Mindfulness, Authentic Functioning, and Work Engagement:

A Growth Modeling Approach

Abstract

Previous research has demonstrated that mindfulness helps reduce symptoms of work stress but research has yet to clarify *whether* and *how* mindfulness is linked to work engagement. Using self-determination theory we hypothesize that mindfulness is positively related to work engagement and that this relationship can be better understood through authentic functioning. We collected survey data on these variables in the context of six mindfulness trainings at three points in time: before the training, directly after the training, and four months after training. We examined the relationships between mindfulness, authentic functioning, and work engagement, both statically (cross-sectionally) and dynamically as they change over training. Results show that authentic functioning mediates the relationship between mindfulness and work engagement, partially for the static relationship and fully for the dynamic relationship. We discuss how these findings further clarify the role of mindfulness in the workplace and highlight the implications for the literature on authentic functioning and work engagement.

Keywords: mindfulness, authentic functioning, work engagement, growth modeling.

Mindfulness, Authentic Functioning, and Work Engagement: A Growth Modeling Approach

Engaged employees have been shown to be more happy and productive (e.g. Rich, LePine, & Crawford, 2010). Work engagement can be defined as "a positive, fulfilling, work-related state of mind that is characterized by vigour, dedication, and absorption" (Schaufeli, Salanova, González-Romá, & Bakker, 2002b, p. 74). The positive consequences of work engagement for organizations lead to increased interest in its causes (Rich et al., 2010). Initially, research focused on establishing the static antecedents of work engagement and investigated personality characteristics (e.g., Langelaan, Bakker, Van Doornen, & Schaufeli, 2006) and job demands/resources (e.g., Mauno, Kinnunen, & Ruokolainen, 2007). One problem with the static antecedents view, however, is that it does not shed light on the proactive role individuals can play in stimulating their own work engagement. In the current paper we investigate 1) *whether* mindfulness is linked to more work engagement and 2) *how* authentic functioning help us understand this relationship.

Mindfulness can be defined as a *receptive attention to* and *awareness of* external (e.g., sounds) and internal (e.g. emotions) present-moment states, events and experiences (Brown & Ryan, 2003; Dane, 2011). Whereas awareness involves experiencing and perceiving reality, attention guides awareness to specific elements of the experienced reality (Bishop, Lau, Shapiro, Carlson, Anderson, Carmody, et al, 2004). Receptiveness refers to remaining experientially open (Bishop et al., 2004) by being non-evaluative and non-defensive (Kabat-Zinn, 2003). It involves experiential processing of information of one's experiences without judging their emotional value, independently of whether the present experiences are positive or negative (see Brown, Ryan, & Creswell, 2007). Being nonjudgmental, however, should not be confused with being indifferent or aloof. Rather, mindfulness helps people be in the present moment and accept it for what it is.

An individual's mindfulness can be developed and enhanced through mindfulness training, a method involving the use of meditation exercises (Kabat-Zinn, 2003). Mindfulness training, such as that in Mindfulness-Based Stress-Reduction (MBSR) training programs, systematically decrease the psychological as well as the physical symptoms of stress (for a meta-analysis see Chiesa & Serretti, 2009). Moreover, mindfulness training has been found to reduce illness symptoms (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008), experienced negative affect, rumination (e.g., Chiesa & Serretti, 2009), and burnout (Geller, Krasner, & Korones, 2010; Hülsheger, Alberts, Feinholdt, & Lang, 2012). Mindfulness training has also been found to have a beneficial effect on various well-being related outcomes, such as the experience of positive emotions, coping capabilities, and purposefulness in life (e.g. Fredrickson et al., 2008). The work-specific outcomes of mindfulness, however, remain largely unaddressed (Dane, 2011). For example, we know very little about whether mindfulness is positively related to work engagement, the antipode of burnout (Bakker, Schaufeli, Leiter, & Taris, 2008; González-Romá, Schaufeli, Bakker, & Lloret, 2006).

In light of promising findings (cf. supra), the question of "*whether* mindfulness and mindfulness training work" is being gradually replaced by another question, "*how* or through what mechanism they work" (Brown et al., 2007). In a theoretical paper, Shapiro, Carlson, Astin, and Friedman (2006) called for research that accounts for the mechanisms though which mindfulness induces its effects. Nonetheless, the empirical studies looking into mediating factors remain scarce (Allen & Kiburz, 2012; Shapiro et al., 2006). Our study answers this call for research by looking at the mediating role of authentic functioning: "the unobstructed operation of one's true, or core, self in one's daily enterprise" (Kernis, 2003, p. 13). The term authentic functioning describes an open and non-defensive way of interacting with oneself and others (Leroy, Anseel, Gardner, & Sels, in press) and we expect it describes the behavioral mechanism through which mindfulness relates to work engagement.

Theory and Hypotheses

We use self-determination theory to predict that mindfulness enhances work engagement in two ways: 1) directly, by making people more attentive and focused, and 2) indirectly, by enhancing people's internal awareness, which generates higher levels of authentic functioning (Brown & Ryan, 2003). First, mindfulness may directly support work-engagement through a sharpened attention to activities. Brown and Ryan (2003) proposed that a receptive attention to activities enhances the quality of experiences such that individuals become happily immersed and intrinsically motivated in them, similar to a state of flow (Csikszentmihalyi, 1997). Flow, however, is a short-term and more fleeting experience of being fully there in the present moment (Csikszentmihalyi, 1997), whereas work engagement reflects more stable or eudaimonic well-being. Eudaimonic well-being originates from one's true self or "daimon" (Illies, Morgeson, & Nahrgang, 2005; Ryan & Deci, 2001).

