

**DESIGNING WORK TO CULTIVATE MINDFULNESS:
AN ATTENTION-BASED APPROACH TO WORK DESIGN**

by
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*Dedicated to my accomplished wife, Mauri Stotts Pratt,
and to my supportive parents, Richard and Julie Pratt*

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ABSTRACT

In contemporary organizations, managing workers' attention is more critical to success than managing workers' temporal location. Mindfulness, which represents an essential dimension of attention, has been associated with many important individual and work outcomes. However, we know relatively little about how mindfulness is cultivated at the individual level, and the little we know places the individual in full control of cultivating mindfulness; implicitly conceptualizing managers as relatively passive characters in the cultivation of worker mindfulness. Integrating the mindfulness literature with work design, I propose an attention-based model of work design, through which key work characteristics are linked to worker mindfulness through the mediating effects of psychological demands and job-based psychological ownership. I test portions of this model with two samples. In sample 1, I use survey data from 555 employees from a regional healthcare system to examine the relationships between key work characteristics and job-based psychological ownership. In sample 2, I use survey data from 211 individuals to test both the proposed job-based psychological ownership path to mindfulness, as well as the proposed psychological demands path to mindfulness. I end with a discussion of the findings, limitations, and opportunities for future research.

CHAPTER 1. DESIGNING WORK TO CULTIVATE MINDFULNESS: AN ATTENTION-BASED MODEL OF WORK DESIGN

Successful managerial boundary maintenance in contemporary organizations has much more to do with managing worker attention than managing workers' physical presence (Stanko & Beckman, 2015). Advancements in communication and collaboration technologies (Raghuram, Hill, Gibbs, & Maruping, 2019), as well as a world-wide pandemic that required many in the workforce to work virtually, have made work increasingly portable; opening avenues to new definitions of the workplace, while also introducing new concerns regarding worker attention. However, even before the pandemic, the emergence of progressively engaging digital content on handheld mobile devices and personal computers has made workplace distractions much more prevalent (Stanko & Beckman, 2015), signaling that the need for organizational leaders to prioritize attention management is increasingly urgent. It is within this context that mindfulness, which represents a present-oriented and relatively wide breadth of attention (Dane, 2011), has become an increasingly important phenomenon in the management literature; to quote a recent article in Harvard Business Review, "mindfulness has gone mainstream" (Lyddy, Good, Bolino, Thompson, & Stephens, 2021). Mindfulness has been positively associated with worker well-being (Brown, Ryan, & Creswell, 2007; Hülshager, Alberts, Feinholdt, & Lang, 2013), creativity (Cheung, Huang, Chang, & Wei, 2020), and performance (Dane & Brummel, 2014; Fraher, Branicki, & Grint, 2017; Reb, Narayanan, & Ho, 2015). While individual-level mindfulness can be a dispositional trait (Reb et al., 2015; Sutcliffe et al., 2016), I conceptualize it in this dissertation as a cognitive state "characterized by novel distinction-drawing that results in being (a) situated in the present, (b) sensitive to context and perspective, and (c) guided (but not governed) by rules and routines" (Langer, 2014: 11); suggesting that mindfulness is a state which can be cultivated and refined by individuals otherwise low in trait mindfulness.

Surprisingly little is known about how mindfulness is cultivated at the individual-level. While scholars have demonstrated the effects of meditation on mindfulness (Hafenbrack, Kinias & Barsade, 2013), the rest of "the body of work documenting antecedents to individual-level mindfulness is remarkably thin" (Sutcliffe et al., 2016: 65). Perhaps more important, this nascent literature implicitly conceptualizes managers and other organizational leaders as passive actors in the cultivation of mindfulness. With a few notable exceptions (Reb et al., 2015, Reina & Kudesia,

2020), the literature regarding antecedents to individual-level mindfulness frames the development of mindfulness as determined by each individual; focusing primarily on individualized drivers of mindfulness such as personality traits (Giluk, 2009) and job experience (Dane, 2010, 2013). This framing limits the mindfulness literature by failing to consider the important role that managers can play in the cultivation or erosion of individual workers' state mindfulness. Since managers can't force employees to meditate, nor can they control workers' personalities or job experience, it is essential to explore avenues by which managers can meaningfully impact state mindfulness among individual employees.

For example, work design is a strategy at the discretion of management which is especially likely to impact state mindfulness. The design of work has a profound impact on worker attitudes (Morgeson, Garza, & Campion, 2013), well-being (Bakker & Demerouti, 2007; Parker, 2014), and performance (Grant, 2008a). Work design has been shown to induce other critical psychological states—such as experienced meaningfulness (Humphrey, Nahrgang, & Morgeson, 2007)—which enhance motivation (Hackman & Oldham, 1976) and engagement (Rich, LePine & Crawford, 2010) among individual workers. Work design has also been associated with task performance and work productivity (Grant & Parker, 2009). In particular, work design's effects on work persistence (Grant, 2008b) imply that it may be particularly well-suited for impacting worker mindfulness; as persistence is required to continuously expend the cognitive resources needed to be situated in the present, sensitive to context and perspective, and guided (but not governed) by rules and routines (Langer, 2014).

In this dissertation, I propose a multi-path attention-based model of work design; focusing specifically on the relationship between work design principles and state mindfulness. In the first path, I hypothesize that specific task characteristics (task identity, feedback, specialization, autonomy and task significance) enhance the degree to which workers experience work-related job-based psychological ownership, and that work-related job-based psychological ownership enhances mindfulness. Additionally, I propose that the relationships between (a) task identity, (b) feedback, (c) specialization, and (d) autonomy and job-based psychological ownership are amplified by task significance (Grant, 2008b). In the second path, I propose that three separate work characteristics (task simplicity, information processing requirements, and time demands) are significantly associated with mindfulness through the mediating effects of psychological demands.

This attention-based model of work design contributes to the literature in three important ways. First, by hypothesizing the antecedent effects of task characteristics, work characteristics, job-based psychological ownership, and psychological demands on state mindfulness, this study contributes significantly to the individual-level mindfulness literature, in which antecedents to state mindfulness development beyond meditation have been considerably limited (Sutcliffe, et al., 2016). While previous research has suggested that prosocial motivation—which is closely associated with work design (Grant, 2008a, 2008b)—may enhance mindfulness among individuals (Vogus, Rothman, Sutcliffe, & Weick, 2014), the impacts of specific work design principles on state mindfulness remain underdeveloped. Additionally, since work design (Morgeson & Campion, 2002), as well as strategies to manage both job-based psychological ownership (Brown, Crossley, & Robinson, 2014a) and psychological demands (Campion, 1988) are readily available to managers and other organizational leaders, this model broadens the mindfulness literature to consider antecedents to mindfulness by conceptualizing managers and organizational leaders as active contributors to (or detractors from) the development of state mindfulness among individual workers.

Second, by proposing the effects of task characteristics on job-based psychological ownership, as well as its effect on state mindfulness, I extend the job-based psychological ownership literature to consider important relationships that enhance the construct's utility. While certain task characteristics, such as autonomy, have been positively associated with job-based psychological ownership (Peng & Pierce, 2015), research in this area remains significantly more limited than in the development of organization-based psychological ownership (Dawkins, Tian, Newman, & Martin, 2017). In evaluating the impacts of various task characteristics on job-based psychological ownership—as well as the potential moderating effects of task significance on those relationships—managers and organizational leaders will be able to strategically influence job-based psychological ownership through work design. As work design can be uniquely tailored to individuals and/or groups (Morgeson & Campion, 2002), knowing the effects of various task characteristics on job-based psychological ownership would make it possible for managers and leaders to customize ownership-enhancing strategies to inexpensively target job-based psychological ownership enhancement among specific workers. Additionally, the job-based psychological ownership literature has recently focused on creativity performance as a key outcome (Berg & Yu, 2019), which is also a key outcome of individual-level mindfulness (Elsbach

& Hargadon, 2006). Conceptualizing mindfulness as a potential outcome of job-based psychological ownership may uncover a key mechanism by which job-based psychological ownership is associated with meaningful performance outcomes.

Finally, this model contributes to the work design literature by focusing on mindfulness as a key outcome of work design. While the work design literature has demonstrated that design-enhanced motivation leads to increased persistence, performance, and productivity in some occupational fields (Grant, 2008b), motivation alone is insufficient to ensure high-quality performance in many professions. Motivation may enhance a professional's persistence in working through a difficult and seemingly intractable problem. However, the ability to generate novel distinctions which facilitate creative and effective solutions (Langer, 2014) requires mindfulness. While motivation can enhance an attorney's productivity outside the courtroom, it is the sensitivity to context and perspective inherent in mindfulness which determines the extent to which an attorney's arguments resonate with specific judges or juries (Dane, 2013). Additionally, successful classroom teaching does not depend solely on an instructor's knowledge regarding the subject matter and/or principles of effective teaching, but also relies on the instructor's ability to be guided (but not governed) by rules and routines in tailoring the course to the needs and interests of students. Thus, cultivating state mindfulness is inextricably linked to high performance in many occupational fields, especially in professions where work is dynamic and high-quality performance depends on matching effort to context (Dane, 2011). By proposing and testing the relationship between work design principles and mindfulness, this dissertation takes an important step toward broadening the work design literature to consider factors beyond motivation that impact work performance. Broadening the work design literature to consider the impacts of task and work characteristics beyond motivation provides a step towards closing the growing gap between work design theory—which focuses primarily on motivation—and work design practice, in which work is routinely designed to achieve a number of important outcomes beyond motivation (Morgeson et al., 2013).

1.1 Mindfulness and Work Design Theory

Managing worker attention represents a growing concern in organizations (Stanko & Beckman, 2015), as well as an important research frontier which management scholars and social scientist have only recently begun exploring (Sutcliffe et al., 2016). Mindfulness represents a key

component in attention research which has garnered particular interest in the management literature (Vogus & Sutcliffe, 2012; Weick & Sutcliffe, 2003, 2006). Compared to other forms of attention, such as cognitive absorption, mindfulness is distinguished by its present-focused and wide breadth of attention (Dane, 2011). As either a dispositional trait or cognitive state, mindfulness usually involves active attention to detail (Langer, 1989), a flexible, open state of mind (Fiol, Pratt, & O'Connor, 2009), and a general awareness of multiple emerging realities (Weick & Sutcliffe, 2006). In considering individual mindfulness, it is also important to make a distinction between Western and Eastern conceptualizations of mindfulness. Eastern conceptualizations derive from Buddhist thought (Weick & Sutcliffe, 2006) and involve a present-oriented awareness to events occurring both internal and external to the individual (Vogus & Sutcliffe, 2012). By contrast, Western conceptualizations—developed primarily by Langer (1989)—derive from theory regarding information processing (Weick & Sutcliffe, 2006). While I gathered data regarding both conceptualizations of mindfulness, I focus primarily on the Western conceptualization developed by Langer (1989, 2014) in this dissertation because of its utility in researching state-based (rather than trait-based) mindfulness in organizations. Langer's (2014) primary focus on the present-orientation of mindfulness is essential for understanding and preventing work errors and mistakes associated with mind-wandering (Dane, 2018) or day dreaming (Dane, 2011). Second, as work settings become increasingly dynamic and fast paced, Langer's (1989) articulation of a sensitivity to context and perspective inherent in mindfulness is particularly important; as poor performance is often the result of cognitive entrenchment—which represents an overreliance on past experience and domain knowledge for solving novel problems (Dane, 2010)—rather than a result of low levels of knowledge, skills, or abilities. Finally, the flexibility to be guided, but not governed, by rules and routines in Langer's definition (1989) represents an openness to creative and innovative problem solving, which has a dramatic impact on workers' creativity performance outcomes (Elsbach & Hargadon, 2006).

A host of outcomes associated with individual-level mindfulness have been well-documented in the literature. Mindfulness is positively associated with constructive conflict management (Kay & Skarlicki, 2020), worker well-being (Reb et al., 2015), and negatively associated with worker stress (Sutcliffe et al., 2016). Regarding performance, mindfulness has been positively associated with worker creativity (Cheung, Huang, Chang, & Wei, 2020), and negatively associated with cognitive biases (Kiken & Shook, 2011). However, considerably less

is known about the antecedents of mindfulness. While research has linked meditation to enhanced state mindfulness (Michel, Bosch, & Rexroth, 2014), our understanding of antecedents to individual-level mindfulness beyond meditation is relatively thin (Sutcliffe et al., 2016). This is likely due in part to the number of studies which consider individual-level mindfulness as a dispositional trait, rather than a cognitive or psychological state (see Thoroughgood, Sawyer, and Webster, 2020, for an example).

Whether considering mindfulness as a trait or state, the scholarly literature has traditionally conceptualized mindfulness as depending upon the individual. Beyond the benefits of personal meditative practices on mindfulness, Giluk's (2009) meta-analysis identified conscientiousness and neuroticism as two key personality traits associated with individual-level mindfulness. Additionally, research has shown a polynomial relationship between job experience and mindfulness. A study of paramedics showed that job experience was positively associated with mindfulness to a certain point; at which time, mindfulness declined with additional experience (Mitmansgruber, Beck, & Schüßler, 2008). In focusing primarily on "inside out" approaches to mindfulness, the literature has implicitly conceptualized managers and organizational leaders as passive actors in the development and cultivation of mindfulness. While recent research has examined the effects of organizational factors on mindfulness, such as supervisor support, conflicting job demands (Reb et al., 2015), and hindrance stressors (Reina & Kudesia, 2020), more research is needed to understand how managers and organizational leaders can readily employ strategies, such as work design or redesign, which actively impact individual-level mindfulness among workers.

For more than five decades, the work design literature has focused primarily on task characteristics which enhance motivation among workers through their effects on work meaningfulness, experienced responsibility, and a knowledge of the results of one's work (Hackman & Lawler, 1971; Hackman & Oldham, 1976, 1980; Humphrey, Nahrgang, & Morgeson, 2007). While this nearly exclusive focus on motivation-enhancing critical psychological states has led to incredible advancements in our collective understanding of the effects of work design on relational and proactive processes (Grant & Parker, 2009), and has broadened our knowledge of the effects of task characteristics on a host of performance and attitudinal outcomes (Humphrey et al., 2007), it has also led to opportunity costs which have limited our understanding of other

mechanisms by which work design principles impact important worker outcomes, such as worker attention.

The attention-based model of work design (see Figure 1.1) integrates specific work design principles to cultivate mindfulness. It should be noted that I am not the first to suggest the benefits of integrating work design perspectives to beneficially impact cognition in work. Karasek's (1979) stress-management model of job strain examines the simultaneous effects of job demands—such as high workload or conflicts at work—and job decision latitude, which refers to decision authority (i.e. autonomy) and skill level required for the job (i.e. job complexity, skill complexity, & task variety). He notably finds that increasing job decision latitude lowers the mental strain experienced by workers across a range of jobs, without requiring any changes to job demands. Additionally, in a longitudinal work redesign quasi-experiment, Morgeson and Campion (2002) found that implementing motivational and mechanistic (i.e. work characteristics which maximize work efficiency (Campion & Thayer, 1985)) work design principles minimized tradeoffs typically associated with either motivational or mechanistic work design alone. Those whose work had been redesigned using both motivational and mechanistic work design principles experienced an increase in job satisfaction (typically associated with motivational work design) without experiencing any significant changes in training requirements or work simplicity (Morgeson & Campion, 2002). Perhaps the best-known integration of work design approaches is the Job Demands/Resources (JD-R) model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). Integrating Karasek's (1979) model with conservation of resources theory (Hobfoll, 1989), the JD-R model demonstrates that job demands (often associated with work characteristics, such as work overload and time pressures) and job resources—among which motivational design elements, such as autonomy and task variety, play an important role—interact to affect worker exhaustion and worker disengagement (Bakker & Demerouti, 2007; Demerouti et al., 2001). The JD-R's major contribution to the literature is the balance that it strikes between designing work to be engaging and designing work to lower worker stress (Bakker & Demerouti, 2007).

To the casual reader, the attention-based model of work design modeled in this dissertation may seem quite similar to the JD-R model. Both focus on the joint impacts of motivation-enhancing and demand-limiting design to achieve desired work outcomes. However, the attention-based approach to work design differs considerably from the JD-R in two important ways. First,

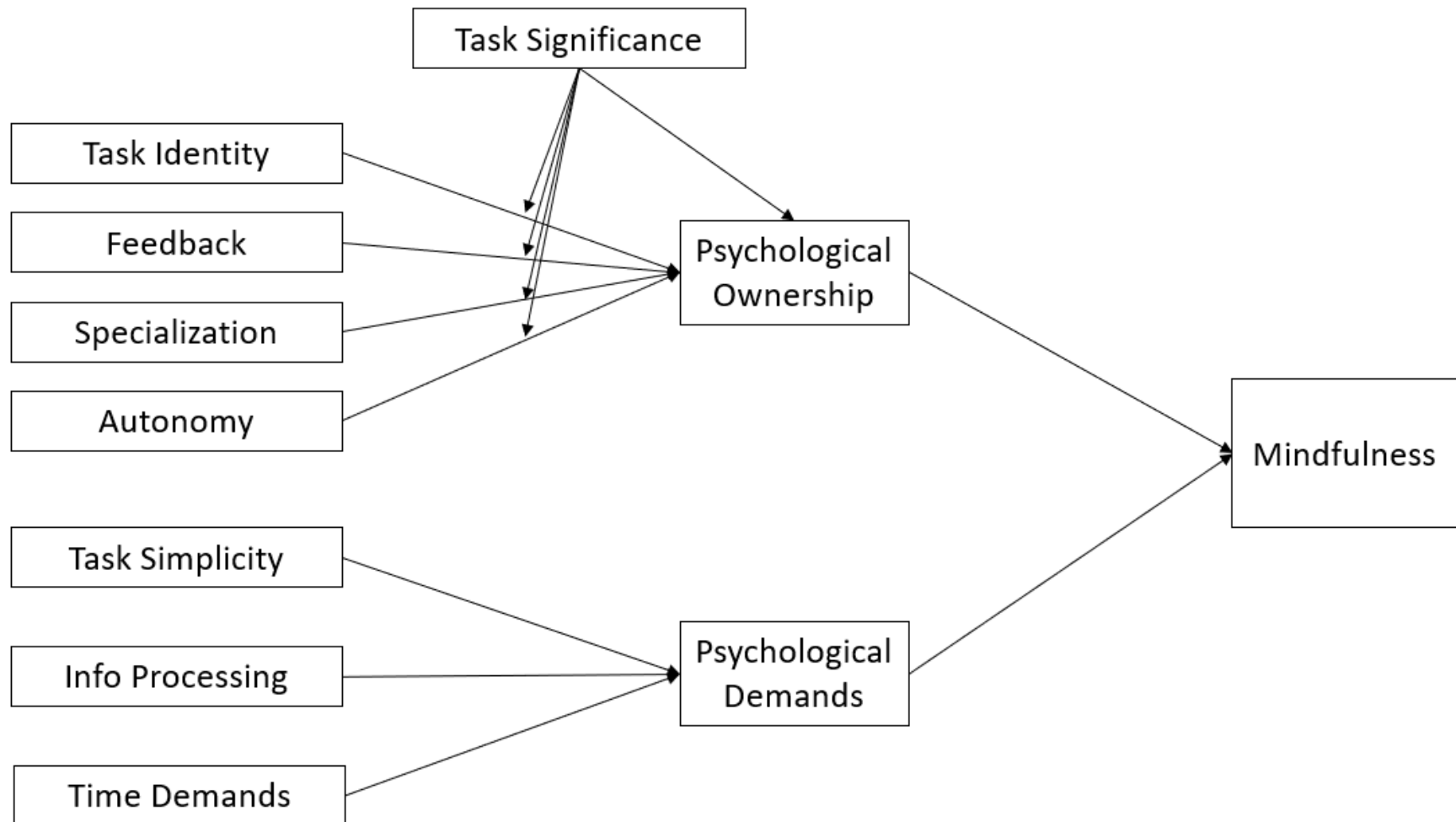


Figure 1.1. Hypothesized Attention-Based Model of Work Design (Study 1)

the model proposed in this dissertation focuses primarily on the cultivation of mindfulness, rather than on worker well-being. Second, there is very little overlap between the constructs considered in this attention-based model of work design and the JD-R. While scholars are beginning to explore potential relationships between the extended JD-R model and mindfulness (Lawrie, Tuckey, & Dollard, 2018), the attention-based model described in this dissertation offers a much more direct, comprehensive, and nuanced test of the effects of work design on mindfulness.

1.1.1 Work Design, Job-based Psychological Ownership, and Mindfulness

To understand how task characteristics can cultivate a state of mindfulness, it is important to first consider the mechanisms by which task characteristics impact worker intentions. In describing psychological engagement with work, Kahn (1990) notes that meaningfulness in work encourages workers to more fully engage their physical, emotional, and cognitive resources in the work that they do, which is essential in cultivating resource intensive psychological states, such as mindfulness (Vogus & Sutcliffe, 2012). Similarly, in his study of firefighters and fundraising callers, Grant (2008a) indicates that task characteristics can increase workers' "willingness to invest time and energy in their tasks, persisting to perform them effectively" (p. 50). I posit that specific task characteristics cultivate a state of mindfulness through the job-based psychological ownership (Pierce et al., 2001) which those task characteristics instill within workers. As workers develop job-based psychological ownership, they are increasingly likely to exert the effort needed to cultivate mindfulness.

As described by Pierce and colleagues (2001, 2003), the routes to the development of psychological ownership are control over the target, an intimate knowledge of the target, and an investment of self into the target. The relationship between autonomy and job-based psychological ownership is documented in the ownership literature (Peng & Pierce, 2015), and fulfills the 'control over the target' route stipulated in developing job-based psychological ownership.

