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Mindfulness-based stress reduction: facilitating work outcomes through experienced affect and high-quality relationships

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MINDFULNESS-BASED STRESS REDUCTION: FACILITATING WORK OUTCOMES THROUGH EXPERIENCED AFFECT AND HIGH-QUALITY RELATIONSHIPS

by

Tamara L. Giluk

An Abstract

Of a thesis submitted in partial fulfillment of the requirements
for the Doctor of Philosophy degree in
Business Administration
in the Graduate College of The University of Iowa

July 2010

Thesis Supervisor: Professor Greg L. Stewart

ABSTRACT

Mindfulness is a quality of consciousness that consists of purposeful attention to and awareness of the present moment, approached with an attitude of openness, acceptance, and nonjudgment. Research evidence shows that mindfulness has positive effects on mental health and psychological well-being, physical health, and quality of intimate relationships. However, few researchers have studied the effects of mindfulness in a work setting. In this project, I expanded previous research by exploring how mindfulness, as developed in a mindfulness-based training program, affects the workplace outcomes of performance and citizenship behavior. I proposed that these effects are mediated through the positive effects of mindfulness on one's experienced affect and one's work relationships. I also examined interdependence as a moderator of the relationship quality-work outcomes relationship. The research study employed an experimental group of participants in a mindfulness-based program and a nonequivalent control group to test the specific hypotheses. Data were provided by multiple sources: mindfulness, affect, and role interdependence by study participants; relationship quality by coworkers; performance and citizenship behavior by supervisors. Analytic strategy was comprised of correlational analysis and regression as well as analytical procedures for moderated mediation. The mindfulness-based programs were effective in increasing mindfulness, particularly for those participants who were lower in mindfulness prior to program participation. Participants also experienced improved affect. However, the proposed model relating mindfulness to work outcomes was not supported. Mindfulness was significantly related to positive and negative affect as predicted; however, mindfulness was not significantly correlated with relationship quality or job performance. Its significant relationship with citizenship behavior was in the opposite direction as hypothesized. In the full model, coefficients for mindfulness, experienced affect, relationship quality, and role interdependence in the prediction of job performance and citizenship behavior were not significant. Additionally, interdependence did not interact

with relationship quality to predict work outcomes. Implications of the study for mindfulness-based programs in work settings and for future research are discussed.

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Graduate College
The University of Iowa
Iowa City, Iowa

CERTIFICATE OF APPROVAL

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PH.D. THESIS

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ABSTRACT

Mindfulness is a quality of consciousness that consists of purposeful attention to and awareness of the present moment, approached with an attitude of openness, acceptance, and nonjudgment. Research evidence shows that mindfulness has positive effects on mental health and psychological well-being, physical health, and quality of intimate relationships. However, few researchers have studied the effects of mindfulness in a work setting. In this project, I expanded previous research by exploring how mindfulness, as developed in a mindfulness-based training program, affects the workplace outcomes of performance and citizenship behavior. I proposed that these effects are mediated through the positive effects of mindfulness on one's experienced affect and one's work relationships. I also examined interdependence as a moderator of the relationship quality-work outcomes relationship. The research study employed an experimental group of participants in a mindfulness-based program and a nonequivalent control group to test the specific hypotheses. Data were provided by multiple sources: mindfulness, affect, and role interdependence by study participants; relationship quality by coworkers; performance and citizenship behavior by supervisors. Analytic strategy was comprised of correlational analysis and regression as well as analytical procedures for moderated mediation. The mindfulness-based programs were effective in increasing mindfulness, particularly for those participants who were lower in mindfulness prior to program participation. Participants also experienced improved affect. However, the proposed model relating mindfulness to work outcomes was not supported. Mindfulness was significantly related to positive and negative affect as predicted; however, mindfulness was not significantly correlated with relationship quality or job performance. Its significant relationship with citizenship behavior was in the opposite direction as hypothesized. In the full model, coefficients for mindfulness, experienced affect, relationship quality, and role interdependence in the prediction of job performance and citizenship behavior were not significant. Additionally, interdependence did not interact

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CHAPTER I

INTRODUCTION

What would your life be like if you were actually present for it, if you approached your experiences with an attitude of acceptance and fully experienced them? This is the question, broadly stated, that mindfulness research attempts to answer. Mindfulness is a quality of consciousness, more specifically defined as "paying attention in a particular way: on purpose, in the present moment, nonjudgmentally" (Kabat-Zinn, 1994, p. 4). Mindfulness consists of a purposeful *attention* to and *awareness* of the *present moment*, approached with an attitude of *openness*, *acceptance*, and *nonjudgment* (Bishop et al., 2004; Kabat-Zinn, 1990, 1994). Kabat-Zinn (1994) calls it simply "the art of conscious living" (p. 6).

In 1979, Jon Kabat-Zinn developed the mindfulness-based stress reduction (MBSR) program at the University of Massachusetts Medical Center. The program, while not religiously focused, has its roots in Buddhism, as mindfulness is at the core of Buddhist teaching (Gunaratana, 1992). The 10-week program (now 8 weeks) trained chronic pain patients in mindfulness meditation and helped these patients to manage their condition (Kabat-Zinn, 1982). Since then, 17,000 people have completed the program at the University of Massachusetts. In addition, there are now 240 MBSR programs worldwide that are modeled on Kabat-Zinn's original program and that train thousands of individuals in mindfulness meditation and a mindful way of being (Center for Mindfulness in Medicine, Health Care, and Society, 2007). The answers to the question posed above thus far have been compelling. Research evidence shows that mindfulness has positive effects on mental health and psychological well-being (e.g., depression, anxiety, stress), physical health (e.g., pain, physical impairment), and quality of intimate relationships (Baer, 2003; Brown & Ryan, 2003; Brown, Ryan, & Cresswell, 2007b; Grossman, Niemann, Schmidt, & Walach, 2004).

The concept of mindfulness is novel in contemporary psychology (Brown et al., 2007b). As Brown and colleagues (Brown et al., 2007b) point out, "of overwhelming interest to most psychologists is the *content* of consciousness—thought, memory, emotion, and so on—rather than the *context* in which those contents are expressed—that is, consciousness itself" (p. 211). Mindfulness is a quality of consciousness that emphasizes attention to and awareness of one's experiences. Other long-standing theories in psychology underscore the value of attention to and awareness of one's experience, behavior, and environment (Brown et al., 2007b), and thus, mindfulness can be placed within this tradition. For example, Buss (1980) and Duval and Wicklund's (1972) theories of self-consciousness and Carver and Scheier's (1981, 1998) control theory emphasize attention to the self and self-awareness as a means to promote self-regulation. In Deci and Ryan's (1985) self-determination theory, attention and awareness are critical to fully process what is occurring so that this knowledge can facilitate integrative functioning, or acting in accordance with one's values and one's "true" self. These theories share with mindfulness the focus on attention and awareness. However, in an MBSR program, individuals are trained to practice mindfulness not to achieve some particular purpose or end goal, but rather to simply participate in the experience, a "non-doing" or "non-striving" of sorts (Kabat-Zinn, 1990). Thus, while improved self-regulation or more authentic functioning, as well as outcomes such as relaxation, insight, or pain relief, may result from mindful practice, one does not embark upon a mindful approach to one's experiences with these end goals in mind (Kabat-Zinn, 1990).

