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Mindfulness influences burnout and work engagement by shaping perceptions of job demands and job resources

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DOI
10.1016/j.jbusres.2025.115307

Publication date
2025

Document Version
Final published version

Published in
Journal of Business Research

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Link to publication

Citation for published version (APA):
Lyddy, C. J., Good, D. J., Yuan, S., Michel, E. J., Ahlvik-Garrison, C., & Reb, J. (2025). Reperceiving personal resources within JD-R: Mindfulness influences burnout and work engagement by shaping perceptions of job demands and job resources. *Journal of Business Research*, *193*, Article 115307. https://doi.org/10.1016/j.jbusres.2025.115307

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Download date:19 May 2026

Journal of Business Research 193 (2025) 115307

Contents lists available at ScienceDirect

Journal of Business Research

journal homepage: www.elsevier.com/locate/jbusres

Reperceiving personal resources within JD-R: Mindfulness influences burnout and work engagement by shaping perceptions of job demands and job resources

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1. Introduction

Burnout and work engagement are of great interest to management scholars and practitioners due to their effects on both individual functioning and organizational effectiveness. Understanding the factors that predict burnout and work engagement is therefore essential for the effective management of human capital. Studies investigating antecedents of burnout and work engagement commonly employ the Job Demands-Resources framework (JD-R; Bakker et al., 2014). Research findings demonstrate that job demands – which drain energy – and job resources – which support goal realization and growth – predict burnout and work engagement. JD-R has long emphasized the consequences of job demands and job resources, jointly termed as "job characteristics" (Thun & Bakker, 2018, p. 574), while increasingly considering how personal resources act as antecedents to job demands and job resources (Bakker, Demerouti, & Sanz-Vergel, 2014; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007, 2009).

To date, personal resources have been conceptualized as psychological characteristics that can predict burnout and work engagement, yet two major ambiguities about personal resources persist. First, the field lacks clear guidelines for how to incorporate these characteristics within the JD-R framework, as noted by Thun and Bakker (Thun & Bakker, 2018, p. 575): "the exact role personal resources play in the JD-R theory is not perfectly clear and needs more empirical investigation." While personal resources have typically been modeled as moderators or mediators between job demands and resources with burnout and work engagement, Schaufeli and Taris (2014) suggest this default approach may be inappropriate for modeling personal resources that impact perceptions of the work environment, instead recommending modeling these as independent variables (IV) that predict job demands and resources. Second, psychological characteristics that act as personal resources in this manner may not be recognized or studied, meaning that ambiguity about model specification may also limit discovery of new personal resources. To address both gaps, we investigated if a potential personal resource with perceptual impacts could be modeled as an IV in a JD-R framework.

Specifically, we theorized that mindfulness could act as this type of personal resource, and therefore could be used to test and exemplify this alternative modeling approach. Defined as enhanced present-moment attention and awareness (Brown & Ryan, 2003), mindfulness has been suggested as a personal resource (Bakker et al., 2014), yet has received limited empirical study within JD-R. Mindfulness is particularly interesting to test as an IV, as this fundamentally influences the core perceptual process of attention, leading to diverse changes in basic domains of functioning (e.g., cognition, emotion, behavior), which ultimately benefit workplace well-being outcomes (e.g., burnout, work engagement; Good et al., 2016). While research links mindfulness to reduced burnout and increased work engagement, there has been only limited investigation of how and why this occurs (Hülsheger et al., 2013; Leroy et al., 2013).

To address these questions, we developed a model theorizing if and how mindfulness may act as a personal resource within JD-R, integrating leading theoretical works on JD-R (Bakker et al., 2014; Schaufeli & Taris, 2014) and mindfulness at work (Good et al., 2016). Considering mindfulness within a JD-R framework suggests a core proposition: mindfulness should predict more beneficial levels of burnout and work

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https://doi.org/10.1016/j.jbusres.2025.115307
Received 6 July 2021; Received in revised form 3 March 2025; Accepted 4 March 2025
Available online 26 March 2025
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engagement by influencing perceptions of job characteristics. This informed our model of mindfulness as an IV predicting perceived job demands and resources (Schaufeli & Taris, 2014), which we theorized would function as mediators linking mindfulness to outcomes of burnout and work engagement. We tested this model through two multi-wave studies of employees; a two-wave field study and a three-wave daily experience sampling study. Replicating our model with different methodologies was intended to increase confidence that any findings would not be artifactual (Hochwarter et al., 2011). The model guiding our research is depicted in Fig. 1.

Our research contributes to the JD-R and mindfulness at work literatures in multiple ways. First, we seek to integrate JD-R and mindfulness theory in a rigorous way. Specifically, we propose and investigate *if* and *how* (Whetten, 1989) mindfulness acts as a personal resource within JD-R when modeled as an IV. Second, this study investigates if a perceptually-influential personal resource can be justifiably modeled as an IV, addressing this open question posed by JD-R scholars. Third, to continue investigating mindfulness' value for work, our research more comprehensively maps the relationship between mindfulness and the main JD-R outcomes of burnout and work engagement, simultaneously testing multiple explanatory mediating mechanisms. These relationships are crucial for understanding mindfulness' value for work, and JD-R provides a strong theoretical basis for identifying and modeling diverse job characteristics that act as mediators linking mindfulness to these outcomes. Finally, we build upon correlational research linking JD-R and mindfulness (Grover et al., 2017; Xie et al., 2022) in addressing these claims with greater rigor.

2. Theory and hypotheses

2.1. Personal resources within the JD-R framework

Burnout and work engagement are crucial employee-related variables (Bakker et al., 2014). Burnout, defined as "being overextended and exhausted by the emotional demands of one's work" (Demerouti et al., 2001, p. 499), and work engagement, "a positive, fulfilling, work-related state of mind … characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002, p. 74), predict employee outcomes like well-being, job attitudes, and work performance (Bakker et al., 2014; Christian et al., 2011; R. T. Lee & Ashforth, 1996; Maslach et al., 2001). Burnout consistently predicts undesirable outcomes, while work engagement consistently predicts desirable outcomes.

Within management literature, JD-R is a theoretical framework used to predict how features of work systematically predict burnout and work engagement (Bakker et al., 2014). A central assumption of JD-R is that job characteristics may be categorized as either job demands or job resources (Schaufeli & Taris, 2014). Job demands drain energy and thus predict stress and ill-being; these can include factors like lack of control, role ambiguity, or interpersonal conflict. Conversely, job resources support growth, provide energy, and facilitate work goal realization, and thus predict motivation; these include factors like task feedback, autonomy, and social support. In typical JD-R studies, job demands predict burnout while job resources predict work engagement (Bakker et al., 2014). Initially, these job characteristics were the focal predictors of these two key outcomes within JD-R.

Personal resources have recently emerged as important predictors within JD-R. These were first defined as "aspects of the self that are generally linked to resiliency and refer to individuals' sense of their ability to control and impact upon their environment successfully" (Xanthopoulou, Bakker, Demerouti, et al., 2007, p. 124), and include psychological characteristics like self-efficacy, optimism, extraversion, and low neuroticism (Schaufeli & Taris, 2014). As with job resources, they have been shown to predict decreased burnout and increased work engagement (Bakker et al., 2014).

Despite this growing understanding, an ongoing uncertainty is that "the exact role personal resources play in the JD–R theory is not perfectly clear and needs more empirical investigation" (Thun & Bakker, 2018, p. 575). Leading scholars outline the multiple models used to incorporate personal resources into JD-R, while noting uncertainty about the optimal approach (Schaufeli & Taris, 2014). Personal resources have typically been modeled as either a mediator or moderator between job demands or job resources and their outcomes.