I anticipate that an intimate knowledge of one's work will be directly affected by the task identity of one's work, as well as the feedback which one receives regarding the work. Task identity is defined as "the degree to which a job requires completion of a "whole" and identifiable piece of work; that is, doing a job from beginning to end with a visible outcome." (Hackman & Oldham, 1976: 257). When individuals enjoy the benefits of greater task identity, they develop a more intimate knowledge of the products/services which they produce (Pierce et al., 2001, 2003),

as well as the work processes in which they are engaged (Braverman, 1974; Tucker, 1978). For example, a worker charged with building a chair, due to her knowledge of how the component pieces and work processes fit together to form the final product, will have a more intimate knowledge of both the chair which she produces, as well as the work involved in building that chair from beginning to end, than a worker who is responsible solely for manufacturing chair legs.

The concept of feedback as a task characteristic was established by Job Characteristics Theory (Hackman & Oldham, 1975, 1976, 1980). In particular, feedback from the work itself, which refers to “the degree to which the job provides direct and clear information about the effectiveness of task performance” (Morgeson & Humphrey, 2006: 1323) will play an important role in job-based psychological ownership development. Feedback from the work allows a worker to more intimately understand the results of specific actions and efforts (Hackman & Oldham, 1980), and to know what work techniques will yield the best outcomes. For example, structural engineers gain intimate knowledge of their work by watching how the buildings or bridges which they design withstand physical forces like gravity, wind, and earthquakes. In learning from the outcomes of their own efforts in work, workers gain a personalized knowledge for how their efforts are transformed into effective—and less effective—outcomes, making their understanding of the work more intimate and personalized in the process.

Specialization refers to “the extent to which a job involves performing specialized tasks or possessing specialized knowledge and skill” (Morgeson & Humphrey, 2006: 1324). Traditionally considered a key principle of mechanistic work design (Campion & Thayer, 1985), specialization has been more closely linked empirically to outcomes associated with motivational work design, such as higher levels of job satisfaction (Edwards et al., 1999, 2000). Highly specialized work requires the development of very specific knowledge and expertise, and represents a significant investment of oneself into the work; fulfilling the third key “route” to job-based psychological ownership (Pierce et al., 2001). For example, surgeons typically develop their very specialized skill sets over four years of graduate schooling, and three to ten years of practice during residency. Thus, surgeons are especially likely to develop ownership over the professional tasks which they exclusively perform due to their extreme time investment in mastering highly specialized skills. I propose that task identity and feedback, due to their conceptual association with an intimate knowledge of the target, as well as specialization—which is conceptually linked with the investment of self in the target (Dawkins et al., 2017)—are all positively associated with job-based

psychological ownership. While autonomy, which represents control over the target of ownership, has already been established as a predictor of job-based psychological ownership (Peng & Pierce, 2015), I predict that this relationship will retain its significance even when considering other important task characteristics. Thus, workers who perceive their work as providing high levels of task identity, feedback, and autonomy, while also requiring a high degree of specialization, will experience high levels of job-based psychological ownership over their work.

Hypothesis 1: (a) Task identity, (b) feedback, (c) specialization, and (d) autonomy will be positively associated with job-based psychological ownership

1.1.2 The Moderating Effects of Task Significance

Understanding the “roots” of psychological ownership, or the human needs fulfilled by psychological ownership (Dawkins et al., 2017), is as important as understanding the routes by which it is formed. Pierce and colleagues (2001, 2003) articulate three primary roots of psychological ownership: efficacy, self-identity, and belongingness. First, ownership makes it possible for individuals to “explore and alter their environment, thus satisfying their innate need to be efficacious” (Pierce et al., 2001: 300). Second, ownership often serves symbolic purposes, since possessions—both tangible and intangible—are inextricably intertwined with human self-definition (Pierce et al., 2003). For example, as sculptors and painters gain mastery—or ownership—over the skills and techniques needed to create real or imagined images, they enhance and refine their self-identities as artists. Third, ownership provides the “owner” with a sense of belonging; belonging embedded in the target of ownership, as when a detective experiences ownership through mastering the techniques and skills associated with the job, or belonging within a community, as when a cadet finishes basic training and becomes a soldier. More recently, accountability has been suggested as a fourth root of psychological ownership (Avey, Avolio, Crossley, & Luthans, 2009). From an ownership perspective, accountability refers to either the right to hold others and oneself accountable for their actions, or the expectation that one will be held accountable (Avey et al., 2009).

The significance of the work which individuals accomplish has a profound impact on the roots of job-based psychological ownership. Task significance is defined as “the degree to which the job has a substantial impact on the lives or work of other people—whether in the immediate

organization or in the external environment” (Hackman & Oldham, 1975: 161). The significance of work accomplished in a job has a dramatic impact on the efficacy, self-identity, belongingness, and accountability which can be derived from that job (Grant, 2008b). Consequently, professionals in highly impactful fields, such as nurses, are more likely to engage in ownership over their professional roles than sales associates or store clerks. By gaining ownership over their clinical work, nurses gain the ability to efficaciously intervene in the health and well-being of countless people, develop strong self-identities as skilled clinicians, gain belonging within a well-respected profession, and earn the right to hold others—and themselves—accountable for health and well-being. Due to its profound effects on the roots of job-based psychological ownership, I anticipate that task significance will be positively associated with job-based psychological ownership. Owing to its proposed relationship with the roots of psychological ownership—rather than the routes that link the other task characteristics to psychological ownership—I anticipate that task significance will impact the relationship between the other task characteristics and job-based psychological ownership. High levels of task significance should be associated with stronger relationships between the task characteristics and job-based psychological ownership, as high levels of task significance provide greater motivation for individuals to develop job-based psychological ownership.

Hypothesis 2: Task significance will be (a) positively associated with job-based psychological ownership, and it will moderate (intensify) the relationships between (b) task identity, (c) feedback, (d) specialization, and (e) autonomy and job-based psychological ownership.

1.1.3 Job-Based Psychological Ownership and Mindfulness

Workers’ job-based psychological ownership is associated with a number of outcomes. While scholars have identified some negative outcomes, such as territorial behavior (Avey et al., 2009), hiding knowledge from other employees, and pro-job unethical behavior (Wang, Law, Zhang, Li, & Liang, 2019), most outcomes associated with job-based psychological ownership are positive, such as enhanced creativity performance (Berg & Yu, 2019), increased organizational citizenship behavior (Van Dyne & Pierce, 2004), and affective commitment (Avey et al., 2009). Most relevant for the purposes of this dissertation, job-based psychological ownership has been

associated with higher levels of attention in the workplace. Wang and colleagues (2019) find an association between job-based psychological ownership and job engagement, which is defined as the “investment of an individual’s complete self into a role” (Rich et al., 2010: 617). Absorption, one of the key components of job engagement (Macey & Schneider, 2008), represents a form of attention which is both narrowly focused and oriented to what is occurring in the present moment (Dane, 2011). Though absorption and mindfulness are distinct in their attentional breadth—with mindfulness representing a relatively wide attentional breadth in comparison to absorption (Dane, 2011)—the commonalities between these two attention-based constructs (Leroy, Anseel, Dimitrova, & Sels, 2013) imply potential connections between job-based psychological ownership and mindfulness as well. For example, both engaged and mindful workers expend a pronounced amount of cognitive resources in completing their work, and workers who experience job-based psychological ownership are more likely to make that effort than those who feel less ownership over their work (Van Dyne & Pierce, 2004).

Beyond its similarities with engagement, however, there are additional reasons to expect a positive relationship between job-based psychological ownership and specific dimensions of worker mindfulness. Returning to the roots of job-based psychological ownership (Pierce et al., 2001, 2003) workers who experience ownership over the work which they do are more proactive in expending time and energy in completing their work, as poor performance represents a threat to worker efficacy, self-identity, worthiness of belonging, and right to be held or hold others accountable (Avey et al., 2009). Thus, workers who experience enhanced ownership over the work which they do are more likely than other workers to expend the cognitive resources needed to consider contexts and perspectives which will impact the quality of the work which they do, in order to maximize their own personal efficacy and self-identity (Van Dyne & Pierce, 2004). Likewise, workers who experience greater levels of job-based psychological ownership are more likely to feel justified or authorized to develop creative responses to seemingly intractable work situations—because of their enhanced ownership—in order to validate their sense of belonging in that occupational role, or their entitlement to accountability over the work which they do (Hochwarter, Perrewé, Hall, & Ferris, 2005; Wallace, Johnson, Mathe, & Paul, 2011). For these reasons, workers who experience high levels of job-based psychological ownership are likely to feel a greater need to develop sensitivity to context and perspective, and are more likely to be

guided—rather than governed—by the rules and routines associated with their work than those who do not experience high levels of job-based psychological ownership.

Hypothesis 3: Job-based psychological ownership will be positively associated with mindfulness.

The logic that supports the proposed relationships between the task characteristics considered in this section (task identity, feedback, specialization, autonomy, and task significance) and mindfulness also highlights some of the conceptual links between job-based psychological ownership and mindfulness. Research shows a link between job control and mindfulness (Lawrie et al., 2018), suggesting that increased autonomy allows individuals both latitude and accompanying accountability in performing their work tasks. Autonomy and accountability impel individuals to be more active and present-oriented in their work. Task identity requires individuals to broaden their thinking in work to consider how decisions made at one step of the work process impact decisions made at subsequent steps of the process, demonstrating the breadth of attention which characterizes mindful thinking (Dane, 2011). Feedback and task significance reinforce the importance of accountability in work processes (Avey et al., 2009), further reinforcing the importance of investment of personal resources in work to ensure better quality; facilitating sustained mindfulness, which requires significant levels of cognitive resources (Vogus & Sutcliffe, 2012). Finally, specialization implies a level of mastery which also facilitates the development of mindfulness by making it easier for individuals to determine when to address a situation “by the book,” or when to take a more flexible and creative approach; an invaluable dimension of mindfulness (Langer, 2014). Thus, I anticipate that job-based psychological ownership functions as a mediating mechanism in the relationships between the aforementioned task characteristics and mindfulness.

Hypothesis 4: Job-based psychological ownership will mediate the significant positive relationships between (a) task identity, (b) feedback, (c) specialization, (d) autonomy, and (e) task significance and mindfulness.

1.1.4 Work Design, Psychological Demands, and Mindfulness

Sustaining mindfulness requires a significant amount of cognitive resources (Vogus & Sutcliffe, 2012). This can be attributable to the cognitive costs associated with creating novel distinctions, being present in the moment, remaining aware of contexts and perspectives, and thinking “outside the box” with regards to problem solving (Langer, 2014). At times, the complexity and demands of work drain workers of the cognitive energies they would otherwise use to cultivate mindfulness (Levinthal & Rerup, 2006). Though not speaking directly to mindfulness, the perceptual/motor approach to job design developed by Campion and colleagues (Campion & Thayer, 1985; Campion, 1988; Campion & McClelland, 1991, 1993; Morgeson & Campion, 2002) hypothesizes that complex and demanding work makes it harder to perform work well, due to its association with higher levels of cognitive or mental overload.

Over the past two decades, research has increasingly sought to demonstrate how “mindless” work (Levinthal & Rerup, 2006) affects performance. “Mindless” work, defined as “work that is low in both cognitive difficulty and performance pressures” (Elsbach & Hargadon, 2006: 470), has been shown to effectively limit the psychological demands of work; facilitating positive outcomes associated with mindfulness, such as increased creativity among employees (Langer, 2014; Sutcliffe et al, 2016). Conceptual links between mindfulness and “mindless work” have been outlined by scholars, who theorize that the clear and established roles and routines associated with mindless work enable responses to novel stimuli and sustain mindfulness “across time and the span of the organization” (Levinthal & Rerup, 2006: 502).

I hypothesize that three specific work characteristics have a profound effect on the psychological demands associated with work; dramatically influencing workers’ abilities to cultivate mindfulness. These are task simplicity, information processing, and time demands. Task simplicity—which is the inverse of job complexity (Morgeson & Humphrey, 2006)—refers to the extent to which the tasks involved in a job are relatively simple and uncomplicated (Campion, 1988). While job complexity is positively associated with increased motivation and job satisfaction (Chung & Ross, 1977; Edwards et al., 2000; Humphrey et al., 2007; Lawler, 1969), it also requires high levels of cognitive resources, due to increased challenge stressors (LePine, Podsakoff, & LePine, 2005) associated with complex jobs. By contrast, task simplicity requires far less cognitive resources, as it requires the completion of a smaller number of tasks which are relatively easy to perform. Information processing refers to the “degree to which a job requires attending to and

processing data or other information” (Morgeson & Humphrey, 2006: 1323). This construct derives from the perceptual-motor perspective of job design, which focuses on maximizing work reliability through minimizing workplace distractions, and is highlighted in the interdisciplinary approach to job design (Campion & Thayer, 1985). In order to limit the psychological demands associated with work, jobs must require only minimal to moderate levels of task-based information processing (Campion, 1988; Edwards et al., 1999), thereby facilitating both time and cognitive energy for individuals to reflect on contextual and situational features which may impact the quality of work being accomplished. Finally, time demands refer to both sufficient opportunities for breaks and limitations on the amount of overtime which individuals are expected to work (Edwards et al., 1999). Initially posited as a key component of biological work design—an aspect of the interdisciplinary approach to job design that focuses primarily on physical and mental comfort in work (Campion & Thayer, 1985; Campion & McClelland, 1991)—time demands dramatically impact work performance and reliability through their theorized effects in limiting cognitive overload (Campion, 1988; Edwards et al., 2000).

While each of these three work characteristics represents a different approach to work design—task simplicity being drawn from the efficiency-based (mechanistic) approach, information processing drawn from enhancing reliability by minimizing distractions (perceptual motor approach), and time demands theorized to enhance physical and mental comfort (biological approach)—all three work design principles are connected to one another conceptually by their hypothesized impacts on psychological demands (Campion, 1988; Edwards et al., 1999). Recent research has demonstrated the negative impact of psychological demands on worker mindfulness (Lawrie et al., 2018), indicating the possibility that clearly stated work guidelines and straightforward work practices conserve cognitive resources (Levinthal & Rerup, 2006), which can then be used to cultivate a more present-focused attentional orientation, as well as increased sensitivity to context and perspectives. However, the link between psychological demands and mindfulness has been undertheorized (Levinthal & Rerup, 2006), and I anticipate that the relationship between the two variables will be more nuanced than a linear relationship. Too few psychological demands will also likely be associated with low levels mindfulness, as it typically results in work being boring and unengaging (Morgeson & Campion, 2002). Consequently, I anticipate that mindfulness cultivation will be low at both extremely low and extremely high levels

of psychological demands, and that mindfulness cultivation will be at its highest at moderate levels of psychological demands.

Hypothesis 5: (a) Task simplicity (b) information processing, and (c) time demands will be associated with mindfulness through the mediating effects of psychological demands, and (5d) the relationship between psychological demands and mindfulness will be quadratic (inverted U-shape).

1.2 Sample 1

1.2.1 Setting

The first empirical setting for this study is a healthcare system in the southern United States. The system includes a hospital that functions as a 150-bed acute care medical center, and employs more than 225 physicians and 1200 employees. Employees from various clinical and non-clinical backgrounds participated in this study, allowing for more occupational variety in testing the hypothesized model.

In collaboration with organizational leaders, I disseminated survey 1 to all employees in the system in August of 2020. In total, 898 individuals completed survey #1, for a response rate of approximately 75%. This first survey included work design indices for autonomy, task identity, feedback, specialization, task significance, task simplicity, information processing, and time demands, and also included job-based psychological ownership. These data were then paired with archival data from the organization to be able to include tenure as a control variable (N = 555).

1.2.2 Measures

Task Identity. Task identity was measured using an adapted scale from Morgeson and Humphrey's work design questionnaire (WDQ) (2006). This scale consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is "My work involves completing work that has an obvious beginning and end." Coefficient alpha for this scale is .85.

Feedback. Feedback was conceptualized specifically as feedback from the work itself, and was measured with the feedback from job scale from Morgeson and Humphrey's WDQ (2006). It

consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item from this scale is “The job itself provides feedback on my performance.” Coefficient alpha for this scale is .93.

Specialization. Specialization is also adapted from the WDQ (Morgeson & Humphrey, 2006). The scale consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “My work requires tools, procedures, and/or materials that are highly specialized in terms of purpose.” Coefficient alpha for this scale is .90.

Autonomy. Autonomy was measured using Morgeson and Humphrey’s (2006) decision making autonomy scale from the WDQ. The scale consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “I am provided with significant autonomy in making decisions.” Coefficient alpha for the scale is .93.

Task Significance. Task significance has also been drawn from Morgeson and Humphrey’s (2006) WDQ. It consists of three items measured on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “The job has a large impact on people outside the organization.” Coefficient alpha for this scale is .91.

Job-based Psychological Ownership. Job-based psychological ownership was measured by adapting a scale developed by Brown, Pierce and Crossley (2014), and consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “The work that I do is MY work.” Coefficient alpha for this scale is .87.

1.3 Sample 1 Results

Means, standard deviations, scale reliabilities, and correlations appear in Table 1.1. Before initiating study 1, confirmatory factor analysis shows optimal fit among task identity, feedback, specialization, and autonomy. A four factor model ($\chi^2 = 466.532$, RMSEA = .099, CFI = .96, TLI = .94, SRMR = .056) fits the data better than a two factor model ($\chi^2 = 2327.705$, RMSEA = .219, CFI = .76, TLI = .70, SRMR = .077) in which specialization is separated from the other variables, or a one factor model ($\chi^2 = 3465.092$, RMSEA = .265, CFI = .64, TLI = .56, SRMR = .114) in which all four task characteristics are combined, suggesting that the task characteristics should not be combined into one or two factors for analysis. With regards to the three work characteristics considered in the psychological demands path, confirmatory factor analysis shows that a three factor model ($\chi^2 = 67.328$, RMSEA = .045, CFI = .99, TLI = .99, SRMR = .023) fits the data much

better than a one factor model ($\chi^2 = 2196.533$, RMSEA = .299, CFI = .51, TLI = .35, SRMR = .213), suggesting that the work characteristics should not be combined into one factor for analysis.

Data from this sample allow me to test hypotheses 1a through 2e. I use multivariate regression to simultaneously examine the relationships between the four task characteristics and job-based psychological ownership. Feedback shares a marginally significant relationship with job-based psychological ownership ($\beta = .08$, $t = 1.66$, $p < .10$), while specialization ($\beta = .28$, $t = 6.83$, $p < .001$), autonomy ($\beta = .20$, $t = 4.47$, $p < .001$), and task significance ($\beta = .30$, $t = 8.25$, $p < .001$) demonstrate strong positive relationships with job-based psychological ownership, providing support for hypotheses 1b, 1c, 1d, and 2a. By contrast, the relationship between task identity and job-based psychological ownership is not significant ($\beta = -.01$, $t = -0.27$, *ns*), failing to provide support for hypothesis 1a in sample 1.

Due to its particularly strong association with the roots of job-based psychological ownership, I hypothesize that task significance moderates the relationship between the identified task characteristics and job-based psychological ownership. I test moderation effects simultaneously in a second OLS regression model in Stata 16. As shown in Figures 1.2—1.5, a simultaneous test of moderating effects of task significance on the relationships among task characteristics and job-based psychological ownership shows that task significance positively and significantly moderates the relationship between task identity and job-based psychological ownership ($\beta = .11$, $t = 2.55$, $p < .05$), while failing to significantly moderate the relationship between the relationship between feedback and job-based psychological ownership ($\beta = .06$, $t = 1.17$, *ns*). Interestingly, while task significance moderates the relationship between specialization and job-based psychological ownership with marginal significance ($\beta = -.07$, $t = -1.80$, $p < .10$), and significantly moderates the relationship between autonomy and job-based psychological ownership ($\beta = -.15$, $t = -3.56$, $p < .001$), it attenuates both relationships rather than amplifying them; thus, failing to provide support for hypotheses 2d and 2e. Therefore, when considered simultaneously, interaction effects only provide direct support for hypothesis 2b, as task significance significantly amplifies the relationship between task identity and job-based psychological ownership.

These findings must be interpreted in light of some important limitations which make it impossible to explore these relationships beyond a preliminary examination with data from sample 1. Most glaringly, the inability to collect data from a second survey which included important

control variables for consideration may have impacted the relationships examined in this preliminary study. Additionally, two vital constructs—psychological demands and mindfulness—would have been included in the second survey; making it impossible to test more than a portion of the original model in this study. Consequently, additional samples are needed to examine the hypothesized model.