Accordingly, the second (indirect) route by which mindfulness may support work engagement is by an enhanced quality of internal awareness (i.e., mindful awareness of one's emotions, thoughts, and behaviors; Brown & Ryan, 2003). Internal awareness supports being aware of and acting in accordance with one's core or true self (Kernis & Goldman, 2006). In turn, being true to oneself has been argued and demonstrated to foster more autonomous motivation (Illies et al., 2005; Kernis & Goldman, 2006) supporting engagement in one's work (Meyer & Gagné, 2008). SDT is careful to note, however that being autonomous is not the same as being independent (see also Leroy et al., in press). In fact, SDT suggests that people become more autonomously motivated when they internalize external role demands into a core sense of self. In this sense SDT acknowledges that one's true self is also a function of continuously evolving environmental demands. Authentic functioning contributes to this process of internalization in that authentic individuals express their true selves (open) while being willing to take relational demands into account (humble).

Mindfulness has been studied both on the inter- as well as on the intra-individual level (Brown et al., 2007). Specifically, mindfulness has been investigated in a) a more inter-individual fashion, to describe differences between individuals at one specific point in time and in b) an intra-individual fashion, to describe a state of being that is open to change within individuals over time. Similarly to mindfulness, authentic functioning can also be seen as an individual-difference psychological construct (Kernis & Goldman, 2006) as well as a changeable intra-individual construct (Novicevic, Harvey, Buckley, Brown, & Evans, 2006). Finally, although work engagement was initially depicted as a mostly stable trait (e.g., Kahn, 1990), recent research suggests that it can change over time, thus it exhibits both inter- as well as intra-individual properties (e.g, Sonnentag, Dormann, & Demerouti, 2010).

In this study, we investigate both inter-individual differences and intra-individual differences in mindfulness, authentic functioning, and work engagement in the context of mindfulness training. The mindfulness training provides us with the opportunity to study both the static and the dynamic relationships between the variables under investigation. The static relationships look at how the variables relate to each other cross-sectionally, at one specific point in time. The dynamic relationships look at how the variables change over time. In this paper we hypothesize both the *static* and *dynamic* relationships of these variables as they evolve in the context of mindfulness training. Combining static and dynamic relationships is further interesting as it demonstrates how dynamic relationships are a function of their static or baseline level. We present an overview of our hypothesized research model in Figure 1.

Insert Figure 1 about here

Mindfulness and Work Engagement

According to Rich et al. (2010) engaged individuals can be described as being fully immersed in the activities they are doing. We expect that mindfulness is positively related to work engagement by enhancing this experience of being immersed and attentive. Receptive attention enhances the clarity and vividness of one's experiences such that individuals become more engulfed and positively engaged in the activities (Brown & Ryan, 2003). Similarly, Kahn (1992) argued that personal engagement in work is a function of being psychologically present at work. Psychological presence is similar to mindfulness in that it reflects whether individuals are "fully there" in the present moment, open and attentive. Psychological presence is positively related to work engagement in that individuals who are more present in their work roles experience more personal engagement (Kahn, 1990).

In addition to being more immersed in activities, mindfulness can also foster engagement by helping individuals see existing activities in novel and more interesting ways, thus promoting a heightened state of involvement and wakefulness in those activities (Langer & Moldoveanu, 2000). Mindfulness can be instrumental in shifting one's perspective or "reperceiving" what is already known (Carmody, Baer, Lykins & Olendzki, 2009; Shapiro et al., 2006), thus keeping employees interested, attentive, and involved in their work. To understand how this may work, imagine engaging in what you consider to be a work-related activity, but approach it as though it was the first time: receptive and attentive to see what this activity has to offer. This open awareness may lead you to discover new and interesting aspects of the task that before were not as "clear" to you. As a result you may feel more engaged in the activity. We thus hypothesize:

Hypothesis 1a: Mindfulness and work engagement are positively related.

Hypothesis 1b: Increases in mindfulness lead to increases in work engagement.

Mindfulness and Authentic Functioning

Authentic functioning is being aware of oneself and regulating oneself accordingly (Avolio & Gardner, 2005). We predict that mindfulness is related to authentic functioning in that a receptive internal awareness of one's thoughts, emotions and behaviors helps individuals to become more aware of one's "true" self (Brown & Ryan, 2003). In this regard, Koole, Govorun, Cheng, & Galluci (2009) demonstrated that mindfulness helps with "pulling yourself together": promoting congruence between more implicit and explicit measures of self-esteem. Interestingly, mindfulness did not promote increase in one's self-worth, it just helped people align their implicit and explicit self-esteem. Similarly, Brown and Ryan (2003) suggested that meditation practices invite individuals to be aware of their behavior, thoughts and feelings and maintain a non-judgmental attitude in processing this self-related information. As self-awareness and self-acceptance increase, individuals will be more open to express the self in a manner that is in accordance with one's true self (Illies et al., 2005). Shapiro et al. (2006) summarized that mindfulness training operates through the clarification of one's personal values and related increases in self-management.