In contrast, Schaufeli (2017) proposes modeling personal resources as IVs for psychological characteristics that may influence perception. The logic is that such personal resources may "determine the way people perceive or formulate this environment and how they react to it … [and] as a result they will experience lower levels of exhaustion and higher levels of work engagement" (Xanthopoulou, Bakker, Demerouti, et al., 2007, p. 126). For example, a psychological characteristic like extraversion might influence how employees subjectively view their work context, over and above its objective features (Bakker et al., 2014). Additionally, this logic builds upon the oft-overlooked assumption within the JD-R framework that job demands and resources are not truly objective job characteristics, but contain subjective components influenced by perception (Li et al., 2023).

Viewing job characteristics in JD-R as subjective factors reflects broader work on organizational cognition. For example, early research on job characteristics viewed reports of these characteristics as

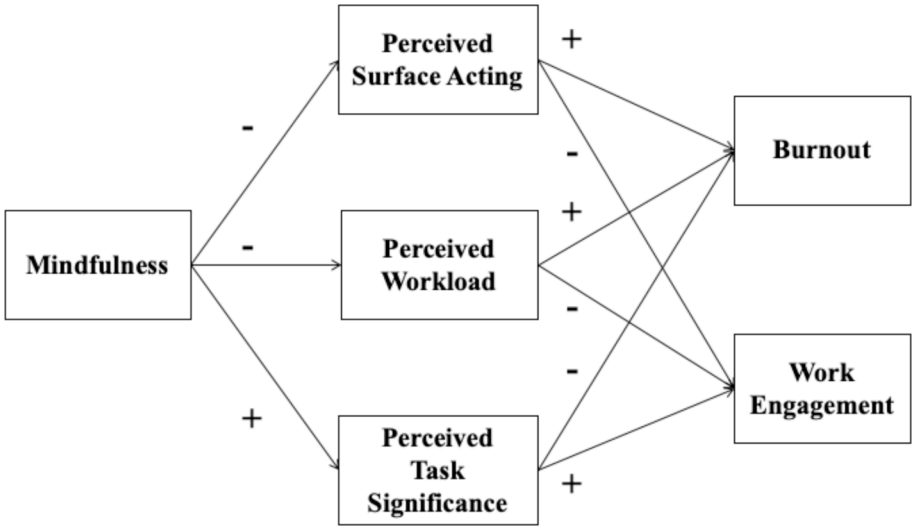

Fig. 1. Hypothesized Model of Mindfulness as a Personal Resource in a JD-R Framework.

subjective perceptions of the job environment. For example, Aldag et al. (1981, p. 415) note that "the set of *perceived task characteristics* on which most attention has focused includes skill variety, task identity, task significance, autonomy, and feedback" [emphasis added]. More fundamentally, whether objective or subjective factors shape perceptions may matter little with respect to outcomes. Grant (2008) notes that while both objective and subjective factors can predict perceptions of a specific job characteristic (e.g., task significance), ultimately these perceptions are what shape employee functioning.

Encapsulating broader views on the subjective nature of perceptions of the workplace environment, foundational work in organizational cognition indicates that "perceptions of environmental properties likely vary with the individual differences among perceivers" (Starbuck & Mezias, 1996, p. 100). Elaborating this view, Barrick et al. (2013, p. 139) note that.

> *individuals' perceptions are critical—a person can only respond to the situation (job characteristics) he or she perceives … the same objective setting may be perceived very differently depending on … each individual. … Even though situational attributes such as the task itself … are 'external' to the person, the source of motivation due to the situation still springs from … the individual's perception of the situation … subjective perceptions of job characteristics are two to three times as strong as objective characteristics when predicting employee reactions.*

This research collectively theorizes and demonstrates that individual differences can and do influence perceptions of jobs, and that these perceptions are often substantially more influential for individual outcomes than objective or aggregated assessments of these same features. In short, incorporating perceptual processes into JD-R may permit theoretical advancement, but this approach has been underrepresented among the extant JD-R literature.

Given this alignment of JD-R and organizational cognition literature, it is worthwhile to test if personal resources can be sensibly modeled as IVs that predict burnout and work engagement outcomes via perceptions of job characteristics. Despite strong support for modeling personal resources as IVs, few such characteristics have been rigorously tested through the JD-R framework. Drawing from extant literature, we found initial support for mindfulness plausibly acting as one such personal resource that could predict perceptions of job demands and job resources, and now elaborate this perspective.

2.2. Mindfulness as a personal resource in JD-R

Mindfulness has been suggested to act as a personal resource in JD-R (e.g., Bakker et al., 2014; Grover et al., 2017; Kroon et al., 2015; Montani et al., 2020; Xie et al., 2022), but this proposition has yet to be comprehensively investigated in the literature on mindfulness at work, otherwise known as "contemplative management theory" (CMT; Lyddy & Good, 2025). Correlational studies have modeled mindfulness in different roles within JD-R (for example, as IV, moderator, and mediator; Grover et al., 2017), but such exploratory designs have methodological limitations that preclude confident identification of the best modeling approach for mindfulness. Consequently, ambiguity remains about how to appropriately model mindfulness as a personal resource.

The most comprehensive workplace theory on this construct conceptualizes mindfulness as an IV that predicts diverse benefits for how people feel and function at work (Good et al., 2016). Like many psychological constructs, mindfulness can be viewed as a stable trait akin to characteristics like personality, and as a varying state that fluctuates on a momentary basis. In either conception, mindfulness involves basic shifts in how individuals perceive the world (Brown & Ryan, 2003). This includes fundamental aspects of perception, such as attention (Good et al., 2016), basic senses like sight (MacLean et al., 2010) and hearing (Cahn et al., 2013), and appraisals of time (Kramer et al., 2013) and stress (Weinstein et al., 2009).

Mindfulness so fundamentally alters perception that it has been termed a "perceptual variable" (Rapgay & Bystrisky, 2009, p. 150), so it could reasonably influence perceptions of work (Lyddy & Good, 2017). Initial JD-R studies have provided preliminary evidence that mindfulness predicts changes in perceived job demands and resources (Grover et al., 2017; Taylor & Millear, 2016; Xie et al., 2022) that may act as mediating mechanisms between mindfulness and various workplace outcomes (Good et al., 2016), including reduced burnout (Hülsheger et al., 2013) and increased work engagement (Leroy et al., 2013).

Drawing on this prior research (Schaufeli & Taris, 2014), we theorized mindfulness would predict reduced burnout and increased work engagement by influencing perceived job characteristics. We reviewed JD-R and mindfulness literatures to identify job characteristics that might: 1) be influenced by mindfulness; 2) act as job demands or job resources; and 3) mediate between mindfulness and outcomes of burnout and work engagement. As a result of this review, we theorized that the job demands of perceived surface acting and perceived workload, and the job resource of perceived task significance, would be predicted by mindfulness, and in turn these would mediate the relationship of mindfulness with burnout and work engagement.

2.2.1. Mindfulness and perceived surface acting

Surface acting, a form of emotional labor, is the display of emotions consistent with job requirements but inconsistent with internal emotional states (Grandey, 2000). Surface acting implies the perception of emotional dissonance, a gap between felt and displayed emotions (Chau et al., 2009) that is an effortful and unpleasant job requirement (Grandey, 2000). Surface acting is a job demand (L. Lee & Madera, 2019; Wang et al., 2020) and a predictor of burnout (Grandey & Gabriel, 2015; Xanthopoulou et al., 2018), as "surface acting is likely to drain energy … and thus [contribute] to resource loss" (Biron & van Veldhoven, 2012, p. 1263). Surface acting can also predict work engagement, as inauthentic emotional displays can diminish positive emotions at work (Huyghebaert et al., 2018) and compromise an individual's sense of wholeness by interfering with natural emotional expression (Uy et al., 2017). The resulting inauthenticity can leave employees depleted, diminishing enthusiasm for work and yielding disengagement.