Table 1.1. Means, Standard Deviations, and Correlations among Variables in Study 1, Sample 1

	Mean	SD	1	2	3	4	5	6	7
1. Autonomy	3.95	.75	.93						
2. Task Identity	3.88	.75	.64***	.85					
3. Feedback	3.90	.73	.63***	.70***	.93				
4. Specialization	4.00	.75	.43***	.45***	.55***	.90			
5. Task significance	4.10	.77	.35***	.35***	.39***	.49***	.91		
6. Psychological Ownership	4.18	.69	.49***	.42***	.50***	.54***	.53***	.87	
7. Tenure	10.35	9.37	.04	-.02	-.02	.10*	.04	.12**	1.00

N = 555

Note: Scale reliabilities (coefficient alphas) reported on the diagonal

**p* < .05

***p* < .01

****p* < .001

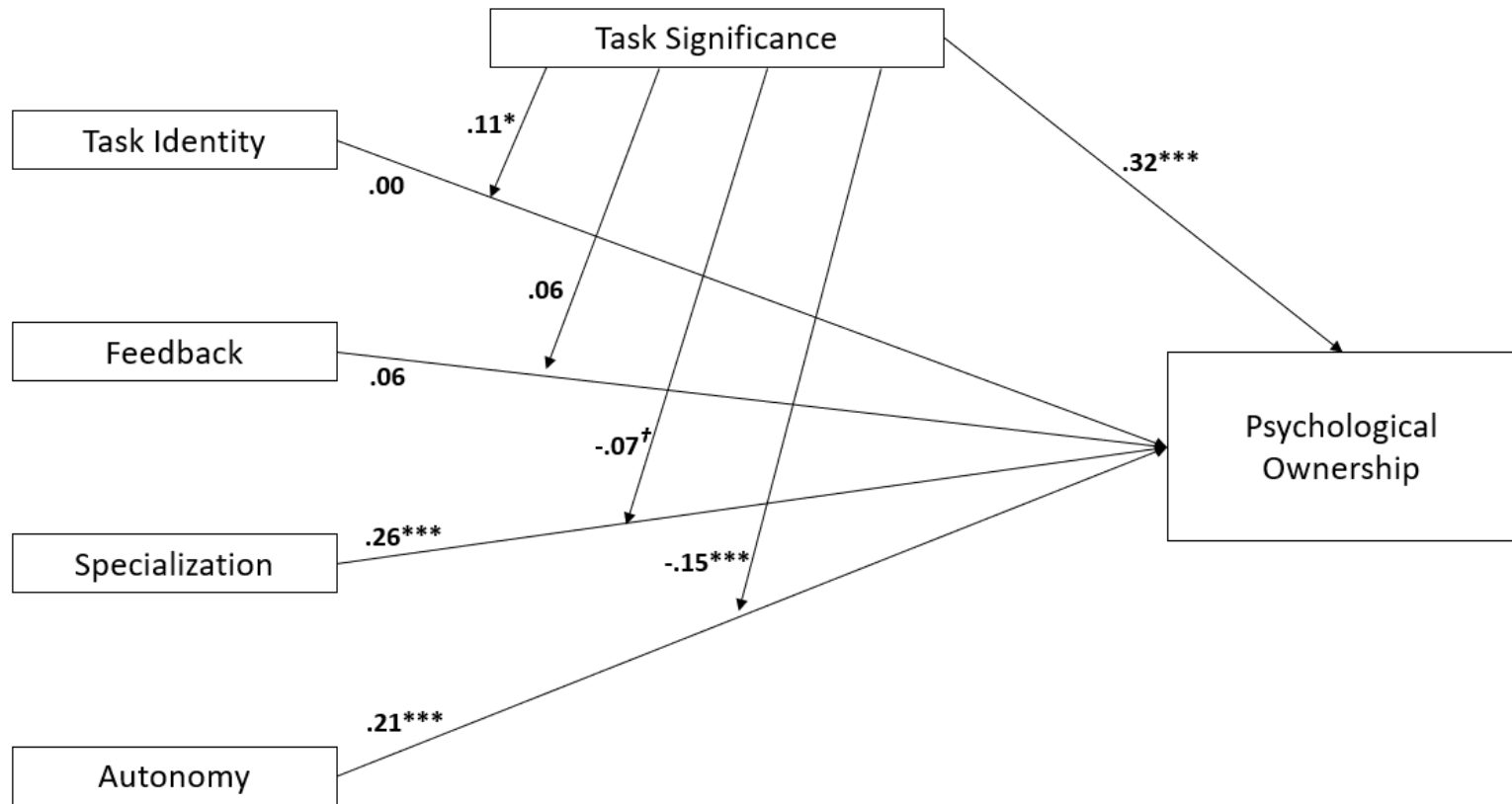


Figure 1.2. Visual Representation of OLS Regression with Sample 1 Data

$N = 555$

[†] $p < .10$, * $p < .05$, ** $p < .01$

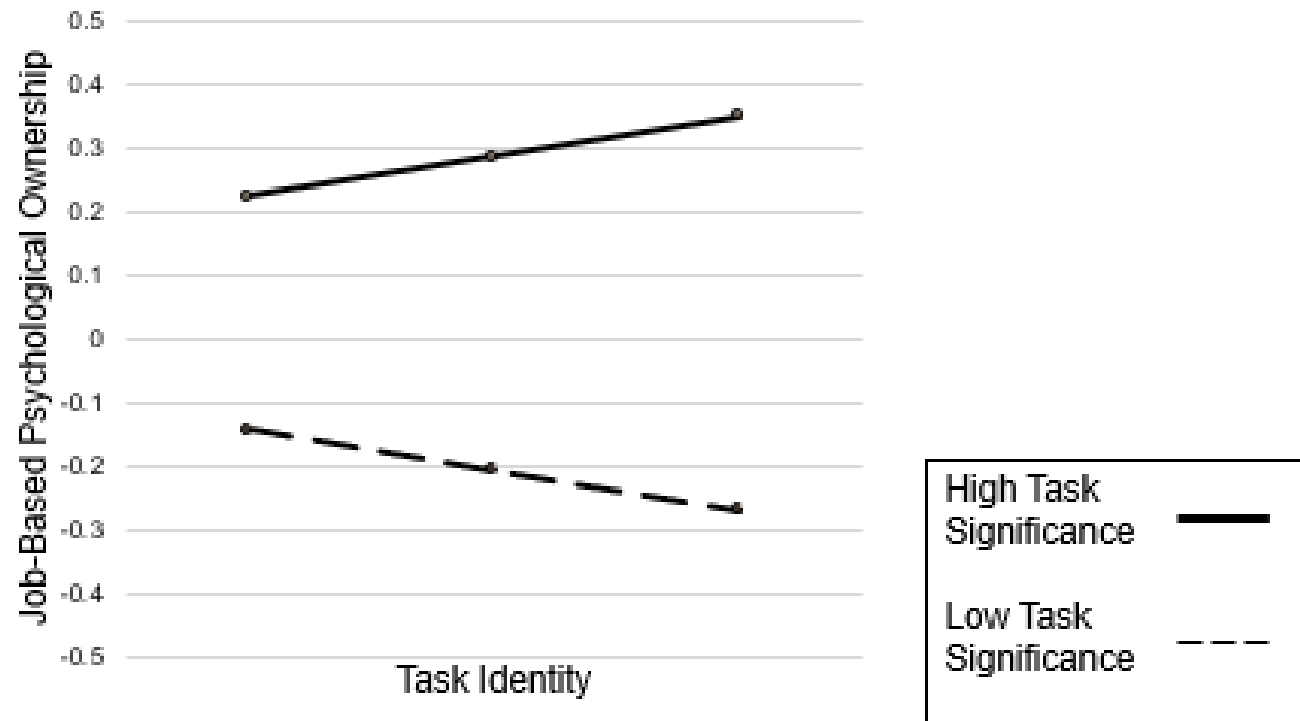


Figure 1.3. Plotting the Interaction of Task Significance on the Relationship between Task Identity and Job-Based Psychological Ownership

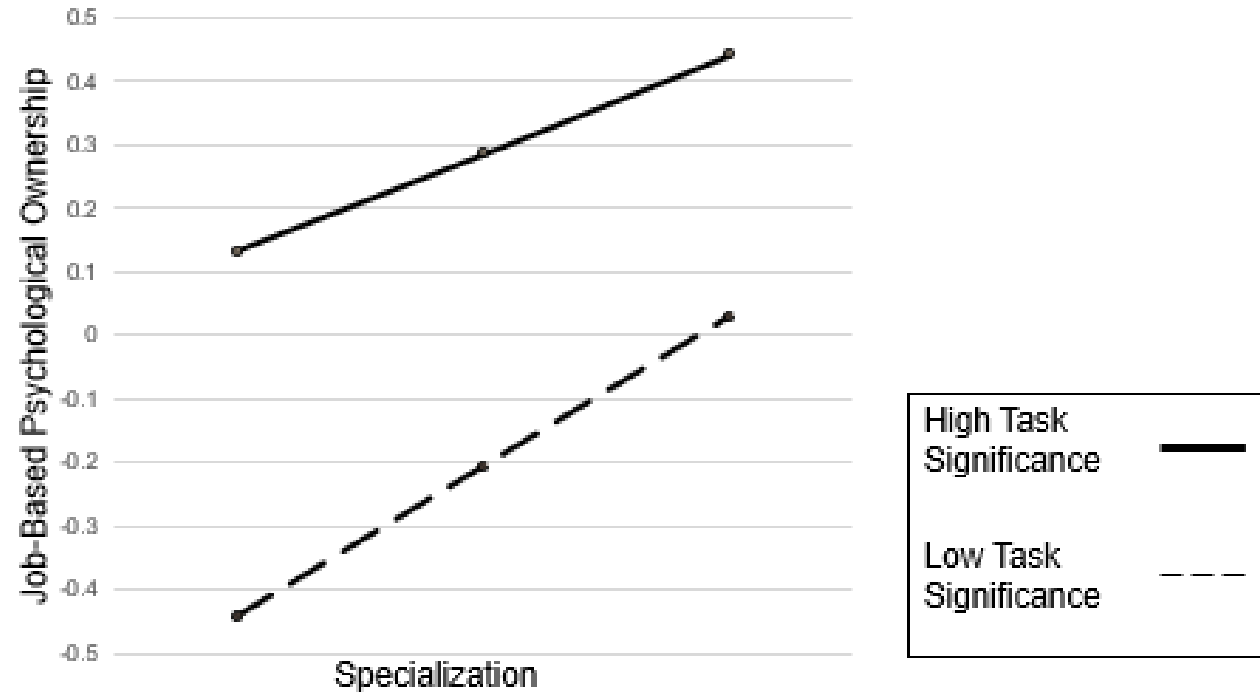


Figure 1.4. Plotting the Interaction Effects of Task Significance on the Relationship between Specialization and Job-Based Psychological Ownership

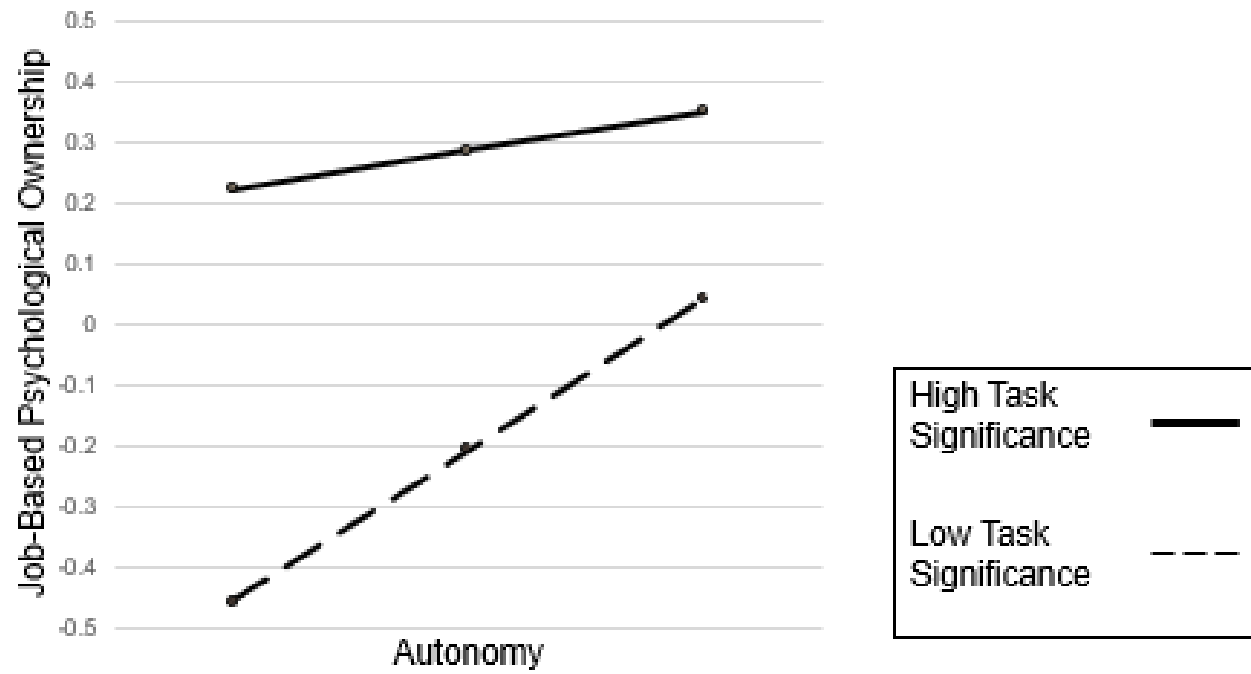


Figure 1.5. Plotting the Interaction Effects of Task Significance on the Relationship between Autonomy and Job-Based Psychological Ownership

1.4 Sample 2

1.4.1 Setting

This sample was derived from three different sources. First, pharmacists and nurses affiliated with the Regenstrief Center for Medical Informatics (REMEDI)—which is housed at Purdue University—were invited to participate in a survey. Second, students in six sections of two different introductory-level business courses at a public university in the Midwest were invited, for extra credit, to send the survey to five acquaintances who are employed full time by an organization. Finally, an additional group of respondents were contacted via Facebook and LinkedIn, and invited to take the survey. In total, 211 individuals completed the entire survey; 16 from the REMEDI group (19% response rate), 124 from student solicited surveys (47% response rate), and 71 from social media invitations (response rate not calculable).

1.4.2 Measures

Task Identity. Task identity was again measured using an adapted scale from Morgeson and Humphrey's WDQ (2006). Coefficient alpha for this scale is .79.

Feedback. As in sample 1, feedback was conceptualized as feedback from the job, and was measured with a scale from Morgeson and Humphrey's WDQ (2006). Coefficient alpha for this scale is .84.

Specialization. As with the previous sample, specialization is adapted from the WDQ (Morgeson & Humphrey, 2006). Coefficient alpha for this scale is .78.

Autonomy. As with sample 1, autonomy was measured using Morgeson and Humphrey's (2006) decision making autonomy scale from the WDQ. Coefficient alpha for this scale is .81.

Task Significance. Task significance was measured exactly as measured with the previous sample, using a scale derived from Morgeson and Humphrey's (2006) WDQ. Coefficient alpha for this scale is .81.

Task Simplicity. Task simplicity was conceptualized as the opposite of job complexity (Morgeson & Humphrey, 2006). Therefore, I measure task simplicity by adapting Morgeson and Humphrey's (2006) job complexity scale, created as part of the WDQ. This scale consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. However, as I'm focused on task simplicity, I don't reverse code the three items in this scale the way Morgeson

& Humphrey (2006) do in the job complexity scale. An example item is “My work is comprised of tasks which are simple and uncomplicated.” Coefficient alpha for this scale is .72.

Information Processing. The information processing scale has been adapted from Morgeson and Humphrey’s (2006) WDQ. This scale consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “My work requires me to keep track of more than one thing at a time.” Coefficient alpha for this scale is .75.

Time Demands. Time demands is drawn from Campion and Thayer’s (1985) initial interdisciplinary approach to job design, and consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “My job does not require me to work excessive overtime” (reverse coded). Coefficient alpha for this scale is .78.

Job-based Psychological Ownership. As with the first sample, job-based psychological ownership was measured by adapting a scale developed by Brown, Pierce and Crossley (2014). Coefficient alpha for this scale is again .83.

Psychological Demands. Psychological demands were measured by adapting a scale developed by Karasek and colleagues (1998) as part of the job content questionnaire. It consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “my job requires me to work too fast.” Coefficient alpha for the scale is .62.

Mindfulness. Mindfulness was measured through a scale adapted from the mindfulness/mindlessness scale (Bodner & Langer, 2001; Haigh, Moore, Kashdan, & Fresco, 2011). This index consists of ten items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “I always attend to the “big picture” when doing my work.” Coefficient alpha for this scale is .75.

Control variables. Research suggests that work experience has a complex relationship with mindfulness (Mitmansgruber et al., 2008). As research has shown that work experience may impact cognitive entrenchment and limit mindfulness (Dane, 2010), I control for job tenure by asking respondents to indicate the number of years that they have worked in their current organizations. As mindfulness can be either a trait or a state variable, I include trait mindfulness as a control variable, and measure it using a scale adapted from Brown and Ryan’s (2003) Mindful Attention Awareness Scale. These three items use a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “I tend to rush through activities without being really attentive to them” (reverse coded). Coefficient alpha for this scale is .83.

1.5 Sample 2 Results

Means, standard deviations, scale reliabilities, and correlations appear in Table 1.2. First, I again performed a CFA to determine the factors which should be used for this study. With regards to the task characteristics in the model, a four factor model ($\chi^2 = 42.548$, RMSEA = .00, CFI = 1.00, TLI = 1.00, SRMR = .038) fits the data better than a two factor model ($\chi^2 = 410.183$, RMSEA = .174, CFI = .63, TLI = .53, SRMR = .134) in which specialization is separated from the other variables, or a one factor model ($\chi^2 = 583.926$, RMSEA = .210, CFI = .44, TLI = .32, SRMR = .161) in which all four task characteristics are combined, suggesting that the task characteristics should not be combined into one or two factors for analysis. With regards to the three work characteristics considered in the psychological demands path, confirmatory factor analysis shows that a three factor model ($\chi^2 = 45.705$, RMSEA = .064, CFI = .97, TLI = .95, SRMR = .047) fits the data much better than a one factor model ($\chi^2 = 280.857$, RMSEA = .205, CFI = .62, TLI = .49, SRMR = .139), suggesting again that the work characteristics should not be combined into one factor for analysis.

I analyze this second sample via path analysis using the structural equation model builder in the Stata 16 software program. Figure 1.6 shows the results of the path analysis. As the survey disseminated to sample 2 included some of the same variables as administered to sample 1, I first re-test hypotheses 1a through 2e with sample 2 data, and find significant relationships between task identity and job-based psychological ownership ($\beta = .25$, $z = 3.96$, $p < .001$), autonomy and job-based psychological ownership ($\beta = .26$, $z = 4.36$, $p < .001$), and task significance and job-based psychological ownership ($\beta = .19$, $z = 3.44$, $p < .01$). However, neither the relationship between feedback and job-based psychological ownership ($\beta = -.05$, $z = -.79$, ns), nor the relationship between specialization and job-based psychological ownership ($\beta = .01$, $z = .18$, ns) is significant. In examining the moderating effects of task significance on the relationships among the four task characteristics and job-based psychological ownership, task significance significantly moderates (attenuates) only the relationship between feedback and job-based psychological ownership ($\beta = -.16$, $z = -2.39$, $p < .05$). Thus, analyses of sample 2 data provide reinforcing support for hypotheses 1d (relationship between autonomy and job-based psychological ownership), and 2a (relationship between task significance and job-based psychological ownership), while also providing initial support for hypothesis 1a (relationship between task identity and job-based psychological ownership). While not in the hypothesized direction, it is

important to note that task significance did moderate (attenuate) the relationship between feedback and job-based psychological ownership.

Mediation paths can be seen in Table 1.3. In support of hypothesis 3, I find a direct and positive relationship between job-based psychological ownership and mindfulness ($\beta = .10$, $z = 2.43$, $p < .05$). Additionally, job-based psychological ownership mediates the relationship between (a) task identity and mindfulness (indirect effect = .02, CI [.00, .04]), providing support for hypotheses 4a. However, job-based psychological ownership does not significantly mediate the relationship between feedback and mindfulness (indirect effect = -.01, CI [-.02, .01]), the relationship between specialization and mindfulness (indirect effect = .00 CI [-.01, .01]), the relationship between autonomy and mindfulness (indirect effect = .03, CI [-.00, .05]), nor the relationship between task significance and mindfulness (indirect effect = .02, CI [-.00, .04]), failing to provide support for hypotheses 4b-e. Of the five task characteristics in the job-based psychological ownership path to mindfulness, only feedback ($\beta = .12$, $z = 2.95$, $p < .01$) and task significance ($\beta = .08$, $z = 2.11$, $p < .05$) share significant direct relationships with mindfulness.

Regarding the psychological demands path to mindfulness, the data show positive relationships between task simplicity and psychological demands ($\beta = .12$, $z = 2.51$, $p < .05$), information processing and psychological demands ($\beta = .41$, $z = 6.07$, $p < .001$), and time demands and psychological demands ($\beta = .47$, $z = 11.85$, $p < .001$). Additionally, the relationship between psychological demands and mindfulness is significant ($\beta = .12$, $z = 2.51$, $p < .05$), albeit in an unanticipated linear relationship with no significant quadratic effects ($\beta = .01$, $z = 0.34$, *ns*), failing to provide support for hypothesis 5d. In testing hypotheses 5a-5c, there are significant relationships between (b) information processing and mindfulness ($\beta = .15$, $z = 2.53$, $p < .05$) and (c) time demands and mindfulness ($\beta = -.10$, $z = -2.75$, $p < .01$), and the psychological demands variable mediates both relationships (indirect effect = .05, CI [.01, .09]; indirect effect = .06, CI [.03, .10] respectively). However, the relationship between task simplicity and mindfulness is not significant ($\beta = .04$, $z = 1.07$, *ns*), and mediation effects of psychological demands are also nonsignificant (indirect effect = .02, CI [-.00, .03]), failing to support hypothesis 5a.

Therefore, to summarize, sample 2 data support relationships between (1a) task identity (1d) autonomy, and (2a) task significance and job-based psychological ownership, while failing to support relationships between (1b) feedback, and (1c) specialization and job-based psychological ownership. Moderation analyses shows that task significance moderates (attenuates) the

relationship between (2c) feedback and job-based psychological ownership, while failing to support task significance's hypothesized moderation of the relationships between (2b) task identity, (2d) specialization, and (2e) autonomy and job-based psychological ownership. Furthermore, the data support hypothesis 3 regarding a positive relationship between job-based psychological ownership and mindfulness, and also support the mediating effects of job-based psychological ownership in the relationship between (4a) task identity and mindfulness, while failing to support the mediating effects of job-based psychological ownership in the relationships between (4b) feedback, (4c) specialization, (4d) autonomy, and (4e) task significance and job-based psychological ownership. With regards to the psychological demands path, the data show an unanticipated positive and significant relationship between psychological demands and mindfulness. While the psychological demands variable does not mediate the relationship between (5a) task simplicity and mindfulness, it does mediate the relationships between (5b) information processing and mindfulness and the relationship between (5c) time demands and mindfulness. Also, psychological demands share a positive, linear relationship with mindfulness, failing to provide support for the hypothesized quadratic (inverted U-shape) relationship between psychological demands and mindfulness (5d).

