

MINDFULNESS AT WORK

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ABSTRACT

In this chapter, we argue that state and trait mindfulness and mindfulness-based practices in the workplace should enhance employee outcomes. First, we review the existing literature on mindfulness, provide a brief history and definition of the construct, and discuss its beneficial effects on physical and psychological health. Second, we delineate a model of the mental and neurobiological processes by which mindfulness and mindfulness-based practices improve self-regulation of thoughts, emotions, and behaviors, linking them to both performance and employee well-being in the workplace. We especially focus on the power of mindfulness, via improved self-regulation, to enhance social relationships in the workplace, make employees more resilient in the face of challenges, and increase task performance. Third, we outline controversies, questions, and challenges that surround the study of mindfulness, paying special attention to the implications of unresolved issues for understanding the effects of mindfulness at work. We conclude with a discussion of the implications of our propositions for organizations and employees and offer some recommendations for future research on mindfulness in the workplace.

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INTRODUCTION

The concept of mindfulness – awareness and observation of the present moment without reactivity or judgment – has gone mainstream. A Google database search on the term *mindfulness* yielded more than six million links; *mindfulness and work* generated 1.4 million links. Amazon.com lists more than 2,000 books with *mindfulness* in the title or as a keyword. A PsycInfo database search produced 2,221 articles, books, and dissertations with *mindfulness* as a keyword; Medline yielded 640. As the mindfulness concept has grown in popularity, claims about its broad-reaching beneficial effects have increased; yet its meaning has become hazier. Mindfulness could be easily dismissed as nothing more than the latest panacea for a stressed society (Altman, 2010; Lehrer, Woolfolk, & Sime, 2007) or the newest fad in organizational development (e.g., Carroll, 2006; Duerr, 2004a) if there were not also a growing body of scientific research suggesting that mindfulness and the practices associated with it significantly benefit both healthy individuals (including workers), as well as those suffering from physical and psychological problems.

The time is ripe to carefully examine the role that mindfulness might play in the performance and well-being of individuals at work. Accordingly, the purpose of this chapter is to assess the expected effects of mindfulness on employees' task and relational functioning on the job. We review the literature on mindfulness and discuss its roots, definition, and association with critical psychological, physical, and neurological processes. Others have linked mindfulness and work (Dane, 2010; Davidson et al., 2003; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Giluk, 2010), but existing research has lacked a coherent theoretical framework that explains *why* and *how* mindfulness might impact employee performance and well-being. We aim to fill that void.

This chapter has four major sections. First, we present a brief history of mindfulness and a working definition. Second, we provide a broad overview of the literature regarding outcomes that have been associated with mindfulness. Third, we introduce a process model linking mindfulness and mindfulness-based practices with three core and seven secondary processes that explain its effects. In the process section, we explicitly link each process to work variables, including job performance and employee well-being. Our goal is not to link mindfulness to organizational functioning (Weick, Sutcliffe, & Obstfeld, 1999), but rather to show how mindfulness and related practices might affect employees directly, in both task and relational functioning. Fourth, we focus on three areas where we expect mindfulness to

most strongly affect employees: improved social relationships, resilience, and task performance and decision making. Finally, we conclude with a discussion of the controversy and confusion surrounding mindfulness, suggestions for future research, and practical implications for organizations.

History of Mindfulness

Rooted in Buddhist philosophy, the concept of *mindfulness* is the literal translation of the Buddhist word *sati* – “intentness of mind,” “wakefulness of mind,” and “lucidity of mind” (Davids & Stede, 1959, p. 672) – highlighting intention, awareness, and attention as key constituents of mindfulness. Mindfulness meditation is at the heart of Buddhist tradition and its aim is to deepen conscious awareness of the present moment (Nyanaponika, 1998). Despite these roots, the concept of mindfulness, per se, has no religious connotation (see Hagen, 2003, for a discussion of whether Buddhism is a religion), and mindfulness meditative practices are becoming increasingly popular, not only in Eastern countries but throughout the world (Mitchell, 2002).

The public has become more aware of mindfulness largely because psychologists and medical practitioners have turned to therapeutic use of mindfulness meditation. Over the past three decades, researchers have frequently examined mindfulness meditation for its role in alleviating symptoms of physical and psychological disorders in clinical populations, and as a stress reduction technique in nonclinical populations (Chiesa & Serretti, 2010; Delmonte, 1990). Patients are trained in mindfulness meditation to heighten their awareness and attention to the present by intentionally orienting them to attend to moment-to-moment stimuli, and to accept those stimuli without judgment, elaboration, or attempts to control them (e.g., Baer, 2003; Chambers, Gullone, & Allen, 2009).

Among the most prominent of the therapeutic mindfulness-based interventions is Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1990), initially developed to assist medical patients. More than 18,000 medical and nonmedical patients have participated in the MBSR program at the University of Massachusetts alone (Center for Mindfulness in Medicine, Health Care, and Society, 2010). Clinical evaluation and academic research have established the health benefits of MBSR in clinical and nonclinical populations (for qualitative reviews, see Baer, 2003; Bishop, 2002; Chiesa & Serretti, 2010; for meta-analyses, see Chiesa & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004). Furthermore, thousands of health-care

professionals have been trained to teach MBSR techniques (Duerr, 2004b). Mindfulness has also emerged as a therapeutic practice in psychology (i.e., Mindfulness-Based Cognitive Therapy [MBCT]; Segal, Williams, & Teasdale, 2002). As a variant of MBSR, MBCT has integrated components of cognitive-behavioral therapy (Beck, Rush, Shaw, & Emery, 1979) with mindfulness meditation. It has been shown effective in reducing clinical symptoms and relapses in patients with psychiatric disorders (for review, see Baer, 2003; Chiesa & Serretti, 2010). Clinical psychologists have found mindfulness practices to benefit both clinical populations and therapists; practices such as meditation may lead therapists to feel more empathy toward patients (Delmonte, 1990) and “enjoy their work more fully” (Germer, 2005, p. 11). Preliminary evidence shows that mindfulness meditation training helped psychotherapists achieve significantly better treatment results for their patients (Grepmaier, Mitterlehner, Rother, & Nickel, 2006).

Definitions

The popular press and the scholarly literature have both used the term *mindfulness* to refer to a variety of related constructs, traits, practices, and processes (e.g., Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Bishop et al., 2004; Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007; Chiesa & Serretti, 2010; Grossman, 2008). Grossman (2008) noted: “Mindfulness is a difficult concept to define, let alone operationalize” (p. 405). Despite surface-level confusion about the nature and meaning of mindfulness, agreement exists on its fundamental nature, defined by Brown and colleagues as “*a receptive attention to and awareness of present events and experience*” (Brown et al., 2007, p. 212, italics in original; see also Brown & Ryan, 2003). Put simply, mindfulness is the process of paying attention to what is happening in the moment – both internal (thoughts, bodily sensations) and external stimuli (physical and social environment) – and observing those stimuli without judgment or evaluation, and without assigning meaning to them. Basic-level examples of mindfulness include experiences such as noticing “the positions of our hands and the sensations of holding a knife and bagel,” being aware of “our bodies sitting in the car when we drive,” and noticing the traffic, the road, and the passing scenery (Siegel, Germer, & Olendzki, 2009, p. 21). Thus, awareness and attention are at the heart of mindfulness, but mindfulness also involves attending to stimuli without imposing judgments, memories, or other self-relevant

cognitive manipulations on them (Brown et al., 2007). In the driving example, mindfulness involves noticing heavy traffic but refraining from evaluating it negatively when it is tied up or moving slowly and from ruminating about what traffic might be like on another route. Our working definition of mindfulness draws heavily from Brown and colleagues (see Brown et al., 2007; Brown & Ryan, 2003). We define mindfulness as *a state of consciousness characterized by receptive attention to and awareness of present events and experiences, without evaluation, judgment, and cognitive filters*. Our definition clearly establishes mindfulness as a state of consciousness, given empirical evidence of considerable within-individual variation in mindfulness over time (Brown & Ryan, 2003) and evidence that mindfulness can be cultivated or enhanced through practices and training such as mindfulness meditation (see Brown & Ryan, 2003), loving-kindness meditation (see Fredrickson et al., 2008), and MBSR and MBCT (see Giluk, 2010).

Although we define mindfulness as a state of consciousness, we also recognize that the average frequency with which individuals experience states of mindfulness may vary from person to person, suggesting that people may have trait-like tendencies toward mindfulness (see Brown et al., 2007; Brown & Cordon, 2009; Brown & Ryan, 2003); indeed one line of research treats mindfulness as a stable individual difference (i.e., trait mindfulness) similar to other personality traits (e.g., Brown & Ryan, 2003; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008; Lakey, Campbell, Brown, & Goodie, 2007; Walsh, Balint, Smolira SJ, Fredericksen, & Madsen, 2009; Way, Creswell, Eisenberger, & Lieberman, 2010).