Research suggests that mindfulness should predict lower perceived surface acting. Theoretically, mindfulness may reduce perceptions of surface acting by altering emotional experience in multiple ways. Being mindful is linked to superior emotional regulation, manifesting as dampened emotional reactivity, shorter emotional reactions, and more positive and less negative affect (Good et al., 2016). Consistent with this, mindfulness has been shown to predict reduced surface acting in two daily diary studies (Hülsheger et al., 2013).

Theoretically, these findings may be collectively explained by a mental process termed "reperceiving," a fundamental shift in perception towards greater acceptance of and psychological distance from events and experiences (Shapiro et al., 2006). One shift is from an evaluative to an accepting and non-judgmental mindset. This allows mindful individuals to face aversive events or experiences without suffering strong negative emotions that may conflict with organizational norms, averting the impetus for emotional suppression. Additionally, being mindful may induce psychological distance between one's thoughts and their consequences for the self (Hülsheger et al., 2013), as being present can lead to experiencing thoughts as reactions to an event, rather than as genuine reflections of reality. Shapiro et al. (2006, p. 278) detail this change: "Rather than being immersed in the drama of our personal narrative or life story, we are able to stand back and simply witness it." For example, a negative event at work (e.g., being criticized one's boss) might typically induce negative self-evaluative thoughts (e.g., "I'm a bad employee, I'll lose my job") that induce negative emotions. Viewing such feedback mindfully can distance the self from such an event, dampening associated deleterious psychological reactions (Lyddy et al., 2022). Jointly, these mechanisms may allow mindful individuals to more consistently experience emotional states aligned with organizational norms, leading to perceptions of less surface acting.

2.2.2. Mindfulness and perceived workload

Workload is another job demand in JD-R literature (Bakker et al., 2014). While workload can be assessed through objective data (e.g., customer interaction frequency), JD-R research has predominantly used self-report assessments (Li et al., 2023). Perceived workload reflects the appraised "amount or difficulty of [an individual's] work" (Bowling & Kirkendall, 2012, p. 222), which can be influenced by various perceptual factors, such as cognitive demands and effort, time pressure, and anxiety and frustration (Lebet et al., 2021). As perceived workload can deplete an individual's resources (e.g., energy, attention) vital for accomplishing tasks (Bowling et al., 2015), this construct predicts higher burnout (Li et al., 2023; Xanthopoulou, Bakker, Dollard, et al., 2007) and lower work engagement (Demerouti et al., 2001).

Being mindful may predict lower perceived workload by altering perceptions underlying this characteristic, like cognitive demands and effort, time pressure, and anxiety and frustration (Lebet et al., 2021). First, by predicting heightened attentional efficiency, stability, and control, along with enhanced cognitive flexibility and working memory (Good et al., 2016), mindfulness may facilitate handling tasks with less difficulty and effort. Second, being mindful involves present-centered attention, which predicts subjective perception of time moving more slowly (Kramer et al., 2013), potentially yielding a less busy experience of work regardless of actual task volume, reducing the experience of time pressure. Third, mindfulness generally leads individuals to reappraise stressors as less threatening (Weinstein et al., 2009), and being mindful involves present-moment focus that inhibits rumination (Huffziger et al., 2013), such as perseverating about daunting task lists. Together these perceptual shifts may inhibit anxiety and frustration (Keng et al., 2011), that might arise from unfinished tasks. This may explain prior findings that mindfulness is negatively correlated with workload (Montani et al., 2020). Consequently, we theorized that mindfulness would predict lower perceived workload, which would then relate positively to burnout and negatively with work engagement, respectively yielding negative and positive indirect associations of mindfulness with burnout and work engagement.

2.2.3. Mindfulness and perceived task significance

Defined as "judgments that one's job has a positive impact on other people" (Grant, 2008, p. 108), perceived task significance is categorized as a job resource in JD-R (Bakker et al., 2014; Schaufeli & Taris, 2014), with *meta*-analytic findings showing a positive relationship to work engagement (Christian et al., 2011). Task significance is strongly related to experiencing work as meaningful, as "perceiving that a specific task matters for other people gives the task particular meaning that should support the investment of energy into the task" (Sonnentag, 2017, p. 15). This may translate into more focus and dedicated effort, and ultimately work engagement. Conversely, the additional energy and other resources conferred from high perceived task significance could counter the experiences of resource depletion and exhaustion, predicting reduced burnout (Sonnentag, 2017).

Mindfulness could predict greater perceived task significance through multiple mechanisms. One explanation drawn from Mindfulness-to-Meaning Theory (Garland et al., 2015) theorizes that mindfulness alters the perception of workplace events through positive reappraisal and savoring. While negative work experiences normally provoke rumination and dissatisfaction that dominate attention and induce negative appraisals, being present may help individuals to distance their sense of self from such events, fostering subsequent "positive reappraisal … the adaptive process through which stressful events are reconstrued as benign, meaningful, or even growth promoting" (Garland et al., 2015, p. 297). In parallel, being less caught up in negative experiences might lead individuals to engage in greater savoring of both positive experiences and even positive aspects of negative experiences, deriving more fulfillment from their work, and therefore a heightened sense of impact (Cheung & Ng, 2020). These twin processes could arise in response to events from the major to the mundane, as "finding positive meaning in adversity does not only occur in the aftermath of disasters … it also commonly occurs in the face of daily stressors" (Garland et al., 2015, p. 297). Mindfulness may promote this kind of reappraisal and savoring, and through this may predict perceptions of greater task significance.

Motivation psychology also suggests a second mechanism, with mindfulness predicting selection of jobs that are more intrinsically motivating, and therefore rated as having greater perceived task significance. Theories of vocational choice suggest that individuals select work that aligns with their values, making it more intrinsically meaningful (Holland, 1997). A *meta*-analysis shows mindfulness predicts greater intrinsic but lower extrinsic motivation (Ryan et al., 2021), potentially driven by an increased sense of self-determination and awareness of one's own values (Brown & Ryan, 2003; Levesque & Brown, 2007). Motivation scholars theorize that "satisfaction of an intrinsically motivated activity is sourced in the moment … [as] mindfulness also involves awareness of … present experiences, we expect mindful individuals to be more sensitive to activities that spark interest and enjoyment, making engagement in activities out of intrinsic motivation more likely" (Donald et al., 2020, p. 1123). The reverse can also be true, as mindfulness orients individuals towards pursuit of intrinsic goals, it also means "the pursuit of extrinsic goals … is less likely among more mindful individuals" (Ryan et al., 2021, p. 303). Despite mindfulness predicting greater intrinsic motivation, this insight has not yet been connected to perceptions of job characteristics.

Reflecting this perspective, studies show mindfulness predicts characteristics closely related to perceived task significance, including perceived meaningfulness at work (Dobkin et al., 2016; West et al., 2014) and behaviors positively impact others (Donald et al., 2019). A diary study found that mindfulness predicted facets of meaningfulness at work, including unity with and service to others (Lysova et al., 2023). Studies show mindfulness interventions can increase work meaningfulness, along with decreased burnout and increased work engagement (Dobkin et al., 2016; West et al., 2014). Consequently, we theorized that mindful individuals would perceive their work tasks as more significant, whether due to positively reappraising and savoring their work, or satisfying intrinsic motivations through job selection or job crafting (Hur et al., 2023; Tims et al., 2016).

Assembling these relationships, we theorized that:

H1a-c: Mindfulness is negatively related to the job demands of a) perceived surface acting and b) perceived workload, and positively related to the job resource of c) perceived task significance.