Research on the construct of mindfulness continues to increase (Brown et al., 2007b; Shapiro, Carlson, Astin, & Freedman, 2006). Scholars are now asking, how would a mindful approach to work affect one's work life and work outcomes? Kabat-Zinn (1990) foreshadows the possibilities:

> When you begin to look at work mindfully, whether you work for yourself, for a big institution, or for a little one, whether you work inside a building or outside, whether you love your job or hate it, you are bringing all your inner resources to

> bear on your working day….In all likelihood, if we saw work as an arena in which we could hone inner strength and wisdom moment by moment, we would make better decisions, communicate more effectively, be more efficient, and perhaps even leave work happier at the end of the day. (pp. 389, 393)

At this time, little research is available regarding the effects of mindfulness in a work setting. Most studies that do exist continue to demonstrate the positive effect of mindfulness on mental health, in this case, its ability to reduce stress and burnout in the workplace, particularly for health care professionals (Cohen-Katz et al., 2004, 2005a, 2005b; Galantino, Baime, Maguire, Szapary, & Farrar, 2005; Irving, Dobkin, & Park; 2009; Klatt, Buckworth, & Malarkey, 2009; Mackenzie, Poulin, & Seidman-Carlson, 2006; Pipe, Bortz, & Dueck, 2009). An exploratory qualitative study, however, (Hunter & McCormick, 2008) suggests much broader effects. Hunter and McCormick's (2008) results indicate that a mindful approach to work may result in more external awareness at work, more acceptance of one's work situation, increased ability to cope with and remain calm in difficult work situations, increased adaptability, and more positive relationships at work. Anecdotal evidence also hints at the power of mindfulness. For example, National Basketball Association (NBA) coach Phil Jackson, former coach of the championship (1991-1993) Chicago Bulls and current coach of the championship (2000-2002) Los Angeles Lakers, considers the mindfulness sessions he holds for his players to be a competitive secret (Lazenby, 2001) that contributes to his team's success.

In this project, I expand previous empirical research by exploring how mindfulness affects work outcomes other than stress and burnout. Specifically, I explore how participation in an MBSR program (or a similarly structured Mindfulness-Based Cognitive Therapy (MBCT) program) affects the important workplace outcomes of general work performance (or job performance) and citizenship behavior. General work performance consists of task performance (e.g., job knowledge and quality of work), citizenship performance (e.g., helping behavior), and counterproductive performance (e.g., lack of adherence to rules) (Rotundo & Sackett, 2002), although performance components are often found to load onto a single overall performance factor (e.g., Colbert,

Kristof-Brown, Bradley, & Barrick, 2008). Job performance is an outcome important to researchers and highly valued by organizations (Hanson & Borman, 2006; Scullen, Mount, & Goff, 2000). Citizenship behavior, although a component of overall work performance, will also be examined as a singular component. Scholars have argued that this particular component of job performance will become increasingly important to organizations as they shift toward more team-based organizational structures (Hanson & Borman, 2006; Ilgen & Pulakos, 1999; LePine, Erez, & Johnson, 2002). In addition, mindfulness should be especially pertinent for citizenship behaviors. MBSR teaches one to direct feelings of patience, acceptance, empathy, and compassion not only toward oneself but also toward others and towards one's relationships (Kabat-Zinn, 1990). Thus, mindfulness may be more closely tied with the citizenship component of performance as compared to the components of task performance and counterproductive behavior. Although an item measuring counterproductive behavior is included in the general work performance measure, detailed measures of counterproductive performance are excluded at the request of the administration of the mindfulness-based programs. Program administration felt that the nature of counterproductive performance (e.g., theft, destruction of property, drug use, inappropriate physical actions; Sackett, 2002) involved sensitive topics; it did not wish to make program participants uncomfortable and was concerned such topics may deter participation in the study.

I propose that mindfulness will be positively associated with individuals' performance and citizenship behavior at work. While direct empirical evidence connecting mindfulness with work performance is scant, theoretical arguments (McCormick, 2006; Riskin, 2002), preliminary empirical evidence (Hunter & McCormick, 2008), and anecdotal evidence (Epstein, 1999; Jackson & Delehanty, 1995; Keeva, 2004; Vacarr, 2001) suggest that a mindful state of attention and awareness will contribute to one's work performance. Mindfulness should be particularly relevant for one's citizenship behavior. Mindfulness has been shown to contribute to the

development of empathy (Block-Lerner, Adair, Plumb, Rhatigan, & Orsillo, 2007; Cohen-Katz et al., 2005a; Shapiro, Schwartz, & Bonner, 1998; Tipsord, 2009) and to be related to positive affectivity (Brown & Ryan, 2003), both of which are positively related to citizenship behavior (Borman, Penner, Allen, & Motowidlo, 2001; Organ & Ryan, 1995; Settoon & Mossholder, 2002).

The effect of mindfulness on an individual's performance and citizenship behavior at work is likely mediated by more proximal processes. I propose that two intermediary variables, experienced affect and high-quality work relationships, link the independent variable mindfulness and the dependent variables of performance and citizenship behavior. I suggest that mindfulness is associated with one's experienced affect. Mindful individuals tend to be more skilled emotionally, as mindfulness scales have correlated positively with measures of emotion awareness and regulation (i.e., emotional intelligence; Baer, Smith, & Allen, 2004; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007) and negatively with scales measuring difficulty in identifying and describing feelings (Baer et al., 2004; Baer et al., 2006; Wachs & Cordova, 2007). Because more mindful individuals are expected to be more emotionally aware and more effective at regulating emotions, they should experience more positive affect and less negative affect as compared to less mindful individuals. Such a relationship would be consistent with meta-analytic findings that mindfulness has a moderate, positive relationship with trait positive affect and a moderate, negative relationship with trait negative affect (Giluk, 2009).

Such experienced affect should have a positive direct effect on work outcomes. In addition, experienced affect should enhance the quality of one's relationships at work. Shiota and colleagues (Shiota, Campos, Keltner, & Hertenstein, 2004) argue that positive emotions are critical to the formation and maintenance of social bonds. Those who experience more frequent positive affect are better able to develop social relationships,

have more friends, and enjoy a stronger network of support (Lyubomirsky, King, & Diener, 2005), while the expression of frequent negative affect is likely to negatively impact relationships (Labianca & Brass, 2006). In addition, processes such as emotion contagion (Hatfield, Cacioppo, & Rapson, 1994) and comparison (Hsee, Hatfield, & Chemtob, 1992) influence the emotional experience of the parties with whom individuals interact. Initial qualitative research (Hunter & McCormick, 2008) supports the positive effects of mindfulness on relationships at work, and I suggest that such a relationship is at least partially explained by the experienced affect of mindful individuals. Affect is central to one's representation of a relationship (Pietromonaco, Laurenceau, & Barrett, 2002), and thus, an improved or high-quality emotional experience should be associated with a positive assessment of the quality of that relationship.

