect and work engagement are more complex than previously expected.

The last hypothesis was also not supported. Contrary to what was predicted in Hypothesis 3b, daily mindfulness was not found to have a moderating effect on the relationship between negative affective events and daily work engagement levels. One reason why the interaction between negative affective events and mindfulness was insignificant may be the fact that participants encountered negative events at work only infrequently in the present sample ($M = 1.20$).

Limitations and Directions for Future Research

The present study has a number of limitations that suggest directions for future research. First, the proposed hypotheses imply some causal ordering between study variables, such as mindfulness precedes positive affect, which, in turn, precedes work engagement. Hypotheses were formulated based on earlier findings that suggested these directions of effect. For example, research has shown that mindfulness-based interventions are effective in enhancing individuals' engagement at work (Leroy et al., 2013) and improving affect (Jain et

al., 2007). However, given the observational- and cross-sectional nature of the data, no conclusions about causality can be drawn in the present study. Directions of effect may also be reversed or even reciprocal. For example, Fredrickson and colleagues (2008) found a mindfulness-related mediation practice to induce increments in daily experiences of positive emotions, which, in turn, built a wide range of personal resources including increased mindfulness. Similarly, Sonnentag, Mojza, Binnewies, and Scholl's (2008) findings that employees who are highly engaged at work during the week report more positive affect and less negative affect at the end of the work week, suggest that the causal ordering may also be different. Future studies should solve this issue of causal inference by using longitudinal or experimental studies.

A second limitation of the study is that all constructs were assessed exclusively with self-report measures, introducing the possibility of common-method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, given that all constructs assessed highly subjective experiences (i.e., variables of cognitive and affective nature), it appeared inappropriate to use more objective measures. Employees were most suited for evaluating whether they felt inspired by their job, had difficulties to stay focused on the present moment, or experienced work events negatively. Furthermore, data were collected anonymously and participants were assured of confidentiality, which are procedures considered to reduce method bias (Podsakoff et al., 2003). Nonetheless, future studies may consider using more objective, multi-source measures such as supervisor ratings of employees' engagement at work, or implicit or behavioral measures in order to assess changes in affect (Payne, Cheng, Govorun, & Stewart, 2005 as cited in Fredrickson et al., 2008).

There are some differences of opinion between mindfulness researchers on how to best conceptualize and measure mindfulness. Whereas some argue that mindfulness is a multidimensional construct (Baer et al., 2006; Bishop et al., 2004; Grossman & Van Dam, 2011; Grossman, 2010), others considered it unidimensional in nature (Brown et al., 2007; Brown & Ryan, 2003; see also Hülsheger et al. 2014). Accordingly, depending on one's view, one might consider it a limitation of the present study that mindfulness was assessed with the state version of Brown and Ryan's (2003) MAAS. The MAAS is a well-established unidimensional mindfulness scale, which assesses individuals' capability to be aware of and attend to the current moment (Brown & Ryan, 2003). Future research may examine other conceptualizations of mindfulness to investigate its role for work engagement in general, and the relevance of certain aspects of mindfulness in particular.

Finally, hypotheses were tested using aggregated data only. By doing so, loads of

information available at the episodic level was neglected. On the other hand, using the DRM for data collection and aggregating the data to the day level enabled a more accurate assessment of participants' activities and experiences than typical for diary- and experience sampling methods (Kahneman et al., 2004). Nonetheless, future studies should use designs and analytical techniques that enable investigating ideas such as that mindfulness is only initially negatively related to work engagement under conditions of high negative affect. That is, that the relationship will be reversed in the further course of time.

The present study focused on the role of affect regulative processes for the relationship between mindfulness and work engagement. Affect regulation, however, is only one of multiple potential mechanisms of action underlying the relationship between mindfulness and work engagement (Bishop et al., 2004; Glomb et al., 2011; Shapiro et al., 2006). Future research may explore other proximal processes through which mindfulness affects the extent to which workers are energetic, enthusiastic and immersed in their jobs. For example, Hülsheger and colleagues (2014) recently showed that employees experiencing greater mindfulness during work are better able to psychologically detach from work during non-work time. Psychological detachment, on the other hand, has repeatedly been found to be of major importance for employees' engagement at work (e.g., Sonnentag, Binnewies, & Mojza, 2010; Sonnentag et al., 2008). Furthermore, it may be interesting to examine the effects of mindfulness on the three dimensions of work engagement separately in future research. Finally, the fact that the present study found mindful individuals to be less engaged than individuals low in mindfulness under conditions of high negative affect, should motivate research on potential negative effects of mindfulness. To date, this has been a rather neglected area in mindfulness research.