In addition to value clarification and self-management, mindfulness has also been argued and shown to be related to being open and non-defensive (Kernis & Goldman, 2006). Heppner et al. (2008) demonstrated that mindfulness, both statistically and dynamically, helps to reduce aggressive behavior in response to social exclusion feedback (e.g., "Nobody wants to work with you"). Mindfulness helps you to become aware of your automatic defensive reactions and engage in less ego-defensive behavior, thus promoting more authentic functioning. Accordingly we hypothesize:

Hypothesis 2a: Mindfulness and authentic functioning are positively related.

Hypothesis 2b: Increases in mindfulness lead to increases in authentic functioning.

Authentic Functioning and Work Engagement

Kahn (1990) suggests that one's engagement in work-related tasks is a function of whether one invests one's personal or "true" self at work. Individuals are more likely to feel engaged in activities when they are able to express their full and personal self at work (cognitively, emotionally, and physically) (Kahn, 1990, 1992). Similarly to Kahn (1990), self-determination theory (SDT) offers that autonomous motivation is positively related to work engagement (Gagné & Deci, 2005). When employees feel that they are the author of their own behavior at work, or in other words, experience a sense of volition, they are more autonomously motivated for work-related activities and are thus more likely to experience personal engagement in those activities (Meyer & Gagné, 2008). Authentic functioning contributes to autonomous motivation in that in being true to oneself at work, employees feel as though they are the author of their own behavior (Leroy et al., 2012).

Individuals cannot however always express their true selves in the workplace and some behavior will be more extrinsically motivated (Gagné & Deci, 2005). SDT argues, however, that there may still be differences in the extent to which this behavior is internalized into a core sense of self such that it becomes more self-determined. Leroy et al. (in press) argue that authentic functioning helps with this process of internalization in that authentic individuals express their true selves ("throwing themselves out there") but also remain open to conflicting feedback. This process of testing boundaries and internalization of external role demands will result in more internalized extrinsic motivation and thus work engagement (Leroy et al., in press). Accordingly, we hypothesize:

Hypothesis 3a: Authentic functioning and work engagement are positively related.

Hypothesis 3b: Increases in authentic functioning lead to increases in work engagement.

Mindfulness, Authentic Functioning and Work Engagement

Mindfulness helps individuals become more attentive and openly aware (Brown & Ryan, 2003) and makes it possible for them to tune in to their true self (self-awareness) and to be their true self (self-regulation). Adapting this to the work context, mindfulness helps individuals to make the conscious decision to engage in work-related activities, thus internalizing external role demands into their core sense of self (Weinstein, Brown, & Ryan, 2009). Work engagement is dependent on people investing their "true self" in the work (Kahn, 1990; 1992), thus, by supporting individual's authentic functioning, mindfulness promotes work engagement.

In addition to this indirect effect, however, there may be a residual direct effect of mindfulness on work engagement because of a moment-to-moment reappreciation of current experiences in a novel, more stimulating way. For example, being mindful while writing a report at work may increase the likelihood of being more engaged or absorbed in the writing process (similar to a state of flow), without internalization of the activity itself. Accordingly, we predict that authentic functioning will only partially mediate the effect of mindfulness on work engagement for the static relationship. For the dynamic relationship, however, we expect full mediation. Increases in work engagement over a substantial amount of time are less likely to show a momentary reappreciation of activities but instead to point at a deep-founded process of internalization of activities into a core sense of self through authentic functioning. Accordingly, we hypothesize that:

Hypothesis 4a: Authentic functioning partially mediates the relationship between mindfulness and work engagement.

Hypothesis 4b: Increases in authentic functioning mediate the effect of increases in mindfulness on increases in work engagement.

Method

Participants and Procedure

We collected the data in collaboration with a training institute for mindfulness. This institute employed several mindfulness trainers who provide in-company mindfulness training. For this study we collaborated with two trainers (one male, one female) and collected data during a one year time period. The present research incorporates data at six distinct organizations in the area of telecommunication, consulting, and architecture (for-profit) and parliamentary services, public services, and health insurance (not-for-profit).

The trainings were offered on a voluntary basis to a large part of the workforce. Previous research has typically used a waiting-list control group to estimate whether the change in the study variables that can naturally be observed is meaningful (see for example Davidson, Kabat-Zinn, Schumacher, Rosenkranz, Muller, Santorelli, et al., 2003; Fredrickson et al., 2008). Accordingly, in addition to the six trainings that were mentioned earlier, in two of the participating organizations we were able to randomly assign 14 employees to a waiting-list control group. These waiting-list control groups were motivated to engage in mindfulness training but would receive the training at a later point in time. This brings the total of groups to eight groups, 6 experimental conditions (N = 76) and 2 waiting-control groups (N = 14).