The literature has also examined mindfulness training as a therapeutic technique (e.g., MBSR; Kabat-Zinn, 1990, or MBCT; Segal et al., 2002) that aims to improve the capacity to create more mindful states. One central element of these programs is mindfulness meditation. Our definition suggests that none of these programs nor the mindfulness meditation they incorporate are mindfulness, but rather meditation is a technique used to develop mindfulness (see also Brown et al., 2007; Grossman, 2008). Moreover, we note that mindfulness meditation is just one specific type of meditation and differs from other practices such as concentrative meditation that requires focused attention on a single stimulus such as a word, sound, or candle (see Goleman, 1977; but see also Cahn & Polich, 2006; Germer, 2005; Lutz, Slagter, Dunne, & Davidson, 2008, for the counterargument that concentrative meditation may also develop mindfulness). Thus, mindfulness meditation, but perhaps not all meditation, develops the mindfulness state of nonjudgmental awareness of and attention to internal

and external stimuli. In our review of the literature, we use the term *mindfulness treatment* to refer to mindfulness-based therapeutic programs designed to develop the ability to achieve mindful states (e.g., MBSR), the term *mindfulness meditation* to refer to mindfulness-based meditation practices, and the term *trait mindfulness* to refer to stable individual differences in mindfulness.

Despite our efforts to clarify the mindfulness literature, we acknowledge the difficulty of making clean distinctions. For example, it is not clear whether studies of the brain, which document changes in brain activities during mindfulness meditation, are documenting the effects of mindfulness meditation practices or the state of mindfulness achieved during meditation, or both.

There is also an important stream of mindfulness research in the psychological and organizational literature that does not explicitly have roots in Buddhist philosophy. Langer (1989a) defined mindfulness as an “active information processing” mode (p. 138). Although research based on Langer’s work uses the term mindfulness, her concept, although related, appears to be a distinct phenomenon from our definition of mindfulness as nonjudgmental attention to and awareness of internal and external stimuli. Both approaches focus on ongoing awareness of and attention to stimuli but diverge in considering what individuals do with observations. Rather than observing without judgment, Langer’s conceptualization explicitly includes deliberate cognitive categorization, generating new distinctions, and adapting to changing situations (see Brown et al., 2007; Brown & Ryan, 2003; Langer, 1989b, for a discussion of overlap and distinction of the two mindfulness concepts).

Langer’s work on mindfulness is germane because it partially forms the basis of Weick and colleagues’ theorizing about collective mindfulness in high-reliability organizations (Weick et al., 1999). These authors draw on both Langer (1989a) and Buddhist mindfulness, and define collective mindfulness as an organizational level attribute that involves “a rich awareness of discriminatory detail and a capacity for action” (Weick et al., 1999, p. 88; see also Weick & Putnam, 2006). Collective mindfulness is construed as the result of a set of organizational practices and processes aimed at observing, categorizing, and responding to unexpected events and errors and it is fundamental to high-reliability organizations; (Weick et al., 1999). Recent work on collective mindfulness (Weick & Sutcliffe, 2006, 2007) has shifted somewhat from a focus on action capacities to awareness. Although there are touchpoints with our conceptualization of mindfulness, Weick and colleagues’ work on collective mindfulness operates at the

organizational level and is distinct from the individual state level phenomenon of interest here.

Positive Effects of Mindfulness

What benefits have been established regarding mindfulness and mindfulness-based practices and therapies? First, a burgeoning body of research has reported clear links between mindfulness meditation, mindfulness treatment, and improved physical health. Most of this research has focused on reducing symptoms or distress caused by physical disease. Research has shown that mindfulness treatment (i.e., MBSR, MBCT, and their variants) can reduce pain, decrease symptoms (e.g., Carmody & Baer, 2008; Ljótsson et al., 2010), and increase overall physical health in clinical populations with various health challenges (for qualitative review, see Baer, 2003; for meta-analysis, see Grossman et al., 2004). Mindfulness treatments have also been linked to higher melatonin levels (an indicator of immune function) in nonclinical populations (for review, see Baer, 2003). Mindfulness meditation has been associated with decreased somatic health complaints (Delgado et al., 2010) and improvements in an array of physiological markers including increased cardiac respiratory sinus arrhythmia (RSA; Ditto, Eclache, & Goldman, 2006), increased cardiac output (Ditto et al., 2006), lowered respiratory rate (Delgado et al., 2010), and decreased blood pressure (for qualitative review, see Chiesa & Serretti, 2010) across clinical and healthy populations. Evidence from laboratory settings has suggested that mindfulness is associated with decreased unpleasantness and sensitivity to painful stimuli (Grant & Rainville, 2009; Perlman, Salomons, Davidson, & Lutz, 2010).

Second, mindfulness and mindfulness-based practices have been clearly linked to reduced symptoms of mental, psychological, and psychiatric conditions. Mental health benefits include decreased anxiety (e.g., Biegel, Brown, Shapiro, & Schubert, 2009), depression (e.g., Foley, Baillie, Huxter, Price, & Sinclair, 2010), stress (e.g., Bränström, Kvillemo, Brandberg, & Moskowitz, 2010), psychological distress (e.g., Foley et al., 2010), and overall psychological symptoms (e.g., Carmody & Baer, 2008). Mindfulness treatments have also been associated with reduced anxiety and depression in individuals with chronic conditions such as pain disorders, cancer, diabetes, rheumatoid arthritis, and heart disease (for qualitative review, see Baer, 2003; Chiesa & Serretti, 2010; for meta-analysis, see Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Grossman et al., 2004; Hofmann, Sawyer,

Witt, & Oh, 2010). Mindfulness meditation has been associated with reduced alcohol and substance abuse (for review, see Chiesa & Serretti, 2010) and lowered anxiety (Sears & Kraus, 2009), depression, worry (Delgado et al., 2010), and stress (for review, see Chiesa & Serretti, 2010) in nonclinical populations. Trait mindfulness has been negatively associated with depressive symptoms in healthy young adults and the relationship was fully mediated by affective regulations (Jimenez, Niles, & Park, 2010).

Third, in addition to the well documented mental and physical health benefits of mindfulness and mindfulness-based practices, literature has examined the power of such practices to promote well-being and human flourishing. In clinical populations with heterogeneous diagnoses, mindfulness treatment has improved psychological well-being (Bränström et al., 2010; Carmody & Baer, 2008), overall well-being (for review, see Chiesa & Serretti, 2010), sleep quality (Biegel et al., 2009; cf. Roth & Robbins, 2004), and overall quality of life (Chiesa & Serretti, 2010; Foley et al., 2010; Ljótsson et al., 2010). In nonclinical populations, positive effects of mindfulness meditation include reduced negative affect (Sears & Kraus, 2009; cf. Delgado et al., 2010), increased hope of goal achievement (Sears & Kraus, 2009), positive emotions and life satisfaction (Fredrickson et al., 2008), overall well-being (Falkenström, 2010), and social connectedness (Hutcherson, Seppala, & Gross, 2008). Trait mindfulness has been positively linked to sleep quality (Howell, Digdon, Buro, & Sheptycki, 2008), emotional well-being (Weinstein, Brown, & Ryan, 2009), overall well-being (Howell, Digdon, & Buro, 2010), and intimate relationship quality (Saavedra, Chapman, & Rogge, 2010). Trait and state mindfulness have been negatively associated with hostility and aggression (Heppner et al., 2008).

Finally, a line of neuroscience research has focused explicitly on the effects of mindfulness-based practices on changes in the brain's activity and structure. This line of research has important implications as it suggests neurobiological changes in the brain as the mechanism by which individuals experience improved well-being and reduction of mental and physical distress as a result of mindfulness. One line of research employed electroencephalographic (EEG) techniques to examine changes in the brain's electrical signals during mindfulness meditation in both novices and long-term meditators. Ongoing mindfulness meditation has been associated with increased alpha activity (cf. Treadway & Lazar, 2009), a marker of relaxation and decreased anxiety, increased theta activity, an indicator of reduced trait and state anxiety, and increased gamma activity, an indicator of affect regulation. Mindfulness meditation has also been associated with increased left prefrontal activation in lateralized EEG, which signals positive

affective states, and the absence of alpha-blocking habituation, which indicates mindful awareness of stimuli (for review, see Cahn & Polich, 2006; Chiesa & Serretti, 2010; Treadway & Lazar, 2009).