I argue that those with high-quality relationships at work are more likely to display both effective performance and citizenship behavior. However, the influence of relationship quality on performance and citizenship behavior is likely moderated by type of job, such that this effect is stronger for individuals in jobs in which relationships are more critical to success. I propose that relationship quality will have a stronger effect on performance and citizenship behavior in highly interdependent contexts. In an interdependent context, individuals are required to cooperate and work interactively in order to complete tasks (Stewart & Barrick, 2000; Wageman, 2001). Structural features such as tasks, goals, and rewards (Campion, Medsker, & Higgs, 1993; Wageman, 1995, 2001) necessitate such interdependence. Interdependence is often investigated as a moderator, particularly in the area of teams. For instance, in meta-analyses of team performance, Gully and colleagues (Gully, DeVine, & Whitney, 1995; Gully, Incalcaterra, Joshi, & Beaubien, 2002) established that cohesion and team efficacy had a stronger effect on team performance when tasks were highly interdependent. Likewise, I expect interdependence to moderate the relationship between mindfulness and the work outcomes of performance and citizenship behavior. Specifically, this moderation will

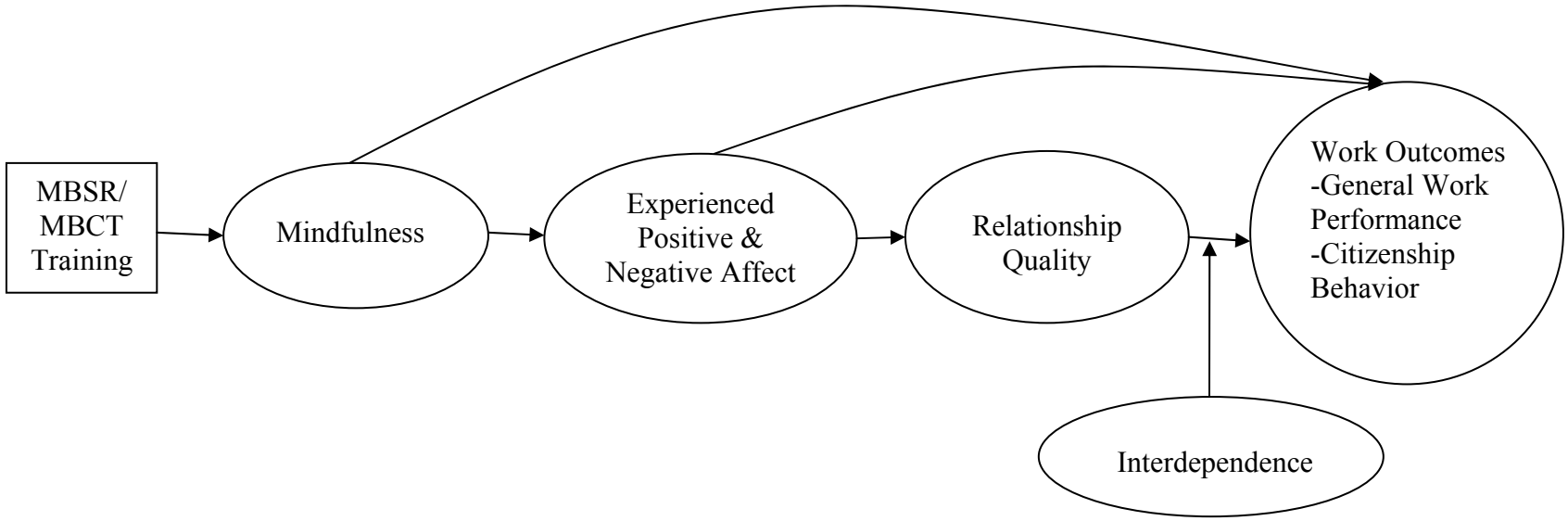
take place on the mediating link of relationship quality and the work outcomes. The theory of relational coordination (Gittell, 2003b) argues that high-quality relationships are critical to highly interdependent work. Interdependence can also be directly related to work outcomes. For example, studies have shown that interdependence is positively associated with individuals' engagement in citizenship (i.e., extrarole or prosocial) behavior (Anderson & Williams, 1996; Comeau & Griffith, 2005; Pearce & Gregersen, 1991).

Figure 1 depicts a model of the relationships expected. First, mindfulness is positively associated with both performance and citizenship behavior. Second, mindfulness positively influences an individual's experienced affect. Third, one's experienced affect directly influences performance and citizenship behavior as well as leads to higher levels of relationship quality with coworkers. Fourth, relationship quality impacts both an individual's performance and citizenship behavior. Finally, interdependence moderates the relationship between relationship quality and these outcomes, such that the effect is stronger for those in more interdependent roles.

Thus, one contribution of this study is to show the relationship of mindfulness, specifically participation in an MBSR or MBCT program, to the key work outcomes of performance and citizenship behavior. Another contribution is to show the mechanisms by which mindfulness may be related to these outcomes, as well as how role interdependence may influence the effect of these proposed mechanisms. The study of the proposed model will enhance our understanding of mindfulness and work. Kabat-Zinn (1994) presents mindfulness as "a way to take charge of the direction and quality of our own lives, including our relationships within the family, our relationship to work and to the larger world and planet, and most fundamentally, our relationship with ourself as a person" (p. 5) Empirically, however, there is much yet to understand with regards to this statement. Mindfulness is very much present in the clinical and relationship literatures. We have begun to understand the effects of mindfulness on the individual person in terms

of mental and physical health as well as its effects on familial or intimate relationships. However, one would be hard pressed to find more than a handful of empirical articles on mindfulness in the management or industrial/organizational psychology literatures; from an empirical research perspective, the influence of mindfulness at work is largely uncharted territory. Thus, on a broader level, the contribution of this study lies in its attempt to bring the construct and empirical study of mindfulness to a setting and literature in which it is not yet widely familiar. Huff (1999) uses the metaphor of "joining the scholarly conversation" for conducting and publishing research. The scholarly conversation on mindfulness and work is just beginning, and I hope in this study not only to contribute to the conversation but also to inspire others to join in.