Respondents (training and control) received questionnaires at three separate points in time (Mitchell & James, 2001). At Time 1 (before the training) 83 of 90 participants completed the survey to establish a baseline, constituting a response rate of 92 %. At Time 2 (two months after the training), 76 respondents (92 % of initial sample) filled out the survey to look at changes over the course of the training. At Time 3, (four months after the training) 68 respondents (75 % of initial sample) completed our survey to look at further growth after the training. Our final sample thus consisted of 68 individuals. Follow-up e-mails and telephone calls suggested that the non-response was attributable to respondents who dropped

out of the training because they were sick or on vacation leave. The average respondent was 42 years old (*SD* = 9.65) and had worked for their company for an average of 10 years (*SD* = 6.47). Fifty-three percent had received a graduate degree and 75% of respondents were women. Respondents worked an average of 40 hours per week (*SD* = 6.80). 68% of participants to the training were professionals, 24% occupied positions in management and 8% occupied administrative positions. The training groups were divided as follows: 12% in health insurance, 22% in public services, 13% in consulting, 15% in telecommunications, 25% parliamentary services and 13% architecture.

Mindfulness Training

The mindfulness training was modeled after the well-established and manualized mindfulness-based stress-reduction (MBSR) programs developed by Kabat-Zinn (2003). The training took eight consecutive weeks, with weekly sessions of about three hours. In these sessions, meditation practices were introduced and participants were asked to continue these meditation practices daily at home during the training period and after training had ended. Meditation practices typically took from 30 to 90 minutes. Examples of specific practices were a mindful body scan, mindful yoga, a mindful breathing meditation, a mindful walking meditation, and mindful awareness of thoughts, feelings and emotions. In addition to these formal meditation practices, participants were asked to train mindfulness in more informal meditation practices at home or at work. For example, trainers would ask participants to practice mindfulness informally through mindful coffee or lunch breaks, mindful conversations with boss or colleagues, and mindful concentration on specific work tasks.

The mindfulness training was highly standardized in both content and format of delivery. The practices were pre-recorded and interaction amongst trainer and participants was limited. Communication in the training was restricted to the sharing of experiences related to the meditations during the sessions or the practice of these meditations outside of

the training session. Participants were given the personal responsibility to cultivate their own awareness during and after training. Given the standardized nature of the training and the importance of personal effort, we expected that changes during training should be a function of meditation practice but not of unique characteristics of trainee or training.

Measurement Instrument

Mindfulness. We measured mindfulness through the mindfulness attention and awareness scale (MAAS) (Brown & Ryan, 2003). The MAAS consists of 15 items asking respondents to indicate when they lack mindfulness in thoughts, feelings or behavior. We asked respondents to use a 6-point Likert scale from 1 (*almost always*) to 6 (*almost never*) to indicate how frequently certain experiences occurred at work. Example items are: "I could be experiencing some emotion and not be conscious of it until some time later." and "It seems I am running on automatic without much awareness of what I'm doing." We found Cronbach alpha coefficients of .89 at Time 1, .89 at Time 2, and .87 at Time 3.

Authentic functioning. We used the 16-item authentic functioning index of Leroy et al. (in press) in a work-related setting (see also Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008). Example items are: "I know what demotivates me.", "I act in accordance with what I believe in.", and "I often pretend to be someone I am not." (reversed). Items were scaled on a 5 point-Likert-scale ranging from *completely agree* to *completely disagree*. The coefficient alpha was .87 at Time 1, .83 at Time 2, and .77 at Time 3.

Work engagement. Schaufeli, Martinez, Pinto, Salanova, & Bakker (2002a) validated a three-component measure of work engagement consisting of vigor, dedication and absorption. 17 items were measured on a 7-point Likert scale ranging from *never* to *always*. Example items for the components of vigor, dedication and absorption are respectively: "At my work, I feel bursting with energy."; "I find the work that I do full of meaning and

purpose.", and "Time flies when I am working.". The coefficient alpha was .88 at Time 1, .85 at Time 2, and .86 at Time 3.

Control variables. At Time 2, directly after the training, we asked respondents to report how much they meditated, ranging from never to six days in the week (excluding the day of the training session). To avoid recall bias, we asked respondents to go back to their training manual where they were required to write down the amount of practice each week. On average, respondents practiced 25 days out of 48 (*SD* = 7.71). At Time 3, we asked respondents how much they meditated after the training had taken place. We asked them to indicate the time spent in "formal meditation", "informal meditation at the workplace" and "informal meditation at home" using a 6-point Likert scale ranging from every day (6), a few times every week (5), once every week (4), a few times per month (3), once a month (2), never (1). We averaged practices across the domains (α = .82). We found that the amount that trainees practiced after the training was moderate (M = 2.8; SD = 1.04, Median = 3).

Analyses

We analyzed the data using structural equation modeling using the Mplus statistical package in two steps (McDonald & Ho, 2002). In a first step, we conducted a confirmatory factor analysis on our measurement model to assure that our variables were empirically distinct. In addition, we tested for measurement invariance over time to assure that changes in variables do not reflect changes in how measures are perceived over time periods (Vandenberg, 2002). In a second step, we tested our hypotheses with a growth model analysis (e.g., Ng, Feldman, & Lam, 2010). To be more exact, we tested the static hypotheses by specifying an equal loading of each measurement period on an initial status factor. We tested the dynamic relationships by specifying equally spaced loadings between different measurement periods on a rate of change factor, thus demonstrating a linear growth trajectory (e.g. Ployhart & Vandenberg, 2009).