Table 1.2. Means, Standard Deviations, and Correlations among Variables in Study 1, Sample 2

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Autonomy	4.16	.77	.81														
2. Task Identity	3.63	.89	.17*	.79													
3. Feedback	3.93	.74	.16*	.38***	.84												
4. Specialization	3.93	.81	.13 [†]	.15*	.27***	.78											
5. Task Simplicity	2.28	.88	-.11 [†]	.19**	.03	-.10	.72										
6. Info. Processing	4.42	.63	.15*	.08	.20**	.41***	-.48***	.75									
7. Time Demands	2.73	.95	-.15*	-.15*	-.09	.02	-.31***	.20**	.78								
8. Task Significance	4.06	.80	.15	.12 [†]	.27***	.28***	-.07	.33***	.13 [†]	.81							
9. Psych. Ownership	4.12	.73	.33***	.30***	.16*	.18**	-.13 [†]	.33***	-.01	.27***	.83						
10. Psych. Demands	3.35	.74	.02	.02	.03	.19**	-.20**	.39***	.63***	.24***	.05	.62					
11. Problem Solving	3.90	.83	.15**	-.05	.06	.27***	-.22**	.40***	.11	.31***	.18**	.27***	.80				
12. Mindfulness (West)	3.92	.46	.21**	.29***	.36***	.26***	-.04	.36***	-.10	.34***	.33***	.17*	.42***	.75			
13. Mindfulness (East)	3.60	.54	.03	.23***	.11 [†]	.24***	.07	.12 [†]	-.05	.18**	.20**	.16*	.18**	.39***	.74		
14. Trait Mindfulness	3.50	.86	.13 [†]	.10	.10	.09	-.17**	.15*	-.02	.16*	.14*	-.02	-.14*	.14*	-.05	.83	
15. Tenure	10.4	10.2	.08	.01	.05	.09	.06	.14*	-.02	.00	.12 [†]	.01	-.10	.03	-.08	.22***	1.00

N = 211

Note: Scale reliabilities (coefficient alphas) reported on the diagonal

[†]p < .10, *p < .05, **p < .01, ***p < .001

Table 1.3. Summary of Results of Mediation Analyses: Study 1, Sample 2

Effect Type	Coefficient	SE	CI
Direct Path to Psychological Ownership			
Task Identity→Psychological Ownership (Hypothesis 1a)	.20***	.06	[0.09, 0.31]
Feedback→Psychological Ownership (Hypothesis 1b)	-.05	.06	[-0.17, 0.07]
Specialization→Psychological Ownership (Hypothesis 1c)	.01	.06	[-0.11, 0.12]
Autonomy→Psychological Ownership (Hypothesis 1d)	.25***	.08	[0.08, 0.41]
Task Significance→Psychological Ownership (Hypothesis 2)	.19**	.06	[0.08, 0.31]
Direct Path to Psychological Demands			
Task Simplicity→Psychological Demands	.12*	.05	[0.01, 0.24]
Information Processing→Psychological Demands	.41***	.07	[0.28, 0.54]
Time Demands→Psychological Demands	.47***	.04	[0.38, 0.56]
Direct Path to Mindfulness			
Psychological Ownership→Mindfulness	.10*	.04	[0.02, 0.19]
Psychological Demands→Mindfulness	.12**	.05	[0.04, 0.21]
Task Identity→Mindfulness	.04	.04	[-0.03, 0.11]
Feedback→ Mindfulness	.12*	.05	[0.03, 0.21]
Specialization→ Mindfulness	.02	.04	[-0.05, 0.10]
Autonomy→ Mindfulness	.02	.04	[-0.05, 0.10]
Task Significance→ Mindfulness	.08*	.04	[0.00, 0.15]
Task Simplicity→ Mindfulness	.03	.04	[-0.05, 0.10]
Information Processing→ Mindfulness	.15*	.06	[0.03, 0.27]
Time Demands→ Mindfulness	-.10*	.04	[-0.17, -0.03]
Indirect Path to Mindfulness			
Task Identity→Psychological Ownership→Mindfulness (Hypothesis 4a)	.02*	.01	[0.00, 0.04]
Feedback→Psychological Ownership→ Mindfulness (Hypothesis 4b)	-.01	.01	[-0.02, 0.01]
Specialization→Psychological Ownership→ Mindfulness (Hypothesis 4c)	.00	.01	[-0.01, 0.01]
Autonomy→Psychological Ownership→ Mindfulness (Hypothesis 4d)	.03	.01	[-0.00, 0.05]
Task Significance→Psychological Ownership→ Mindfulness (Hypothesis 4e)	.02	.01	[-0.00, 0.04]
Task Simplicity→Psychological Demands→Mindfulness (Hypothesis 5a)	.02	.01	[-0.00, 0.03]
Information Processing→Psychological Demands→Mindfulness (Hypothesis 5b)	.05*	.02	[0.01, 0.09]
Time Demands→Psychological Demands→Mindfulness (Hypothesis 5c)	.06*	.02	[0.03, 0.10]

$N = 211$, * $p < .05$, ** $p < .01$, *** $p < .001$

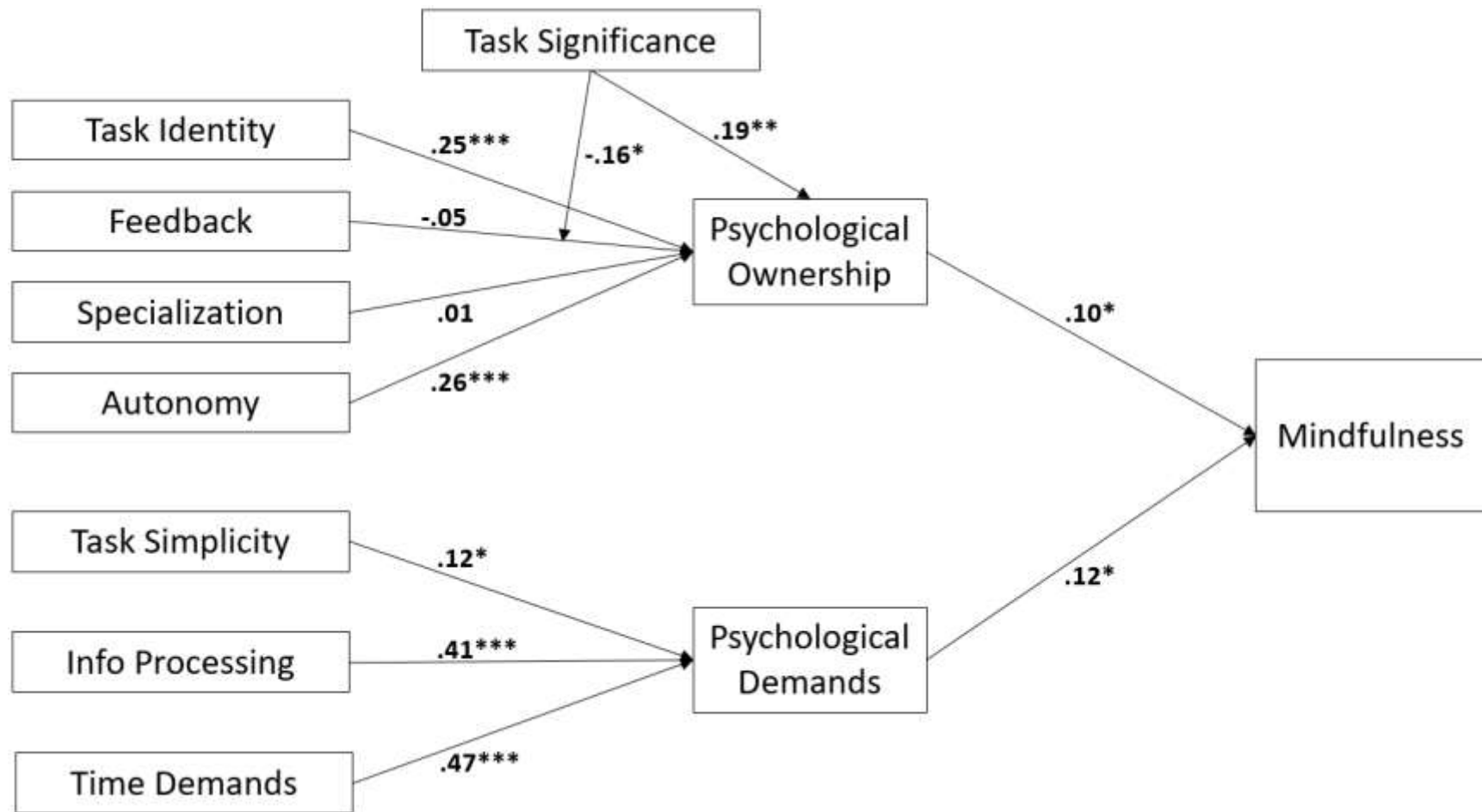


Figure 1.6. Path Analysis of Attention-based Model of Work Design

$N = 211$

Model Fit: $\chi^2 = 21.937$, RMSEA = .06, CFI = .97, TLI = .91, SRMR = .02

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

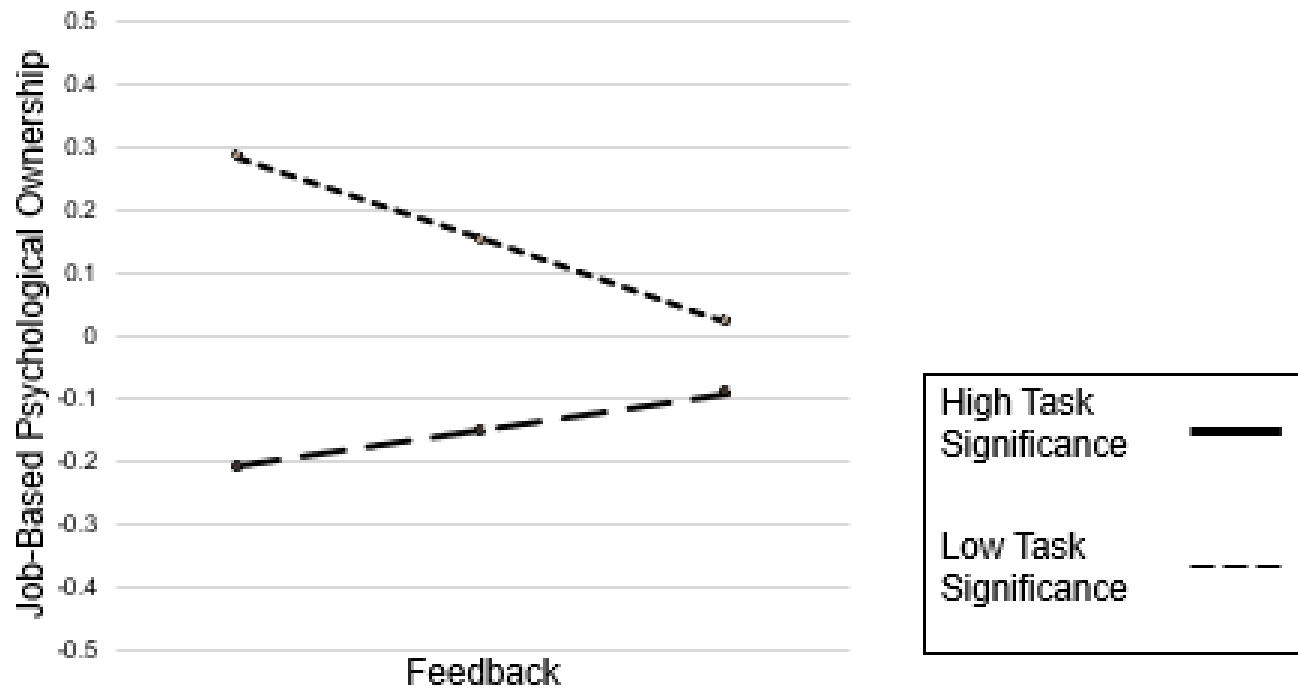


Figure 1.7. Plotting the Interaction Effects of Task Significance on the Relationship between Feedback and Job-Based Psychological Ownership

1.6 Supplemental Analysis

While the model tested above provides relatively acceptable model fit, it does not correspond exactly with the model I proposed during my dissertation proposal. In order to provide full transparency regarding the dissertation process, I include the results of path analyses of the original hypothesized model, which includes the nonsignificant moderating paths of task significance on (a) task identity, (c) specialization, and (d) autonomy and job-based psychological ownership, as well as proposed moderating effects of problem solving on the relationship between job-based psychological ownership and mindfulness. For comprehensiveness and transparency in reporting, task significance does not moderate the relationship between task identity and job-based psychological ownership ($\beta = .04$, $z = .10$, *ns*), the relationship between specialization and job-based psychological ownership ($\beta = .23$, $z = .45$, *ns*), nor the relationship between autonomy and job-based psychological ownership ($\beta = .09$, $z = .17$, *ns*). Additionally, problem solving does not moderate the relationship between job-based psychological ownership and mindfulness ($\beta = -.12$, $z = -.29$, *ns*). These paths were eliminated from the final analysis because of their nonsignificance, and because of the poor fit associated with their inclusion in the initial model ($\chi^2 = 647.265$, RMSEA = .34, CFI = .32, TLI = -.34, SRMR = .044).

1.7 Study 1 Discussion

Analyzing a large sample of employees from a healthcare system in the southern United States, I find preliminary support for positive relationships between (1b) feedback and job-based psychological ownership, (1c) specialization and job-based psychological ownership, (1d) autonomy and job-based psychological ownership and (2a) task significance and job-based psychological ownership. Task significance also moderates the relationship between (2b) task identity and job-based psychological ownership. Analyses of data from a second sample of individuals from many occupational backgrounds reinforce many of the preliminary findings from the first analysis, and extended that analysis to include a test of the entire hypothesized model. Analysis demonstrates a positive relationship between job-based psychological ownership and mindfulness (hypothesis 3), and shows evidence that job-based psychological ownership mediates the relationships between (4a) task identity and mindfulness. Analysis also demonstrates a positive, linear relationship between psychological demands and; a counterintuitive finding which fails to

provide support for hypothesis 5d. Furthermore, analysis demonstrates evidence that the psychological demands variable mediates the relationships between (5b) information processing and mindfulness, and (5c) time demands and mindfulness.

1.7.1 Theoretical Contributions

This study contributes to the management literature in three important ways. First by hypothesizing relationships between work design principles, job-based psychological ownership, psychological demands, and mindfulness, I consider important antecedents to the development and cultivation of state mindfulness. This contribution is important for a few reasons. Not only does this contribution bolster the relatively underdeveloped literature regarding antecedents of mindfulness (Sutcliffe et al., 2016), but it broadens the current conceptualizations of mindfulness antecedents beyond the traditionally exclusive focus on factors which managers and organizations can't control to consider how organizations and their leaders may actively facilitate or erode worker state mindfulness. As “[m]indfulness requires a conducive work environment to blossom” (Reina & Kudesia, 2020: 93), I posit that mindfulness cultivation requires conducive work design. This study lends support to that idea, while highlighting substantive relationships between many task and work characteristics and state mindfulness.

Additionally, in finding a significant positive relationship between job-based psychological ownership and state mindfulness beyond the effects of trait mindfulness and psychological demands, I find what may be a critical psychological antecedent in the development of state mindfulness. As both the roots and routes of psychological ownership have been well-documented in the literature (Avey et al., 2009; Pierce et al., 2001, 2003), the relationship between job-based psychological ownership and mindfulness opens the mindfulness literature to new possibilities for understanding how individuals *and* managers can either cultivate or erode state mindfulness among individual workers. The positive relationship between psychological demands and mindfulness which I find represents a surprising departure from the anticipated quadratic relationship between psychological demands and mindfulness. While this finding may be attributable to a number of limitations (see limitations section) which call into question its validity, it represents an interesting step towards understanding how psychological demands may be optimized to cultivate mindfulness. Finally, proposing and testing both job-based psychological ownership and psychological demands as mediators in the relationships between specific work

characteristics and mindfulness expands the applicability of state mindfulness in the literature by suggesting readily implementable approaches to enhancing individual-level mindfulness beyond meditation.

Second, the positive relationships between (1a) task identity, (1b) feedback, (1c) specialization, (1d) autonomy and (2a) task significance and job-based psychological ownership, as well as the attenuating effects of task significance on the relationships between (2b task identity, and (2c) feedback and job-based psychological ownership, suggest that work design can significantly influence job-based psychological ownership among individual workers. This finding provides foundational evidence that managers and organizational leaders can strategically impact job-based psychological ownership among individual employees; suggesting a readily tailored approach to inexpensively target strategies for enhancing job-based psychological ownership among strategic individuals, teams, or divisions within an organization. Additionally, the positive relationship between job-based psychological ownership and mindfulness extends the psychological ownership literature to consider additional mechanisms through which job-based psychological ownership may be related to individual-level performance, which is not yet well-defined (Dawkins et al., 2017) but of particular interest currently in the area of creativity (Berg & Yu, 2019).

Third, the attention-based model of work design contributes to the work design literature by extending work design to consider mindfulness as a vital outcome, and as a potential mechanism by which work design may be related to performance. While the work design literature has demonstrated that motivation is key to persistence, productivity and, by extension, performance (Grant, 2008b), high-quality performance in many complex and dynamic fields requires careful attention to context (Dane, 2011). In particular, the ability to generate novel distinctions through (a) present oriented attention, (b) sensitivity to context and perspective, and (c) flexibility in following rules and routines (Langer, 2014) is a primary driver of success in many professions (Dane, 2010). Since state mindfulness can be cultivated, even among those low in trait mindfulness, and since work design is particularly well suited to inducing critical psychological states in workers (Hackman & Oldham, 1976)—an expansion of work design theory to consider its potential impacts on mindfulness is critically important.

1.7.2 Practical Implications

These findings also have important practical implications regarding state mindfulness cultivation and work design. In particular, the results suggest that specific task and work characteristics facilitate mindfulness cultivation. Most notably, these findings suggest that managers and other organizational leaders can actively design work to facilitate mindfulness among individual workers. For example, by designing work to provide direct feedback to an individual worker, a manager may facilitate higher state mindfulness for that worker. Likewise, the findings suggest that poorly designed work can prevent the cultivation of mindfulness, or even erode it. For example, the direct association between time demands and mindfulness show evidence that work which is high in time demands is negatively associated with worker state mindfulness.

While the positive association between psychological demands and mindfulness runs counter to what I anticipated, it is possible—and even likely—that mindfulness cultivation requires a certain amount of psychological demands. The work design literature has demonstrated that jobs which are too low in demands can be boring, resulting in low work satisfaction (Campion, 1988; Demerouti et al., 2001). It is also likely that the simple routines and repetitiveness of work that is too low in psychological demands prevents the cultivation of mindfulness.

Finally, my results suggest that efforts by managers and workers to increase workers' job-based psychological ownership also cultivates state mindfulness. By engaging in ownership increasing practices, such as giving workers greater control over their work (Brown et al., 2014b), facilitating workers' intimate knowledge of the work which they do (Pierce et al., 2001), and incentivizing workers' personal investment in their work (Avey et al., 2009), managers and organizational leaders might also, by extension, lay a foundation for enhanced state mindfulness cultivation.

1.7.3 Limitations and Future Research

The findings from this dissertation must be considered in the light of limitations to these studies, including the impacts of the global pandemic. Aside from creating novel circumstances that led to the postponing of essential data collection with sample 1, the pandemic undoubtedly limited participation among potential participants in sample 2, as many individuals who may have

otherwise chosen to participate in the survey under normal circumstances were likely not able to participate due to stresses associated with working from home, managing children's e-learning experiences, or dealing with other life-related demands associated with the pandemic. While data from two separate samples of individuals working in varied jobs, settings, and industries strengthen the generalizability of the findings, a more adequate examination of the attention-based model of work design will need to occur after the most pronounced effects of the worldwide pandemic have subsided. However, the end of the pandemic may provide a unique set of circumstances in which to examine the relationship between work design and mindfulness. Future research should test this model within organizations as they transition from remote work to in-person work. Exploring the potential impacts of task and work characteristics on critical psychological states and mindfulness, first in a remote setting, and then in an in-person work setting, would result in a much more comprehensive understanding of how adjustments in work design may be associated with psychological demands, job-based psychological ownership, and mindfulness.

Relatedly, low sample size is a key limitation in the second sample, which may have impacted the significance of some of the findings. A few notable differences between overlapping outcomes tested in sample 2 and those in sample 1—such as the moderating effects of task significance—highlight the potential sample size issues in sample 2. Future research should test the attention-based model of work design within larger groups of workers and targeting multiple organizations in order to develop more robust examination of the phenomena in question.

Additionally, most of the data from the two samples for these studies were gathered via one single survey. While this single study approach was not intentional for sample 1, and provided the best chance for collecting a complete dataset for sample 2, this approach makes the findings susceptible to single source bias (Campbell & Fiske, 1959). Future research should collect data through multiple methods and sources, thereby developing a more full and comprehensive measurement of the phenomena in question (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

Another limitation to the study is the static nature of the data, which prevents an examination of the temporal precedent of work design in impacting psychological demands, job-based psychological ownership, and mindfulness. In order to more effectively examine the appropriate ordering of the proposed relationships in this model, future research could measure psychological demands, job-based psychological ownership, and mindfulness under circumstances in which workers' work is being significantly redesigned. In examining the constructs in the model

both before and after planned redesigns of work, future studies could more robustly analyze the impacts of work design on psychological demands, job-based psychological ownership, and mindfulness, opening the door to time variant models which would improve our overall conceptualizations of state mindfulness antecedents and development.

Beyond addressing the study's limitations, opportunities for future research regarding the attention-based model of work design abound. Future research should focus on some of the potential cross-level effects which would likely impact the relationship between work design and individual-level state mindfulness. For example, by examining this model among individuals in specific occupational groups and organizations, research can better determine how occupation and organization specific variables impact the relationships among work characteristics, job-based psychological ownership, psychological demands, and mindfulness. Additionally, as cultures prioritize and conceptualize mindfulness distinctly from one another (Weick & Sutcliffe, 2006), research can examine this model cross-culturally to determine differences among the relationships hypothesized in the attention-based model of work design based on cultural or social differences.