Figure 1. Proposed Model for the Study



CHAPTER II

LITERATURE REVIEW

Research on the topic of mindfulness has been increasing of late. A recent review of mindfulness research (Brown et al., 2007b) describes interest in mindfulness as having "quietly exploded" (p. 211) and research on mindfulness as having "increased exponentially" (p. 211) over the past two decades. Indeed, if scale development is taken as an indication of interest in a construct, there has been a flurry of activity to develop self-report scales of mindfulness. Seven scales to measure mindfulness have been developed and published in only the last eight years (Baer et al., 2004; Baer et al., 2006; Baer et al., 2008; Brown & Ryan, 2003; Buchheld, Grossman, & Walach, 2002; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008; Feldman et al., 2007; Lau et al., 2006; Walach, Buchheld, Buttenmüller, Kleinknecht, & Schmidt, 2006). Interest in and research on the construct appears to be warranted. Mindfulness has been shown to positively affect mental health and psychological well-being, physical health, and quality of intimate relationships (Baer, 2003; Brown & Ryan, 2003; Brown et al., 2007b; Grossman et al., 2004).

However, we know very little about the impact of mindfulness on work outcomes. Few studies have been conducted. Those that do exist demonstrate the ability of mindfulness to reduce stress and burnout in the workplace, particularly for nurses (Cohen-Katz et al., 2004, 2005a, 2005b; Klatt et al., 2009; Mackenzie et al., 2006; Pipe et al., 2009) or students in training for positions as therapists (Shapiro, Brown & Biegel, 2007) and physicians (Rosenzweig, Reibel, Greeson, Brainard, & Hojat, 2003; Shapiro et al., 1998). A recent conference paper (Hunter & McCormick, 2008) presented a small exploratory qualitative study in which eight managers and professionals described a broader set of workplace outcomes stemming from their mindfulness practice, including increased external awareness, more acceptance of one's work situation, increased ability to cope and remain calm in difficult work situations, increased adaptability, and more

positive relationships at work. But, does mindfulness affect the important work outcomes of citizenship behavior and performance? And if so, through what mechanisms does it have its effect? To answer these questions, I will review relevant literature according to the model presented in the previous chapter (depicted in Figure 1) and propose specific hypotheses about these relationships.

First, I define mindfulness and review the literature to date. Next, I discuss work performance and citizenship behavior, the work outcomes to be investigated in this study, and how mindfulness may influence them. I then examine experienced affect and how mindfulness impacts this. I follow with a discussion of the nature of relationships. I then discuss the effect that experienced affect has on work performance and citizenship, both directly and indirectly through its effect on relationship quality. Finally, I consider how the quality of relationships at work impacts work performance and citizenship behavior, and argue that the nature of one's job will moderate these relationships. Specific hypotheses are developed and presented throughout this section as appropriate.

What is Mindfulness?

> …inhabiting this moment, our only moment, with greater awareness shapes the moment that follows, and if we can sustain it, actually shapes the future and the quality of our lives and relationships in ways we often simply do not appreciate…
>
> Jon Kabat-Zinn (1990, p. XXVIII)

Mindfulness is a quality of consciousness, more specifically defined as "paying attention in a particular way: on purpose, in the present moment, nonjudgmentally" (Kabat-Zinn, 1994, p. 4). Mindfulness entails self-regulation of attention so that attention is concentrated on the present (Bishop et al., 2004). One's attention remains focused on the "unfolding of experience moment by moment" (Kabat-Zinn, 2003, p. 145). Thoughts, feelings, and bodily sensations are considered to be "objects of observation" (Bishop et al., 2004, p. 232) but not something on which one should elaborate (i.e., direct attention toward thinking *about* the thought, feeling, or sensation). Such elaboration would take one out of the present moment, and thus, distract focus from the current experience. It

would also require use of resources that could be devoted to attention and present-moment awareness. In addition, elaboration often involves judgment (e.g., this is a "good" event or this is a "bad" experience because of how it is making me think or feel). Mindful awareness is fostered by acting as an "impartial witness" (Kabat-Zinn, 1990, p. 33) to one's own experience. This means stepping back from one's tendency to categorize and judge one's experiences, a practice which "locks us into mechanical reactions" (Kabat-Zinn, 1990, p. 33) of which we may not even be aware. The nonjudgmental quality of mindfulness leads to equanimity, as emotional disturbance often comes from our interpretation of the event rather than the event itself (McCormick, 2006). Mindfulness also encourages one to realize that the thoughts, feelings, and sensations that one observes are simply experiences in the mind or body, and not something that one should "over-identify" with (e.g., A thought is a thought, but you are not your thought).

Mindfulness also involves one's orientation to experience (Bishop et al., 2004). Mindfulness encourages approaching one's experiences with a "beginner's mind" (Kabat-Zinn, 1990, pp. 35-36), as if experiencing the event for the first time. With such an approach, one brings to their experience "an orientation that is characterized by curiosity, openness, and acceptance" (Bishop et al., 2004, p. 232). Acceptance in this sense refers to receptivity to seeing things as they actually are in the present moment (Kabat-Zinn, 1990). Each moment is viewed as unique, and if one brings to the moment preconceived ideas, assumptions, or expectations, one will not be able to experience the moment as it truly is. Fundamental to the idea of being open to and seeing one's experience as it is in reality is the attitude of letting go, or non-attachment. One learns to "put aside the tendency to elevate some aspects of our experience and to reject others" (Kabat-Zinn, 1990, p. 40). This attentiveness to and acceptance of one's full experience allows an individual to respond effectively rather than react habitually to the situation and

experience (Bishop et al., 2004; Kabat-Zinn, 1990). The following quote illustrates the philosophy of approaching each experience with a beginner's mind:

> When I say that I 'know' my wife, it is that I have an image about her; but that image is always in the past; that image prevents me from looking at her—she may already be changing…So the mind must be in a constant state of learning, therefore always in the active present, always fresh; not stale with the accumulated knowledge of yesterday. (Krishnamurti, 1972, p. 8, as cited in McIntosh, 1997)

There are two perspectives or schools of thought on mindfulness: what Weick (Weick & Putnam, 2006; Weick & Sutcliffe, 2006) refers to as Eastern and Western perspectives on mindfulness. This study and the above discussion draw from the Eastern perspective on mindfulness. The Eastern view of mindfulness has its roots in Buddhism. Mindfulness is at the core of Buddhist teachings (Gunaratana, 1992) and has been referred to as "the heart" of Buddhist meditation (Kabat-Zinn, 1994; Thera, 1962). This view of mindfulness is exemplified by the research stream of Jon Kabat-Zinn, who developed the MBSR program in 1979 at the University of Massachusetts Medical Center. The 10-week (now 8 week) program trained chronic pain patients in mindfulness meditation and was originally conceived as a way to help these patients to manage their condition. Indeed, much of Kabat-Zinn's early research focused on the use of mindfulness meditation to self-regulate chronic pain (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn, Lipworth, Burney, & Sellers, 1986). Although mindfulness, as conceptualized by Kabat-Zinn and the Eastern perspective, is rooted in the Buddhist tradition, the MBSR course was designed so that it did not include a religious or cultural component associated with Buddhism (Kabat-Zinn, 2003). Indeed, as Kabat-Zinn (2003) points out, "mindfulness…being about attention, is also of necessity universal. There is nothing particularly Buddhist about it. We are all mindful to one degree or another, moment by moment. It is an inherent human capacity" (pp. 145-146). While the capacity to be mindful may be inherent in all humans, mindfulness is viewed as a skill that can be cultivated with practice (Bishop et al., 2004). What the

Buddhist tradition has provided are ways to develop this capacity for mindfulness and use it in all aspects of life (Kabat-Zinn, 2003).