Pracitcal Implications

Work engagement is an important indicator of employee well-being and enhances the occurrence of behaviors known to promote efficient functioning of the organization. Hence, answering the question of how to foster employees' engagement at work is essential for both the individual and the organization (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010). Whereas there already exist workplace interventions focusing on increasing work engagement by developing personal and job resources (Cifre, Salanova, & Rodríguez-Sánchez, 2011; Luthans, Avey, Avolio, Norman, & Combs, 2006), the present study supports the idea that cultivating mindfulness may be another option to foster employees' engagement. Mindfulness-based interventions in the workplace have already been proven effective in

reducing perceived stress and sleep quality (Wolever et al., 2012). In addition, mindfulness self-training has been successfully tested to reduce employees' emotional exhaustion and to increase their job satisfaction (Hülsheger et al., 2013). Furthermore, mindfulness meditation practice has been found to build personal resources (Fredrickson et al., 2008). Thus, it is possible to use both workplace and individual intervention programs to a) enhance mindfulness in employees, and b) to obtain benefits that go even beyond enhanced engagement. Hence, one might consider mindfulness-based interventions superior to others that focus on enhancing employees' engagement at work by developing personal- and job resources.

References

Alberts, H. J. E. M., Schneider, F., & Martijn, C. (2012). Dealing efficiently with emotions: Acceptance-based coping with negative emotions requires fewer resources than suppression. *Cognition & Emotion*, *26*(5), 863–870. doi:10.1080/02699931.2011.625402

Allen, T. D., & Kiburz, K. M. (2012). Trait mindfulness and work–family balance among working parents: The mediating effects of vitality and sleep quality. *Journal of Vocational Behavior*, *80*(2), 372–379.

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky inventory of mindfulness skills. *Assessment*, *11*(3), 191–206. doi:10.1177/1073191104268029

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *assessment*, *13*(1), 27–45. doi:10.1177/1073191105283504

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., … Williams, J. M. G. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment*, *15*(3), 329–342. doi:10.1177/1073191107313003

Bakker, A. B., & Bal, M. P. (2010). Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology*, *83*(1), 189–206. doi:10.1348/096317909X402596

Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International*, *13*(3), 209–223. doi:10.1108/13620430810870476

Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. (2007). Job resources boost

    work engagement, particularly when job demands are high. *Journal of Educational*

    Psychology, *99*(2), 274–284. doi:10.1037/0022-0663.99.2.274

Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. (2008). Work engagement: An

    emerging concept in occupational health psychology. *Work & Stress*, *22*(3), 187–200.

    doi:10.1080/02678370802393649

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social

    psychological research: Conceptual, strategic, and statistical considerations. *Journal of*

    Personality and Social Psychology, *51*(6), 1173–1182. doi:10.1037/0022-

    3514.51.6.1173

Bindl, U. K., & Parker, S. K. (2010). Feeling good and performing well? Psychological

    engagement and positive behaviors at work. In S. L. Albrecht (Ed.), *Handbook of*

    employee engagement: Perspectives, issues, research and practice (pp. 385–398).

    Edward Elgar Publishing.

Bishop, S. R., Lau, M., Shapiro, S. L., Carlson, L., Anderson, N. D., Carmody, J., … Devins,

    G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology:*

    Science and Practice, *11*(3), 230–241. doi:10.1093/clipsy/bph077

Bledow, R., Schmitt, A., Frese, M., & Kühnel, J. (2011). The affective shift model of work

    engagement. *Journal of Applied Psychology*, *96*(6), 1246–1257.

    doi:10.1037/a0024532

Bodhi, B. (2011). What does mindfulness really mean? A canonical perspective.

    Contemporary Buddhism, *12*(1), 19–39. doi:10.1080/14639947.2011.564813

Bono, J. E., Glomb, T. M., Shen, W., Kim, E., & Koch, A. J. (2013). Building positive

    resources: Effects of positive events and positive reflection on work stress and health.