Finally, the passage of time likely plays a substantial role in the relationship between work design and state mindfulness. While it may be relatively easy for individuals to focus attention on work tasks that are new, foreign, or initially difficult, our state mindfulness in completing these tasks may wane over time as the tasks become easier, more natural, and more routine. While research indicates that sustaining mindfulness is difficult for anybody (Vogus et al., 2012), are there certain individual or organizational characteristics which hasten or slow the process of state mindfulness degradation? Future research should examine the trajectories of state mindfulness among new employees as they acclimate to their new work situations, and the work characteristics and task characteristics associated with their jobs, in order to get a better understanding of factors which might impact those trajectories.

1.8 Conclusion

New work configurations and complexities have made managing employee attention increasingly important for managers and other organizational leaders (Stanko & Beckman, 2015). This study demonstrates relationships between key work design principles and mindfulness, which is conceptualized as a present oriented and relatively wide breadth of attention (Dane, 2011), and represents a form of attention which is associated with many positive work outcomes (Sutcliffe et

al., 2016). Further, the relationships between key task/work characteristics and mindfulness is mediated by two psychological phenomena: job-based psychological ownership and psychological demands. Though limited in its generalizability, it is my hope that this study represents a preliminary step in understanding how managers can cultivate worker mindfulness through work design.

CHAPTER 2. JOB-BASED PSYCHOLOGICAL OWNERSHIP AND WORK ERRORS: THE MEDIATING EFFECTS OF MINDFULNESS

Abstract

While job-based psychological ownership has been associated with a number of attitudinal outcomes and extra-role behaviors, little is known about its effects on work errors. This is unfortunate, as an understanding of the relationship between job-based psychological ownership and work errors would be instrumental in helping managers decide whether or not to promote ownership among employees, and to whom they should target ownership-enhancing strategies. In this chapter, I develop a model in which I propose a negative relationship between job-based psychological ownership and work errors. I also hypothesize that the relationship between job-based psychological ownership and work errors is mediated by mindfulness, and that the relationships between psychological ownership and both mindfulness and work errors are significant beyond the effects of psychological demands. I test this model with multi-source data gathered from 78 employees in a genealogical research company. The data demonstrate an unanticipated positive and significant relationship between job-based psychological ownership and work errors. While power limitations and environmental factors temper the weight of these findings, the data suggest interesting paths for further exploring potentially negative outcomes associated with job-based psychological ownership.

2.1 Introduction

The desire for ownership seems to be inherent within humanity. Even under circumstances in which legal or transactional ownership is not possible, humans often still become possessive towards target entities (Pierce, Kostova, & Dirks, 2003). Psychological ownership—which refers to the “state in which individuals feel as though the target of ownership is theirs” (Dawkins, Tian, Newman, & Martin, 2017)—can be directed toward any number of real or imagined targets (Etzioni, 1991). However, it has been particularly well documented in work environments (Pierce, Kostova, & Dirks, 2001), where individuals are most likely to develop psychological ownership over the organization in which they work (Peng & Pierce, 2015) or over their jobs (Mayhew, Ashkanasy, Bramble, & Gardner, 2007).

Job-based psychological ownership (PO) has a particularly influential impact on individuals' job attitudes. It is associated with higher levels of organizational commitment (Han, Chiang, & Chang, 2010; Van Dyne & Pierce, 2004), job satisfaction (Avey, Wernsing, & Palanski, 2012), and engagement (Ramos, Man, Mustafa, & Ng, 2014). Job-based PO has also been associated with lower levels of burnout (Kaur, Sambasivan, & Kumar, 2013). Beyond attitudes, job-based PO has been associated with various work-related behaviors, such as organizational citizenship behavior, stewardship behavior, and voice behavior (see Dawkins et al., 2017 for a review). However, the impacts of job-based PO on work errors has not been considered in the literature. This is unfortunate because work errors represent a vitally important aspect of individual-level performance, and can have significant consequences for individuals, teams, customers, and organizations (Dahlin, Chuang, & Roulet, 2017). Any theoretical framework that could be helpful in illuminating practical prescriptions for reducing work errors would help to minimize these negative consequences. Second, job-based psychological ownership is noted for its association with greater work engagement (Wang, Law, Zhang Li, & Liang, 2019) and accountability (Avey, Avolio, Crossley, & Luthans, 2009), aligning individuals' personal investment in performing high quality, low-error work with the interests of organizational leaders. Therefore, psychological ownership may represent an important antecedent in limiting work errors.

In this dissertation chapter, I examine job-based PO's impact on work errors, an important and often understudied dimension of individual performance. Due to PO's pervasive roots in efficacy, self-identity, and accountability (Avey, Avolio, Crossley, & Luthans, 2009; Pierce et al., 2003), I anticipate that individuals with high job-based PO will expend extra effort in assuring the quality of the work which they perform, resulting in fewer work errors. Individuals develop PO through control over, an intimate knowledge of, and an investment of self in the target of ownership (Pierce et al., 2001). As individuals high in ownership more fully invest their physical, cognitive, and emotional resources in their jobs, I anticipate that they are more likely to engage in mindfulness, which is a cognitive state "characterized by novel distinction-drawing that results in being (a) situated in the present, (b) sensitive to context and perspective, and (c) guided (but not governed) by rules and routines" (Langer, 2014: 11). Further, I propose that mindfulness will mediate the relationship between job-based PO and work errors. Finally, the literature demonstrates that errors are often the result of stress associated with overly-demanding work (Campion, 1988; Campion & McClelland, 1993), and foundational literature on stress indicates

that individuals' attention typically starts to narrow as stress increases (Combs & Taylor, 1952; Easterbrook, 1959; Sexton, Thomas, & Helmreich, 2000). I therefore control for the effects of psychological demands, and I propose that the relationship between job-based PO and work errors through the mediated path of mindfulness will be significant beyond the relationship between psychological demands and work errors through the same mediated mindfulness path.

This dissertation chapter provides two primary contributions to the management literature. First, by examining job-based PO's impact on work errors, this chapter provides additional information towards clarifying the currently underexamined and nebulous relationship between PO and individual work performance (Dawkins et al., 2017). While PO's documented positive impacts on attitudinal outcomes (Zhu, Chen, Li, & Zhou, 2013) and extra-role behaviors (Bernhard & O'Driscoll, 2011) make it a valuable construct for enhancing commitment, better understanding of the potential relationship between job-based PO and work errors would enhance the theoretical and practical utility of job-based PO. While those who experience high levels of job-based PO typically experience a greater sense of personal accountability than their colleagues (Avey et al., 2009)—likely limiting their work errors—the high amounts of autonomy and freedom in work which they also enjoy (Peng & Pierce, 2015; Pierce et al., 2001), may delay the detection of any errors they do make; limiting the organization's and leaders' abilities to mitigate the full consequences potentially associated with those errors. Therefore, knowing the impact of job-based PO on work errors may have a substantial impact on managers' strategies for implementing job-based PO enhancing practices among workers.

Second, by exploring the potential mediating effects of mindfulness on the relationship between PO and work errors, I bridge the PO literature and mindfulness literature to more effectively consider interconnections between these two influential mental states. While the mindfulness literature has established links between mindfulness and a host of positive organizational outcomes, such as worker well-being (Roche, Haar, & Luthans, 2014), creativity (Cheung, Huang, Change, & Wei, 2020), and task performance (Zhang, Ding, Li, & Wu, 2014), much less is known about the antecedents of mindfulness. While mindfulness is often conceptualized as a personal trait (see Thoroughgood, Sawyer, and Webster, 2020 for an example), mindfulness is also conceptualized as a state which can be cultivated or eroded based on individual and environmental factors (Chong, Kim, Lee, Johnson, & Lin, 2020; Reina and Kudesia, 2020). It is possible that this dual conceptualization has limited exploration of antecedents to mindfulness

as, aside from meditative practices, our understanding of the antecedents of individual-level mindfulness “is remarkably thin” (Sutcliffe et al., 2016: 65). Exploring PO as a potential antecedent to mindfulness expands the individual-level mindfulness literature to consider new avenues by which mindfulness may be cultivated; providing managers and organizational leaders with tangible strategies for cultivating mindfulness, or for eliminating practices which erode it, among individual workers. Additionally, conceptualizing mindfulness as a mediating outcome through which job-based PO impacts work errors would provide much needed clarity and context for understanding PO’s impacts on performance (Dawkins et al., 2017).

2.2 Job-based Psychological Ownership and Work Errors

Conceptualized as a key component of work reliability (Parke & Seo, 2017), error-free work is a hallmark of high-quality work performance. While it’s obvious that work-related errors can result in substantial organizational and relational costs, even small deviations from recognized procedures and policies with no immediate adverse impact can result in individual and organizational consequences, such as mislearning (Ramanujam & Goodman, 2003). Generally speaking, much of the literature regarding work errors focuses on organizational factors, such as creating work climates in which errors can be more openly prevented or managed (Dahlin et al., 2018; Edmondson, 1999; Frese & Keith, 2015; Lei et al., 2016). However, the literature regarding work reliability increasingly suggests strategies for improving work reliability at the individual level. For example, in hypothesizing foundational approaches to high reliability organizing, Vogus and colleagues (2014) suggest two individual-level factors—prosocial motivation and ambivalence—as potentially enhancing reliability at the organizational level.

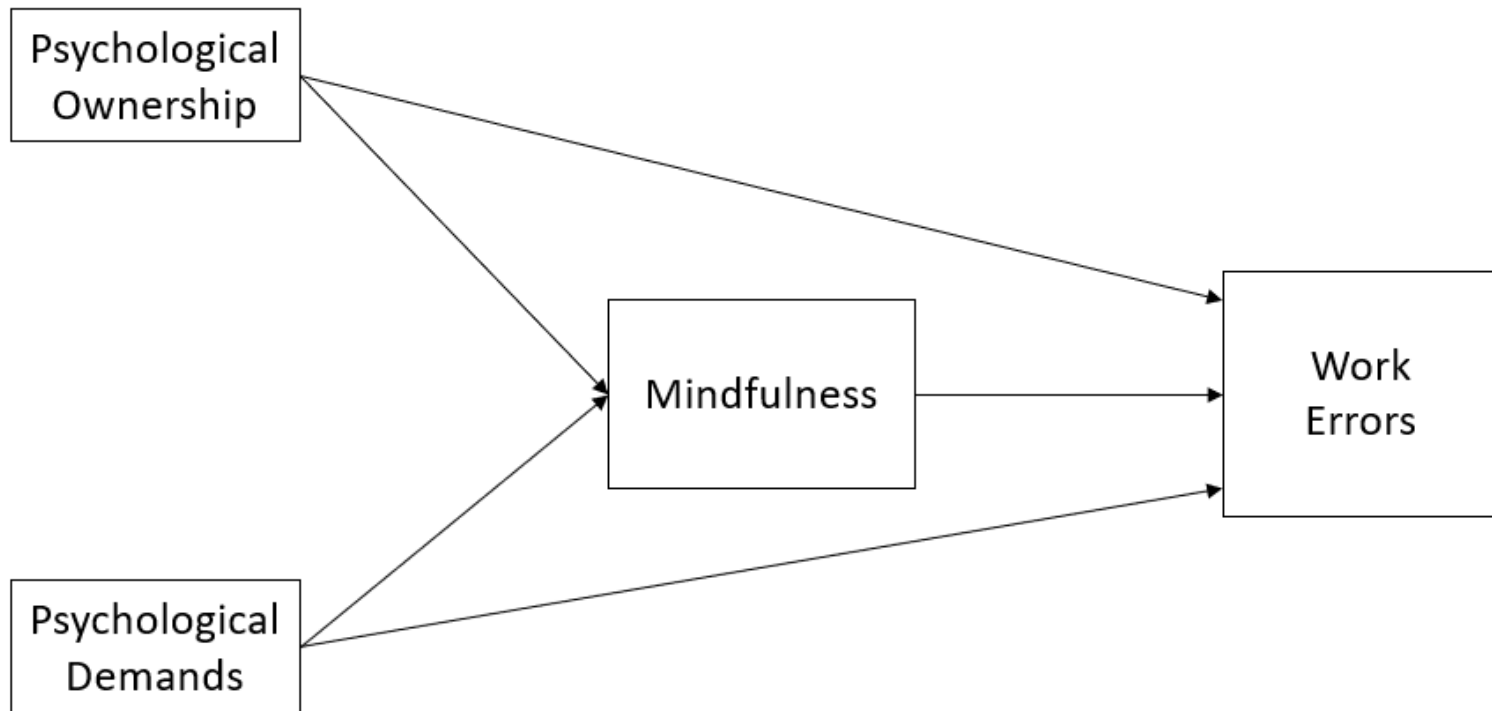


Figure 2.1. Hypothesized Effects of Psychological Ownership on Work Errors

Psychological ownership theory implies a negative relationship between job-based PO and work errors. For example, in articulating antecedents to psychological ownership, Pierce and colleagues (2001) identify both an intimate knowledge of the target of ownership and investment of self as primary routes by which psychological ownership is developed. For job-based PO, an intimate knowledge refers to a deep understanding of the work processes associated with a job (Peng & Pierce, 2015). Implied within this intimate knowledge is an understanding of the nuances which allow an individual to prevent errors. Lack of knowledge is considered one of the primary antecedents to errors in organizations (Dahlin et al., 2017), suggesting that, as individuals develop an intimate knowledge of specific tasks associated with psychological ownership, the likelihood of their making job-related errors should diminish. Regarding job-based PO, an investment of self in the target suggests a larger expenditure of personal resources—such as time, effort, physical exertion and mental exertion—in performance of work responsibilities. As maintaining the attention needed to prevent work errors requires substantial expenditures in personal resources (Frese & Keith, 2015; Hockey & Earle, 2006; Vogus & Sutcliffe, 2012), individuals who experience high job-based PO—due to the higher proportions of personal resources they commit to their jobs (Pierce et al., 2003)—will likely have more resources at their disposal to maintain the attention needed to prevent work errors than those who do not experience high job-based PO.

It is the conceptualized “roots” of PO (Pierce, et al., 2003), however, which provide the strongest case for a hypothesized relationship between job-based PO and work errors. The roots of PO refer to the human needs which PO serves (Dawkins et al., 2017), or the intrapersonal effects of PO. The first root of PO is efficacy (Pierce et al., 2001), which refers to an individual’s need to feel capable (Bandura, 1997). As individuals develop job-based PO, they experience a sense of efficacy regarding the specific domain of work in which they engage. Work errors directly threaten the sense of efficacy which individuals experience in their work. It is therefore likely that individuals who experience high job-based PO will be particularly attuned to the quality of the work which they do, preventing errors to maintain their sense of efficacy. The second root of PO is self-identity, which suggests that the target of ownership becomes a symbolic extension of the owner (Dittmar, 1992). As individuals develop job-based PO, the work which they perform becomes an extension and reflection of their own identities. As work becomes a reflection of self, the costs associated with work errors increase, especially due to the human tendency to make broad negative generalizations regarding those who have made errors (Frese & Keith, 2015). Finally,

Avey and colleagues (2009) introduce accountability as an additional root to PO. Accountability, they posit, refers to both being held accountable for one's relationship with the target, as well as the ability to hold others accountable in their relationships with the target (Avey et al., 2009). By its nature, accountability suggests fewer work errors. As individuals who experience high job-based PO and hold themselves accountable to high work standards monitor their own efforts to ensure that work is performed appropriately (Hall, Zinko, Perryman, & Ferris, 2009), they will be less likely to experience accidental slip ups, or to intentionally deviate from standard procedures, both of which are key drivers of work errors (Dahlin et al., 2017; Zhao & Olivera, 2006).

Since PO requires individuals to develop an intimate knowledge of the target of ownership, as well as an investment of self in the target (Pierce et al., 2003), I anticipate that individuals that experience high-levels of job-based PO will have both the competence and ability needed to limit their own work errors. Additionally, owing to three specific roots of PO—efficacy, self-identity, and accountability—I anticipate that individuals high in job-based PO will have substantial motivation to avoid work errors, as errors represent unique and clear threats to efficacy, reflect poorly on individuals who perceive their work as an extension of themselves, and violate the accountability expectations established by individuals high in job-based PO (Avey et al., 2009).

Hypothesis 1: Job-based psychological ownership will be negatively associated with work errors.

2.3 Psychological Ownership and Mindfulness

While PO is associated with many positive outcomes, it is also associated in some contexts with negative outcomes such as territoriality (Brown & Baer, 2015), information withholding (Avey et al., 2009), and unethical behavior (Wang et al., 2019). Therefore, the mechanisms activated by job-based PO are particularly important when considering its potential impacts on performance in general, and work errors in particular.

Psychological ownership theory suggests a positive relationship between job-based PO and mindfulness through the “routes” of psychological ownership (Pierce et al., 2001). These routes include control over a specified target (in this case, over work), an intimate knowledge of work which an individual does, and an investment of self in the work (Pierce et al., 2003). First, greater control over one's work provides an individual with decision latitude to enact the flexibility

associated with mindfulness (Langer, 2014), and has been associated with greater levels of mindfulness (Lawrie, Tuckey, & Dollard, 2018).

Additionally, an intimate knowledge of one's work facilitates individuals engaging in mindfulness in three important ways. First, mindfulness requires extensive amounts of cognitive resources (Vogus & Sutcliffe, 2012) and an intimate knowledge of one's work allows individuals to more readily divert cognitive resources which would otherwise be used in learning and mastering the work process to mindfulness. Second, individuals with an intimate knowledge of their work are more likely to recognize contextual anomalies and potential threats sooner, resulting in mindful responses to addressing work related concerns (Langer, 2014). Additionally, an intimate knowledge of one's work gives individuals' the necessary expertise, and license, to be guided, but not governed, by rules and routines (Langer, 2014). Investment of self in the target of ownership is the final route to psychological ownership (Avey et al., 2009). Investment of self requires the allocation of extra time, effort, and exertion into one's work. Not only does the investment of self provide additional personal resources for engaging in mindfulness, but it motivates greater mindfulness as individuals develop a stronger sense of stewardship over their work, and seek ways to perform it better to enhance their personal identities (Pierce et al., 2001).

Hypothesis 2: Psychological ownership will have a positive relationship with mindfulness.

2.4 Mindfulness as a Mechanism for Managing Work Errors

The relationship between job-based PO and work errors may be complicated by a few factors. First, individuals who pride themselves on an intimate knowledge of the work that they do, and who invest themselves extensively in that work, may be particularly resistant to changes in the nature and structure of their work (Dirks, Cummings, & Pierce, 1996), as such changes require giving up intimately known aspects of the work process and may signal that such heavy investments of self in a job that is changing were wasted. As Dane (2010) notes, some workplace errors are not attributable to a lack of knowledge, skills, and abilities, but to an inflexible view of performance that fails to recognize the nuance of context and circumstances. Consequently, mindfulness is an essential mechanism through which job-related PO is associated with fewer work errors.

Theories of attention suggest that mindfulness is positively associated with error-free work (Dane, 2011). For example, Dane (2010) explains that flexibility—a key dimension of mindfulness—enhances important aspects of task performance, such as creative idea generation and adaptation. Management scholars have increasingly examined how mindfulness impacts important organizational processes, such as recognizing important resources (Weick, 1993), or developing and executing organizational strategies (Nadkarni & Barr, 2008). Consequently, mindfulness has been associated with a number of important work outcomes, such as learning (Lawrie et al, 2018), the generation of creative ideas (Baas, Nevicka, & Ten Velden, 2014), the elimination of some forms of bias (Kiken & Shook, 2011), and improved improvisational skills in dynamic settings (Dane, 2013). While research has demonstrated that mindfulness is associated with higher levels of overall performance (Dane & Brummel, 2014), and research has shown that principles of collective mindfulness are negatively associated with work errors (Vogus & Sutcliffe, 2007), the relationship between individual-level state mindfulness and fewer individual work errors has remained primarily theoretical (Dane, 2011), and empirical tests have not yet been conclusive. As a personal trait, mindfulness has been associated with more effective problem solving (Ostafin & Kassman, 2012), and higher levels of cognitive flexibility (Moore & Malinowski, 2009). However, more research is needed to clearly determine the ways in which individual-level state mindfulness may potentially impact work errors. At the individual level, mindfulness results in a worker being situated in the present and aware of context and perspective (Langer, 2014). Therefore, workers who are mindful are less likely to make simple mistakes attributable to inattentiveness and/or distraction (Dane, 2011). Furthermore, mindful workers are more likely to adjust their work to meet needs or avoid challenges resultant from changing contexts and circumstances; thereby avoiding errors attributable to novel situations. I therefore posit that mindful individuals are less likely to make work related errors than their less mindful counterparts. Further, I propose that mindfulness is a salient mechanism by which job-related PO may be associated with fewer work errors.

Hypothesis 3: Mindfulness will be negatively associated with work errors.

Hypothesis 4: Mindfulness will mediate the relationship between job-based psychological ownership and work errors.

2.5 Study

2.5.1 Setting

This study was carried out in a professional genealogical organization located in the western United States. The organization employs approximately 125 genealogical researchers at varying levels of skill and expertise who perform research for individuals trying to identify their ancestors. Genealogical researchers strategically comb through various types of records, such as census records, tax records, birth records, death records, deed books, and marriage records—among many other record types—to trace family lines into the past. Increasingly, genealogical research also involves the interpreting of DNA data, which can then be matched to DNA samples from other customers, providing a biological link between customers. As record keeping practices have traditionally varied substantially from state to state and from country to country, genealogical research constitutes a highly dynamic work environment in which errors in research and/or research plan development can result in significant amounts of lost time and cost to the researcher, the company, and potentially to clients as well.