Results

We used random item parcels to validate the overall measurement model to maintain a favorable indicator-to-sample-size ratio. Following the suggestions of Little, Cunningham, Shahar, and Widaman (2002) we applied a domain-representative approach that constructs parcels using items from sub-dimensions of each construct. For example, for authentic functioning we used four parcels that combined random items from the four sub-dimensions. A confirmatory factor analysis on these parcels showed a reasonable fit to the data (Hu & Bentler, 1999): χ^2 (124) = 141.98 (p = .13), RMSEA = .04, CFI = .99, SRMR = .10. When we alternately constrained each pairwise factor correlation to unity, we found that, in each case, constraining the factor correlation significantly worsened model fit ($p < 0.05$), suggesting that our study variables are distinct. In addition, when we constrained the factor loadings from the different time periods to be equal, we found no significant drop in model fit. This suggests that our measures were not perceived differently over time periods.

Table 1 depicts the means, standard deviations and Cronbach alpha's of the study variables, including the rate of long-term change. Table 1 displays significant correlations in the direction of our hypotheses. Table 1 also suggests that there are mean differences between the different time periods. We conducted a multivariate repeated measure analysis to investigate whether these differences are significant. We found a significant multivariate effect in the study variables over time, Wilks Lambda = .11; $F(6, 62) = 87.06$, $p < .05$. We further found significant increments in mindfulness, $F(1.7, 111.02) = 223.97$, $p < .05$, authentic functioning, $F(1.5, 101.97) = 190.65$, $p < .05$ and work engagement, $F(1.9, 130.35) = 172.24$, $p < .05$. We also tested for a quadratic effect to account for the possibility of smaller increments after the training than during the training. This only appeared to be the case for increments in mindfulness over time during the training, $F(1, 67) = 8.62$, $p < .05$, and therefore, we will examine linear effects over time in subsequent analyses.

Insert Table 1 about here

To provide more evidence for the meaningfulness of our change variables, we also compared changes over time between respondents from the training groups and the waiting-list groups. First, we did not find a significant main effect between groups over time, Wilks Lambda = 0.93; $F(3, 64) = 87.06$; $p = .18$. Thus, there seemed to be no differences between the training and waiting list group in initial level of the focal variables, supporting random assignment. However, we found a significant interaction effect between time and type of group, suggesting that changes over time were dependent on actual participation in the training, Wilks Lambda = 0.47; $F(6, 61) = 11.30$; $p < .05$. This was the case for each of the dependent variables.

Next we explored whether the positive effects in the training group were contingent on the amount of meditation practice during or after training. A significant interaction effect between time and meditation practice during training could be observed, Wilks Lambda = .76, $F(6, 50) = 2.66$; $p < .05$. We further observed a positive effect on mindfulness, $F(1.9, 104) = 3.29$; $p < .05$, authentic functioning, $F(1.5, 84.65) = 7.07$; $p < .05$, but not work engagement, $F(1.9, 107.03) = .61$; $p > .05$. These results tentatively suggest that meditation practice during training has a positive effect on increases in mindfulness and on increases in authentic functioning, but not on work engagement. We found no significant interaction effect between time and meditation practice after training, Wilks Lambda = .97; $F(6, 50) = .25$; $p = .96$, suggesting that changes cannot be attributed to amount of meditation practice after training. Finally, we found no significant effect ($p > .05$) of characteristics of the training (training group, trainer) or characteristics of the trainee (age, tenure, gender, educational level, position in the organization or hours of work per week) on increases over time.

Growth Model

We ran a growth analysis to test our hypothesized model. The growth model adds to previous analyses in that it specifies and tests the static and dynamic relationships between the study variables. We found a reasonable fit to the data for our hypothesized model: χ^2 (19) = 27.25 (p = 0.09), SRMR = 0.11, RMSEA = 0.08, CFI = 0.98. We report the results of these analyses in Figure 2. First, from a model excluding authentic functioning, we established support for Hypothesis 1a and 1b. The initial status and rate of increase in mindfulness were significantly and positively related to the initial status (β = 0.41, p < .05) and rate of increase (β = 0.32, p < .05) in work engagement. Next, we support Hypothesis 2a and 2b. The initial status and rate of increase in mindfulness were significantly and positively related to the initial status (β = .48, p < .05) and rate of increase (β = .51, p < .05) in authentic functioning. In addition, we support both Hypothesis 3a and 3b. The initial status and rate of increase in authentic functioning were significantly and positively related to the initial status (β = .34, p < .05) and rate of increase (β = .28, p < .05) in work engagement.

Hypothesis 4a and Hypothesis 4b predicted that authentic functioning would mediate the static and dynamic relationship between mindfulness and work engagement. We tested these indirect effects with 5000 bootstrap iterations. Mindfulness showed an indirect effect for initial status (β = 0.22, CI^{95} 0.40 to 0.04)) and rate of increase (β = 0.19, CI^{95} 0.34 to 0.04) on work engagement through authentic functioning. We found an additional effect for initial status (β = .25, p < .05) but not for rate of increase (β = .14, p = .28) suggesting full mediation for rate of increase and partial mediation for initial status. Finally, initial status was significantly correlated with change in mindfulness (r = -.10, p = .05), suggesting that increases in mindfulness are smaller for higher initial scores.