Other research has used functional magnetic resonance imaging (fMRI) techniques to examine activation of specific brain regions during mindfulness meditation and enduring brain structure changes in experienced meditators. Changes observed during mindfulness meditation include activation in the areas of the brain associated with emotional regulation, attentional regulation, enhanced attentional focus, and heightened awareness of internal bodily sensations (for review, see Cahn & Polich, 2006; Chiesa & Serretti, 2010; Treadway & Lazar, 2009). Researchers have found that long-term meditators show increased thickness of brain regions (e.g., middle prefrontal cortex [mPFC]) associated with internal awareness and attention (for review, see Chiesa & Serretti, 2010; Treadway & Lazar, 2009) and areas associated with reduced pain sensitivity (Grant, Courtemanche, Duerden, Duncan, & Rainville, 2010). Trait mindfulness has been linked to the brain's neural activities. Recent fMRI studies found trait mindfulness is associated with increased prefrontal cortex (PFC) activity (Creswell, Way, Eisenberger, & Lieberman, 2007; Frewen et al., 2010) and decreased amygdala activity (Creswell et al., 2007; cf. Frewen et al., 2010) during affect-related tasks, suggesting better affective regulation among individuals high in dispositional mindfulness, which may explain why such individuals experience less depression (Way et al., 2010). Thus, neurobiology research suggests mindfulness-related changes in brain activities and structures are related to heightened awareness, positive mental experiences, and attentional, affective, and physiological regulation.

CORE PROCESSES LINKING MINDFULNESS AND SELF-REGULATION

As discussed in the preceding text, a large and growing body of literature affirms that mindfulness and mindfulness-based practices have beneficial effects for a variety of outcomes in clinical and nonclinical populations. Yet scholars and researchers have only recently begun to carefully examine the process and mechanisms behind these effects. Reviews of the mindfulness literature converge in identifying the central outcome of mindfulness: *improved self-regulation* of thoughts, emotions, behaviors, and physiological reactions. As our goal here is to explore the potential effects of mindfulness

on employees' functioning at work, we draw from neuroscience, psychology, and medicine to develop propositions about how mindfulness and mindfulness-based practices will influence work behaviors, performance, and well-being. Although there is considerable agreement that mindfulness improves self-regulation, our goal is to dig more deeply into the processes by which that occurs.

In Fig. 1, we present a model linking mindfulness to its outcomes, via a series of core and secondary mental and neurobiological processes. We identify two core mental processes and one core neurobiological process that are affected by mindfulness: (a) a decoupling of the self (i.e., ego) from events, experiences, thoughts, and emotions; (b) a decrease in automaticity of mental processes in which past experiences, schemas, and cognitive habits constrain thinking; and (c) increased awareness and regulation of physiological systems. In addition to these three core processes, we identify seven additional, secondary processes by which mindfulness-based practices are expected to improve employee functioning: (a) decreased rumination, (b) greater empathy, (c) increased response flexibility, (d) improved affective regulation, (e) increased self-determination and greater persistence (f) enhanced working memory, and (g) greater accuracy in affective forecasting. We suggest that, in concert, these three core and seven secondary processes form a series of pathways by which mindfulness and mindfulness-based practices lead to improved self-regulation and, ultimately, higher functioning.

As we describe the secondary processes, we provide evidence from the literature linking them to mindfulness, as well as outlining their expected work-related outcomes. We also draw on interviews the first three authors conducted as part of a larger mindfulness research project. Through a local

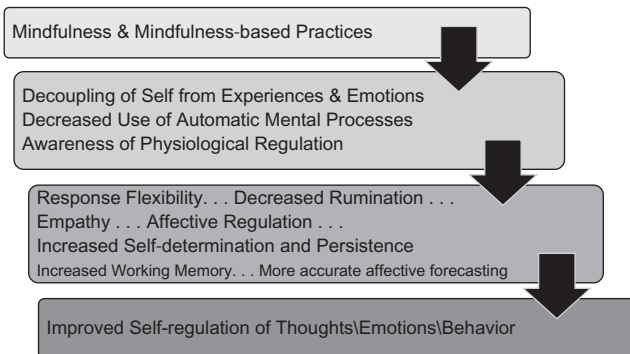


Fig. 1. Core and Secondary Processes Linking Mindfulness to Self-Regulation.

meditation center, we recruited 20 employed individuals who had been regularly practicing mindfulness-based practices for at least 1 year. In one-hour interviews, we asked participants how their mindfulness-based practices influenced their attitudes, emotions, thoughts, and behaviors on the job. We use observations from three of these interviews to illustrate the secondary processes in action.

Decoupling of the Self from Experiences, Events, and Mental Processes

One of the key mechanisms by which mindfulness affects self-regulation is by creating a separation between the self (e.g., ego, self-esteem, self-concept) and events, emotions, and experiences. Mindfulness-based practices aim to train individuals to observe internal and external stimuli objectively, creating meta-awareness. As such, most mindfulness training involves noticing, observing, and naming stimuli without evaluating or assigning meaning to them. This leads individuals to create distance between themselves (and their self-worth) and their thoughts, emotions, and experiences. This process has also been described as “de-centering” in which one “view[s] thoughts as events in the mind rather than necessarily being reflections of reality or accurate self-view” (Feldman, Greeson, & Senville, 2010, p. 1002).

When ego involvement in a negative situation is high, people feel their self-worth is under attack (Kernis, Paradise, Whitaker, Wheatman, & Goldman, 2000), but when the ego is separated from events, negative events are decoupled from the self and become less threatening. For example, before an important sales presentation, a salesperson might interpret thoughts about what could go wrong or potential failure as “just those nerves talking,” rather than as a valid indication of inadequacy. The literature has supported the idea that mindfulness and mindfulness-based practices are associated with a decoupling of the self from experiences. Hargus, Crane, Barnhofer, and Williams (2010) found that 8 weeks of mindfulness training was associated with a significant improvement in meta-awareness, demonstrating that mindfulness can help people “learn to uncouple the sensory, directly experienced self from the ‘narrative’ self” (Williams, 2010, p. 1). Preliminary evidence has indicated that even temporarily heightened mindfulness (via experimental manipulation) increases separation between self-worth and experiences such as interpersonal rejection (Heppner & Kernis, 2007). Although existing neurobiological research has not yet explicitly tested the decoupling hypothesis, Davidson (2010) suggested that the brains of mindfulness practitioners might reveal “decreased connectivity between emotion

processing and self-relevant processing” (p. 10) areas of the brain. For example, one study found that when subjects were exposed to a manipulation designed to induce sadness, those who were trained in mindfulness techniques reported just as much sadness as others, but their fMRI scans showed less activity in the brain regions associated with self-referential processing. These differences in neural patterns “may stem from the objectification of emotions as innocuous sensory information rather than as affect laden threats to the self” (Farb et al., 2010, p. 31).

Decreased Use of Automatic Mental Processes

A second core process by which mindfulness leads to improved self-regulation is via decreased automaticity of mental processes. Through the process of *automaticity*, engrained brain states mold awareness of present-day experiences (Siegel, 2007). Automaticity of thinking can arise from different sources including prior experiences, entrenched mental models, and bodily responses based on prior experiences. Offering individuals a clear survival benefit (i.e., quick information processing and responses), automaticity has the unfortunate consequence of restricting individuals’ perceptions and experiences of the present moment. In a sense, automaticity hijacks the ability to fully experience the present moment. Although automaticity provides mental efficiency, it diminishes present-moment awareness, control, and intent (Bargh, 1994). For example, we may find ourselves responding to colleagues without really listening to the conversation because we believe we already know where the conversation is going. We may complete a task without recalling actually doing it or head to the store to get groceries and end up in the parking lot at work, all because of deeply ingrained, automatic responses.

Engaging in mindfulness disrupts automaticity of thought patterns and habits as individuals move from heuristic modes of information processing to more systematic modes (Chaiken, 1980). Through the simple act of observing thoughts arising in the mind, mindful nonjudging awareness allows one to disengage from: (a) automatic thought patterns and (b) perceptual filtering driven by emotions and schemas from the past (Siegel, 2007). As Shapiro and colleagues noted, “We experience what *is* instead of a commentary or story about what is” (Shapiro, Carlson, Astin, & Freedman, 2006, p. 379, italics in original).

As a result, the range of responses is increased because responses are no longer constrained by automaticity. Mindful awareness allows individuals to

consciously sense and shape their thoughts and to have greater cognitive flexibility in response to thoughts (Siegel, 2010). The flipside of reduced automaticity is that mindfulness may promote “relatively more thorough attention to the external environment” (Herndon, 2008, p. 33). For example, Radel, Sarrazin, Legrain, and Gobance (2009) showed that students higher in trait mindfulness were immune to a motivational manipulation using unconscious priming; they were less influenced by automatic processes.

Awareness of Physiological Regulation

The third major process through which mindfulness influences self-regulation is through generating bodily awareness and concomitant physiological regulation (Siegel, 2010). Much like the process of “thought observation” described in the preceding text, present-moment nonjudgmental awareness of one’s physiological state promotes a more balanced regulation of the body’s physiological response systems (e.g., approach–avoidance, fight–flight, inhibition–activation systems). Coordinated by the brain’s mPFC via the sympathetic (activation) and parasympathetic (inhibition) nervous system, these physiological response systems are designed to work in balance and coordination with another. When physiological activation reaches too high a threshold, the mPFC is overloaded and unable to modulate the firing of the limbic system, which leads to myriad undesirable affective (i.e., anger, anxiety) and physical consequences (i.e., heart palpitations, gastrointestinal distress) (Siegel, 2007). As Siegel (2010) noted, without the coordination of the activation and inhibition systems people are likely to “burn out, revving up” when they need to slow down (p. 27). When balanced, however, these brain systems can generate feelings of calm, connection, and physical well-being (Cozolino, 2006). Thus, increased attention to and awareness of the body’s physiological response systems can help individuals better interpret and respond to messages from the body.