With the collaborative support and assistance of the organization's leadership, I distributed two surveys to all employees in the organization. The surveys were administered electronically via Qualtrics. Surveys were linked to one another through a 4-digit number assigned to each respondent, which was also used to link organizational data to survey data. Following survey collection, the organization provided me with information regarding each employee's role, monthly billable work hours, and monthly errors (called adjustments). In total, 101 employees completed survey 1, while 92 employees responded to survey 2, with 88 employees completing both surveys. When I collected data from the organization, leadership indicated that monthly error data for 10 employees in my sample were inaccurate, leaving 78 employees in the final analysis. While the response rate (63%) is acceptably high, the relatively low number of employees limits the generalizability of the data.

2.5.2 Measures

Job-based Psychological Ownership. Is measured with an adapted scale developed by Brown, Pierce and Crossley (2014), and consists of three items on a five-point scale, ranging from

1= strongly disagree, to 5= strongly agree. An example item is “The work that I do is MY work.” Coefficient alpha for this scale is .81.

Mindfulness. As indicated previously, mindfulness is operationalized according to western conceptualizations developed by Langer (1989). The mindfulness/mindlessness scale (Bodner & Langer, 2001; Haigh, Moore, Kashdan, & Fresco, 2011) was adapted for this study. This index consists of ten items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “I always attend to the “big picture” when doing my work.” Coefficient alpha for this scale is .78.

Work Errors. The organization provided monthly error data for each worker, which they refer to as “adjustments.” Errors are called adjustments because they represent adjustments that are made to client’s research plans for which the clients do not pay, and they vary in severity according to the dollar amount assigned to them at the rate of \$125/hour. For example, a \$500 adjustment would represent an error that required 4 additional (uncharged) hours to address. The organization provided monthly error data for each employee for the four months following the second survey, which I combined into a monthly average. All error data was provided to me in dollar form, as the organization tracks dollar amounts rather than error frequency. Because of the right skew nature of these data, I use the natural log of error dollar amounts for analysis.

Psychological Demands. Research suggests that psychological demands also influence mindfulness (Levinthal & Rerup, 2006) and work errors (Campion, 1988). Foundational research in experimental psychology has long demonstrated a negative relationship between cognitive overload and reliable work (Kahneman, 1973). Though not comprehensively examined in their research, Campion and colleagues (Campion, 1988; Campion & Thayer, 1985; Campion & McClelland, 1993) attribute the positive correlation between resource-conserving work characteristics and work reliability to cognitive load, suggesting that cognitive overload and other forms of psychological demands lead to more errors. I control for the effects of psychological demands on mindfulness and work errors by implementing a scale adapted from Karasek and colleagues (1998). It consists of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “my job requires me to work too fast.” Coefficient alpha for this scale is .74.

Additional Control Variables. As workload can impact the reliability of work (Campion, 1988), I control for research workload by including an average ratio of billable time worked by

each employee during the four months in which I gathered work error data. Employees have a specific number of billable hours—i.e. client research hours—which they are required to work each day. I created the workload variable by dividing the number of billable hours worked in a month by the number of billable hours anticipated that month for each employee in the organization, and then taking an average of that number across four months of data.

Owing to similarities between mindfulness and absorption, which is the key attentional dimension in the job engagement construct (Dane, 2011), I control for absorption with a scale adapted from the cognitive engagement index developed by Rich and colleagues (2010), consisting of three items on a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “At work, I am absorbed by my job.” Coefficient alpha for this scale is .80. I also include perceptions of self-efficacy as a control for work errors. I measure self-efficacy with a three-item index adapted from Jex and Bliese (1999), which uses a five-point scale for response, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “I think I do a better job at tasks than most other workers.” Coefficient alpha for this scale is .63.

As experience in a job will likely lower the amount of errors which a person makes, I control for job tenure by asking respondents to indicate the number of years that they have worked in their current organizations. Finally, I control for trait mindfulness in the relationship between job-based PO and mindfulness, and as a control for work errors with a scale adapted from Brown and Ryan’s (2003) Mindful Attention Awareness Scale. These three items use a five-point scale, ranging from 1= strongly disagree, to 5= strongly agree. An example item is “I tend to rush through activities without being really attentive to them” (reverse coded). Coefficient alpha for this scale is .75.

2.6 Results

Means, standard deviations, and correlations can be found in Table 2.1. I use path analysis via the structural equation model builder in Stata 16. Relationships among the variables can be seen in Table 2.2 and Figure 2.2. While the data show a significant relationship between job-based psychological ownership and work errors, it is opposite the hypothesized direction ($\beta = .37$, $z = 3.35$, $p < .01$), demonstrating an unanticipated positive relationship between psychological ownership and work errors, thereby failing to provide support for hypothesis 1. However, psychological ownership demonstrates a positive and significant relationship with mindfulness (β

= .26, $z = 2.43$, $p < .05$), providing support for hypothesis 2. Additionally, mindfulness and work errors are negatively associated with one another, and the relationship is marginally significant ($\beta = -.22$, $z = -1.79$, $p = .073$), providing marginal support for hypothesis 3. However, mediation analysis shows that mindfulness does not meaningfully mediate the relationship between job-based psychological ownership and work errors (indirect effects = $-.18$, $CI = [-.44, .06]$), failing to provide support for hypothesis 4.

In considering the unanticipated positive relationship between psychological ownership and work errors, I also include analyses of the relationship between psychological demands and both mindfulness and work errors. The relationship between psychological demands and work errors, though positive, is only marginally significant ($\beta = .19$, $z = 1.72$, $p = .085$). Further, the relationship between psychological demands and mindfulness is not significant ($\beta = .12$, $z = 1.10$, *ns*), nor does mindfulness mediate the relationship between psychological demands and work errors (indirect effects = $-.07$, $CI = [-.22, .08]$). It should be noted as well that model fit was relatively poor for this model (Model Fit: $\chi^2 = 13.534$, $RMSEA = .148$, $CFI = .55$, $TLI = -.35$, $SRMR = .054$) which is likely attributable, at least in part, to the low sample size.

Table 2.1 Means, Standard Deviations, and Correlations among Variables: Study 2

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Psychological Ownership	4.26	.69	.81									
2. Mindfulness (West)	3.67	.53	.24*	.78								
3. Work Errors ^a	2.23	2.34	.28*	-.13	1.00							
4. Psychological Demands	3.58	.89	-.26*	.03	.06	.74						
5. Workload	77.15	25.54	-.02	.11	.13	.11	1.00					
6. Cognitive Absorption	3.56	.85	.31**	.16	.04	.12	-.17	.80				
7. Self-Efficacy	4.09	.56	.35**	.38***	.08	-.12	-.02	.18	.63			
8. Trait Mindfulness	2.30	.73	-.36***	-.15	-.12	.21	.09	-.42***	-.38***	.75		
9. Tenure	5.59	3.29	.10	.11	.06	-.07	-.11	-.02	.06	-.02	1.00	
10. Mindfulness (East)	3.48	.48	.04	.13	-.03	-.10	.08	.25*	-.01	-.10	.12	.69

N = 78

Note: Scale reliabilities (coefficient alphas) reported on the diagonal

p* < .05, *p* < .01, ****p* < .001

Table 2.2. Summary of Mediation Analysis: Study 2

Effect Type	Coefficient	SE	CI
Direct Path to Mindfulness			
Psychological Ownership→Mindfulness (Hypothesis 2)	.26*	.11	[0.05, 0.47]
Psychological Demands→Mindfulness	.12	.11	[-0.10, 0.35]
Direct Path to Work Errors			
Mindfulness→Work Errors (Hypothesis 3)	-.22 [†]	.11	[-0.46, 0.02]
Psychological Ownership→Work Errors (Hypothesis 1)	.37**	.11	[0.15, 0.59]
Psychological Demands→Work Errors	.19 [†]	.11	[-0.03, 0.40]
Indirect Path to Work Errors			
Psychological Ownership→Mindfulness→Work Errors (Hypothesis 4)	-.18	.13	[-0.44, 0.06]
Psychological Demands→Mindfulness→Work Errors	-.07	.08	[-0.22, 0.08]

$N = 78$

[†] $p < .10$, * $p < .05$, ** $p < .01$

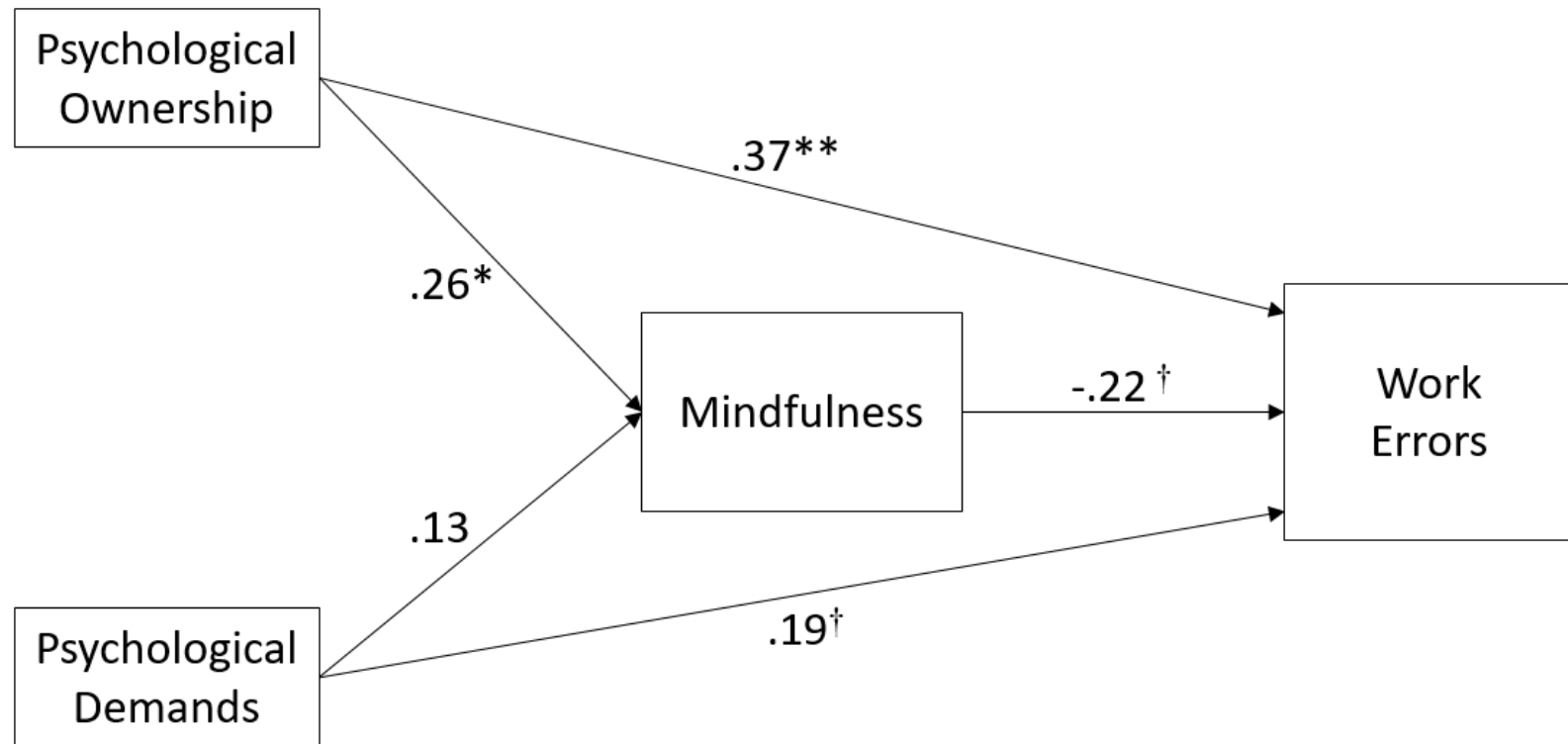


Figure 2.2. Path Analysis: Effects of Psychological Ownership on Work Errors, Study 2

$N = 78$

Model Fit: $\chi^2 = 13.534$, RMSEA = .148, CFI = .55, TLI = -.35, SRMR = .054

$^\dagger p < .10$, $*p < .05$, $**p < .01$

2.7 Supplemental Analysis

To more comprehensively understand the relationships between key study variables and work errors, I employ a multi-level analysis of actual monthly error rates—rather than average monthly errors—across the four months during which I gathered error data. This cross-level analysis involves two levels of data: Level 1 variables refer to intra-employee differences (i.e. within employee variance across time), while level 2 variables refer to inter-employee differences (between employee variance reported via survey). While only 78 employees are represented in the survey, there are 315 employee months available for analysis, providing sufficient data for an examination of the relationships among job-based psychological ownership, psychological demands, mindfulness, and monthly work errors.

The results of multilevel analyses can be found in Table 2.3. Model 1 represents an unconstrained model, which examines the appropriateness of multi-level modeling for analyzing these data. ICC(2) is .42, indicating that 42% of variance in monthly error scores can be attributed to differences between employees. Thus, multi-level modeling is an appropriate analytic tool in this situation. In model 2, I include all level 1 and level 2 control variables, with the exception of psychological demands. A likelihood ratio test indicates that this model does not provide significantly better fit for the data than model 1 ($\Delta LR\chi^2 = 3.75$, *ns*). In model 3, I include psychological ownership, psychological demands, and mindfulness as fixed effects only. Again, psychological ownership has a significant positive relationship with work errors ($\gamma = 1.24$, $z = 3.10$, $p < .01$), indicating a significant positive relationship between psychological ownership and work errors and failing to support hypothesis 1. Mindfulness was negatively associated with work errors, and the relationship between the two variables was also marginally significant ($\gamma = -.91$, $z = -1.80$, $p = .072$), reinforcing marginal support for hypothesis 3, which hypothesizes a negative relationship between mindfulness and work errors. Additionally, the data show a marginally significant relationship between psychological demands and work errors ($\gamma = .52$, $z = 1.80$, $p = .073$), reinforcing marginal support in the previous analyses for the positive relationship between psychological demands and work errors. In model 4, mindfulness is included as both a fixed and random variable. However, a likelihood ratio test suggests that model 4 does not provide significantly better fit for the data than model 3. Therefore, in keeping with best practices in random coefficient modeling (Bliese & Ployhart, 2002), I reject model 4 in favor of the more parsimonious model 3.

Table 2.3. Cross-level Effects of Psychological Ownership, Psychological Demands, and Mindfulness on Monthly Worker Errors:^a Study 2

	Model 1		Model 2		Model 3		Model 4	
	Est	SE	Est	SE	Est	SE	Est	SE
<u>Fixed Effects</u>								
Monthly Workload (L1)			0.00	0.01	0.00	0.01	0.00	0.01
Time (L1)			-0.13	0.12	-0.13	0.12	-0.13	0.12
Absorption (L2)			-0.20	0.34	-0.43	0.34	-0.45	0.33
Self-Efficacy (L2)			0.10	0.49	0.10	0.50	0.20	0.49
Trait Mindfulness (L2)			-0.57	0.42	-0.47	0.41	-0.47	0.40
Tenure (L2)			0.01	0.07	0.01	0.07	0.01	0.07
<i>Independent Variables</i>								
Psychological Ownership (L2)					1.24**	0.42	1.25**	0.39
Psychological Demands (L2)					0.52 [†]	0.29	0.59*	0.29
Mindfulness (L2)					-0.91 [†]	0.51	-1.06*	0.49
Intercept	2.22***	0.26	3.99	3.01	0.78	3.19	0.74	3.75
<u>Random Effects</u>								
Mindfulness							0.19*	0.21
ICC(2)	0.42		0.41		0.36		0.02	
Likelihood Ratio Change ($\Delta LR\chi^2$)			3.75		11.74**		0.88	

Notes: Within person $N=315$, between person $N=78$.

^a Natural log value used

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

2.8 Chapter 2 Discussion

In this dissertation chapter, I propose a model by which job-based PO is negatively associated with work errors through the mediating effects of mindfulness. While the relationship between job-based PO and work errors was both strong and significant, it was positive instead of negative, suggesting that job-based psychological ownership may significantly increase individual's work errors. While the data suggest that the hypothesized positive relationship between job-based PO and mindfulness, and well as the hypothesized negative relationship between mindfulness and work errors, are significant, mindfulness does not meaningfully mediate the relationship between job-based PO and work errors. While data limitations must be considered, the findings herein provide meaningful theoretical and practical implications for future research.

2.8.1 Theoretical Implications

The most important theoretical implication of this study is the positive relationship between job-based PO and work errors. While previous research has long debated whether PO leads to improved job performance or not (Dawkins et al., 2017), to my knowledge this is the first empirical evidence which suggests that job-based PO may be associated with increased work errors. This positive relationship may also be due to a few spurious factors. For example, the study focused on employees within one specific organization, and in one specific occupational family, which may denote characteristics and findings which are unique to this group. The finding may also be attributable to the timing of error data collection, which commenced in March of 2020 and coincided with the beginning of the “stay at home” orders issued during the global pandemic. The curiousness of this finding, as well as the timing of data collection, suggest interesting avenues for future research. For example, in novel situations and circumstances, does job-based PO increase work errors? Dane (2010) has suggested that cognitive entrenchment, which refers to “a high level of stability in one's domain schemas” (Dane, 2010: 579), may be associated with work errors. Cognitive entrenchment, often born by routine experiences performing the same tasks, is associated with inflexibility in thought and behavior (Dane, 2010) that prevents individuals from engaging in novel distinction-drawing when circumstances change, in order to solve novel problems creatively or to proactively prevent novel errors (Langer, 2014). As experience is an influential driver in the development of both cognitive entrenchment and PO (Pierce et al., 2003),

future research should explore both the maintenance of job-based PO, as well as the effects of job-based PO on work errors in contexts in which a major work-related change has occurred.

Additionally, support for the positive relationship between job-based PO and mindfulness—beyond the relationship between psychological demands on mindfulness—suggest interconnections between the two mental states which can result in fruitful integration and further examination. While the mindfulness literature has focused extensively on positive outcomes derived from mindfulness (Vogus & Sutcliffe, 2012), its exploration of antecedents of individual mindfulness are quite limited (Sutcliffe et al., 2016). By conceptualizing psychological ownership as an antecedent to individual-level mindfulness cultivation, I open a new avenue of research that considers how malleable psychological states may promote or discourage mindfulness. While the literature typically conceptualizes state mindfulness development as primarily instigated by the individual, this new avenue suggests that managers and organizational leaders may play an active role in mindfulness cultivation or erosion among individual workers. Though not significant with the limited data available here, conceptualizing mindfulness as a mediator in the relationship between job-based PO and work errors introduces novel, and potentially meaningful, avenues for better understanding the undertheorized relationship between PO and work errors.

2.8.2 Practical Implications

This study suggests multiple practical implications for organizational management. First, if the counterintuitive positive relationship between job-based PO and work errors is correct, managers and other organizational leaders may want to weigh potential performance costs—in terms of work errors—with the well-known employee benefits associated with job-based PO before strategically implementing practices which will enhance or discourage job-based PO among employees. Additionally, managers and organizational leaders may want to employ mindfulness themselves in being sensitive to the contexts and circumstances (Langer, 2014) in which job-based PO is most likely associated with positive or negative outcomes. While it is likely that job-based PO is not typically associated with increased work errors, it is possible that major changes to work processes, such as those occasioned by the global pandemic, may be associated with increased errors among those who experience high levels of job-based PO, as evidenced in this study.

Second, this study suggests that another potential benefit of job-based psychological ownership is increased mindfulness among individual workers. Aside from the well-being and

attitudinal benefits associated with mindfulness (Sutcliffe et al., 2016), which extend beyond those associated with job-related PO (Dawkins et al., 2017), mindfulness is associated with improved creativity (Berg & Yu, 2019), safety (Zhang & Wu, 2014), and general performance (Dane & Brummel, 2014) and, despite limitations in the statistical power in this study, findings suggest a negative relationship between mindfulness and work errors. As some strategies for implementing job-based PO are relatively well-known (Dawkins et al., 2017), and accessible to managers, the relationship between job-based PO and mindfulness provides managers with avenues by which they can actively support or discourage the development of mindfulness among individual workers. This is important, because the mindfulness literature has typically implied that mindfulness is cultivated solely by the individual, and that managers and organizations are passive actors in the process.

2.8.3 Limitations and Future Research

As mentioned earlier in the discussion, limitations diminished the potential contributions which this study makes to management theory and practice. Most notable among these limitations is the low sample size in this study. Despite considerable support from formal and informal leaders within the organization, data collection did not exceed the 100+ participants anticipated. Thus, relationships which may have been significant in the model were non-significant, while low sample size prevents meaningful generalizability of the findings, further limiting the analytical rigor of analyses. While supplemental analyses were intended to provide a more robust examination of the relationships between key variables and work errors, future research should engage larger groups of workers to better determine the effects of psychological ownership on work errors and mindfulness, as well as the potential mediating effects of mindfulness on the relationship between job-based PO and work errors. Additionally, this study suffered from limitations associated with research in one single organization and one industry. While the organization's collection of individual-level error data made it a uniquely valuable source of data for this study, more comprehensive studies involving participants from many different industries and organizations would provide far more generalizable findings, limiting the chances that relationships found in this study were idiosyncratic to the organization or industry.

While the timing of the study provides interesting questions for future exploration, it likely impacted study results as well. As mentioned above, this study overlapped with the global

pandemic of 2020-2021. I gathered data from the second survey two weeks before the organization issued a “stay at home” order for all employees, due to the pandemic. While this timing could have provided an incredibly fortuitous opportunity to gather data regarding psychological ownership, state mindfulness and work errors under such unique and novel circumstances, my requests to gather additional data from employees were denied by organizational leadership. Consequently, the unanticipated positive relationship between job-based PO and work errors remains suspect. As employees begin returning to work, future research could opportunistically document the impacts of transitioning from remote work to in-person work on job-based psychological ownership, mindfulness, work errors, and psychological demands. Though not exactly the same as the initial stay at home orders, returning to work will likely create a disruption of work processes similar to what was experienced when employees were required to stay at home; leading to novel and important findings regarding job-based PO, mindfulness, and work errors in contexts of dramatic changes.