The Western perspective of mindfulness (Weick & Putnam, 2006; Weick & Sutcliffe, 2006) is best exemplified by the work of Harvard psychologist Ellen Langer (e.g., 1989, 1997). Langer's conceptualization of mindfulness shares some commonalities with the Eastern perspective. Both perspectives emphasize awareness, attention, and engagement in the present moment (Bishop et al., 2004; Brown et al., 2007b) that allows one to respond effectively to a situation rather than reactively or reflexively based on automatic habit (Bishop et al., 2004; Brown et al., 2007b; Langer, 1989). However, the Eastern view of mindfulness, while still encouraging attention to external reality, has a greater focus on attention to *internal* stimuli (e.g., thoughts, feelings) and *processes* of the mind. Langer's mindfulness, on the other hand, directs greater attention to *external* situations as well as the *contents* of the mind, including past associations and concepts (Bishop et al., 2004; Weick & Putnam, 2006). In particular, Langer states that mindfulness is "best understood as the process of drawing novel distinctions" (Langer & Moldoveanu, 2000, p. 1). Langer (1989) notes that mindlessness occurs when we are "trapped by created categories" (p. 27), relying on distinctions created in the past rather than continually creating new ones based on present experience. In turn, this focus on making distinctions encourages awareness of "the context and perspective of our actions" (Langer & Moldoveanu, 2000, p. 2). Sternberg (2000) has characterized Langer's mindfulness as a "cognitive style," or preferred way of thinking, while Weick (Weick & Sutcliffe, 2006) has referred to her conceptualization as rooted in an information-processing perspective. Thus, there are conceptual differences between the Eastern and Western views of mindfulness (Weick & Putnam, 2006; Weick & Sutcliffe, 2006). For this reason, Langer (1989) cautions against making comparisons that are "too tidy" (p. 78) between her work within the Western scientific perspective and mindfulness derived from an Eastern tradition. However, early evidence has shown them

to be related (e.g., small to moderate correlations between Langer's mindfulness scale and Brown & Ryan's MAAS scale; Brown & Ryan, 2003).

Thus, mindfulness consists of a purposeful *attention* to and *awareness* of the *present moment*, approached with an attitude of *openness*, *acceptance*, and *nonjudgment*. These features are the defining characteristics of the Eastern perspective of mindfulness on which this study is based. In this paper, I argue that it is these features which allow one more positive experienced affect and improved quality of relationships with others, ultimately impacting one's work performance and citizenship behavior.

Developing Mindfulness in a Mindfulness-Based Intervention

Mindfulness is considered to be a quality of consciousness that can be dispositional (i.e., conceptualized as a trait such that some people are naturally more mindful than others) as well as more state-like (i.e., one is mindful as long as the appropriate regulation of attention and orientation to experience is maintained; when this practice ceases, then one is no longer mindful; Bishop et al., 2004). While being momentarily mindful is more likely among those who have the disposition (Brown & Ryan, 2003), mindfulness is also viewed as a skill that can be learned and developed through instruction and practice (Bishop et al., 2004). Thus, various training programs or therapeutic interventions incorporate mindfulness skills training into their approach.

The MBSR program, originally developed by Jon Kabat-Zinn (1990), is an 8-week program in which participants meet once per week for a two-hour group session for instruction, discussion, and practice in mindfulness and meditation as rooted in the Eastern perspective. The program also includes participation in a 6-hour retreat in which participants engage in various meditation practices in silence followed by a brief discussion at the end of the day. Participants are also asked to participate in formal mindfulness practice for 45 minutes six days per week as well as various informal practices. The MBCT program, targeted specifically toward those who have a history of multiple episodes of depression but who are currently in remission, is similar in format

and structure. Participants in the MBCT program learn to integrate mindfulness meditation practices with cognitive-behavioral therapy in a group environment, though in a smaller group of participants as compared to a typical MBSR course.

Four types of formal mindfulness practice are learned in the programs: body scan, yoga, sitting meditation, and walking meditation (Kabat-Zinn, 1990). In the body scan, participants are instructed to focus on various areas of the body, generally as they are lying down with their eyes closed, and observe the sensations in each area. Yoga involves gentle and slow movements drawn from hatha yoga. Participants focus on being fully present with their movement and breathing. Sitting meditation entails sitting in a relaxed yet alert position while one focuses on his or her breathing, continuing to observe other sensations that arise but generally returning to the breath. In walking meditation, one walks slowly and purposefully, again focused on the breath and bodily sensations. Informal practices include conducting ordinary activities such as eating or brushing one's teeth in a mindful manner. Participants keep a log of their observations during formal and informal practice as part of the course. Both the formal and informal mindfulness practice is intended to help participants cultivate awareness and a higher quality of consciousness so that they may approach their lives and each activity within it in a mindful way.

Other training or therapy interventions incorporate mindfulness or strategies consistent with mindfulness as part of their approach. In Dialectical Behavior Therapy (DBT; Linehan, 1993a, 1993b), an approach to treating borderline personality disorder, clients are taught to accept themselves and their current situation while at the same time to work to change their behaviors and environment. Mindfulness skills, such as observation, awareness, and non-judgment, are taught "within the context of synthesizing acceptance and change" (Baer, 2003, p. 127). Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006) strives to help individuals become aware of their values and to commit to behaviors consistent with their values. Mindful

processes such as presence and acceptance are core components of ACT. Finally, Relapse Prevention (RP; Marlatt & Gordon, 1985) is a treatment strategy designed to prevent relapse of addictive behavior such as substance abuse or compulsive gambling. Mindfulness skills such as observation and nonjudgmental acceptance are taught as ways to cope with desires to engage in addictive behavior.

Mindfulness' Relationships with Other Variables

The recent surge in interest in mindfulness is likely due in part to its association with a range of positive physical, psychological, and relationship outcomes.

Physical Health

A recent meta-analysis (Grossman et al., 2004) examined the mean effect size *d* between groups for five studies that included a mindfulness meditation group and a control group. Results indicated significant effects (i.e., a 95% CI that does not include zero) of mindfulness, specifically the MBSR or similarly structured programs, with respect to physical health variables (d = .53). "Physical health" included such outcomes as medical symptoms, physical pain or impairment, or the physical component of quality of life questionnaires. Baer's meta-analysis (2003) finds a smaller, yet still beneficial, effect size (d = .31) for pain. It is important to note in both of these meta-analyses, however, that number of studies is generally small (k = 5 and 17, respectively) given the relatively early stage of mindfulness research.