SECONDARY MINDFULNESS PROCESSES

As presented in Fig. 1, the mental and neurobiological processes associated with mindfulness and mindfulness-based practices lead to more distal processes that influence employees’ ability to effectively regulate their thoughts, behaviors, and emotions at work. In this section, we turn our focus explicitly to these processes, with a special emphasis on how these

processes might be expected to affect employee performance and well-being at work. We explicitly link each process to one or more of the core processes described in the preceding section. We provide empirical evidence for each process, suggest ways in which the process would affect employees' functioning at work, and, where available, provide illustrations of these processes from our interviews. In [Table 1](#), we provide a summary of the

Table 1. Potential Effects of Secondary Processes of Mindfulness on Employee Performance and Well-Being.

Mindfulness-Based Process	Possible Work-Related Effects
Response flexibility	<ul style="list-style-type: none"> • Improved decision making • Improved communication
Decreased rumination	<ul style="list-style-type: none"> • Improved coping with stressful events • Faster recovery from negative events • Increased confidence and self-efficacy • Better problem solving • Improved concentrations • More effective use of social support
Empathy	<ul style="list-style-type: none"> • Increased interactional and informational justice • Reduced antisocial behavior • Increased organizational citizenship behaviors • Positive leadership behaviors
Affective regulation	<ul style="list-style-type: none"> • Improved communication • Improved coping with stressful events • Faster recovery from negative events • Fewer accidents
Increased self-determination and persistence	<ul style="list-style-type: none"> • Increased goal-directed effort • Improved task performance • Greater learning • Increased job satisfaction • Increased organizational commitment • Increased performance on creative tasks
Increased working memory	<ul style="list-style-type: none"> • Reduced negative affect • Improved ability to handle multiple demands • Ability to perform under stress
More accurate affective forecasting	<ul style="list-style-type: none"> • Less biased decision making • More accurate expectations • Less frustration and negative emotion

cognitive and emotional process related to mindfulness and their proposed work-related effects.

Response Flexibility

[During a meditation retreat] my teacher was talking about a kind of reptilian inherited kind of restlessness – jump! jump! jump! jump! – that we probably inherited because we needed to, and I tend not to respond to that ... which I think is wise. Now when someone comes to me with something [at work], instead of giving a fast glance I find myself staring a lot at people ... just kind of slowing down, you know ... and I try to come to some wisdom before I answer ... and if that turns out not to be wise, or not wisdom, then switching it. But I don't think I'm nearly as impulsive as I would be if I didn't practice, that's for sure.

– Mindfulness Meditator (Participant #3)

Response flexibility can be defined as the ability to pause before taking verbal or physical action (Siegel, 2007). Response flexibility occurs when one is able to pause before responding to an environmental stimulus. In the words of our study participant, response flexibility is characterized by a “slowing down” and deeper consideration of the situation (“come to some wisdom”) before responding to workplace events and interactions. Allowing time and space to reflect and consider multiple, nonautomatic ways of responding offers more opportunities for optimal outcomes and functioning. Rather than responding to workplace events habitually and invariantly, response flexibility allows one the power to act in alignment with one's goals, needs, and values (Brown et al., 2007). As our interviewee indicated, mindfulness promotes a slowing down of one's response and more thoughtful consideration of how (and whether) to react to work events rather than “jump” impulsively and reactively.

A growing body of evidence suggests that mindfulness plays a significant role in heightened response flexibility across a variety of situations ranging from gambling to interpersonal communication (e.g., Bishop et al., 2004; Chatzisarantis & Hagger, 2007; Lakey et al., 2007; Wenk-Sormaz, 2005). Responding in a flexible manner requires not only a delay in response but also a careful assessment of the situation, the available response options, as well as an ultimate initiation of action (Siegel, 2007). This type of executive self-control is initiated in large part by the mPFC, which, as noted in the preceding text, is activated by mindfulness. All three core processes delineated in the preceding text appear to play a role in generating a capacity for flexible responding. *Physiological regulation and awareness* allows one to assess environmental stimuli without experiencing

physiological activation of the fight-or-flight response system in which high levels of physiological arousal overload the mPFC and override the ability to think and to choose reactions (Cozolino, 2006). Mindfulness also facilitates response flexibility through the nonreactive, nonjudging aspects that characterize two of our other core processes – *decoupling* and *decreased automaticity*. Through decoupling and decreased automaticity, individuals recognize that thoughts and reactions to an event are not an objective reality requiring immediate alteration or response (Chambers et al., 2009).

As such, the range and optimization of possible behavioral responses grows. In the workplace, we suspect that increased response flexibility would contribute to a more productive environment in a variety of ways including fewer instances of escalating conflict and displaced aggression in response to perceived threats and disagreements and improved decision making because reactive decision making would be less likely (i.e., escalation of commitment).

Decreased Rumination

I find that meditation lets you just have an emotion, and it's so hard to not get caught up in them. But you can take a breath and step back and say "Oh! I'm feeling really angry!" And a lot of times that lets you do something different and not just do your habitual response. It's helped with my emotions quite a bit ... But it's also helped me be aware of thought patterns that keep occurring ... that you really get trapped in. And you can spend a lot of time there if you can't step back and say "Oh! Here I am having this argument with myself again!" And I find with both the emotional kind of habits and thought habits ... I think it really helps me to just stop, step back and see it, you know?
– Mindfulness Meditator (Participant #1)

When individuals are confronted with events that would normally provoke negative thought patterns, a mindful orientation makes them less likely to engage in rumination – a repetitive and passive focus on symptoms, causes, and consequences of distress (Nolen-Hoeksema, 1991). Because mindfulness leads to a separation of the self from the experience or emotion, and because it reduces automatic responding, individuals who practice mindfulness engage in less rumination, leading them to better cope with stressful events (Broderick, 2005).

Absent the power of mindfulness to decouple and reduce automaticity, rumination will follow certain stimuli as individuals attempt to make sense of and resolve discrepancies between what is happening and what they desire to happen. As our interviewee noted, rumination can “trap” one in a spiral of negative and unproductive thoughts. In a mindful state, individuals are

aware of their thoughts, but can separate them from their self-view and avoid evaluating their thoughts as good or bad. Indeed, more adaptive coping with change or with adverse experiences at work was one of the common themes that emerged in our interviews.

In terms of the empirical evidence, a clear link exists between mindfulness and mindfulness-based techniques and decreased rumination among clinical and nonclinical populations. Research has suggested that individuals who participated in mindfulness programs reported less ruminative thinking in response to life events (Ramel, Goldin, Carmona, & McQuaid, 2004), even when the events were similar to those experienced by others who had no mindfulness training (Goldin & Gross, 2010). Trait mindfulness also has been associated with less rumination. Frewen, Evans, Maraj, Dozois, and Partridge (2008) found associations between trait mindfulness [as measured by the Mindful Attention and Awareness Scale (MAAS; Brown & Ryan, 2003) and the Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, & Allen, 2004)] and less difficulty “letting go” of negative automatic thinking (depressive, worry, or social fear cognitions). Verplanken, Friborg, Wang, Trafimow, and Woolf (2007) found moderate negative correlations between the MAAS and a scale of habitual negative thinking as well as rumination.

Individuals who engage in ruminating thought patterns are at greater risk for poor concentration (Ingram & Smith, 1984), depressed mood (Nolen-Hoeksema & Morrow, 1991), low self-efficacy (Brockner & Hulton, 1978) and are more likely to alienate those who might provide social support (Nolen-Hoeksema & Davis, 1999). Conversely, individuals who are less prone to rumination after stressful events report fewer work-related health complaints. Accordingly, we suggest that a reduction in rumination resulting from mindfulness will have broad ranging effects on employees’ performance and well-being, via improved confidence, better problem solving, more effective use of social support mechanisms, and better concentration. In addition, a reduction in rumination will lead to faster recovery from negative workplace events.

Empathy

The other part was ... working with compassion outside of class, like really looking at how damaged my students are and how ... how many holes they have in their life and how wounded they are ... really looking at their pain and their confusion and their traumas and dramas and ... really feeling how hard it is to be a teenager in this world, and really just feeling it, like how inherently shitty their circumstances are ... Once you

feel that, then you're not so angry because ... you feel like, well, just try to help them. You know, just try to ... make them smile and just pat them on the back, and try to make their life a little less hard. That becomes the goal ... being friendly and being kind and just understanding that this is really hard for them ... kind of coming at it from their point of view.