Insert Figure 2 about here

Discussion

This study set out to investigate whether the mindset of mindfulness (a receptive attention and awareness to the present moment) would be linked to feelings of engagement (vigor, dedication, absorption) in one's daily work. We further hypothesized that the behavioral mechanism of authentic functioning (being more open and non-defensive) would mediate those relationships. This is in line with the central tenets of self-determination theory (Deci & Ryan, 2000) that posits that individuals become more engaged in activities because they are happily immersed and intrinsically motivated in them (Brown & Ryan, 2003; Kahn, 1992). Furthermore, SDT postulates that individuals become more engaged in activities (Meyer & Gagné, 2008) when they effectively internalize external role demands into a core sense of self. Authentic functioning describes this process of internalization as authentic persons are both open and humble, expressing their true selves but willing to adapt at the same time.

We tested these relationships both statically and dynamically, demonstrating that they work both cross-sectionally as well as that the variables change over the course of a mindfulness training. The only difference between the static and dynamic results is that for the dynamic process authentic functioning fully mediates the effects of mindfulness on work engagement: to become more engaged in your work you need to internalize work-related activities, consciously choosing to engage in them for self-determined reasons. For the static relationships, however, mindfulness can enhance engagement because one is more "fully there" in the activity, enhancing the quality of the experience. In other words, whereas cross-sectionally mindfulness may still be directly related to work engagement because of short-term feelings of flow, our findings suggest that for the dynamic relationships authentic functioning fully supports changes in long-term or eudaimonic engagement (Dane, 2011; Schaufeli et al., 2002a).

These findings make several contributions to previous research. First, they suggest mindfulness is important not only for reduction of negative symptoms of burnout (Geller et al., 2010; Hülsheger et al., 2012), but also for strengthening the personal resources of work engagement. Second, our findings provide evidence that mindfulness is a meaningful antecedent of authentic functioning (Gardner, Avolio, Luthans, May, & Walumbwa, 2005; Illies et al., 2005). Third, our results provide empirical evidence for the assumption that authentic functioning is an antecedent of work engagement (Gardner et al., 2005; Ilies et al., 2005; Leroy et al., in press).

Future Research

In this section we offer how future research can build on the findings in this study. For example, future research could use a diary-method (e.g. Ohly, Sonnentag, Niessem, & Zapf, 2010) and ask training participants to report on random intervals during the training period about their positive experiences of flow and authentic functioning. Grounded in the theory and research reported in this paper, we would expect that mindfulness training will initially induce positive and short term peak experiences of flow during the training. However, as the training evolves, we may see a drop in these positive emotional states as individuals become more confronted with the self (increase in self-awareness) and go through the difficult process of changing oneself accordingly (self-regulation). Near the end of the training however, increased self-awareness and self-regulated functioning should have increased personal resiliency and should thus provide more stability in overall feelings of work engagement.

A second avenue for research is to see how mindfulness interacts with existing job demands and job resources in predicting work engagement. We expect that individuals who maintain a receptive attention and awareness are more likely to perceive job demands as challenges rather than as hindrances (Crawford et al., 2010). In support of this reasoning, previous research has found a positive interaction between mindfulness and positive

psychological capital on the experience of positive emotions (Avey, Wernsing, & Luthans, 2008). Furthermore, Weinstein et al. (2009) found that mindfulness fosters a more benign appraisal of stressful conditions and that mindful individuals use more approach rather than avoidance strategies in coping with stressful demands. Future research could clarify these relationships.

Third, future research could investigate how mindfulness and its development foster employee performance. A substantial amount of literature has confirmed the positive effects of mindfulness on clinical outcomes (for an overview see Brown et al., 2007). Research on work-related performance and mindfulness is however scarce (Dane, 2011). Mindfulness may be particularly relevant to foster measures of resilient performance in a dynamic work environment (Dane, 2011; Weick & Sutcliffe, 2001). Previous research has shown that individuals in a mindfulness training score better on tasks that require one to ignore conflicting messages: d2-concentration task and Stroop task (Moore & Malinowski, 2009), skills that are particularly relevant in a dynamic task environment that requires multi-tasking and the switching of attention (Leroy, 2009).

Fourth, future research should study whether mindfulness has a "dark side". There have been no studies to date suggesting that mindfulness has any negative long-term effects. Even in studies which included chronic pain patients, mindfulness training that made participants aware of, attentive to, and accept the pain as a part of themselves showed decline in experienced pain during and after the course of the training (see Kabat-Zinn, Lipworth, & Burney, 1985; effects present 15 months after training Kabat-Zinn, Lipworth, Burney, & Sellers, 1987, effects present four years after training). This does not go to say that the process of training mindfulness is necessarily easy. Unlike training that focuses on avoidance and distraction, mindfulness requires being aware and attentive to one's experiences, even if those are negative (e.g., pain). Accordingly, initially it is possible for mindfulness to be

associated with some discomfort as people learn how to be aware and attentive without being overwhelmed by their emotions and thoughts about their experiences (e.g., Frederickson et al., 2008). Given attention to and accepting these painful experiences requires a lot of personal resiliency and social support. Future research should study "when mindfulness can go wrong" and highlight the boundary conditions for mindfulness training.