While confirming that mindfulness predicts how individuals perceive these three job characteristics would suggest that mindfulness is a personal resource that can be modeled as an IV, assessing if these characteristics mediate the benefits between mindfulness and outcomes of burnout and work engagement is vital to holistically test this theory. Therefore, we theorized a mediated relationship between mindfulness, perceived job demands and job resources, and the outcomes of burnout and work engagement.

H2a-c: Mindfulness is related indirectly and negatively to burnout via a) perceived surface acting, b) perceived workload, and c) perceived task significance.
H3a-c: Mindfulness is related indirectly and positively to work engagement via a) perceived surface acting, b) perceived workload, and c) perceived task significance.

We investigated these questions by twin studies testing our theoretical model. Study 1 investigated the influence of trait mindfulness in a two-wave design across four organizations, while Study 2 investigated the influence of state mindfulness via an online panel study using a three-wave daily experience sampling design. Jointly these aimed to constructively replicate any findings, following guidance regarding studies of job characteristics (Sonnentag, 2017) and multi-study manuscripts in organizational research (Hochwarter et al., 2011).

3. Study 1

3.1. Methodology

Study 1 was a two-wave field study with low- and mid-level full-time employees in four Finnish organizations (a consultancy, retailer, bank, and hospital). Participants held diverse occupations (e.g., consultants, clerks, bankers, and nurses). The sample diversity was intended to support the generalizability of findings. 1,054 employees were invited to join by their direct managers via email; 800 completed the first survey (T1). Two months later they were emailed an invitation to complete the second survey (T2) in the next two weeks. 648 participants completed both surveys, yielding an overall response rate of 61.4 %. 74 % were male, with mean organizational tenure of 13.37 years (*S.D.* = 11.18). We report findings of a model in which trait mindfulness and control variables were collected at T1, while job demands (e.g., surface acting, workload), job resources (e.g., task significance), and outcome variables (e.g., burnout and engagement) were collected at T2. Given that the mediators were collected at both T1 and T2, we conducted additional sensitivity analyses to mitigate the possible influence of common method variance (Podsakoff et al., 2024), analyzing mediator values collected at T1 and averaged across T1 and T2; the pattern of results was unaffected.

Trait mindfulness was measured at T1 via a 5-item version of the Mindful Attention Awareness Scale (Van Dam et al., 2010). Participants reported frequencies for each item (example: "I rush through activities without being really attentive to them") on a 6-point Likert scale (1 = almost never; 6 = almost always), with lower scores reflecting higher mindfulness.

Among mediators, surface acting was measured using Hülsheger et al.'s (2013) 4-item scale. Participants were asked to rate how frequently on an average day at work they presented false emotions when interacting with others (example: "Pretend to have emotions that I did not really have") on a 5-point scale (1 = never; 5 = always). Employee workload was measured via Spector and Jex's (1998) 5-item scale. Participants were asked to rate how often attributes of their work (example: "How often does your job require you to work very fast?") occurred on a 5-point scale (1 = less than once per month; 5 = several times per day.). Task significance was measured via Morgeson and Humphrey's (2006) 4-item scale. An example item was "The results of my work are likely to significantly affect the lives of other people," with responses on a 5-point scale (1 = strongly disagree; 5 = strongly agree).

Among outcomes, burnout was measured at T2 using the 9-item emotional exhaustion dimension of the Maslach Burnout Inventory (Maslach & Jackson, 1981). Participants were asked how frequently they experienced each statement (example: "I feel emotionally drained from my work") on a 7-point scale (0 = never; 6 = every day). Work engagement was measured at T2 via Utrecht Work Engagement Scale, using the 9-item version (Schaufeli et al., 2006). Participants rated their work engagement (example: "At my work, I feel bursting with energy") on a 7-point scale (0 = never; 6 = always). All measures showed good reliability (Table 1).

Covariates were selected following guidelines from Rohrer (2018). We created three dummy variables to control for the fixed effects resulting from factors unique to each of the four organizations in our sample that could bias estimates. To test for robustness of findings, we estimated the model both with and without these covariates, finding identical patterns of results. Code for Study 1 can be found at https://osf.io/vnp7x/.

3.2. Descriptive Analysis

The means, standard deviations, and correlations for the six key variables in our hypothetical model (Fig. 1) are reported in Table 1. Trait mindfulness was negatively correlated with perceived surface acting (r = -0.33, $p < 0.01$) and perceived workload (r = -0.14, $p < 0.05$), and positively correlated with perceived task significance (r = 0.20, $p < 0.01$). Perceived surface acting (r = 0.48, $p < 0.01$) and perceived workload (r = 0.44, $p < 0.01$) were both positively related to burnout, but the relationship between perceived task significance and burnout was negative (r = -0.15, $p < 0.01$). While both perceived surface acting (r = -0.39, $p < 0.01$) and perceived task significance (r = 0.42, $p < 0.01$) positively correlated with work engagement, the relationship of perceived workload and work engagement was non-significant (r = 0.04, *n.s.*). These correlations offered preliminary support for our hypotheses.

3.3. Confirmatory factor analyses

Before testing our hypotheses, we first conducted confirmatory factor analyses (CFA)[1] to confirm discriminant validity among study variables and to formally construct the measurement part of the SEM. We tested the fit of our proposed six-factor (i.e., trait mindfulness, surface acting, workload, task significance, burnout, and work engagement) measurement model, and contrasted this against alternative models with five, four or three factors, where two or three of the factors were composed into a general factor. The six-factor model fit the data very well (CFI = 0.93, TLI = 0.93, SRMR = 0.07, RMSEA = 0.06). Further, in comparison to all three-factor, four-factor, and five-factors models, the six-factor model fits the data best, indicated by the lowest BIC values (Table 2). Taken together, the discriminant validity of the model was clearly supported by the CFA analyses; therefore, we proceeded to test our hypotheses using SEM models where the measurement model consisted of the six main factors depicted in the hypothesized model.

3.4. Model results

To test our hypotheses while controlling for all alternative mediating mechanisms and accounting for measurement errors, we ran a full Structural Equation Model (SEM) that included both measurement and structural components, and simultaneously estimated all coefficients for hypothesized relationships. The SEM fit the data very well; CFI = 0.92, TLI = 0.91, SRMR = 0.08, RMSEA = 0.06). Model estimates are presented in Table 3 and visualized in Fig. 2, with standardized coefficients reported throughout to ensure comparability.

Overall, our hypotheses received support from the model estimations. First, direct effects analysis showed negative relationships between trait mindfulness and perceived surface acting (H1a: β = -0.29, *se* = 0.04, $p < 0.01$), and between trait mindfulness and perceived workload (H1b: β = -0.16, *se* = 0.05, $p < 0.01$). A positive relationship was found between trait mindfulness and perceived task significance (H1c: β = 0.25, *se* = 0.04, $p < 0.01$). Therefore, hypotheses 1a-1c were fully supported.

For the mediation hypotheses (Hypotheses 2a-2c and 3a-3c), we again tested the model within the SEM framework and, per methodological recommendations (MacKinnon et al., 2004; Preacher et al., 2010), used bootstrapping resampling methods to accurately estimate the confidence intervals for the indirect and total effects. The indirect effect of trait mindfulness on burnout was negative, via perceived surface acting (β = -0.23, 95 % CI = [-0.31, −0.16]), perceived workload (β = -0.13, 95 % CI = [-0.21, −0.04]), and perceived task significance (β = -0.08, 95 % CI = [-0.13, −0.04]), thus supporting Hypotheses 2a-2c. The total effect of trait mindfulness on burnout was also negative (β = -0.62, 95 % CI = [-0.77, −0.47]).