– Mindfulness Meditator (Participant #3)

Empathy is the ability to see life from another's perspective. Empathy allows us to be attuned to others, to resonate with them, and to have compassion (Cozolino, 2006). As suggested in the quote above, empathy enabled our interviewee to see how deeply wounded the students were. Our interviewee altered his/her behavior to better connect with them, offering kindness and compassion rather than judgment. Through empathy, individuals are able to consider the larger social picture, moving out of "survival mode" by considering what actions are best for others (Siegel, 2007). How is mindfulness related to empathy? Building on a growing body of work, we see several links between mindful awareness and empathy via its links to decreased automaticity and decoupling and increased physiological awareness and regulation (Block-Lerner, Adair, Plumb, Rhatigan, & Orsillo, 2007; Brems, Fromme, & Johnson, 1992; Brown et al., 2007; Cozolino, 2006; Hughes, Tingle, & Sawin, 1981; Shapiro, Schwartz, & Bonner, 1998; Siegel, 2010; Tipsord, 2009).

As the Dalai Lama (2002, p. 67) noted, "Ultimately, how we act and behave in relation to our fellow humans and the world, depends on how we perceive ourselves." With empathy, one must be able to simultaneously "hold one's own perspective in mind while simultaneously imagining what it is like to be the other" (Cozolino, 2006, p. 203). The ability to perceive the self as it is without the constraints of automaticity is a key feature of mindfulness. Indeed, it is difficult for individuals to be aware of others' perspectives if they are unaware of their own. In essence, nonjudgmental, present-moment awareness (i.e., mindfulness) of one's own internal thoughts facilitates empathy for the internal states of others (Block-Lerner et al., 2007). Through mindfulness generated meta-cognitive awareness, individuals can develop the capacity to understand their own internal emotional processes, which can help them better understand the emotional processes of others (Teasdale et al., 2002). A cycle of mutual reinforcement develops where *intrapersonal* attunement promotes *interpersonal* attunement (Siegel, 2007). A growing body of social neurobiology research indicates that our capacity to be attuned to others depends, in part, on our knowledge of our own mind and internal state (Siegel, 2010).

Second, a growing body of research indicates that *physiological awareness and regulation* promotes empathy (e.g., Cozolino, 2006). In the process of attuning and resonating with others, individuals use subcortical data (i.e., heart rate, limbic system) to guide their responses. The act of empathy requires individuals to experience, emotionally and physiologically, the inner experience of others. As part of the empathy process, the physiological and limbic systems send signals to the body and brain allowing individuals to literally feel what the other person is experiencing.

Third, mindfulness increases our ability to tolerate negative emotions in ourselves and others (Tipsord, 2009). Having true empathy requires a tolerance for and regulation of the negative internal states of others and those that arise in ourselves as a consequence. By observing and not reacting to our own negative states (i.e., decoupling) we can better tolerate our own negative states and the negative states of others. Without the ability to regulate our own negative emotional states, we can become flooded with the negative emotions of others, limiting our ability to remain attuned and compassionate.

Higher levels of empathy are clearly desirable for organizational members at all levels (Kamdar, McAllister, & Turban, 2006; Patient & Skarlicki, 2010). Organizational members who have higher levels of empathy for their colleagues demonstrate higher levels of interactional justice (i.e., lower levels of sexual harassment and antisocial behavior; Douglas & Martinko, 2001; O’Leary-Kelly, Bowes-Sperry, Bates, & Lean, 2009), informational justice (Patient & Skarlicki, 2010), organizational citizenship behaviors (Kamdar et al., 2006; Kidder, 2002), and positive leadership behaviors (Kellett, Humphrey, & Sleeth, 2002; Scott, Colquitt, Paddock, & Judge, 2010). Empathy may be particularly important in certain occupations that require greater compassion. For example, in one study of medical students, an MBSR training program increased self-reported empathy over preprogram levels (Shapiro et al., 1998). Thus, if mindfulness can imbue employees with empathy, we would expect positive organizational and individual outcomes.

Affective Regulation

... just even being in a positive state of mind ... you know, I’ve only been here two years after being gone for ten and I hate winter and, just using a practice while walking to the bus of dis-identification with the experience of having it be twenty below, freezing, and it’s 5:30 in the morning. You know, I’d instantly just go to agitation. But the practice has taught me just to watch it and even have a sense of humor about it If I go to the bus with agitation and I got to work with agitation, I’m not going to be very productive.

– Mindfulness Meditator (Participant #2)

Affective regulation comprises the reduction of negative emotions as well as the generation and maintenance of positive emotion. Our interviewee captured the essence of affective regulation and its benefits. Rather than be distressed by the cold, by using mindfulness practices this meditator eliminated “agitation” about external conditions beyond their control.

Mindfulness (state and trait) has been linked to both facets of affect regulation (generating positive emotions, down-regulating negative emotions when they arise; e.g., Fredrickson et al., 2008; Giluk, 2009, 2010) in large part because mindfulness enhances the brain circuits responsible for emotional regulation (Davidson, 2000; Siegel, 2007). Specifically, enhanced left prefrontal activation seems to be a critical trigger of positive emotion, approach motivation, and increased ability to modulate negative moods arising from the firing of the limbic system. Building on the growing literature in this area (e.g., Urry et al., 2004), we assert that two core processes – awareness and regulation of one’s physiological states combined with decoupling of the self from experiences and emotions – play a key role in affect regulation.

In terms of the influence of mindfulness on *positive emotions*, meta-analytic evidence indicates a positive association between mindfulness and positive mood states (i.e., PA; Giluk, 2009). Although challenging situations deplete important self-regulatory resources (Tice, Baumeister, & Zhang, 2004), positive mood states “restore and replenish” these resources, allowing individuals to persist (Giluk, 2010, p. 55). Greater awareness promoted by mindfulness may enhance the experience of and engagement with positive emotions (Erisman & Roemer, 2010; Tomarken, Davidson, & Henriques, 1990). In other words, a cycle of positivity may develop through mindfulness, as individuals are more likely to notice positive events in their lives and thus experience more positive moods.

According to Brown and his colleagues (2007), mindfulness is also associated with acceptance of emotional states and enhanced ability to repair negative states. Further evidence of the role of mindfulness in regulating negative affect comes from a study by Hariri, Bookheimer, and Mazziotta (2000) in which the simple act of observing a negative emotion and labeling it without judgment decreased limbic system activation, which subsequently reduced felt and expressed negative emotions. It appears that mindfulness driven mPFC activation modulates limbic system activation in response to negative emotions (Siegel, 2007).

In terms of the workplace, a significant body of extant work has documented the benefits of increased positive mood and decreased or regulated negative affective experiences (Bono & Ilies, 2006; Isen, 1987;

Losada, 1999; Lyubomirsky, King, & Diener, 2005; Miner, Glomb, & Hulin, 2005). For example, Lyubomirsky and her colleagues (2005) demonstrated that positive affect generates success in multiple life domains. Likewise, Fredrickson and her colleagues (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Fredrickson, 1998; Fredrickson et al., 2008) suggested that positive emotions enable individuals to build important cognitive, physical, and social resources such as resilience. Moreover, employees who tend to experience more positive moods are more sensitive to the reward signals in the environment such as pay raises and other forms of recognition (e.g., Shaw, Duffy, Mitra, Lockhart, & Bowler, 2003).

The regulation and reduction of negative emotion also has clear implications for employee functioning (see Brief & Weiss, 2002). For example, individuals who experience chronically negative mood states are more likely to be victimized at work and to be perpetrators of workplace aggression (e.g., Aquino, Grover, Bradfield, & Allen, 1999; Tepper, Duffy, Henle, & Lambert, 2006). Leaders' negative mood states have been linked to followers' moods and group processing effects as well (Sy, Côté, & Saavedra, 2005).

Increased Self-Determination and Persistence

I do this job because ... it's working with humans, but also it's essential to me that I have a right livelihood you know ... that's very important to me. I mean, I don't want a job that wouldn't fall under the category of right livelihood or direct contact with people in need.

– Mindfulness Meditator (Participant #2)

Brown and Ryan (2003) argued that individuals acting mindfully behave in accord with their underlying values and interests. They reported a positive association between the experience of mindful states and feelings of autonomy, a key component of self-determination. Additionally, Shapiro et al. (2006) suggested that the detached observation developed in mindfulness training allows greater recognition of what is valued, and increased likelihood that individuals will choose behaviors in alignment with those values. The reduced automaticity associated with mindfulness leads individuals to “*reflectively* choose what has previously been *reflexively* adopted or conditioned” (Shapiro et al., 2006, p. 380), ultimately creating greater congruence between values and actions, which is at the heart of self-determined behavior. Because mindful individuals better understand their goals and values, and act more congruently with them, their intentions are better predictors of their behavior. This proposition is consistent with the

predictions of self-determination theory (Ryan & Deci, 2000) and was supported empirically by Chatzisarantis and Hagger (2007), who found that intentions for physical activity in leisure time predicted actual physical activity among individuals high in trait mindfulness.