Other studies (that for various reasons did not meet the inclusion criteria for the meta-analyses) confirm these physical benefits of mindfulness. For example, in Kabat-Zinn's (1982) first study of mindfulness, an uncontrolled study of chronic pain patients, he examined 51 patients for whom traditional medical care had not been successful in improving their condition. Sixty-five percent of these patients indicated at least a one-third reduction in pain. Reductions were also seen in number of medical symptoms reported, mood disturbance, and other psychiatric symptoms. Kabat-Zinn (Kabat-Zinn et al., 1985) followed this study with a controlled study of 90 chronic pain patients. As

compared to patients receiving traditional treatment, these patients reported reductions in present-moment pain, inhibition of activity by pain, pain-related drug utilization, as well as psychological symptoms such as mood disturbance, anxiety, and depression. More recent work by Kabat-Zinn and colleagues has demonstrated the positive effects of mindfulness meditation in clearing skin psoriasis (Kabat-Zinn et al., 1998) and enhancing immune responsiveness (Davidson et al., 2003). Other researchers have demonstrated the efficacy of mindfulness in enhancing health-related quality of life for cancer patients (Monti et al., 2005), movement for patients with multiple sclerosis (Mills & Allen, 2000), and pain and distress levels of fibromyalgia patients (Goldenberg et al., 1994; Kaplan, Goldenberg, & Galvin-Nadeau, 1993).

Mental Health and Psychological Well-being

The meta-analysis by Grossman and colleagues (2004) cited previously also examined the mean effect size *d* for mental health, which included such outcomes as psychological well-being, depression, anxiety, sleep, and affective perception of pain. They found a significant *d* value of .54 for mindfulness meditation groups as compared to control groups on such variables. Baer's (2003) meta-analysis draws similar conclusions. She generally finds medium- to large-size mean effect sizes for anxiety (d = .70), depression (d = .86), stress (d = .63) and global psychological outcomes (d = .64). Two recent narrative reviews of research related to mindfulness interventions with cancer patients concluded that MBSR can improve mood, sleep quality, stress levels, coping, and well-being for these patients (Ott, Norris, & Bauer-Wu, 2006; Smith, Richardson, Hoffman, & Pilkington, 2005). A narrative review of mindfulness interventions aimed at healthcare professionals notes benefits such as decreased negative affect, anxiety, depression, and burnout (Irving et al., 2009). As cautioned above, the number of studies for both of these meta-analyses as well as the three reviews is relatively small (k = 2-18 for the various meta-analytic outcomes).

Construct validity efforts associated with the development of numerous mindfulness scales have also provided evidence of mindfulness' relationship with mental health and psychological well-being. Mindfulness has shown positive relationships with scales measuring psychological well-being (Baer et al., 2008), life satisfaction (Baer et al, 2004; Brown & Ryan, 2003), positive affect (Brown & Ryan, 2003), self-esteem (Brown & Ryan, 2003), and optimism (Brown & Ryan, 2003). Mindfulness has shown negative relationships with anxiety and depression (Brown & Ryan, 2003; Cardaciotto et al., 2008; Feldman et al., 2007), neuroticism (Baer et al., 2004; Baer et al., 2006; Brown & Ryan, 2003) psychopathology (Baer et al., 2004) and psychological distress (Walach et al., 2006). Mindful individuals also tend to be more skilled emotionally, as mindfulness scales have correlated positively with measures of emotion awareness and regulation (i.e., emotional intelligence; Baer et al., 2004; Baer et al., 2006; Brown & Ryan, 2003; Feldman et al., 2007) and negatively with scales measuring alexithymia (i.e., difficulty in identifying and describing feelings; Baer et al., 2004; Baer et al., 2006; Wachs & Cordova, 2007). Mindfulness is also associated with increased self awareness (Lau et al., 2006; Walach et al., 2006).

Relationships

Mindfulness has also shown benefits in the area of relationships, although most research to this point has focused on romantic relationships. Current research has shown that mindfulness may play an important role in relationship well-being, satisfaction, and communication. In his now-published doctoral dissertation, James Carson (Carson, Carson, Gil, & Baucom, 2004) designed a mindfulness-based relationship enhancement intervention targeted toward nondistressed couples. The 8-week intervention was modeled on Kabat-Zinn's (1982, 1990) MBSR program. Couples participating in the program reported higher levels of relationship satisfaction, closeness, acceptance of one another, and lower levels of relationship distress. In addition, outside of their relationship, individual participants reported more optimism and relaxation as well as lower levels of

psychological distress. In subsequent analysis (Carson, Carson, Gil, & Baucom, 2007), however, the authors attribute these improvements mainly to the couples' sense that they were participating in an exciting and self-expanding activity together more so than an increased acceptance of one another or an increased ability to relax.

A special section on mindfulness in the context of romantic relationships was featured in the *Journal of Marital and Family Therapy* (October 2007). In a study using a longitudinal design, Barnes and colleagues (Barnes, Brown, Krusemark, Campbell, & Rogge, 2007) found that higher trait mindfulness was associated with greater relationship satisfaction as well as lower emotional stress responses, while state mindfulness was positively associated with quality of communication during a discussion. Wachs and Cordova (2007) found similar results, with a positive association between mindfulness and both marital satisfaction and emotion skills. Block-Lerner and colleagues (Block-Lerner et al., 2007) argue that mindfulness-based interventions may also develop empathy in partners, including increased ability to demonstrate perspective-taking and empathic concern. Preliminary results presented from their laboratory support their argument. The potential for mindfulness to impact individuals' empathy was also demonstrated in a study that examined the effects of an MBSR program on medical and premedical students (Shapiro et al., 1998). Empathy levels of the experimental group were found to significantly increase as compared to a wait-list control group. Tipsord (2009) found similar results after investigating effects of a mindfulness intervention for her dissertation. Participants in the intervention reported higher levels of empathic concern, perspective taking, and felt connection to others and to nature.

Other research demonstrates that mindfulness may positively impact not only intimate relationships, but relationships more broadly (e.g., friendships, work relationships, etc.). Coatsworth and colleagues (Coatsworth, Duncan, Greenberg, & Nix, 2010) found that a mindfulness-based parenting intervention enhanced parent-adolescent relationships and affect expressed toward one another. Cohen and Miller (2009)

designed a mindfulness-based training program modeled after MBSR but with an added emphasis on relational awareness. Participants in the program reported an enhanced sense of social connectedness, among other outcomes. Dekeyser and colleagues (Dekeyser, Raes, Leijssen, Leyson, & Dewulf, 2008) found that mindfulness is associated with more frequently expressing oneself in social situations and experiencing less social anxiety when doing so. The "space" that mindfulness provides to encourage thoughtful response rather than habitual reaction may also mitigate or prevent negative social interaction. For example, in a study in which participants were interviewed about instances in which they acted incongruently with their self-view or desired self-view, more mindful individuals demonstrated less verbal defensiveness in responding to the questions (Lakey, Kernis, Heppner, & Lance, 2008). Similarly, after exposing participants to social rejection feedback, Heppner and colleagues (Heppner et al., 2008) found that those participants who had undergone a mindfulness induction prior to the feedback displayed less aggressive behavior than those who had not. In a separate study reported in the same paper, they found that trait mindfulness was negatively associated with both self-reported aggressiveness and hostile attribution bias (i.e., interpreting ambiguous social behaviors as having aggressive intent). The authors posit that these results may be due to more mindful individuals having lower ego-involvement or more secure self-esteem.