    Academy of Management Journal, *56*(6), 1601–1627. doi:10.5465/amj.2011.0272

Broderick, P. C. (2005). Mindfulness and coping with dysphoric mood: Contrasts with rumination and distraction. *Cognitive Therapy and Research*, *29*(5), 501–510. doi:10.1007/s10608-005-3888-0

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. doi:10.1037/0022-3514.84.4.822

Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry*, *18*(4), 211–237. doi:10.1080/10478400701598298

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: a control-process view. *Psychological Review*, *97*(1), 19.

Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review*, *29*(6), 560–572. doi:10.1016/j.cpr.2009.06.005

Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *The Journal of Alternative and Complementary Medicine*, *15*(5), 593–600. doi:10.1089/acm.2008.0495

Cifre, E., Salanova, M., & Rodríguez-Sánchez, A. M. (2011). Dancing between theory and practice: Enhancing work engagement through work stress intervention. *Human Factors and Ergonomics in Manufacturing & Service Industries*, *21*(3), 269–286. doi:10.1002/hfm.20232

Creswell, J. D., Way, B. M., Eisenberger, N. I., & Lieberman, M. D. (2007). Neural correlates of dispositional mindfulness during affect labeling. *Psychosomatic Medicine*, *69*(6), 560–565. doi:10.1097/PSY.0b013e3180f6171f

Dane, E., & Brummel, B. J. (2013). Examining workplace mindfulness and its relations to job

performance and turnover intention. *Human Relations*.

doi:10.1177/0018726713487753

Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F.,

… Sheridan, J. F. (2003). Alterations in brain and immune function produced by

mindfulness meditation. *Psychosomatic Medicine*, *65*(4), 564–570.

doi:10.1097/01.PSY.0000077505.67574.E3

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-

resources model of burnout. *Journal of Applied Psychology*, *86*(3), 499–512.

doi:10.1037//0021-9010.86.3.499

Eifert, G. H., & Heffner, M. (2003). The effects of acceptance versus control contexts on

avoidance of panic-related symptoms. *Journal of Behavior Therapy and Experimental

Psychiatry*, *34*(3-4), 293–312. doi:10.1016/j.jbtep.2003.11.001

Evans, D. R., & Segerstrom, S. C. (2011). Why do mindful people worry less? *Cognitive

Therapy and Research*, *35*(6), 505–510. doi:10.1007/s10608-010-9340-0

Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J.-P. (2007). Mindfulness and

emotion regulation: The development and initial validation of the cognitive and

affective mindfulness scale-revised (CAMS-R). *Journal of Psychopathology and

Behavioral Assessment*, *29*(3), 177–190. doi:10.1007/s10862-006-9035-8

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*,

2(3), 300.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-

and-build theory of positive emotions. *American Psychologist*, *56*(3), 218.

doi:10.1037//0003-066X.56.3.218

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical*

Transactions of the Royal Society B: Biological Sciences, *359*(1449), 1367–1377.

doi:10.1098/rstb.2004.1512

Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts

build lives: Positive emotions, induced through loving-kindness meditation, build

consequential personal resources. *Journal of Personality and Social Psychology*,

95(5), 1045–1062. doi:10.1037/a0013262

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are

positive emotions in crisis? A prospective study of resilience and emotions following

the terrorist attacks on the United States on September 11th, 2001. *Journal of*

Personality and Social Psychology, *84*(2), 365–376. doi:10.1037/0022-3514.84.2.365

Friese, M., Messner, C., & Schaffner, Y. (2012). Mindfulness meditation counteracts self-

control depletion. *Consciousness and Cognition*, *21*(2), 1016–1022.

doi:10.1016/j.concog.2012.01.008

Gabriel, A. S., Diefendorff, J. M., & Erickson, R. J. (2011). The relations of daily task

accomplishment satisfaction with changes in affect: A multilevel study in nurses.

Journal of Applied Psychology, *96*(5), 1095–1104. doi:10.1037/a0023937

Giluk, T. L. (2009). Mindfulness, Big Five personality, and affect: A meta-analysis.

Personality and Individual Differences, *47*(8), 805–811.

doi:10.1016/j.paid.2009.06.026

Giluk, T. L. (2010). Mindfulness-based stress reduction: facilitating work outcomes through

experienced affect and high-quality relationships. (Doctoral dissertation). University

of Iowa, Iowa. Retrieved from http://ir.uiowa.edu/etd/674/

Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011). Mindfulness at work. In J.

Martocchio, H. Liao, & A. Joshi (Eds.), *Research in Personnel and Human Resources

Management* (Vol. 30, pp. 115–157). Emerald Group Publishing Limited.