Greater alignment between goals and values is also associated with persistence toward goal accomplishment. Self-determined goals elicit more effort (Bono & Judge, 2003; Sheldon & Elliot, 1999) and also lead to greater persistence, even in the face of challenges. Mindfulness also reduces the extent to which people see barriers to goal accomplishment, or obstacles in goal pursuit, as indications of their competency (e.g., decoupling of self from experiences). Challenges often trigger derailing negative, self-critical, reactive, and judgmental thoughts. As individuals attempt to avoid dealing with these challenging threats to self, persistence lags (Teasdale, Segal, & Williams, 1995). By allowing negative thoughts to occur without judgment and reaction, the thoughts and concomitant frustration dissipate, allowing successful goal pursuit (Brown et al., 2007). Empirical evidence has supported the notion that mindfulness plays a significant role in persistence (e.g., Evans, Baer, & Segerstrom, 2009). Rather than being absorbed in a dysfunctional cycle of rumination, mindfulness helps people maintain cognitive focus (Chambers et al., 2009; Chambers, Lo, & Allen, 2008). We suggest this occurs because mindful people are pursuing goals that are important to them, and mindfulness helps them cope more effectively with obstacles.

The implications for increased self-determination and persistence at work are broad reaching. Existing research links goal self-concordance directly to job satisfaction and organizational commitment (Bono & Judge, 2003), increased job satisfaction (Judge, Bono, Erez, & Locke, 2005), and increased effort and performance on creative tasks (Bono & Judge, 2003). Additionally, Sheldon, Turban, Brown, Barrick, and Judge (2003) suggested that self-determination increases goal-commitment and learning efforts, and ultimately increases learning. A series of studies also link goal self-concordance to increased effort, improved goal attainment, and greater satisfaction with goal attainment (Sheldon & Elliot, 1999). In summary, we expect that mindfulness, primarily via reduced automaticity of thought, will lead employees to both be more productive and to experience greater satisfaction from their work.

Other Secondary Processes

So far we have identified major processes we believe to be central in the operation of mindfulness. However, the literature has provided suggestive

evidence for additional processes. In the following text, we detail two such processes: increased working memory capacity and more accurate affective forecasting. Although these issues did not arise directly in our interviews, empirical evidence suggests that mindfulness may increase working memory and improve affective forecasting.

Increased Working Memory

Working memory or “the cognitive mechanism that allows us to keep a limited amount of information active for a limited period of time” (Elzinga & Roelofs, 2005, p. 98), plays a key role in self-regulatory processes because it is used to manage cognitive demands and to regulate emotions (e.g., Schmeichel, Volokhov, & Demaree, 2008). The existing literature has provided considerable evidence that highly stressful or demanding situations deplete working memory capacity, partly because stressful or other physiologically and emotionally activated situations cause the adrenal glands to release stress hormones (e.g., cortisol) to meet situational demands (e.g., Roozendaal, 2002). Although helpful in activating response systems, elevated cortisol levels in stressful situations have the unfortunate consequence of inhibiting working memory (Oei, Everaerd, Elzinga, Van Well, & Bermond, 2006). Indeed, working memory is considered to be one of the memory functions most affected by cortisol (Elzinga & Roelofs, 2005).

Given the link between mindfulness and physiological balance and awareness, and building on the growing research in this area (e.g., Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010), we propose that mindfulness meditation will improve working memory in work settings. In a recent study of military employees, Jha and her colleagues (2010) hypothesized and found that mindfulness practices protected working memory from degradation during a stressful predeployment phase for soldiers who completed an 8-week mindfulness training program. Results confirmed an increase in working memory capacity for soldiers who were trained and who practiced and degradations in working memory capacity for those who were trained but did not practice, consistent with expectations for individuals in stressful environments. Jha and her colleagues proposed that mindfulness may help cultivate a “working memory reserve” (p. 62). In addition, they found that the increase in working memory capacity associated with mindfulness training led to reduced negative affect.

Although not a focus of their study, this research is also consistent with the notion that mindfulness is associated with improved self-regulation because it affects the brain’s capacity for balanced physiological regulation.

As noted in the preceding text, when individuals become more aware of their bodily states, they are more able to regulate their levels of physiological activation and responses to negative thoughts and emotions. Consequently, unhealthy stress hormone production (i.e., cortisol) is reduced, allowing working memory to function more effectively, which suggests that mindfulness may be especially important for effective performance in the workplace when multiple demands or stress-inducing conditions prevail.

Improved Accuracy in Affective Forecasting

Affective forecasting refers to an individual's ability to accurately predict their emotional responses to future events (Wilson & Gilbert, 2003). It has been well established that people are generally poor at anticipating future emotions; they are unable to accurately predict how they will feel following emotionally charged events (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). They tend to predict they will be happier than they actually are after positive events and to predict that they will be unhappier than they actually are following negative events. Mindfulness may lead to improvements in affective forecasting by reducing the impact bias (i.e., overestimating the emotional impact of a future event), because mindfulness allows people to consider emotions and emotional experiences as separate from the self, and because it reduces automaticity of thought. In one study of a sample of 188 young adults who forecasted their emotions for the weeks following the 2008 presidential election, Emanuel, Updegraff, Kalmbach, and Ciesla (2010) found that trait mindfulness was associated with more moderate affective forecasts and decreased impact bias.

Errors in affective forecasting are important in the workplace because they introduce bias into decision-making processes when individuals overweight their own or others' reactions to future occurrences. More accurate affective forecasting is expected not only to improve employee performance via improved decision making, but is also expected to improve well-being because of greater alignment between expectations and reality, which eliminates the disappointment, negative emotions, and frustration that follow from unmet expectations.

KEY WORK-RELATED BENEFITS OF MINDFULNESS

Our central purpose in this manuscript was to link mindfulness and mindfulness-based processes to employees' performance and well-being at work. In examining the cognitive, emotional, and neurobiological processes

linking mindfulness with improved self-regulatory capacity in the workplace, three central themes emerge. First, mindfulness is associated with factors expected to influence relationship quality. Second, mindfulness is linked to processes indicative of resiliency. Third, mindfulness is linked with processes expected to improve task performance and decision making. In the following sections, we focus explicitly on the ways mindfulness and mindfulness-based practices lead to more positive relational functioning at work, how they build resiliency, and how they improve task performance and decision making. The three outcomes we focus on are inextricably linked, but we discuss them independently because they represent distinct work-related outcomes.

Improved Social Relationships

There are two things I think that I'm really aware of how [mindfulness] helped me, and one of them is relationships. It's that pause ... I mean I can think of instances where I was having a disagreement with either a co-worker or a student, and just being able to, like, just come back to myself and realize ... a lot of times what I actually realize is they're upset but I don't think I have to be (laughter). And boy, that can be so helpful. Many times that either just settles it down or at least ... at least I'm not all upset about it. I mean I certainly do get upset at times ... there's things that happen but ... that's one thing with relationships that helps tremendously.

– Mindfulness Meditator (Participant #1)

A fundamental finding of social psychological research is that individuals thrive through positive social connections with others (Baumeister & Leary, 1995). Positive social connections in a work setting are no exception. A growing body of work indicates that positive workplace relationships build critical resources that protect individuals from workplace stressors, and foster employee thriving, communication, creativity, and citizenship behaviors (e.g., Dutton & Heaphy, 2003; Harter, Schmidt, & Hayes, 2002; Thau, Aquino, & Poortvliet, 2007). We submit that mindfulness will promote these positive social connections.

How does mindfulness foster positive social connections in the workplace? Many processes may contribute to improved workplace relationships, but we note the special importance of *empathy* and *response flexibility*, both markers of the internal attunement associated with mindfulness in which one is distinctly aware of one's own physical and emotional signals, which allows enhanced sensitivity to others' signals *without subsequent reactivity* (Davidson, 2000; Siegel, 2007). Thus, individuals who practice mindfulness should be better poised to respond to colleagues with greater acceptance and

without unskillful reactivity. In essence, mindfulness promotes healthy ways of relating to others in the workplace (Giluk, 2010), which include taking another's perspective and reducing habitual reactions that may be dysfunctional or promote escalation. As indicated in the preceding quote, the practice has allowed the mindfulness meditator to communicate more openly and to resolve conflict without negative contagion and escalating patterns of tit-for-tat behaviors, instead being more accepting of others and their imperfections.

Recent research has turned to the role of mindfulness in facilitating the quality of interpersonal connections as well (e.g., Hutcherson et al., 2008), and studies suggest that mindfulness training may be related to greater social connectedness (e.g., Cohen & Miller, 2009). This sense of connection may be important for the workplace as individuals higher in social connectedness tend to display more desirable interpersonal behaviors (e.g., OCBs, received and perceived social support) than those lower in social connectedness (Fredrickson et al., 2008). In many ways, positive interpersonal relationships are a critical determinant of optimal organizational functioning (Duffy, Ganster, & Pagon, 2002), thereby underscoring the important role of mindfulness in work relationships.