One particularly intriguing path for future research is examining the relationship between psychological ownership and work errors over time. The literature on errors is increasingly focusing on temporal dynamism, and scholars are beginning to explore the processes by which individuals prevent, identify, and learn from work errors (Lei et al., 2016). Job-based PO may meaningfully impact the temporal dynamism of errors. For example, it’s possible that job-based PO may delay error identification, due to the autonomy typically experienced by individuals with high levels of job-based PO (Peng & Pierce, 2015), or due to territorial tendencies or information withholding which is sometimes noted among those individuals (Avey et al., 2009). Future research could also examine the relationship between job-based PO and serial errors. For example, do owners have a shorter learning curve than others? Because of their strong sense of accountability and self-identification, are individuals high in job-based PO less likely to repeat the same mistakes again? Or could job-based PO potentially increase the likelihood that they make the same mistakes, owing perhaps to a sense of entitlement among individuals, or self-assurance that they are engaging in practices that, while not “by the book,” have worked just fine in the past? While a few studies have examined the dark side of psychological ownership (Avey et al., 2009; Brown & Baer, 2015; Dirks et al., 1996; Wang et al., 2019), future research could extend our understanding of additional negative outcomes which may derive from high job-based PO. For

example, when combined with certain personality traits, could high job-based PO actually lead to more carelessness in some individuals?

Finally, one of the strengths in this study was a clear focus on individual work errors, representing an important facet of individual performance. As methods currently used in the psychological ownership literature, such as manager reports of general performance (e.g. Mayhew et al., 2007; Van Dyne & Pierce, 2004), can be vague and limited by multiple social and cognitive biases, future research should continue to operationalize performance in terms of specific dimensions of performance which are collected, recorded, and managed continuously by organizations. As research begins systematically exploring the relationship between job-based PO and specific dimensions of performance, a clearer and more nuanced explanation of the effects of job-based PO on performance will emerge.

2.9 Conclusion

While job-based PO is associated with many positive attitudinal and behavioral outcomes (Bernhard & O'Driscoll, 2011), its impact on individual-level work errors has not been empirically considered. In this study, I propose and test a model in which a hypothesized negative relationship between job-based PO and work errors is mediated by mindfulness. Contrary to expectations, job-based PO demonstrates a significant positive relationship with work errors. While job-based PO also demonstrates a significant positive relationship with mindfulness, and mindfulness' negative association with work errors is marginally significant, mindfulness does not mediate the relationship between job-based PO and work errors. While data limitations, attributable in part to low sample size, potential idiosyncrasies associated with the organization and industry, and the unique timing of data collection during the beginning of the COVID-19 global pandemic, limit the generalizability of these findings, the findings provide interesting questions for future research regarding the relationship between job-based PO and work errors, as well as the potential mediating effects of mindfulness in that relationship.

APPENDIX A

Table A1. Sample 1 OLS Regression

	Model 1		Model 2	
	β	t	β	t
Task Identity	-.01	-.27	.00	.08
Feedback	.08 [†]	1.66	.06	1.29
Specialization	.28***	6.83	.26***	6.53
Autonomy	.20***	4.47	.21***	4.49
Task Significance	.30***	8.25	.32***	8.74
Tenure	.07*	2.15	.07*	2.30
Task Identity X Task Significance			.11*	2.55
Feedback X Task Significance			.06	1.17
Specialization X Task Significance			-.07 [†]	-1.80
Autonomy X Task Significance			-.15***	-3.56
Constant	.03	1.60	.04*	2.02
R ²		.43		.44
ΔR^2				.01

$N = 555$

[†] $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

Table A2. OLS Regressions Regarding the Effects of Task Characteristics on Psychological Ownership

	Model 1		Model 2		Model 3		Model 4		Model 5	
	β	t	β	t	β	t	β	t	β	t
Task Identity	-.01	-.27	-.02	-.39	-.01	-.29	-.01	-.18	.00	.09
Feedback	.08 [†]	1.66	.08	1.64	.08	1.64	.08 [†]	1.67	.07	1.54
Specialization	.28***	6.83	.28***	6.89	.28***	6.82	.28***	6.80	.26***	6.50
Autonomy	.20***	4.47	.20***	4.29	.20***	4.46	.20***	4.38	.22***	4.77
Task Significance	.30***	8.25	.31***	8.36	.30***	8.25	.30***	8.29	.30***	8.30
Tenure	.07*	2.15	.07*	2.20	.07*	2.15	.07*	2.18	.07*	2.13
Task Identity X Task Significance			.05	1.35						
Feedback X Task Significance					.01	.21				
Specialization X Task Significance							-.05	-1.42		
Autonomy X Task Significance									-.08*	-2.47
Constant	.03	1.60	.03	1.18	.03	1.45	.04*	2.02	.05*	2.13
R ²		.43		.43		.43		.43		.44
ΔR^2										.01

N = 555

[†]p < .10, *p < .05, **p < .01, ***p < .001

APPENDIX B.

Alternate Measurement of Mindfulness (Eastern)

Eastern Mindfulness Measure: Toronto Mindfulness Scale (Lau et al., 2006)

6 items, 5-point scale (1 = strongly disagree, 5 = strongly agree)

Example item: “I try to accept life’s experiences, no matter whether they are pleasant or unpleasant.”

Cronbach’s alpha: .74

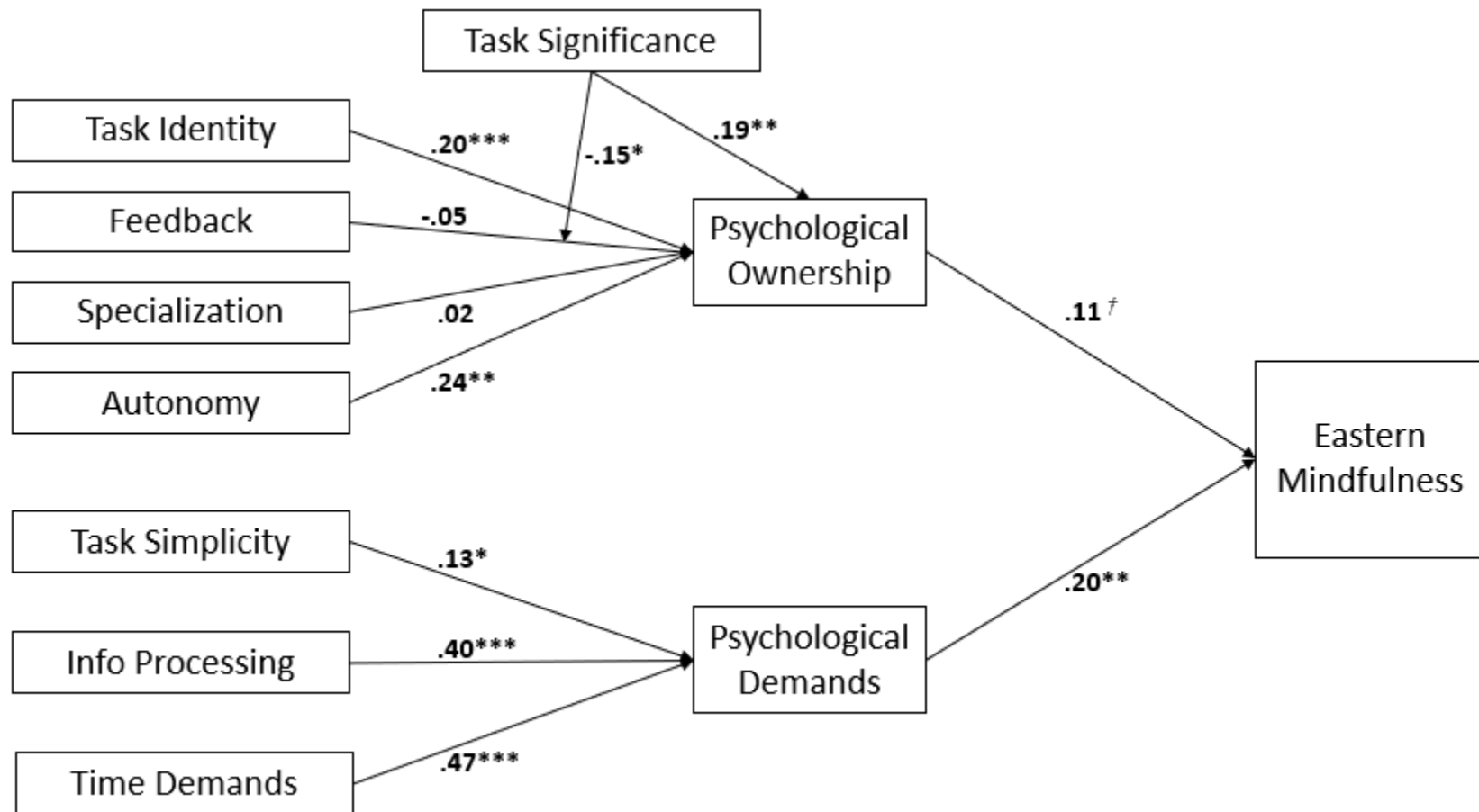


Figure B1. Study 1, Sample 2 Path Analysis: Eastern Mindfulness

$N = 211$

Model Fit: $\chi^2 = 24.234$, RMSEA = .06, CFI = .95, TLI = .87, SRMR = .03

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table B1. Mediation Analyses: Eastern Mindfulness

Effect Type	Coefficient	SE	CI
Direct Path to Psychological Ownership			
Task Identity→Psychological Ownership (Hypothesis 1a)	.20***	.06	[0.09, 0.31]
Feedback→Psychological Ownership (Hypothesis 1b)	-.05	.06	[-0.17, 0.07]
Specialization→Psychological Ownership (Hypothesis 1c)	.02	.06	[-0.09, 0.14]
Autonomy→Psychological Ownership (Hypothesis 1d)	.24***	.08	[0.08, 0.40]
Task Significance→Psychological Ownership (Hypothesis 2)	.19**	.08	[0.08, 0.31]
Direct Path to Psychological Demands			
Task Simplicity→Psychological Demands	.13*	.05	[0.02, 0.25]
Information Processing→Psychological Demands	.40***	.07	[0.27, 0.53]
Time Demands→Psychological Demands	.47***	.05	[0.38, 0.57]
Direct Path to Mindfulness			
Psychological Ownership→Mindfulness	.11 [†]	.06	[-0.01, 0.23]
Psychological Demands→Mindfulness	.20**	.08	[0.05, 0.34]
Task Identity→Mindfulness	.09*	.05	[0.00, 0.18]
Feedback→Mindfulness	-.03	.05	[-0.13, 0.07]
Specialization→Mindfulness	.13**	.05	[0.03, 0.23]
Autonomy→Mindfulness	-.06	.06	[-0.19, 0.06]
Task Significance→Mindfulness	.07*	.06	[0.00, 0.15]
Task Simplicity→Mindfulness	.03	.05	[-0.07, 0.12]
Information Processing→Mindfulness	-.02	.08	[-0.18, 0.14]
Time Demands→Mindfulness	-.11 [†]	.06	[-0.23, -0.00]
Indirect Path to Mindfulness			
Task Identity→Psychological Ownership→Mindfulness (Hypothesis 4a)	.02 [†]	.01	[-0.00, 0.05]
Feedback→Psychological Ownership→Mindfulness (Hypothesis 4b)	-.01	.01	[-0.02, 0.01]
Specialization→Psychological Ownership→Mindfulness (Hypothesis 4c)	.00	.01	[-0.01, 0.02]
Autonomy→Psychological Ownership→Mindfulness (Hypothesis 4d)	.03 [†]	.02	[-0.01, 0.06]
Task Significance→Psychological Ownership→Mindfulness (Hypothesis 4e)	.02	.01	[-0.00, 0.05]
Task Simplicity→Psychological Demands→Mindfulness (Hypothesis 5a)	.03	.02	[-0.00, 0.06]
Information Processing→Psychological Demands→Mindfulness (Hypothesis 5b)	.08*	.04	[0.01, 0.15]
Time Demands→Psychological Demands→Mindfulness (Hypothesis 5c)	.09*	.04	[0.02, 0.17]

$N = 211$, * $p < .05$, ** $p < .01$, *** $p < .001$

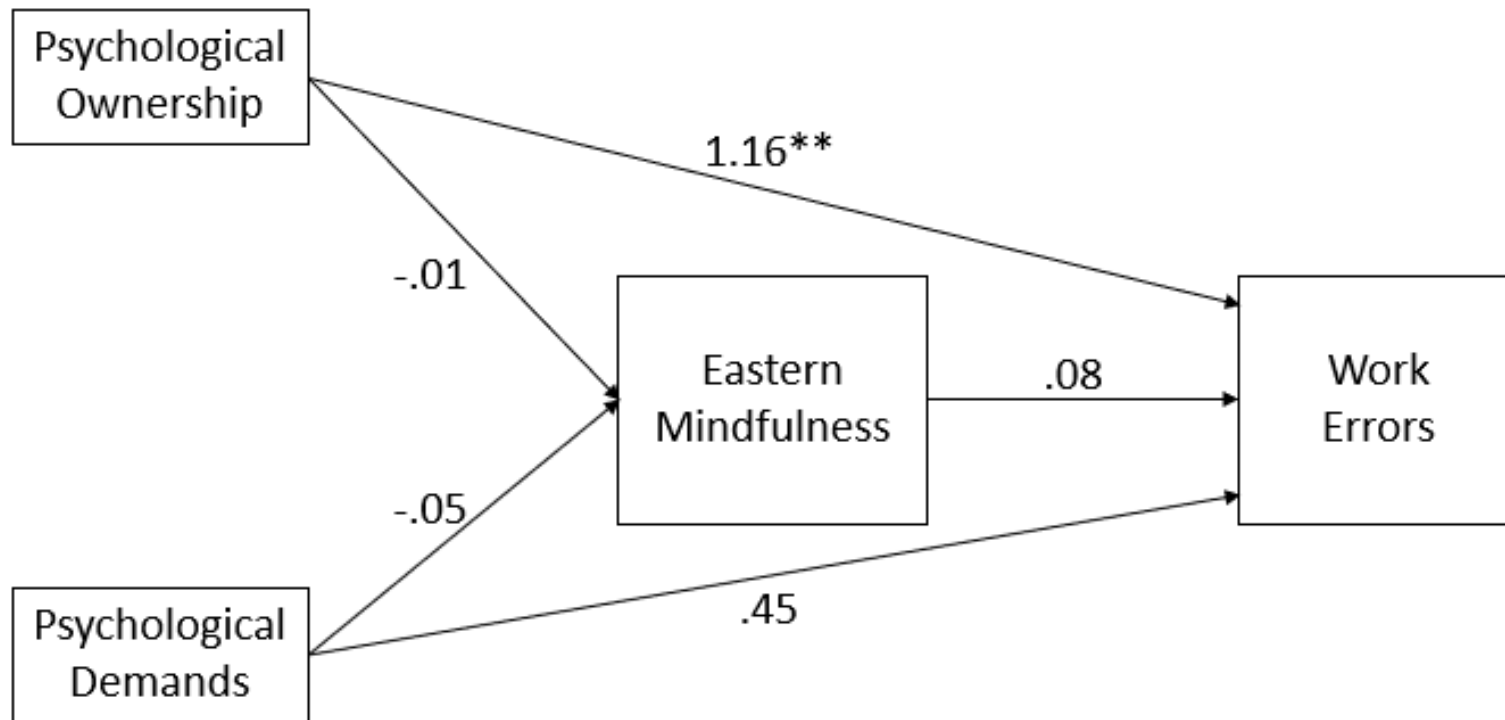


Figure B2. Study 2 Path Analysis: Eastern Mindfulness

$N = 78$

Model Fit: $\chi^2 = 10.368$, RMSEA = .117, CFI = .28, TLI = -1.15, SRMR = .045

$^{\dagger}p < .10$, $*p < .05$, $**p < .01$

Table B2. Study 2 Mediation Analyses: Eastern Mindfulness

Effect Type	Coefficient	SE	CI
Direct Path to Mindfulness			
Psychological Ownership→Mindfulness (Hypothesis 2)	-.01	.09	[-0.18, 0.17]
Psychological Demands→Mindfulness	-.05	.06	[-0.16, 0.06]
Direct Path to Work Errors			
Mindfulness→Work Errors (Hypothesis 3)	.08	.62	[-1.13, 1.29]
Psychological Ownership→Work Errors (Hypothesis 1)	1.16**	.39	[0.39, 1.94]
Psychological Demands→Work Errors	.45	.31	[-0.16, 1.05]
Indirect Path to Work Errors			
Psychological Ownership→Mindfulness→Work Errors (Hypothesis 4)	-.00	.01	[-0.02, 0.02]
Psychological Demands→Mindfulness→Work Errors	-.00	.03	[-0.07, 0.06]

N = 79

†*p* < .10, **p* < .05, ***p* < .01

APPENDIX C

Dimensions of Mindfulness

Present Oriented

Eigenvalue 0.87 (Factor loadings between .47 and .57)

Alpha: .59

Sensitivity to Context

Eigenvalue 1.01 (Factor loadings between .39 and .61)

Alpha: .58

Flexibility

Eigenvalue 1.21 (Factor loadings between .61 and .65)

Alpha: .71

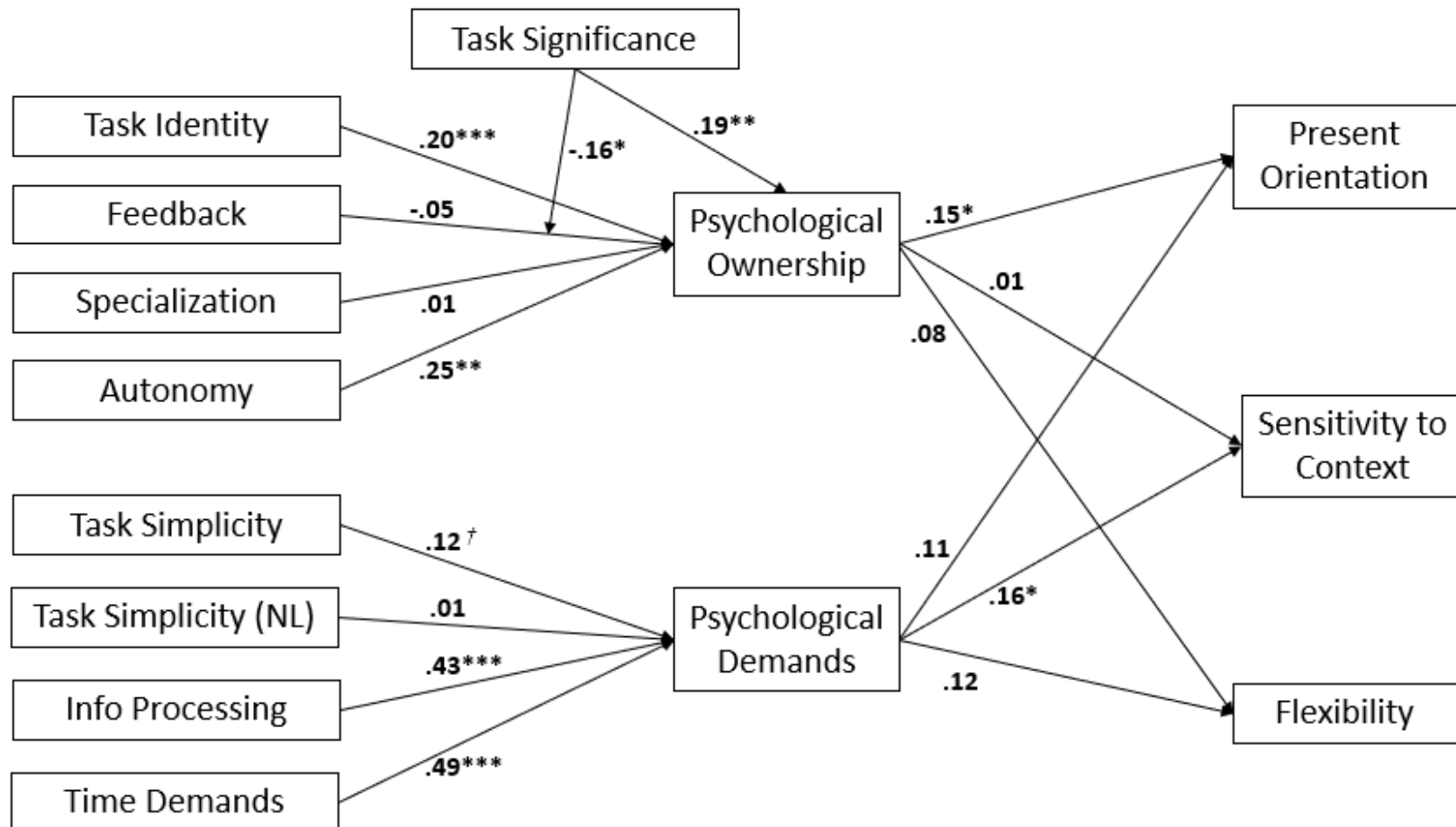


Figure C1. Attention-Based Model of Work Design (3 Dimensions of Mindfulness)