Limitations

There are a number of limitations to our study that should be acknowledged. First, drawing any conclusions regarding the effectiveness of mindfulness training should be done with caution. We compared changes in our variables to a waiting-list control group only to establish the meaningfulness of these changes over training. Although the differences between the training group and waiting-list control condition were a function of meditation practice and not characteristics of the trainee or trainer, there is no definite way to rule out trainer demands, the creation of expectations, or non-specific effects regarding delivery format (see also Fredrickson et al., 2008). Thus, future research should use experimental methods to determine to what extent mindfulness training enhances work engagement.

Second, the variables in our study were rated by the same source (Podsakoff, Mackenzie, Lee & Podsakoff, 2003). While our use of longitudinal data weakens potential common method bias related to one specific measurement moment, our data is still self-report, which may have inflated some of the correlations. Future research should include alternative and more objective measures for some of the variables included in this study. For instance, future research could demonstrate how mindfulness training relates to changes in neurological measures of enhanced attention (see for example Davidson et al., 2003) or use an implicit measure of authenticity (Koole et al.,2009). An alternative avenue may be to use ratings of authenticity from different sources. One specific suggestion is to look at authentic leadership. Measures of authentic leadership are similar to the measure of authentic

functioning but are typically measured as a direct report from followers (Walumbwa et al., 2008). Previous research has found that mindfulness is related to perceptions of leader authenticity (Kawakami, White, & Langer, 2000) and that leader authenticity may translate into leader and follower well-being (Macik-Frey, Quick, & Cooper, 2009).

Third, because we focused on how an individual can play a proactive role in increasing their own work engagement, this paper took a relatively individualistic view of work engagement, independently of the surrounding environment (e.g., job demands and resources). Although this choice may be viewed as a limitation because it does not incorporate context, by directing attention to the role the individual plays in creating their own work engagement we contribute to the literature by addressing an understudied aspect. Nonetheless, future work should look in greater detail into the interaction between individual and context, for example by investigating how mindfulness can help individuals reperceive work demands as challenges rather than as hindrances (Crawford, LePine, & Rich, 2010).

Conclusion

The findings reported in this study suggest that mindfulness and meditation practices support the positive and work-related outcome of work engagement. Furthermore, we found that these relationships can be better understood by considering employee authentic functioning, the extent to which employees are aware of and behave in accordance with one's core or true sense of self. This is important as staying true to one's core sense of self clarifies how mindful employees attain more stable work-related well-being. Overall, our findings contribute to our understanding of the positive role of mindfulness at work.

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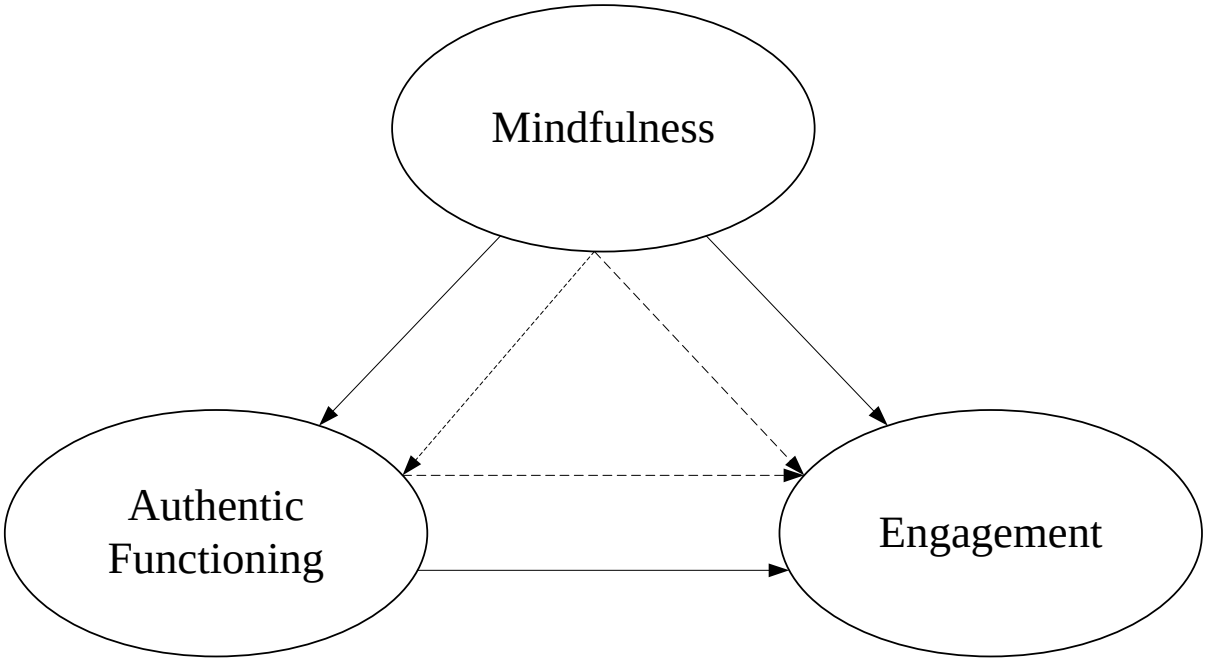
Table 1