Increased Resiliency

... you get really sensitive, like, to people's energy, like ... my [boss name], she's the exact opposite of me, she's like really tight ... she's retiring this year, she's very old, she's been doing it for way too long and she's burnt out, she's really whipped up and she's very tight. And I notice I respond to her with calmness "Be at ease, be at ease" like this, and I want to walk away because she's so intense! Like her body, and her language. At first when I was really sensitive I just wanted to, like, get out of there! I just couldn't deal with her energy, ... but now I've just learned how to, like, just kind of be with it, and it feels good that I can really just listen to her go off and just ... and ... just stay with her. But not feel drained by her. It was draining listening to her at one point, and now it's just like "Just let it move through me, don't resist and don't kind of like react, respond, just take it all in." And then she feels better because I'm not reacting, I'm not getting caught up in her drama, 'cause that's what sometimes happens, you get caught up in each others' dramas and just kind of whip it up. When you don't, and they vent, you still feel calm, and that way you don't have to avoid. I used to avoid people because I didn't want to deal with their shit. But now I don't have to, it's like "Alright, give me your shit, what's wrong?"

– Mindfulness Meditator (Participant #3)

The desire to avoid unpleasant and challenging situations, such as the one described in the preceding text by our study participant, is common.

Although offering temporary respite from adversarial conditions, in the long-term such avoidance behavior is maladaptive. Withdrawal tendencies (e.g., “I wanted to get out of there!”) deprive individuals of the opportunities to achieve goal-relevant behaviors and activities necessary for thriving (Urry et al., 2004). Conversely, a convincing body of evidence suggests that approach tendencies (e.g., engaged thinking and interacting with others and one’s environment) are associated with well-being and thriving (Urry et al., 2004). To engage in approach behaviors and experience their associated well-being effects, individuals must be resilient in the face of challenge and difficulties.

How does mindfulness generate resilience? Although resilience is likely to be fostered through several of the mechanisms posited in the preceding text, we highlight the role of two processes associated with mindfulness – affective regulation and persistence. Approach behavior requires persistence as well as the maintenance of positive affect and well-being in the face of adversity (Chambers et al., 2009; Davidson, 2000). Another central feature of resilience is the capacity to be nonreactive to one’s thoughts and emotions and to accept them (i.e., decoupling and reduced automaticity). The capacity to regulate negative thoughts and emotions, particularly once they surface, is a key feature of resilience. Davis (2009) wrote, “The capacity to harness positive emotion in daily life may be a key ingredient to resilience, helping individuals to persevere in the face of challenge, speeding recovery from transient life difficulties, and sustaining quality of life in the face of more chronic stressors” (p. 62). As our meditator so eloquently illustrated, mindfulness not only allows us to approach others positively (in this case, a person who is known to be difficult) it also protects us from other’s negative emotional states and agitation through appropriate regulation of affect and decreased reactivity. In a work setting, remaining resilient to work challenges and stressors, be they interpersonal or task related, is critical to optimal work functioning.

Improved Task Performance

I’ve learned that when your energy is concentrated on ... when you’re absorbed in a task like planning, it really feels good. It really feels good to [work task] because you’re absorbed in a task, your mind is focusing on one thing, so those are really pleasurable because you’re not scattered, your mind’s not scattered

And I also do try and walk really slowly sometimes, or just tell myself “I’m going to do this really slowly” instead of always feeling like I’m being really pushed to rush which we always generally are, but ... and that actually does help, you know, it kinda

just ... something still gets done (laughter), you know? And ... and a lot of times if you do it slowly it actually gets done well!

– Mindfulness Meditator (Participant #3)

Many processes described in this chapter are likely to have downstream effects on task performance, but the way that mindfulness affects performance is likely to depend heavily on the type of tasks required of a job. For example, for jobs with hefty interpersonal interactions, we might expect empathy to play a major role. For occupations with high emotional content, we might expect decreased rumination and improved affective regulation to be the critical pathways to performance. For jobs that are not routinized and have high task complexity, response flexibility may be key. Although some processes (e.g., increased self-determination and persistence) can be expected to beneficially affect many job types, we believe that the role of mindfulness in performance largely depends on the task and contextual features of the work.

The effects of the attentional component of mindfulness on task performance have been thoughtfully considered by Dane (2010). Dane suggested that wide attentional breadth, such as that present in a state of mindfulness, may inhibit or promote task performance depending on the task environment and level of expertise. Specifically, maintaining a wide external attentional breadth is useful in dynamic task environments as it allows for attention to a wide range of stimuli. However, in fairly static environments, wide external attentional breadth might inhibit performance as one loses focus on their tasks. Herndon (2008) found that trait mindfulness was associated with fewer cognitive failures (i.e., forgetting, distraction, blunders), which suggests that if mindfulness is associated with greater attention to external stimuli, and therefore, fewer cognitive failures, then a variety of favorable work outcomes are likely to follow including increased performance and fewer accidents.

Mindfulness also attunes individuals to internal processes such that an individual is more attentive to their nonconscious or automatic thoughts, feelings, and perceptions, often in the form of gut feelings or reactions. Dane (2010) argued that these intuitions may promote task performance when expertise is high. Mindfulness is also expected to impact job performance through improved decision making. When heuristic processing is reduced and attention to internal and external stimuli is increased, decision biases such as anchoring and fundamental attribution error should be decreased (Hammond, Keeney, & Raiffa, 2006).

As we consider the links of mindfulness to task performance, we recognize that mindfulness might be antithetical to the evolutionary development and

efficient functioning of the human brain, which is designed to rapidly process and categorize a large volume of stimuli. Automaticity is functional and at first blush, it might seem as if mindfulness may make one less efficient and less productive, as individuals are no longer able to rapidly process stimuli. However, we might reconcile these seemingly contradictory ideas by considering that mindfulness may help tune our minds so that automaticity becomes more functional and redirects attention to the appropriate environmental stimuli, allowing individuals to respond more skillfully rather than automatically. There is much room for future research testing our propositions about the effects of mindfulness on performance at work.

CONTROVERSIES, QUESTIONS, AND CHALLENGES

Although this chapter focuses on carefully examining the processes by which mindfulness and mindfulness-based practices might influence employees' functioning at work, we would be remiss if we did not address several controversies, questions, and challenges in the general mindfulness literature to determine how seriously they challenge the link between mindfulness and work.

Mindfulness vs. Mindfulness-Based Practices and Programs

In conjunction with our foray into the mindfulness literature, the first three authors completed an 8-week mindfulness training program modeled after the Kabat-Zinn MBSR program. Our reasons were twofold. As scholars, we wanted to better understand the ideas of mindfulness and the MBSR approach to cultivating mindfulness. As individuals, we were attracted to the possibilities of stress reduction and other benefits associated with MBSR programs. Although each had different experiences, we all found that the processes described in the preceding text and illustrated by our interviewees resonated with our experiences in mindfulness training. We felt that cultivating mindfulness via MBSR training benefitted our work and personal lives in many ways. Despite these experiences, we believe much remains to be known about the "active ingredients" that led to these benefits, especially whether they were attributable to mindfulness.

Mindfulness-based stress reduction curriculums include, as one aspect, practices designed to develop participant mindfulness. However, especially in a work-related discussion, we must recognize that these programs are,

first and foremost, for reducing stress. Indeed, the practices are designed to help individuals relax mentally (guided imagery) and release tension physically (yoga and Qigong). Some, but not all, of these techniques are expected to improve mindfulness. Moreover, because they are conducted in small group sessions with regular sharing among participants, they also provide social support and sometimes lead to ongoing social relationships with the concomitant benefits. Participants may also change various behaviors (e.g., reducing commitments, better time management) over the course of an MBSR program (Kabat-Zinn, 1990, 1994). Although these practices (i.e., mental relaxation, reduced physical tensions, social support, better time management) and their direct benefits are not necessarily related to mindfulness, they would be expected to benefit work outcomes. It is beyond our scope here to analyze which MBSR benefits are due to mindfulness and which result from other processes such as relaxation or social support (see Bishop, 2002; Dimidjian & Linehan, 2003; Dobkin, 2008; Roemer & Orsillo, 2003, for a debate of whether mindfulness is the key ingredient of mindfulness-based practices), and we caution against unthinkingly choosing MBSR-type programs at work if the ultimate goal is to increase mindfulness. As Shapiro et al. (2006) noted, “Dismantle studies are necessary to separate and compare the various active ingredients in mindfulness-based interventions such as social support, relaxation, and cognitive behavioral elements” (p. 374).

Furthermore, questions surface about distinguishing mindfulness from existing self-regulatory concepts. Masicampo and Baumeister (2010) questioned whether mindfulness is substantively different from self-control. Given the difficulty of measuring mindfulness itself (as a state of consciousness), most research has focused on the beneficial effects of mindfulness-based practices or therapies. These effects are generally attributed to improved self-regulation of emotions, thoughts, and behaviors. Brown et al. (2007) argued that mindfulness improves autonomous self-control, which is associated with more effective self-regulation. Masicampo and Baumeister (2010) also questioned whether there is anything unique about mindfulness as a technique for developing self-control.