Finally, we examined the indirect effects linking trait mindfulness and work engagement (Hypotheses 3a-3c). Our analyses determined the

[1] All analyses reported in this paper related to latent variables (i.e., the Structural Equation Modeling used in Study 1 and the Multi-level Structural Equation Modeling used in Study 2) were conducted using the R package *lavaan.*.

Table 1
Means, Standard Deviations and Correlations.

	M	SD	1	2	3	4	5	6
1. Trait Mindfulness	4.92	0.72	(0.86)					
2. Perceived Surface Acting	2.32	0.69	−0.33**	(0.87)				
3. Perceived Workload	3.06	0.93	−0.14*	0.17	(0.93)			
4. Perceived Task Significance	3.83	0.73	0.20**	−0.26**	0.19**	(0.87)		
5. Burnout	2.66	1.07	−0.32**	0.48**	0.44**	−0.15**	(0.92)	
6. Work Engagement	5.24	0.90	0.28**	−0.39**	0.04	0.42**	−0.48**	(0.94)

Note. N = 648. Coefficient alphas are on the diagonal.

Table 2
Confirmatory Factor Analysis (CFA) Model Comparison Results.

Model	DF	AIC	BIC
6-factor original model	572	**52,871**	**53,292**
5-factor model 1 (combined Work Load and Surface Acting)	577	54,953	55,351
5-factor model 2 (combined Task Significance and Surface Acting)	577	53,622	54,021
5-factor model 3 (combined Work Load and Task Significance)	577	53,718	54,117
5-factor model 4 (combined Burnout and Work Engagement)	577	54,858	55,256
4-factor model 1 (combined Work Load and Surface Acting, and combined Burnout and Work Engagement)	581	56,811	57,192
4-factor model 2 (combined Task Significance and Surface Acting, and combined Burnout and Work Engagement)	581	55,566	55,947
4-factor model 3 (combined Work Load and Task Significance, and combined Burnout and Work Engagement)	581	55,668	56,049
3-factor model 1 (combined Work Load, Task Significance, and Surface Acting, and combined Burnout and Work Engagement)	584	57,495	57,862

Note. $N = 648$. The model with the best fit (i.e., the lowest values of AIC and BIC) is indicated in bold.

Table 3
Summary of Estimated Indirect and Total Effects.

Effect	Estimate	SE	Bootstrap CI
Indirect effects			
Trait Mindfulness to Burnout via Perceived Surface Acting	−0.23	0.04	[-0.31, −0.16]
Trait Mindfulness to Engagement via Perceived Surface Acting	0.10	0.02	[.07, 0.14]
Trait Mindfulness to Burnout via Perceived Workload	−0.13	0.04	[-0.21, −0.04]
Trait Mindfulness to Engagement via Perceived Workload	0.00	0.01	[-0.02, 0.01]
Trait Mindfulness to Burnout via Perceived Task Significance	−0.08	0.03	[-0.13, −0.04]
Trait Mindfulness to Engagement via Perceived Task Significance	0.11	0.03	[.07, 0.17]
Direct effects			
Trait Mindfulness to Burnout	−0.19	0.07	[-0.32, −0.04]
Trait Mindfulness to Engagement	0.10	0.04	[.02, 0.19]
Total effects			
Trait Mindfulness to Burnout	−0.62	0.08	[-0.77, −0.47]
Trait Mindfulness to Engagement	0.31	0.04	[.22, 0.40]

Note. N = 648. The standardized coefficients are presented here. Only the confidence intervals but not the significance level of the bootstrapping coefficients are reported.

indirect effect for trait mindfulness on work engagement was positive via perceived surface acting (β = 0.10, 95 % CI = [.07, 0.14]) and perceived task significance (β = 0.11, 95 % CI = [.07, 0.17]). Thus, both Hypotheses 3a and 3c were supported. However, the indirect effect from trait mindfulness to work engagement via workload was not significant (β = 0.00, 95 % CI = [-0.02, 0.01]), so hypothesis 3b was not supported. The total effect of trait mindfulness on engagement was positive (β = 0.31, 95 % CI = [.22, 0.40]).

3.5. Discussion

The results from Study 1 largely supported our hypothesized relationships, with the exception that mindfulness had a non-significant effect on work engagement via perceived workload. However, we note two key limitations of this study: (1) although we assessed the robustness of our findings by testing models with slightly different operationalizations of the mediators, the possibility of common method variance cannot be eliminated due to usage of self-report measures, and (2) the current design assessed the between-person effects of the hypothesized model. Therefore it remains unclear to what extent the conceptual model generalizes to within-person effects (Hamaker et al., 2015), which are particularly salient for developing and validating intervention programs (Lischetzke et al., 2015). Furthermore, given the novelty of our model, a replication study could increase confidence in the findings (Hochwarter et al., 2011). Therefore, in Study 2, we retested our model using an alternative daily experience sampling design (Ohly et al., 2010), allowing explicit testing of within-person effects (Beal, 2015) and building support for the validity and generalizability of our model.

4. Study 2

4.1. Methodology

To replicate the findings from Study 1, address its limitations, and test the generalizability of the hypothesized model with regard to within-person effects, we used a daily experience sampling design with three waves in Study 2. Responses were collected from an online panel of full-time workers in the U.S. recruited via Prolific, an online platform showing high response quality (Peer et al., 2022). Participants worked in diverse industries and occupations, increasing the likelihood of generalizable findings. 206 participants chose to participate and 200 completed the baseline survey (97 % completion rate). The following week, participants completed three daily surveys Monday to Friday for 10 consecutive working days, including: a morning survey (T1) assessing state mindfulness; a midday survey (T2) assessing job characteristics (surface acting, workload, and task significance); and a late afternoon survey (T3) assessing outcomes (burnout and work engagement). Therefore, the study involved 30 daily data collection points.

In our final analyses, we retained 146 participants who completed the survey in at least 3 data collection points (i.e., the 54 respondents who completed fewer than 3 daily surveys were excluded). Of the 146 remaining respondents, 31 completed surveys in all 30 data collection points, with the average number of completed surveys being 21.76 (SD = 9.25). The number of completed surveys remained stable over the 10-day data collection period: 95 respondents completed all three surveys on the first day, while 91 respondents completed all three on the last day. Given that some respondents did not fill out all daily surveys, following methodological recommendations, we imputed all missing

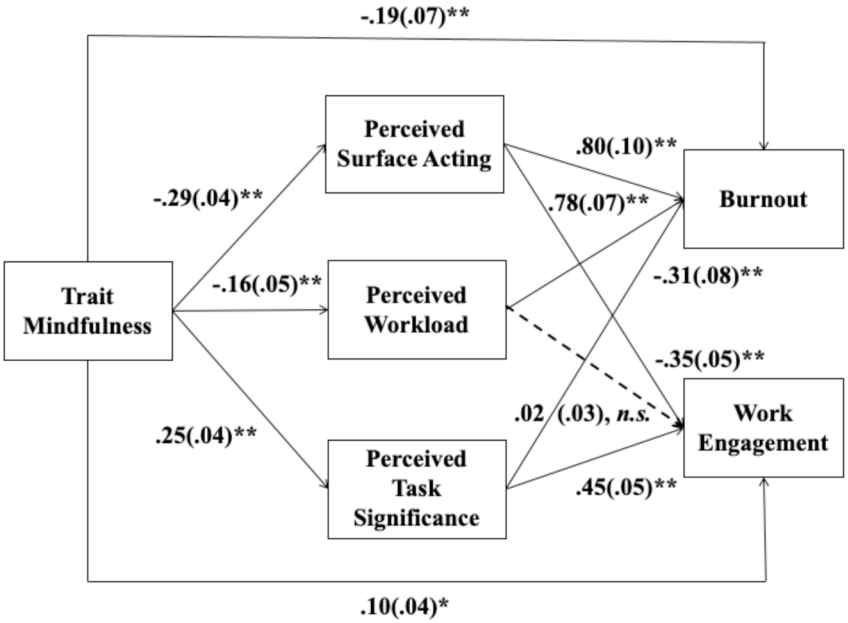

Fig. 2. Study 1: SEM Results with Trait Mindfulness as Personal Resource.
Note. N = 648. The standardized path estimates are presented here. Solid lines indicate significant relationships and dashed lines indicate non-significant relationships. In addition to the variables illustrated here, three dummy variables signifying different organizations were introduced in the model estimation as covariates (not shown in the model).
* p < .05; ** p < .01.