González-Romá, V., Schaufeli, W. B., Bakker, A. B., & Lloret, S. (2006). Burnout and work

engagement: Independent factors or opposite poles? *Journal of Vocational Behavior*,

68(1), 165–174. doi:10.1016/j.jvb.2005.01.003

Goodman, M., & Schorling, J. B. (2012). A mindfulness course decreases burnout and

improves well-being among healthcare providers. *International Journal of Psychiatry

in Medicine*, *43*(2), 119–128. doi:10.2190/PM.43.2.b

Grossman, P. (2010). Mindfulness for psychologists: Paying kind attention to the perceptible.

Mindfulness, *1*(2), 87–97. doi:10.1007/s12671-010-0012-7

Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress

reduction and health benefits. *Journal of Psychosomatic Research*, *57*(1), 35–43.

doi:10.1016/S0022-3999(03)00573-7

Grossman, P., & Van Dam, N. T. (2011). Mindfulness, by any other name…: Trials and

tribulations of sati in western psychology and science. *Contemporary Buddhism*,

12(1), 219–239. doi:10.1080/14639947.2011.564841

Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement

among teachers. *Journal of School Psychology*, *43*(6), 495–513.

doi:10.1016/j.jsp.2005.11.001

Hariri, A. R., Bookheimer, S. Y., & Mazziotta, J. C. (2000). Modulating emotional responses:

Effects of a neocortical network on the limbic system. *Neuroreport*, *11*(1), 43–48.

Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between

employee satisfaction, employee engagement, and business outcomes: A meta-

analysis. *Journal of Applied Psychology*, *87*(2), 268–279. doi:10.1037//0021-
9010.87.2.268

Hayes, A. M., & Feldman, G. (2004). Clarifying the construct of mindfulness in the context of
emotion regulation and the process of change in therapy. *Clinical Psychology: Science
and Practice*, *11*(3), 255–262. doi:10.1093/clipsy.bph080

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress.
American Psychologist, *44*(3), 513–524. doi:0003-066X/89/$00.75

Hülsheger, U. R., Alberts, H. J. E. M., Feinholdt, A., & Lang, J. W. B. (2013). Benefits of
mindfulness at work: The role of mindfulness in emotion regulation, emotional
exhaustion, and job satisfaction. *Journal of Applied Psychology*, *98*(2), 310–325.
doi:10.1037/a0031313

Hülsheger, U. R., Lang, J. W. B., Depenbrock, F., Fehrmann, C., Zijlstra, F. R. H., & Alberts,
H. J. E. M. (2014). The power of presence: The role of mindfulness at work for daily
levels and change trajectories of psychological detachment and sleep quality.
Manuscript Submitted for Publication.

Jain, S., Shapiro, S. L., Swanick, S., Roesch, S. C., Mills, P. J., Bell, I., & Schwartz, G. E. R.
(2007). A randomized controlled trial of mindfulness meditation versus relaxation
training: Effects on distress, positive states of mind, rumination, and distraction.
Annals of Behavioral Medicine, *33*(1), 11–21. doi:10.1207/s15324796abm3301_2

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients
based on the practice of mindfulness meditation: Theoretical considerations and
preliminary results. *General Hospital Psychiatry*, *4*(1), 33–47. doi:10.1016/0163-
8343(82)90026-3

Kabat-Zinn, J. (1990). *Full Catastrophe Living: Using the wisdom of your body and mind to
face stress, pain, and illness*. New York NY: Delacorte Press.

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: The day reconstruction method. *Science*, *306*(5702), 1776–1780. doi:10.1126/science.1103572

Klatt, M. D., Buckworth, J., & Malarkey, W. B. (2009). Effects of low-dose mindfulness-based stress reduction (MBSR-LD) on working adults. *Health Education & Behavior*, *36*(3), 601–614. doi:10.1177/1090198108317627

Langelaan, S., Bakker, A. B., van Doornen, L. J. P., & Schaufeli, W. B. (2006). Burnout and work engagement: Do individual differences make a difference? *Personality and Individual Differences*, *40*(3), 521–532. doi:10.1016/j.paid.2005.07.009

Lau, M. A., Bishop, S. R., Segal, Z. V., Buis, T., Anderson, N. D., Carlson, L., … Devins, G. (2006). The toronto mindfulness scale: Development and validation. *Journal of Clinical Psychology*, *62*(12), 1445–1467. doi:10.1002/jclp.20326