Thus, mindfulness—this purposeful *attention* to and *awareness* of the *present moment*, approached with an attitude of *openness*, *acceptance*, and *nonjudgment*—clearly is associated with a host of positive benefits for individuals' mental and physical health and their personal relationships. But does mindfulness offer positive benefits for individuals at work? In the next section, I present the work outcomes to be examined in this paper, and discuss how mindfulness may relate to these outcomes.

Work Outcomes

The work outcomes examined in this paper are overall work performance and interpersonal citizenship behavior. As will be discussed in more depth later in this section, overall performance is comprised of the components of task performance, citizenship performance, and counterproductive performance (Rotundo & Sackett, 2002), although the variance among performance components is often found to be explained by one general factor (e.g., Colbert et al., 2008). Job performance is an outcome important to organizations. Its importance has prompted some to describe performance in the industrial/organizational psychology literature as the "ultimate dependent variable, if not its *raison d'etre*" (Organ & Paine, 1999, p. 337). In this paper, I argue that mindfulness, as developed through an MBSR program, will impact overall performance directly as well as through experienced affect and the quality of relationships with one's coworkers. Evidence has shown that both experienced affect (Barsade & Gibson, 2007; Isen, 1999; Lyubormirsky et al., 2005) and relationship quality (Beal, Cohen, Burke & McLendon, 2003; Chiaburu & Harrison, 2008; Gerstner & Day, 1997; Gully et al., 1995) impact individuals' performance. The hallmarks of mindfulness and the MBSR program—present-moment attention and awareness, openness, acceptance, and nonjudgment—should improve one's affect and allow one to be more emotionally and behaviorally flexible (i.e., less reactive) in one's responses to the moment and to one's coworkers, thus also improving relationship quality.

Citizenship behavior, while a component of overall work performance, will also be examined as a separate dependent variable. Our understanding of job performance has broadened over the last two decades (Hanson & Borman, 2006), and citizenship performance has been an important part of this understanding. Hanson & Borman (2006) argue that "as organizations…move toward more flexible workforces and team-based organizational structures, high levels of citizenship performance are likely to become increasingly important for organizational success" (p. 169) and other scholars seem to

agree with this assessment (Ilgen & Pulakos, 1999; LePine et al., 2002). In addition, mindfulness should facilitate the citizenship component of performance in particular. MBSR teaches one to direct feelings of patience, acceptance, empathy, and compassion not only toward oneself but also toward others and towards one's relationships (Kabat-Zinn, 1990). These feelings toward others are especially compatible with helping others. Thus, this study will examine overall performance, as well as citizenship performance more specifically. As participants' jobs vary widely, specific measures of task performance are not included (although task performance is included in the general work performance measure). As described previously, an item measuring counterproductive behavior is included in the general work performance measure; however, detailed measures of counterproductive performance are excluded at the request of the administration of the mindfulness-based programs due to the sensitive nature of the construct.

Performance

Job performance is an outcome important to both researchers and organizations (Hanson & Borman, 2006; Scullen et al., 2000). Nonetheless, as recently as 1990, Campbell (1990a) decried that researchers had no theories of performance and described research on the structure and content of performance as a "virtual desert" (p. 704). However, the literature has developed since then, such that we have a better understanding of both job performance structure and content.

There are multiple ways of conceptualizing job performance, and Campbell (1994) reviews eight alternative models. Two of the most common include the classic model and the multiple factors model. The classic model views performance as "one thing," in other words, as a unidimensional model in which the general factor accounts for almost all covariances among observed measures. On the other hand, multiple factor models view performance as multidimensional, with components that can be distinguished from one another. The model used in Army's Project A (Campbell, 1990a, 1990b), comprised

of eight higher-order performance components (e.g., job-specific task proficiency, written and oral communication, demonstrating effort, facilitating peer and team performance), illustrates this view.

Campbell (1994) argues that there is no one best model of performance but rather that it depends upon whether one is collecting performance data for the purpose of research or for real-world appraisal, as well as the objectives of the research or real-world appraisal. In this study, overall work performance will be assessed employing an adapted version of Campbell's (1990a) multidimensional performance taxonomy. This adaptation of Campbell's (1990a) taxonomy also captures what Rotundo and Sackett (2002) describe as the three broad components of job performance: task performance, citizenship performance, and counterproductive performance. Task performance includes behaviors that contribute to the completion of a task, such as goods production or service delivery. Citizenship performance, which will be reviewed in more depth later in this chapter, involves behaviors that contribute positively to an organizational environment but may not be task-related, such as helping coworkers or demonstrating organizational values. Counterproductive performance is comprised of deviant behaviors that hurt an organization, such as tardiness, theft, or lack of adherence to organizational rules. In a policy-capturing study conducted to examine how raters weighted these three components in their performance ratings, Rotundo and Sackett (2002) concluded that raters weighted task and counterproductive performance the most; citizenship performance received less but still significant weight.

How will mindfulness affect one's job performance? I propose that mindfulness will be positively associated with individuals' performance at work. Although the direct empirical evidence connecting mindfulness and work performance is scant, theoretical, empirical, and anecdotal evidence connecting mindfulness and other outcomes at work provide clues to the likely relationship between these two variables. I next review mindfulness with respect to stress/burnout, engagement, decision making, and

interactions/relationships with others. These variables are particularly insightful because their relevance to overall work performance likely cuts across multiple dimensions of performance. In other words, employees' stress levels, their engagement with their work, their ability to make clear and unbiased decisions, and their relationships with others likely affect their task, citizenship, and, in some cases, counterproductive work performance rather than just one of these aspects of performance. Thus, to understand the impact of mindfulness on performance, the "ultimate dependent variable" (Organ & Paine, 1999, p. 337) for industrial/organizational psychology researchers and an outcome critical to organizations, I next examine the relationship of mindfulness with other outcomes at work: stress/burnout, engagement, decision making, and interactions/relationships with others.

Stress/Burnout

Research in the management and psychology literatures has established the negative impact of stress and burnout, particularly the burnout dimension of emotional exhaustion, on job performance (Cropanzano, Rupp, & Byrne, 2003; Jex, 1998; Klein & Verbeke, 1999; Maslach, Schaufeli, & Leiter, 2001; Motowidlo, Packard, & Manning, 1986; Parker & Kulik, 1995; Wright & Bonett, 1997; Wright & Cropanzano, 1998). A mindful approach to work should alleviate stress and burnout. In MBSR, one is trained to "sit with" all experiences, even those which are unpleasant or stressful. Participants learn to approach such experiences with an attitude of acceptance and nonjudgment (i.e., avoiding the conclusion that this is a "bad" experience). This practice is thought to build one's ability to tolerate a range of thoughts, emotions, and experiences and lead to equanimity. Indeed, the evidence is clear that mindfulness-based programs have the ability to reduce stress and burnout.