Means, Standard Deviations, Cronbach Alpha's and Correlations Among Study Variables

	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1.	Mindfulness (T1)	3.42	.64	.89										
2.	Mindfulness (T2)	4.04	.60	.75**	.89									
3.	Mindfulness (T3)	4.45	.56	.64**	.84**	.87								
4.	Auth Funct (T1)	2.98	.57	.41**	.32**	.25*	.87							
5.	Auth Funct (T2)	3.38	.38	.36**	.50**	.48**	.71**	.83						
6.	Auth Funct (T3)	4.70	.31	.25*	.49**	.57**	.63**	.75**	.77					
7.	Engagement (T1)	4.32	.55	.35**	.34**	.15	.45**	.39**	.40**	.88				
8.	Engagement (T2)	4.83	.53	.33**	.44**	.33**	.27*	.39**	.39**	.68**	.85			
9.	Engagement (T3)	5.16	.54	.37**	.45**	.51**	.25*	.38**	.50**	.69**	.76**	.86		
10.	Mindfulness Increase	1.10	.50	-.50**	.07	.35**	-.19	.16	.33**	-.13	.03	.12		
11.	Auth Funct Increase	.83	.40	-.30*	.04	.13	-.79**	.27*	.02	-.22	.05	.07	.50**	
12.	Engagement Increase	.89	.42	-.17	.22	.47**	-.21	.01	.13	-.37**	.10	.41**	.32**	.38**

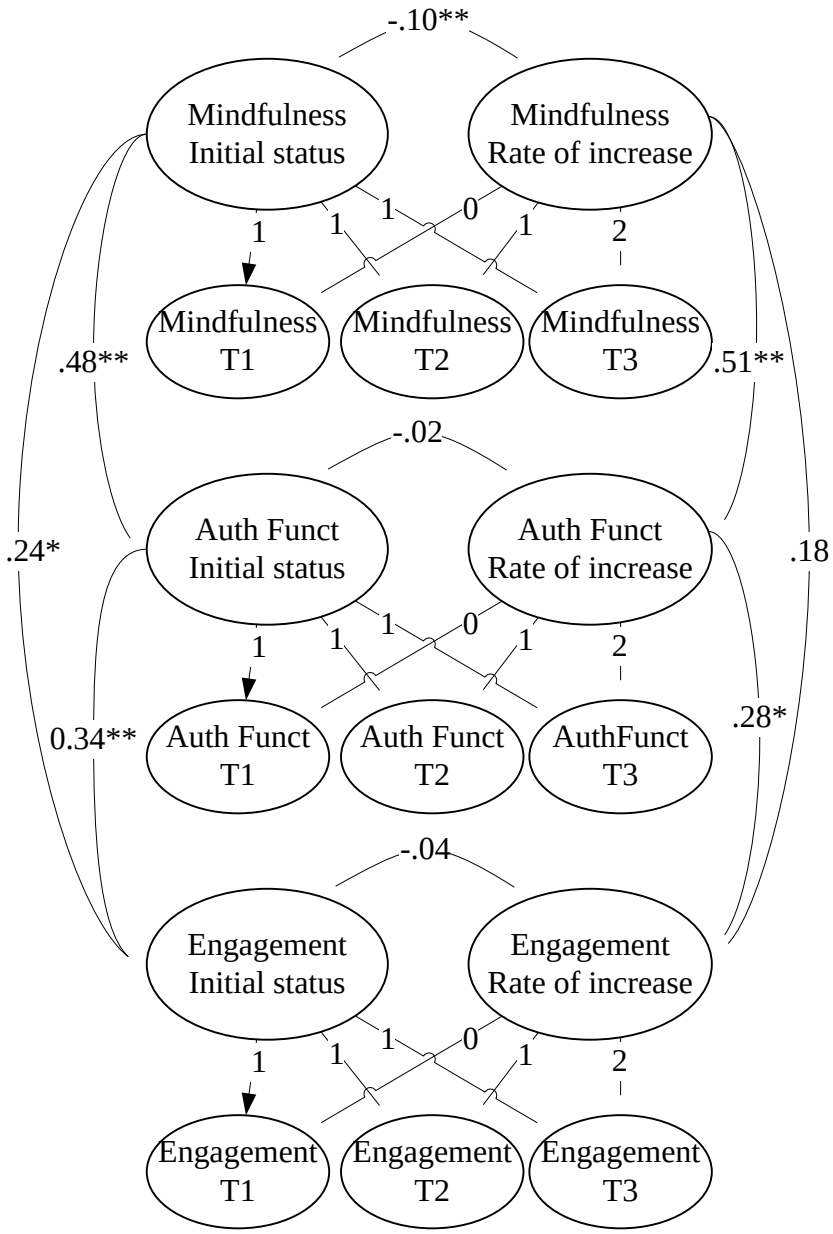
Note. Reliability estimates for scales are presented on the diagonal. T = Time; Auth Funct = Authentic Functioning.

* $p < .05$. ** $p < .01$.



Solid lines indicate initial status, and dashed lines indicate rate of change.

Figure 1. Proposed model.



Auth Funct = Authentic Functioning; T = Time. * $p < .05$. ** $p < .01$.

Figure 2. Results of latent growth model.