Leroy, H., Anseel, F., Dimitrova, N. G., & Sels, L. (2013). Mindfulness, authentic functioning, and work engagement: A growth modeling approach. *Journal of Vocational Behavior*, *82*(3), 238–247. doi:10.1016/j.jvb.2013.01.012

Levitt, J. T., Brown, T. A., Orsillo, S. M., & Barlow, D. H. (2004). The effects of acceptance versus suppression of emotion on subjective and psychophysiological response to carbon dioxide challenge in patients with panic disorder. *Behavior Therapy*, *35*(4), 747–766.

Luthans, F., Avey, J. B., Avolio, B. J., Norman, S. M., & Combs, G. M. (2006). Psychological capital development: Toward a micro-intervention. *Journal of Organizational Behavior*, *27*(3), 387–393. doi:10.1002/job.373

Macey, W. H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology*, *1*(1), 3–30.

Marzuq, N., & Drach-Zahavy, A. (2012). Recovery during a short period of respite: The interactive roles of mindfulness and respite experiences. *Work and Stress*, *26*(2), 175–194. doi: 10.1080/02678373.2012.683574

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*(1), 397–422. doi:10.1146/annurev.psych.52.1.397

Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D Drenth & H. Thierry (Eds.), *Handbook of work and organizational psychology* (Vol. 2, pp. 5–33). Hove: Psychology Press.

Narayanan, J., Chaturvedi, S., Reb, J., & Srinivas, E. (2011). Examining the role of trait mindfulness on turnover intentions and job performance: The mediating role of emotional exhaustion. Working paper, National University of Singapore.

Nyklíček, I., & Kuijpers, K. F. (2008). Effects of mindfulness-based stress reduction intervention on psychological well-being and quality of life: Is increased mindfulness indeed the mechanism? *Annals of Behavioral Medicine*, *35*(3), 331–340. doi:10.1007/s12160-008-9030-2

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology*, *9*(2), 79–93. doi:10.1027/1866-5888/a000009

Ortner, C. N. M., Kilner, S. J., & Zelazo, P. D. (2007). Mindfulness meditation and reduced emotional interference on a cognitive task. *Motivation and Emotion*, *31*(4), 271–283. doi:10.1007/s11031-007-9076-7

Ouweneel, E., Blanc, P. M. L., & Schaufeli, W. B. (2012). Don't leave your heart at home: Gain cycles of positive emotions, resources, and engagement at work. *Career Development International*, *17*(6), 537–556. doi:10.1108/13620431211280123

Ouweneel, E., Le Blanc, P. M., Schaufeli, W. B., & van Wijhe, C. I. (2012). Good morning, good day: A diary study on positive emotions, hope, and work engagement. *Human Relations*, *65*(9), 1129–1154. doi:10.1177/0018726711429382

Payne, B. K., Cheng, C. M., Govorun, O., & Stewart, B. D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality and Social Psychology*, *89*(3), 277–293. doi:10.1037/0022-3514.89.3.277

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. doi:10.1037/0021-9010.88.5.879

Reb, J., Narayanan, J., & Chaturvedi, S. (2014). Leading mindfully: Two studies on the influence of supervisor trait mindfulness on employee well-being and performance. *Mindfulness*, *5*(1), 36–45. doi:10.1007/s12671-012-0144-z

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of Management Journal*, *53*(3), 617–635.

Roemer, L., Lee, J. K., Salters-Pedneault, K., Erisman, S. M., Orsillo, S. M., & Mennin, D. S. (2009). Mindfulness and emotion regulation difficulties in generalized anxiety disorder: Preliminary evidence for independent and overlapping contributions. *Behavior Therapy*, *40*(2), 142–154. doi:10.1016/j.beth.2008.04.001

Ryan, R. M., & Deci, E. L. (2008). From ego depletion to vitality: Theory and findings concerning the facilitation of energy available to the self. *Social and Personality Psychology Compass*, *2*(2), 702–717. doi:10.1111/j.1751-9004.2008.00098.x

Salanova, M., Agut, S., & Peiró, J. M. (2005). Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service

climate. *Journal of Applied Psychology*, *90*(6), 1217–1227. doi:10.1037/0021-9010.90.6.1217

Salanova, M., Schaufeli, W. B., Xanthopoulou, D., & Bakker, A. B. (2010). The gain spiral of resources and work engagement: Sustaining a positive worklife. In A. B. Bakker & M. P. Leiter (Eds.), *Work Engagement: A Handbook of Essential Theory and Research.* (pp. 118–131). New York NY: Psychology Press.