We suggest this is a question for neuroscience. Neuroimaging studies that link brain activity to self-reported states of mindfulness may be one way to validate self-reports (e.g., Davidson, 2010) and differentiate mindfulness from other self-regulatory strategies. We do not know whether brain activities or structural changes are the same for all practices that improve self-regulation. Perhaps mindfulness-based techniques are unique; perhaps they are not.

From the standpoint of basic research, it is critical to the advancement of knowledge that we continue efforts to separate mindfulness and related states, traits, meditation, and programs. But, from the standpoint of work, it may be more valuable to focus on the outcomes (and mediating processes) by which mindfulness-based practices lead to improved self-regulation of thoughts, emotions, and behaviors. An underlying assumption here is that organizations might implement mindfulness-based programs as part of their wellness initiatives. Thus, the focus of organizational research might be to understand the effects of mindfulness training rather than mindfulness itself, and to identify features of the work environment that support mindfulness.

Bringing Mindfulness Training into Work Organizations

Given the impressive outcomes associated with mindfulness and mindfulness-based practices, especially in the clinical domain, it is easy to think of mindfulness practices as a cure-all. Indeed, already we see research (Giluk, 2010; Tipsord, 2009) – with mixed results – linking MBSR to a variety of work-related outcomes including experienced empathy, affect, citizenship behavior, relationship quality, and job performance. Although we warn against the tendency to view mindfulness and mindfulness-based practices as a panacea, we also recognize its demonstrated efficacy for a number of important work-related outcomes, particularly for stress reduction. According to the National Institute for Occupational Safety and Health (1999), about one-third of workers experience high levels of stress. Work stress has been identified as a major cause of employee turnover and burnout and has been linked to many physical and psychological complaints, including headaches, higher incidence of cardiovascular disease, and increased health insurance claims (Schnall, Dobson, & Roskam, 2009). Along with emerging neurobiological studies linking mindfulness-based practices to changes in the activity and structure of the brain, research presents compelling evidence that mindfulness-based practices may be a fruitful addition to organizational wellness programs.

Although the evidence for mindfulness is compelling, we also recognize that much of the existing literature has been conducted outside the work environment, with little attention to the contextual features of work. Many examinations have used student samples or patient populations seeking treatment for medical or psychological symptoms. Thus, the generalizability of current research findings to employees in organizations is uncertain. Nevertheless, initial research evaluating the efficacy of mindfulness-based

training programs for leaders is promising (Shambhala Sun Foundation, 2010a). For instance, leaders participating in the mindfulness training program in General Mills have experienced dramatic improvement of listening attentiveness and decision-making quality (General Mills, 2010). Additional research using rigorous methodologies is needed.

We also considered the possibility that organizations might experience unintended consequences from mindfulness. Given that mindfulness increases individuals' ability to control their thoughts, emotions, and behaviors, to be more aware of their personal goals and values, and to be more attuned to others' needs, a more mindful employee may act in ways that are counter to the organization's best interests, by favoring family, personal connections, or a slower work pace. For example, in the case of citizenship behaviors, an organization might benefit because a mindful employee is more likely to notice that a coworker needs help (via greater attention to the employee and increased empathy), but the mindful employee may also be more attuned to costs associated with helping (e.g., less time for family) or more aware of task goals and, as a result, choose not to help. This small example raises an important issue: The behaviors of more mindful employees will be more intentional, but they may not always lead to self-regulation that is consistent with organizational goals.

We also suspect that mindfulness is easier to cultivate in certain occupations or organizational contexts. One might argue that mindfulness is diametrically opposed to organizational cultures that value working fast, multitasking, and being hyper busy. Perhaps mindfulness would improve work quality but decrease quantity of work. There are a number of interesting questions to ask: What would an organizational culture that promotes mindfulness look like? How do people enter into mindful states at work? Do certain conditions in the work environment make a mindful state more likely?

We also believe that there may be certain conditions where the effects of mindfulness will be particularly strong, including situations when employees are dealing with challenging roles, when emotional regulation is required, or during times of transition. For example, mindfulness might be helpful in cross cultural situations when response flexibility and affective regulation are critical. Mindful, nonjudgmental attention to cultural differences might improve the odds of successful expatriate adjustment, because conscious awareness of differences should result in better adaptation to cultural norms, and because of the increased resilience and improved social relationships that we expect to result from a more mindful orientation. A similar rationale would apply to employees in new roles, such as moving

into a new organization, department, or transitioning into management. Cultivating mindfulness might also be beneficial for organizations during periods of large-scale change. Consider the benefits of increased empathy, response flexibility, and affective regulation along with decreased rumination in times of uncertainty and stress such as during a downsizing, restructuring, or merger. The advantages of mindfulness programs might be heightened in such contexts.

Before organizations adopt existing mindfulness training programs, they should carefully consider their goals. If the goal is to develop mindfulness among employees, they should consider multiple techniques for training employees to be more mindful. Kabat-Zinn (2005) discussed MBSR as “scaffolding,” but other techniques to cultivate mindfulness are also possible. If the goal is to develop improved self-regulatory capabilities, results might be obtained via self-control building exercises, or via increases in self-determination at work (e.g., Bono & Judge, 2003). Focusing directly on self-regulation would eliminate uneasiness that might exist in organizations about the Buddhist roots of mindfulness. Deciding on the ultimate goal of an organizational intervention is critical, as there is no reason to believe that self-regulation exercises will lead to the same benefits as mindfulness training, especially those associated with empathy, or those that result from changes in the structure of the brain. Further, research has suggested that other relaxation or meditation exercises (i.e., loving-kindness meditation designed to increase feelings of social connection and progressive muscle relaxation designed for physical relaxation) do not evidence the decentering that occurs in mindful exercises (Feldman et al., 2010). Clearly, there is a need for research on optimal ways to increase mindfulness at work and to delineate the effects of different interventions. It may also be that optimal practices for each of these outcomes vary for different individuals.

It is also important to note that in some organizations, core tenants of original mindfulness training programs are being removed for the organizational audience. For example, programs are not touted as stress reduction programs, given that stress has become a way of life in most organizations and a badge of honor in many. Nor do some work-related programs retain a link to Buddhism or any other philosophical underpinnings. Thus, it seems reasonable to assume that programs must be tailored to work settings, and adoption of any program must carefully consider the elements of the program and the organization’s specific goals. Google’s “Search Inside Yourself” program provides one example of a setting where mindfulness has been positioned not as a stress reduction program or one with Buddhist links, but as a program designed to promote

autonomy, creativity, and joy of work – all in alignment with organizational goals and values. Although Google’s program includes the same meditative and contemplative techniques present in other mindfulness programs, there are also topics tailored to organizational settings such as mindful emailing, mindful listening, and dealing with difficult conversations (Shambhala Sun Foundation, 2010b). Indeed, customized mindfulness programs and practices have been increasingly popular in a variety of companies such as Apple, McKinsey, and Deutsche Bank (Mindfulnet, 2011). However, it is hard to know whether such tailoring to suit organizational purposes undermines the core principles of mindfulness or its outcomes. In the words of one of our interviewees:

what I notice is ... the secularization of mindfulness, I mean, there’s some good things about that as people are getting interested and it’s helping them reduce stress, and it’s making them more effective. That’s all good. But I’m a little bit worried about the longevity, if they see it as a tool, if it’s seen as like another tactic, strategy ... a lot of times people have a very short span of attention for that because it takes years of practice. When it’s [mindfulness meditation] connected to more of a spiritual ... religious teachings, like the Dharma, then it’s much more transformative, like it’s more of a personal transformation, it’s much deeper. And then it’s more sustainable because you have that ... it’s not just about being effective at work, it’s about your life, it’s about how to be happy in your life, so then it’s much deeper and it’s much more transformative. Then I think there’s a chance for it to be sustainable in the workplace. But, in the workplace you have different religions, different creeds, and you could never pull that off. You’d have to secularize the practice. And you lose something when you secularize it, you know, you lose something. ... it just seems light, and fluffy. It’s not, it doesn’t penetrate ... it just feels really ... surface. Mindfulness is really powerful.

– Mindfulness Meditator (Participant #3)

CONCLUSION

Both the words of our participants and the research literature suggest that mindfulness is powerful and considering the ways that mindfulness might improve people’s work lives is exciting. In this chapter, we reviewed the existing literature on mindfulness and explicitly link it to a variety of core and secondary processes that are expected to improve work outcomes, including improved social relationships, resilience, and performance. We see the potential for many positive outcomes associated with mindfulness at work, but note that few studies directly test our propositions in work settings or with employee samples. Building on the strong foundation of existing research, it is time to test the efficacy of mindfulness-based practices in a series of carefully designed field experiments or quasi-experiments in work settings.

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