data via multiple imputation (MI; van Buuren and Groothuis-Oudshoorn, 2011; Fichman & Cummings, 2003; Lüdtke et al., 2017) for hypothesis testing. Of the 146 respondents that constituted the final sample, 88 (60 %) were male, 57 (39 %) were female, and 1 did not indicate gender. Average age and organizational tenure were respectively 37.15 years (S.D. = 11.18) and 8.51 years (S.D. = 6.79). We used the widely applied and validated Global Industry Classification Standard (GICS; Bhojraj et al., 2003) to classify each respondent's industry into 11 unique sectors. The most common sectors for participants were Industrials (21.9 %), Health Care (17.8 %), Public Services (17.8 %), Consumer Discretionary (13.7 %), Information Technology (9.8 %), and Financials (8.4 %).

To maximize consistency across studies, we used the measures from Study 1 in Study 2, with two exceptions. We adjusted all survey referents to daily experiences (e.g., "*Today* I rushed through activities…"), and to minimize respondent burden and associated attrition, we used the three-item measure of surface acting from Brotheridge & Lee (2002).[2] Workload responses were recorded on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). All measures showed good reliability (Table 4). All code and data for Study 2 can be found at https://osf.io/vnp7x/.

4.2. Descriptive analysis

The means, standard deviations, and reliability of the six key variables (i.e., state mindfulness, surface acting, perceived workload, perceived task significance, burnout and work engagement) and correlations between these variables within-persons (Level 1) and between-persons (Level 2) are reported in Table 4. Within-persons correlations provided preliminary insights into our hypotheses. State mindfulness was negatively correlated with perceived surface acting (r = -0.33, p < 0.01) and perceived workload (r = -0.13, p < 0.01), and positively correlated with perceived task significance (r = 0.15, p < 0.01). Perceived surface acting and perceived workload were both positively related to burnout (r = 0.52, p < 0.01 and r = 0.30, p < 0.01) and negatively related to work engagement (r = -0.39, p < 0.01 and r = -0.06, p < 0.05). Perceived task significance, on the other hand, was negatively correlated with burnout (r = -0.12, p < 0.01) and positively correlated with work engagement (r = 0.40, p < 0.01). We also assessed between-persons correlations of these key variables, and these closely replicate our findings from Study 1: mindfulness was significantly correlated with three work characteristics (perceived surface acting, perceived workload, and perceived task significance), which, in turn related to key work outcomes (burnout and work engagement), except for the non-significant correlation between perceived workload and work engagement (r = -0.10, *n.s.*).

4.3. Confirmatory factor analyses

Given the experience sampling design and nested nature of the data, we used a Multilevel Structural Equation Model (MSEM) for data analyses, as MSEM accounts for both measurement error and the hierarchical dataset structure simultaneously (Preacher et al., 2010). Before testing the full MSEM, multiple Level-1 CFAs were conducted to determine the most suitable measurement model and to examine convergent and discriminant validity. The proposed six-factor model was compared to alternative models with five, four, or three factors, including composite factors. The six-factor model fit the data well (CFI = 0.93, TLI = 0.92, SRMR = 0.04, RMSEA = 0.05), yielding better model fit (i.e., lower BIC value) than all alternative models (see Table 5).

4.4. Model results

With this six-factor measurement model, we then tested the hypothesized model using MSEM, adding the structural part of the model. The final MSEM model fit the data well (CFI = 0.94, TLI = 0.92, SRMR =

[2] This involved shortening the four-item scale used in Study 1 by Hülsheger et al. (2013) by removing the item "Show emotions that are expected rather than what I feel.".

Table 4
Means, Standard Deviations, Reliability and Correlations.

	M	SD	1	2	3	4	5	6
1. State Mindfulness	2.17	1.18	(0.95)	−0.51**	−0.22**	0.23**	−0.67**	0.64**
2. Perceived Surface Acting	3.81	1.34	−0.33**	(0.95)	0.30**	−0.26**	0.73**	−0.58**
3. Perceived Workload	2.90	1.17	−0.13**	0.19**	(0.90)	0.21**	0.39**	−0.10
4. Perceived Task Significance	2.62	1.26	0.15**	−0.23**	0.19**	(0.96)	−0.20*	0.55**
5. Burnout	3.66	1.21	−0.43**	0.52**	0.30**	−0.12**	(0.92)	−0.73
6. Work Engagement	1.67	1.18	0.41**	−0.39**	−0.06*	0.40**	−0.62**	(0.95)

Note. $N = 146$ at the between-persons level and $N = 1460$ at the within-persons level. The retained responses are from the groups of Prolific respondents who completed at least one wave of survey questionnaire during the 10-day dairy study. The first two columns (i.e., M and SD) contain the means and standard deviations of the daily scales. In the correlational matrix, the values depicted in the diagonal cells are reliability of the daily scales, and the values below and above the diagonal are within-person and between-person correlations of variables, respectively.

Table 5
Confirmatory Factor Analysis (CFA) Model Comparison Results.

Model	DF	AIC	BIC
6-factor original model	494	**89,342**	**89,945**
5-factor model 1 (combined Work Load and Surface Acting)	499	93,420	93,996
5-factor model 2 (combined Task Significance and Surface Acting)	499	93,284	93,860
5-factor model 3 (combined Work Load and Task Significance)	499	92,566	93,142
5-factor model 4 (combined Burnout and Work Engagement)	499	91,365	91,491
4-factor model 1 (combined Work Load and Surface Acting, and combined Burnout and Work Engagement)	503	95,317	95,872
4-factor model 2 (combined Task Significance and Surface Acting, and combined Burnout and Work Engagement)	503	95,173	95,728
4-factor model 3 (combined Work Load and Task Significance, and combined Burnout and Work Engagement)	503	95,549	96,104
3-factor model 1 (combined Work Load, Task Significance, and Surface Acting, and combined Burnout and Work Engagement)	506	99,488	100,027

Note. $N = 146$. The model with the best fit (i.e., the lowest values of AIC and BIC) is indicated in bold.

Table 6
Summary of Estimated Indirect and Total Effects.

Effect	Estimate	SE	*Monte Carlo CI*
Indirect effects			
State Mindfulness to Burnout via Perceived Surface Acting	−0.04	0.008	[-0.06, −0.03]
State Mindfulness to Engagement via Perceived Surface Acting	0.018	0.006	[.01, 0.03]
State Mindfulness to Burnout via Perceived Workload	−0.012	0.005	[-0.02, −0.004]
State Mindfulness to Engagement via Perceived Workload	0.001	0.002	[-0.003, 0.006]
State Mindfulness to Burnout via Perceived Task Significance	0.003	0.002	[-0.001, 0.008]
State Mindfulness to Engagement via Perceived Task Significance	0.007	0.003	[.001, 0.01]
Direct effects			
State Mindfulness to Burnout	−0.13	0.03	[-0.18, −0.08]
State Mindfulness to Engagement	0.13	0.03	[.08, 0.18]
Total effects			
State Mindfulness to Burnout	−0.19	0.03	[-0.24, −0.13]
State Mindfulness to Engagement	0.15	0.03	[.10, 0.20]

Note. N = 146. The standardized coefficients are presented here. Only the confidence intervals but not the significance level of the bootstrapping coefficients are reported.