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior*, *25*(3), 293–315. doi:10.1002/job.248

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement*, *66*(4), 701–716. doi:10.1177/0013164405282471

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, *3*(1), 71–92.

Schroevers, M. J., & Brandsma, R. (2010). Is learning mindfulness associated with improved affect after mindfulness-based cognitive therapy? *British Journal of Psychology*, *101*(1), 95–107. doi:10.1348/000712609X424195

Sears, S., & Kraus, S. (2009). I think therefore i om: Cognitive distortions and coping style as mediators for the effects of mindfulness meditation on anxiety, positive and negative affect, and hope. *Journal of Clinical Psychology*, *65*(6), 561–573. doi:10.1002/jclp.20543

Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: a new approach to preventing relapse.* New York: Guilford.

Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching self-care to caregivers: Effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology*, *1*(2), 105–115. doi:10.1037/1931-3918.1.2.105

Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, *62*(3), 373–386. doi:10.1002/jclp.20237

Smith, B. W., Shelley, B. M., Dalen, J., Wiggins, K., Tooley, E., & Bernard, J. (2008). A pilot study comparing the effects of mindfulness-based and cognitive-behavioral stress reduction. *The Journal of Alternative and Complementary Medicine*, *14*(3), 251–258. doi:10.1089/acm.2007.0641

Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology*, *88*(3), 518–528. doi:10.1037/0021-9010.88.3.518

Sonnentag, S., Binnewies, C., & Mojza, E. J. (2010). Staying well and engaged when demands are high: The role of psychological detachment. *Journal of Applied Psychology*, *95*(5), 965–976. doi:10.1037/a0020032

Sonnentag, S., Dorman, C., & Demerouti, E. (2010). Not all days are created equal: The concept of state work engagement. In A. B. Bakker & M. P. Leiter (Eds.), *Work engagement: Recent developments in theory and research* (pp. 25–38). New York NY: Psychology Press.

Sonnentag, S., Mojza, E. J., Binnewies, C., & Scholl, A. (2008). Being engaged at work and detached at home: A week-level study on work engagement, psychological detachment, and affect. *Work & Stress*, *22*(3), 257–276. doi:10.1080/02678370802379440

Tipsord, J. M. (2009). *The effects of mindfulness training and individual differences in mindfulness on social perception and empathy*. (Doctoral Dissertation) University of Oregon, Oregon. Retrieved from https://scholarsbank.uoregon.edu/xmlui/handle/1794/10357

Vieten, C., & Astin, J. (2008). Effects of a mindfulness-based intervention during pregnancy on prenatal stress and mood: Results of a pilot study. *Archives of Women's Mental Health*, *11*(1), 67–74. doi:10.1007/s00737-008-0214-3

Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness—the Freiburg Mindfulness Inventory (FMI). *Personality and Individual Differences*, *40*(8), 1543–1555. doi:10.1016/j.paid.2005.11.025

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063.

Weigl, M., Hornung, S., Parker, S. K., Petru, R., Glaser, J., & Angerer, P. (2010). Work engagement accumulation of task, social, personal resources: A three-wave structural equation model. *Journal of Vocational Behavior*, *77*(1), 140–153. doi:10.1016/j.jvb.2010.03.002

Weiss, H. M., & Cropanzano, R. (1996). Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. *Research in Organizational Behavior: An Annual Series of Analytical Essays and Critical Reviews*, *18*, 1–74.

Wolever, R. Q., Bobinet, K. J., McCabe, K., Mackenzie, E. R., Fekete, E., Kusnick, C. A., & Baime, M. (2012). Effective and viable mind-body stress reduction in the workplace: A randomized controlled trial. *Journal of Occupational Health Psychology*, *17*(2), 246–258. doi: 10.1037/a0027278

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2007). The role of

personal resources in the job demands-resources model. *International Journal of*

Stress Management, *14*(2), 121–141. doi:10.1037/1072-5245.14.2.121

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Work

engagement and financial returns: A diary study on the role of job and personal

resources. *Journal of Occupational and Organizational Psychology*, *82*(1), 183–200.

doi:10.1348/096317908X285633