$N = 211$

Model Fit: $\chi^2 = 78.413$, RMSEA = .126, CFI = .85, TLI = .37, SRMR = .037

$^{\dagger}p < .10$, $^*p < .05$, $^{**}p < .01$

Table C1. Mediation Analysis, Present Oriented Mindfulness Dimension

Effect Type (Present Oriented Mindfulness)	Coefficient	SE	CI
Direct Path to Psychological Ownership			
Task Identity→Psychological Ownership	.25***	.07	[0.11, 0.38]
Feedback→Psychological Ownership	-.05	.06	[-0.18, 0.07]
Specialization→Psychological Ownership	.01	.06	[-0.12, 0.13]
Autonomy→Psychological Ownership	.26**	.08	[0.09, 0.42]
Task Significance→Psychological Ownership	.21**	.06	[0.09, 0.34]
Direct Path to Psychological Demands			
Task Simplicity→Psychological Demands	.14 [†]	.07	[-0.01, 0.28]
Task Simplicity (NL) → Psychological Demands	.02	.06	[-0.11, 0.14]
Information Processing→Psychological Demands	.35***	.05	[0.25, 0.45]
Time Demands→Psychological Demands	.63***	.05	[0.53, 0.73]
Direct Path to Present Oriented Mindfulness			
Psychological Ownership→Present Oriented Mindfulness	.20*	.08	[0.05, 0.35]
Psychological Demands→ Present Oriented Mindfulness	.14	.09	[-0.03, 0.31]
Task Identity→ Present Oriented Mindfulness	-.03	.08	[-0.19, 0.12]
Feedback→ Present Oriented Mindfulness	.14	.08	[-0.01, 0.28]
Specialization→ Present Oriented Mindfulness	.02	.07	[-0.10, 0.15]
Autonomy→ Present Oriented Mindfulness	.07	.08	[-0.08, 0.22]
Task Significance→ Present Oriented Mindfulness	.17*	.08	[0.02, 0.32]
Task Simplicity → Present Oriented Mindfulness	.05	.09	[-0.12, 0.23]
Task Simplicity (NL) → Present Oriented Mindfulness	-.01	.07	[-0.14, 0.12]
Information Processing→ Present Oriented Mindfulness	.17 [†]	.09	[-0.01, 0.35]
Time Demands→ Present Oriented Mindfulness	-.10	.09	[-0.28, 0.08]
Indirect Path to Mindfulness			
Task Identity→Psychological Ownership→ Present Oriented Mindfulness	.03*	.01	[0.00, 0.06]
Feedback→Psychological Ownership→ Present Oriented Mindfulness	-.01	.01	[-0.03, 0.01]
Specialization→Psychological Ownership→ Present Oriented Mindfulness	.00	.01	[-0.02, 0.02]
Autonomy→Psychological Ownership→ Present Oriented Mindfulness	.04	.02	[-0.00, 0.08]
Task Significance→Psychological Ownership→ Present Oriented Mindfulness	.03*	.02	[0.00, 0.06]
Task Simplicity→Psychological Demands→ Present Oriented Mindfulness	.01	.01	[-0.01, 0.03]
Task Simplicity (NL) → Psychological Demands → Present Oriented Mindfulness	.00	.00	[-0.01, 0.01]
Information Processing→Psychological Demands→ Present Oriented Mindfulness	.05	.03	[-0.01, 0.10]
Time Demands→Psychological Demands→ Present Oriented Mindfulness	.05	.03	[-0.01, 0.12]

$N = 211$, [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table C2. Mediation Analysis, Sensitivity to Context and Perspective Dimension

Effect Type (Sensitive to Context and Perspective Dimension)	Coefficient	SE	CI
Direct Path to Psychological Ownership			
Task Identity→Psychological Ownership	.25***	.07	[0.11, 0.38]
Feedback→Psychological Ownership	-.05	.06	[-0.18, 0.07]
Specialization→Psychological Ownership	.01	.06	[-0.12, 0.13]
Autonomy→Psychological Ownership	.26**	.08	[0.09, 0.42]
Task Significance→Psychological Ownership	.21**	.06	[0.09, 0.34]
Direct Path to Psychological Demands			
Task Simplicity→Psychological Demands	.14 [†]	.07	[-0.01, 0.28]
Task Simplicity (NL) → Psychological Demands	.02	.06	[-0.11, 0.14]
Information Processing→Psychological Demands	.35***	.05	[0.25, 0.45]
Time Demands→Psychological Demands	.63***	.05	[0.53, 0.73]
Direct Path to Present Oriented Mindfulness			
Psychological Ownership→ Sensitivity Dimension	.02	.06	[-0.11, 0.15]
Psychological Demands→ Sensitivity Dimension	.14*	.09	[0.02, 0.29]
Task Identity→ Sensitivity Dimension	.07	.05	[-0.03, 0.17]
Feedback→ Sensitivity Dimension	.15	.07	[0.02, 0.28]
Specialization→ Sensitivity Dimension	.03	.05	[-0.06, 0.13]
Autonomy→ Sensitivity Dimension	-.03	.06	[-0.15, 0.09]
Task Significance→ Sensitivity Dimension	.02	.05	[-0.08, 0.11]
Task Simplicity → Sensitivity Dimension	.02	.06	[-0.08, 0.13]
Task Simplicity (NL) → Sensitivity Dimension	.09**	.03	[0.02, 0.15]
Information Processing→ Sensitivity Dimension	.17*	.08	[0.01, 0.33]
Time Demands→ Sensitivity Dimension	-.10	.05	[-0.20, 0.00]
Indirect Path to Mindfulness			
Task Identity→Psychological Ownership→ Sensitivity Dimension	.00	.01	[-0.02, 0.03]
Feedback→Psychological Ownership→ Sensitivity Dimension	-.00	.00	[-0.01, 0.01]
Specialization→Psychological Ownership→ Sensitivity Dimension	.00	.00	[-0.00, 0.00]
Autonomy→Psychological Ownership→ Sensitivity Dimension	.00	.02	[-0.03, 0.04]
Task Significance→Psychological Ownership→ Sensitivity Dimension	.00	.01	[-0.02, 0.03]
Task Simplicity→Psychological Demands→ Sensitivity Dimension	.02	.01	[-0.01, 0.05]
Task Simplicity (NL) → Psychological Demands → Sensitivity Dimension	.00	.01	[-0.01, 0.02]
Information Processing→Psychological Demands→ Sensitivity Dimension	.07*	.03	[0.01, 0.13]
Time Demands→Psychological Demands→ Sensitivity Dimension	.08*	.04	[0.01, 0.15]

$N = 211$, [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

C3. Mediation Analysis, Flexibility Dimension

Effect Type (Flexibility Dimension)	Coefficient	SE	CI
Direct Path to Psychological Ownership			
Task Identity→Psychological Ownership	.25***	.07	[0.11, 0.38]
Feedback→Psychological Ownership	-.05	.06	[-0.18, 0.07]
Specialization→Psychological Ownership	.01	.06	[-0.12, 0.13]
Autonomy→Psychological Ownership	.26**	.08	[0.09, 0.42]
Task Significance→Psychological Ownership	.21**	.06	[0.09, 0.34]
Direct Path to Psychological Demands			
Task Simplicity→Psychological Demands	.14 [†]	.07	[-0.01, 0.28]
Task Simplicity (NL) → Psychological Demands	.02	.06	[-0.11, 0.14]
Information Processing→Psychological Demands	.35***	.05	[0.25, 0.45]
Time Demands→Psychological Demands	.63***	.05	[0.53, 0.73]
Direct Path to Present Oriented Mindfulness			
Psychological Ownership→ Flexibility Dimension	.08	.08	[-0.07, 0.23]
Psychological Demands→ Flexibility Dimension	.12	.07	[-0.03, 0.26]
Task Identity→ Flexibility Dimension	.07	.06	[-0.05, 0.19]
Feedback→ Flexibility Dimension	.08	.07	[-0.06, 0.22]
Specialization→ Flexibility Dimension	-.03	.06	[-0.15, 0.10]
Autonomy→ Flexibility Dimension	.05	.06	[-0.07, 0.17]
Task Significance→ Flexibility Dimension	.11	.06	[-0.01, 0.23]
Task Simplicity → Flexibility Dimension	-.13	.07	[-0.26, 0.00]
Task Simplicity (NL) → Flexibility Dimension	.14**	.04	[0.06, 0.22]
Information Processing→ Flexibility Dimension	.06	.11	[-0.15, 0.27]
Time Demands→ Flexibility Dimension	-.16**	.06	[-0.27, -0.04]
Indirect Path to Mindfulness			
Task Identity→Psychological Ownership→ Flexibility Dimension	.02	.02	[-0.01, 0.05]
Feedback→Psychological Ownership→ Flexibility Dimension	-.00	.01	[-0.02, 0.01]
Specialization→Psychological Ownership→ Flexibility Dimension	.00	.00	[-0.01, 0.01]
Autonomy→Psychological Ownership→ Flexibility Dimension	.02	.02	[-0.02, 0.06]
Task Significance→Psychological Ownership→ Flexibility Dimension	.02	.02	[-0.01, 0.05]
Task Simplicity→Psychological Demands→ Flexibility Dimension	.01	.01	[-0.01, 0.04]
Task Simplicity (NL) → Psychological Demands → Flexibility Dimension	.00	.01	[-0.01, 0.01]
Information Processing→Psychological Demands→ Flexibility Dimension	.05	.03	[-0.01, 0.12]
Time Demands→Psychological Demands→ Flexibility Dimension	.06	.04	[-0.01, 0.13]

$N = 211$, [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

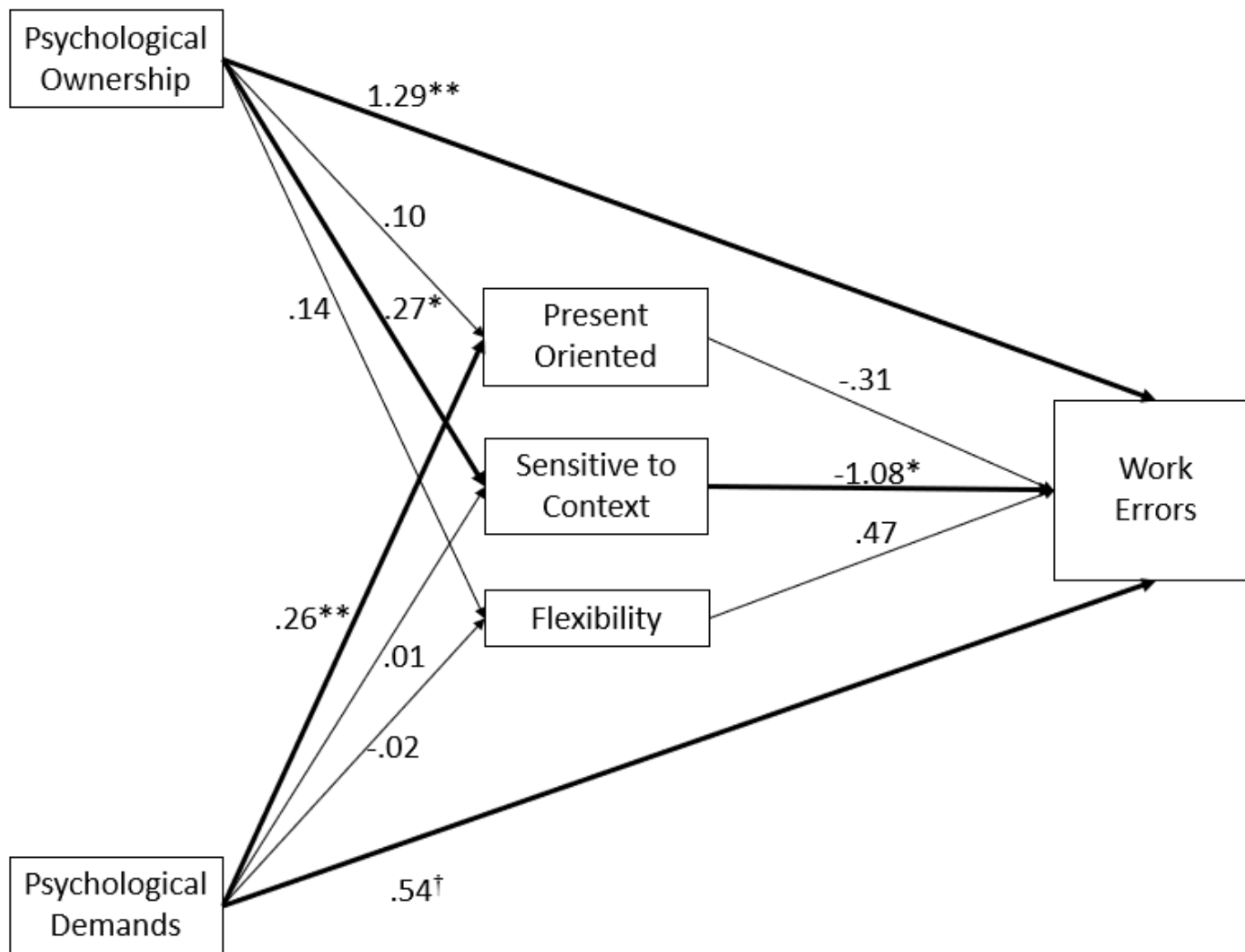


Figure C2. Study 2 Dimensions of Mindfulness

$N = 78$

Model Fit: $\chi^2 = 55.891$, RMSEA = .188, CFI = .35, TLI = -.48, SRMR = .105

$^{\dagger}p < .10$, $^{*}p < .05$, $^{**}p < .01$

Table C4. Mediation Analyses: 3 Dimensions of Mindfulness

Effect Type	Coefficient	SE	CI
Direct Path to Mindfulness			
Psychological Ownership → Present Oriented	.10	.14	[-0.17, 0.38]
Psychological Demands → Present Oriented	.26**	.09	[0.09, 0.43]
Psychological Ownership → Sensitivity	.27*	.12	[0.04, 0.50]
Psychological Demands → Sensitivity	.01	.09	[-0.16, 0.18]
Psychological Ownership → Flexibility	.14	.12	[-0.10, 0.37]
Psychological Demands → Flexibility	-.02	.09	[-0.19, 0.16]
Direct Path to Work Errors			
Psychological Ownership → Work Errors	1.29**	.40	[0.50, 2.08]
Psychological Demands → Work Errors	.54 [†]	.32	[-0.09, 1.17]
Present Oriented → Work Errors	-.31	.46	[-1.21, 0.58]
Sensitivity → Work Errors	-1.07*	.46	[-1.98, -0.18]
Flexibility → Work Errors	.47	.43	[-0.38, 1.32]
Indirect Path to Work Errors			
Psychological Ownership → Three Dimensions → Work Errors	-.26	.16	[-0.58, 0.05]
Psychological Demands → Three Dimensions → Work Errors	-.10	.14	[-0.39, 0.18]

$N = 78$

Model Fit: $\chi^2 = 55.891$, RMSEA = .188, CFI = .35, TLI = -.48, SRMR = .105

[†] $p < .10$, * $p < .05$, ** $p < .01$

APPENDIX D

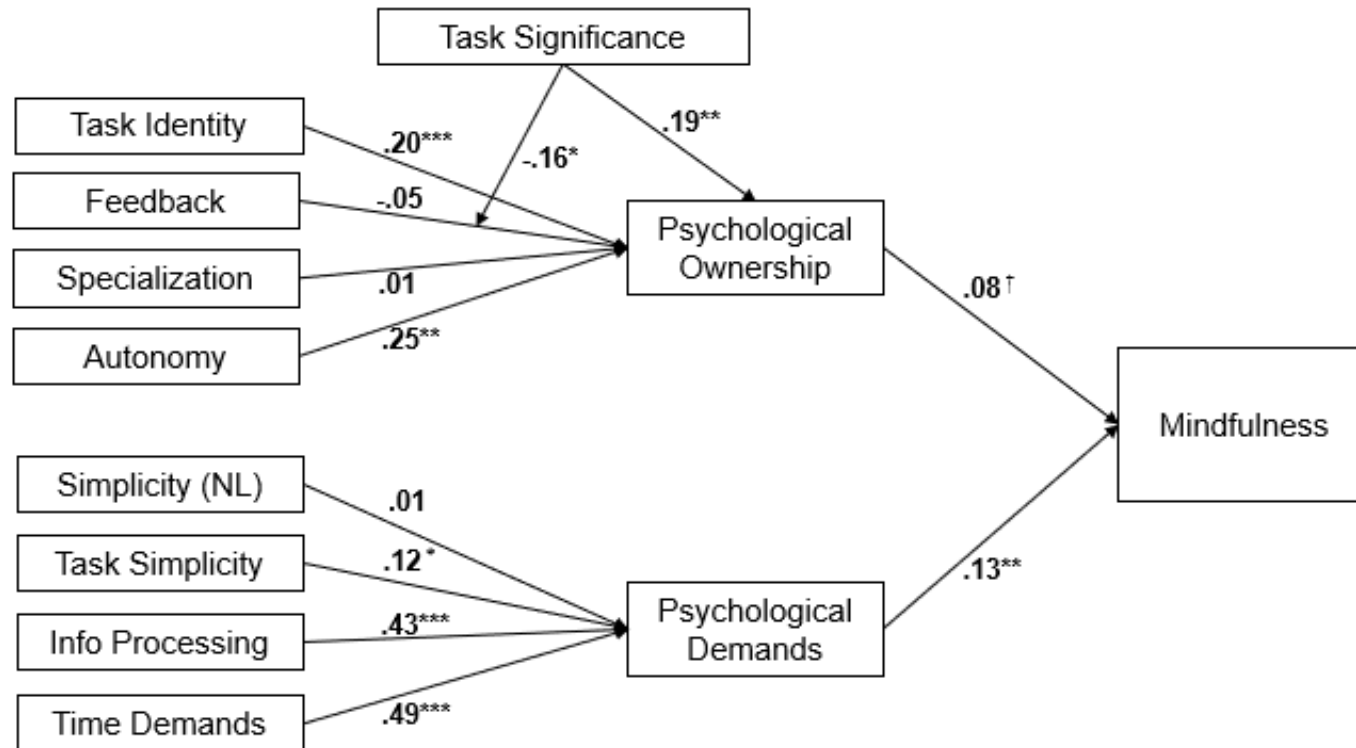


Figure D1. Study 1 Non-Linear Effects

$N = 211$, † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Model Fit: $\chi^2 = 32.379$, RMSEA = .07, CFI = .94, TLI = .83, SRMR = .03

Table D1. Mediation Paths: Study 1 Non-Linear Effects

Effect Type (Mindfulness)	Coefficient	SE	CI
Direct Path to Psychological Ownership			
Task Identity→Psychological Ownership	.20***	.06	[0.09, 0.31]
Feedback→Psychological Ownership	-.05	.06	[-0.18, 0.07]
Specialization→Psychological Ownership	.01	.06	[-0.11, 0.12]
Autonomy→Psychological Ownership	.25**	.08	[0.08, 0.41]
Task Significance→Psychological Ownership	.19**	.06	[0.08, 0.31]
Direct Path to Psychological Demands			
Task Simplicity→Psychological Demands	.12	.07	[-0.01, 0.25]
Task Simplicity (NL) → Psychological Demands	.01	.04	[-0.07, 0.10]
Information Processing→Psychological Demands	.43***	.07	[0.30, 0.56]
Time Demands→Psychological Demands	.49***	.05	[0.40, 0.58]
Direct Path to Mindfulness			
Psychological Ownership→ Mindfulness	.08	.04	[-0.01, 0.16]
Psychological Demands→ Mindfulness	.13**	.04	[0.04, 0.22]
Task Identity→ Mindfulness	.04	.04	[-0.03, 0.11]
Feedback→ Mindfulness	.11*	.05	[0.02, 0.21]
Specialization→ Mindfulness	.01	.04	[-0.07, 0.09]
Autonomy→ Mindfulness	.02	.04	[-0.05, 0.09]
Task Significance→ Mindfulness	.07	.04	[-0.00, 0.15]
Task Simplicity → Mindfulness	-.02	.04	[-0.10, 0.06]
Task Simplicity (NL) → Mindfulness	.07**	.02	[0.03, 0.12]
Information Processing→ Mindfulness	.13*	.06	[0.01, 0.25]
Time Demands→ Mindfulness	-.10**	.04	[-0.17, -0.04]
Indirect Path to Mindfulness			
Task Identity→Psychological Ownership→ Mindfulness	.02	.01	[-0.00, 0.03]
Feedback→Psychological Ownership→ Mindfulness	-.00	.01	[-0.01, 0.01]
Specialization→Psychological Ownership→ Mindfulness	.00	.00	[-0.01, 0.01]
Autonomy→Psychological Ownership→ Mindfulness	.02	.01	[-0.01, 0.04]
Task Significance→Psychological Ownership→ Mindfulness	.02	.01	[-0.00, 0.03]
Task Simplicity→Psychological Demands→ Mindfulness	.02	.01	[-0.00, 0.04]
Task Simplicity (NL) → Psychological Demands → Mindfulness	.00	.01	[-0.01, 0.01]
Information Processing→Psychological Demands→ Mindfulness	.06**	.02	[0.01, 0.10]
Time Demands→Psychological Demands→ Mindfulness	.06**	.02	[0.02, 0.11]

$N = 211$, * $p < .05$, ** $p < .01$, *** $p < .001$

APPENDIX E

Table E1. Trajectory Analyses of Chapter 2 Work Errors

	Model 1		Model 2		Model 3		Model 4	
	Est	SE	Est	SE	Est	SE	Est	SE
<i>Fixed Effects</i>								
Monthly Workload (L1)			0.00	0.01	0.00	0.01	0.00	0.01
Time (L1)			-0.13	0.12	-0.13	0.12	-0.13	0.12
Absorption (L2)			-0.20	0.34	-0.43	0.34	-0.43	0.34
Self-Efficacy (L2)			0.10	0.49	0.10	0.50	0.10	0.50
Trait Mindfulness (L2)			-0.57	0.42	-0.47	0.41	-0.47	0.41
Tenure (L2)			0.01	0.07	0.01	0.07	0.01	0.07
<i>Independent Variables</i>								
Psychological Ownership (L2)					1.24**	0.40	1.45*	0.61
Psychological Demands (L2)					0.52 [†]	0.29	0.47	0.45
Mindfulness (L2)					-0.91 [†]	0.51	-1.02	0.77
<i>Interactions</i>								
Psychological Ownership X Time							-0.08	0.18
Psychological Demands X Time							0.02	0.14
Mindfulness X Time							0.04	0.23
Intercept	2.22***	0.26	2.43**	0.70	2.42***	0.68	2.44***	0.68
ICC(2)	0.21		0.20		0.18		0.18	
ICC(3)	0.42		0.41		0.36		0.36	
Likelihood Ratio Change ($\Delta LR\chi^2$)			3.75		11.74**		0.31	

Notes: Within person $N = 315$, between person $N = 78$.

^a Natural log value used, [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

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