0.07, RMSEA = 0.06), with estimates presented in Table 6 and Fig. 3.

Analysis supported most paths of our hypothesized model at the within-person level. First, state mindfulness was negatively related to both perceived surface acting (H1a: β = -0.19, se = 0.03, $p < 0.01$) and perceived workload (H1b: β = -0.07, se = 0.02, $p < 0.01$), while positively related to perceived task significance (H1c: β = 0.07, se = 0.02, $p < 0.01$). Therefore, hypotheses 1a-1c were fully supported at the within-person level.

For the mediation hypotheses (Hypotheses 2a-2c and 3a-3c), we tested the model within the MSEM framework and, following guidance from MacKinnon et al. (2004), used the Monte Carlo resampling methods to calculate the 95 % confidence intervals for indirect and total effects (Table 6). While prior research indicated that the empirical confidence intervals computed from Bootstrapping and Monte Carlo resampling methods are usually almost identical, we applied different resampling methods in our two sub-studies (Bootstrapping method in Study 1, and the Monte Carlo method in Study 2) to further examine the robustness of our analyses. The indirect effect of state mindfulness on burnout was negative via both perceived surface acting (β = -0.04, 95 % CI = [-0.06, −0.03]) and perceived workload (β = -0.012, 95 % CI = [-0.02, −0.004]). However, state mindfulness did not significantly predict burnout via perceived task significance (β = 0.003, 95 % CI = [-0.001, 0.008]), thus supporting Hypotheses 2a and 2b, but not hypothesis 2c. The total effect of state mindfulness on burnout was also negative (β = -0.19, 95 % CI = [-0.24, −0.13]).

Finally, we examined the indirect effects linking mindfulness and work engagement (Hypotheses 3a-3c). The indirect effect of state mindfulness on work engagement was positive via perceived surface acting (β = 0.018, 95 % CI = [.01, 0.03]) and perceived task significance (β = 0.007, [95 % CI = [.001, 0.01]], but not via perceived workload (β = 0.001, 95 % CI = [-0.003, 0.006]); therefore, Hypotheses 3a and 3c were supported but not Hypothesis 3b. The total effect of state mindfulness on work engagement was positive and significant (β = 0.15, 95 % CI = [.10, 0.20]).

4.5. Discussion

This study provided additional support for our hypothesized model by replicating and generalizing the findings of Study 1, while also addressing potential limitations. Analysis revealed a similar pattern of results, with the lone exception being the hypothesized indirect relationship of state mindfulness on burnout via perceived task significance was non-significant in Study 2. We now consider the broader implications of these twin studies.

5. General Discussion

The overall ambition of this research was to integrate literature on JD-R and mindfulness through a rigorous empirical package of twin multi-wave studies. We found that mindfulness consistently predicted perceptions of diminished job demands (perceived surface acting and workload) and augmented job resources (perceived task significance),

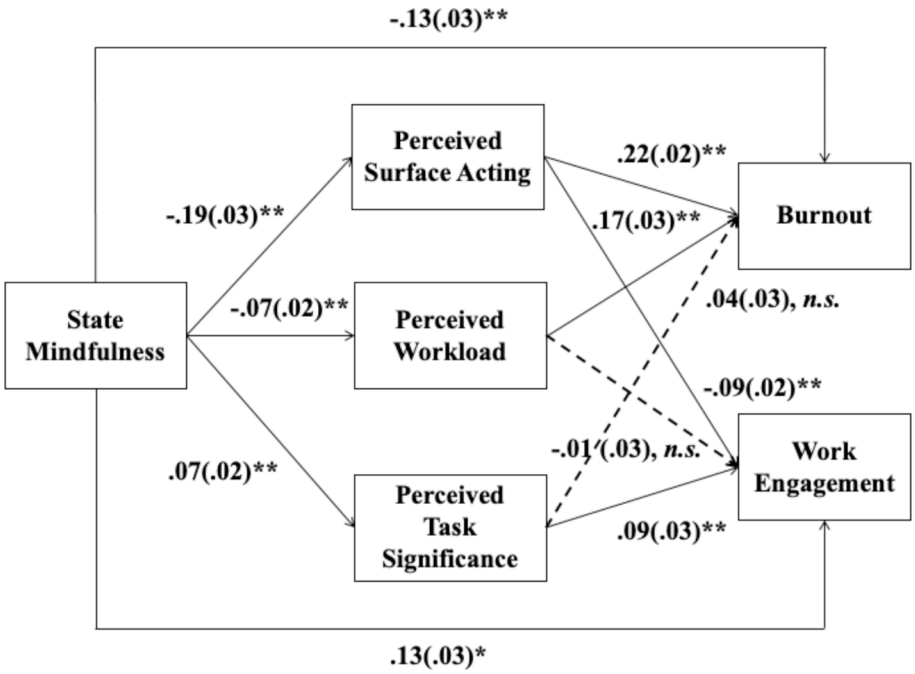

Fig. 3. Study 2: MSEM Results (Within-Person) with State Mindfulness as Personal Resource.
Note. $N = 146$. The standardized path estimates are presented here. Solid lines indicate significant relationships and dashed lines indicate non-significant relationships. * $p < .05$; ** $p < .01$.

and these mediated the relationships of mindfulness to lowered burnout and increased work engagement. In both studies, mindfulness exerted a beneficial total effect on both burnout and work engagement. While most hypothesized relationships replicated across both studies, mindfulness showed an inconsistent relationship to burnout through task significance (negative in Study 1, non-significant in Study 2), and a non-significant relationship to work engagement via workload (Studies 1 and 2). Overall, these results support categorizing mindfulness as a personal resource within JD-R, one that acts as an IV directly predicting perceptions of decreased job demands and increased job resources. We elaborate on the implications of these findings below.

5.1. Theoretical implications

Our research integrates constructs and insights from both JD-R and mindfulness literatures to advance theoretical understanding in both discourses. Through two studies, we demonstrate that a personal resource that influences perceptions can be modeled as an IV that predicts burnout and work engagement through job characteristics. While JD-R has placed increasing attention on personal resources, ambiguity about appropriate modeling approaches has persisted. This study documents that mindfulness is a clear exemplar of this type of personal resource, and offers a template for modeling other perceptually-influential personal resources-as-IVs. Departing from the logic underlying typical JD-R models, our findings show that modeling personal resources like mindfulness as IVs may reveal undiscovered paths of influence on job characteristics, burnout, and work engagement.

As debate about optimal personal resource modeling continues, our research unequivocally supports Schaufeli and Taris' (2014) proposition that perceptually active characteristics may be viewed as IVs, helping to clarify how to model personal resources within JD-R (Thun & Bakker, 2018). Other research may follow a similar template for subsequent JD-R models, revealing new characteristics that act through a similar process of shaping perceptions of job demands and job resources. The typical assumption that personal resources should not be viewed as IVs may obfuscate how these factors influence JD-R models. While viewing personal resources as moderators or mediators is often sensible, when appropriate, IV models offer notable advantages. They may act as single characteristics that impact both job demands and resources, and through this, strain and motivation outcomes, comprehensively influencing an entire JD-R model. This reflects Schaufeli's (2017, p. 121) perspective that enhancing personal resources is particularly desirable within JD-R, as only "by increasing resources … two birds are hit by one stone: burnout is prevented and engagement is fostered." Consequently, it is valuable to identify IV personal resources that holistically impact JD-R models.

Integrating mindfulness as a personal resource into the JD-R framework clarifies *if* and *how* this variable may benefit burnout and work engagement. Most literature describes mindfulness as a personal resource that benefits working individuals (Stuart-Edwards et al., 2023). Recent papers have investigated this proposition through a JD-R framework, albeit typically with exploratory methods like cross-sectional data (e.g., Grover et al., 2017), so we more comprehensively tested this proposition using multi-wave studies that temporally separated variables. Our results consistently indicated that mindfulness predicted lower burnout and higher work engagement, and so should be considered as a personal resource in JD-R. Further, this occurred indirectly through predicting perceptions of job characteristics influenced by emotional, cognitive, and motivational domains of human functioning.

Beyond documenting that mindfulness can act as a personal resource, our research also showed *how* this may occur, theorizing and documenting multiple novel paths linking mindfulness to burnout and work engagement through surface acting, workload, and task significance. While surface acting has been shown to mediate between mindfulness and lower burnout (Hülsheger et al., 2013), our studies show it can also mediate between mindfulness and greater work engagement. As mindfulness predicted lower perceived frequency of inauthentic emotional displays that induce emotional dissonance, this explained greater focus and vigor. With workload, we theorized that mindful individuals would perceive less work relative to their capabilities, and this would then serve to mitigate burnout. With task significance, we theorized that mindful individuals would perceive their work as relatively more meaningful and intrinsically motivating, reducing their strain and

bolstering their work engagement. All together, we found support for four novel paths linking mindfulness to burnout and work engagement, three of which replicated across both studies. This pattern of impacts is consistent with views that mindfulness may act as a "root construct" that broadly influences multiple mechanisms and outcomes (Good et al., 2016, p. 135).

5.2. Limitations and future directions

These studies had limitations that invite future refinement. Both studies used self-report measures potentially subject to common method bias, which can spuriously inflate correlations between predictors and outcomes (Podsakoff et al., 2024). Further, organizational constraints limited data collection in Study 1 to two waves, precluding temporal separation of mediator and outcome variables. Study 2 aimed to mitigate these concerns by replicating findings with a design less susceptible to common method bias, a three-wave within-persons experience sampling design that implicitly controlled for potential respondent response sets or biases through a repeated-measures design. This design aimed to increase confidence that hypothesized relationships were robust and not artifactual (Hochwarter et al., 2011). To further mitigate such concerns, future research might triangulate subjective reports of job characteristics with objective or aggregated reports (Li et al., 2023), or randomly manipulate mindfulness levels through an intervention (Bakker et al., 2014) to increase strength of causal inferences of the IV-job characteristics relationships.

Modeling mindfulness as an IV predicting perception of job demands and resources was supported by JD-R (Bakker et al., 2014; Schaufeli & Taris, 2014) and mindfulness literature (Good et al., 2016; Hülsheger et al., 2013), but other modeling approaches are theoretically plausible. For example, trait mindfulness might moderate, or state mindfulness might mediate, the relationships between job characteristics and JD-R outcomes; contextual variables, like job control or climate, may moderate these relationships; and mediating characteristics may more precisely explain how mindfulness alters perceptions of job demands and job resources.

While most of the hypothesized relationships were supported and replicated across both studies, it may be worth revisiting inconsistent findings. While mindfulness predicted task significance in both studies, this was only a significant predictor of burnout at the between-person level in Study 1, which invites further inquiry. One possibility is that this significant finding in Study 1 was influenced by common method bias (Podsakoff et al., 2024), and the additional temporal separation in Study 2 diminished the strength of this relationship. Another possibility is that this finding is not artifactual, but varies by analytical levels. For example, mindfulness may impact burnout via task significance at the between-person level, perhaps through a mechanism like job selection, but not a within-person level, such as through influencing daily attention or emotion. Finally, it may be worth factoring in boundary conditions on all hypothesized relationships. While the sample was drawn from specific occupations, industries, and nationalities, varying these factors might alter the relationships in this model.

These studies demonstrate that mindfulness acts as a personal resource by influencing perceptions of job characteristics, and more broadly, exemplifies that personal resources can act as IVs that influence perceptions of job characteristics. Our research suggests that mindfulness may alter perceptions of many other job demands or resources, such as other components of the job characteristics model, job autonomy and control, extrinsic and intrinsic motivators, workplace climate, etc. Second, while mindfulness acted as an IV predicting perceptions of job characteristics, other personal resources may act similarly, such as personality facets or core-self evaluations (Barrick et al., 2013; Tims & Akkermans, 2017). Identifying more specific criteria for determining which personal resources are sufficiently perceptually influential to model as IVs within JD-R research also bears future consideration.

Finally, our theoretical presumption that mindfulness would act as a personal resource may not apply in every context or process. Recent findings show that mindfulness can exacerbate rather than mitigate undesirable effects of various factors, like anxiety, surface acting, and abusive supervision (Good et al., 2024; Lyddy et al., 2021a; Walsh & Arnold, 2020). These suggest the possibility that mindfulness might act not only as a personal resource, but also display a "dark side" (Lyddy et al., 2021a, p. 1922), or what Schaufeli and Taris (2014, p. 57) term a "personal vulnerability.".

5.3. Implications for practice

By integrating JD-R and mindfulness, this research suggests practical implications. Our studies support Bakker et al.'s (2014) view of mindfulness-enhancing training as a JD-R personal resource intervention, as mindfulness predicted lower burnout and greater work engagement, while also going beyond this initial suggestion, showing that mindfulness can impact more than recovery from job demands. In contrast, these results suggest that elevating mindfulness should predict decreased perceived job demands and increased perceived job resources, ultimately benefiting burnout and work engagement. This mirrors Schaufeli's (2017) proposition that when personal resources act as IVs, they can serve as a particularly valuable intervention target.

Our research also provides support for widespread investment in corporate mindfulness training programs (Caporale-Berkowitz et al., 2021; Stuart-Edwards et al., 2023), or what has been called "contemplative management practices" (CMP; Lyddy & Good, 2025). We showed that mindfulness acts as a personal resource benefitting burnout and work engagement by altering perceptions of work, including emotional authenticity, cognitive workload, and sense of meaning. As impacts are seen for both trait and state mindfulness across multiple time scales, this suggests that practices and interventions boosting mindfulness may have both immediate and long-term psychological benefits for burnout and work engagement (Hafenbrack, 2017). While there has been recent increased skepticism about the overall value of mindfulness interventions (Lyddy et al., 2021b), our studies increase confidence that mindfulness training may be an effective intervention for targeting these characteristics, additionally explaining how and why these practices should be effective. Capturing the broad array of beneficial outcomes through multiple pathways mirrors prior theorizing that mindfulness training may act as a "parsimonious intervention" (Good et al., 2016, p. 134), increasing understanding of mindfulness training's holistic value as a managerial tool.

CRediT authorship contribution statement

Christopher J. Lyddy: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Conceptualization. **Darren J. Good:** Writing – review & editing, Writing – original draft, Conceptualization. **Shuai Yuan:** Writing – review & editing, Methodology, Formal analysis, Data curation. **Eric J. Michel:** Writing – original draft, Methodology, Formal analysis. **Catarina Ahlvik-Garrison:** Project administration, Methodology, Investigation, Data curation, Conceptualization. **Jochen Reb:** Writing – review & editing, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding sources

The authors wish to express their appreciation to the Providence College School of Business Fund for Faculty Research & Development for research support.

Data availability

Code used for statistical analysis and the data set for Study 2 can be found online at https://osf.io/vnp7x/.

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