For example, a hospital in Pennsylvania conducted a small study (N = 27 including experimental and control groups) with employees drawn mainly from their nurse population (Cohen-Katz et al., 2004, 2005a, 2005b). The experimental group

showed desired results in all aspects of burnout: a demonstrated reduction in emotional exhaustion and depersonalization and an improved sense of personal accomplishment. Results with emotional exhaustion were the most positive and effects were maintained three months after the MBSR course. In a qualitative portion of the study, participants cited benefits such as increased relaxation, self-acceptance, self-awareness, decreased physical pain, and improved sleep. In terms of effects on their relationships, certainly a potential source of stress at work, they discussed benefits such as increased presence, self-confidence, and empathy and less reactivity and defensiveness. In a study of nursing leaders that employed a randomized controlled trial, Pipe and colleagues (Pipe et al., 2009) found that a mindfulness meditation course was effective in reducing self-reported stress symptoms. Another study of nurses and nurse aides found similar improvements with respect to burnout, as well as improvements in relaxation and life satisfaction (Mackenzie et al., 2006). Galantino and colleagues (Galantino et al., 2005) confirm related results in a sample of university hospital employees. Participants in a mindfulness meditation program experienced a decline in the emotional exhaustion dimension of burnout, as well as a decline in fatigue and an increase in vigor in a measure of mood states.

Studies have also examined the effects of MBSR on students training to become healthcare professionals. Rosenzweig and colleagues (Rosenzweig et al., 2003) concluded that the MBSR program decreased mood disturbance for the experimental group. In particular, they found decreased anxiety and increased vigor in the experimental group while the control group experienced increased anxiety and fatigue and decreased vigor during the same time period, in which the MBSR program concluded as students approached final exams. Their results support those by Shapiro and colleagues (Shapiro et al., 1998), who also saw positive results in medical and premedical students' anxiety and psychological distress for those taking part in an MBSR intervention, even during the exam period. In addition, these students achieved increased

scores on measures of empathy as well as spiritual experiences. Similar results have been found with graduate counseling psychology students (Shapiro et al., 2007). Researchers found that participation in the MBSR program resulted in decreased stress, anxiety, rumination, and negative affect and increased self-compassion and positive affect.

However, the benefits to working adults are certainly not limited to the healthcare field. Klatt and colleagues (Klatt et al., 2009) conducted a study with faculty and staff in a university setting and found significant decreases in perceived stress for the experimental group as compared to the control group. This study is particularly interesting in that they used a "low-dose" intervention, consisting of six weeks rather than eight and 20 minutes of mindfulness practice each day rather than the normally prescribed 45. A small qualitative study of mindfulness and work (Hunter & McCormick, 2008) consisted of interviews with 8 professionals, including a filmmaker, physicist, writer, and investments manager. In unstructured interviews, each individual discussed workplace outcomes stemming from their mindfulness practice. Several of the benefits they cited should facilitate diminished stress and burnout, including more acceptance of one's work situation, increased ability to cope with and remain calm in difficult work situations (i.e., level-headedness), increased adaptability, and increased enjoyment of work. In a similar vein, university faculty member McCormick (Kernochan, McCormick, & White, 2007) feels that mindfulness makes unpleasant teaching tasks more pleasant. Thus, each of these studies supports the idea that mindfulness is a valuable tool to alleviate the stress and burnout that can be so detrimental to job performance.

Employee Engagement

Mindfulness may also promote increased employee engagement, which has been shown to positively relate to desired work behaviors such as taking initiative and pursuing learning goals (Sonnentag, 2003) as well as citizenship behavior, a dimension of performance (Saks, 2006). For instance, MBSR program participants in a study by Rosenzweig and colleagues (Rosenzweig et al., 2003) reported increased vigor with

respect to their training to become healthcare professionals. In a personal account of mindfulness and work, Johnson (2001), a professor of English, sees parallels between the focused concentration of mindfulness developed in his meditation practice and the moments of intense writing and inspiration required for the writing and publishing of stories. These empirical and anecdotal results allude to mindful individuals in a state of engagement with their work, as vigor (Schaufeli, Salanova, González-Romá, & Bakker, 2002) and concentration or absorption (May, Gilson, & Harter, 2004; Rothbard, 2001; Schaufeli et al., 2002) are hallmarks of employee engagement.

Decision Making

By definition, mindfulness entails increased awareness, attention, and receptivity (Brown et al., 2007b; Kabat-Zinn, 1994). These factors allow one to more accurately assess reality, to see reality as it exists rather than as colored by biases or expectations (Kabat-Zinn, 1990). Indeed, a mindful state has been described as "inherently empirical, in that it seeks possession of the 'full facts' in a manner similar to that of the objective scientist" (Brown et al., 2007b, pp. 213-214). Such a state should facilitate less biased decision-making. One physician (Epstein, 1999) believes that the self-awareness that comes with mindfulness can help to highlight one's own emotions and biases in making value-laden clinical decisions; this personal knowledge should also be viewed as a form of evidence. He contends that mindfulness "can link evidence-based and relationship-centered care and help to overcome the limitations of both approaches" (p. 837).

Mindfulness may also facilitate more intuitive decision-making. It has been argued that managers with developed intuition, particularly when combined with rationality, may be more effective decision makers and creative problem solvers than those who rely on rationality alone (Dane & Pratt, 2007; Sinclair & Ashkanasy, 2005). Intuitive decision making has been found to be positively related to both individual (Dane, Rockmann, & Pratt, 2005) and organizational (Khatri & Ng, 2000) performance in uncertain environments. Sadler-Smith and Shefy (2007) propose that mindfulness and

meditation may be key to training managers to use intuition when making decisions and solving problems. They designed, implemented, and evaluated a program intended to develop managers' intuitive awareness. The program employed exercises in mindfulness, including sitting and walking meditation and somatic (bodily) awareness exercises. Participants reported increased intra- and interpersonal sensitivity, sense of perspective and acceptance, and self-confidence in their intuition. They also reported increased awareness of their feelings, thoughts, and thinking processes, that is, metacognition. Although the authors did not evaluate participants' work performance, the research cited above would suggest that development of participants' intuitive skills would positively affect performance through effective decision making.

Interactions/Relationships with Others

Mindfulness also appears to have value for enhancing the way individuals interact with and respond to others, which helps their overall work performance. The focus of mindfulness on present-moment awareness and attention encourages individuals to stay centered in interaction with others so that they can be aware of what is truly occurring. The orientation of acceptance and nonjudgment gives mindful individuals the "space" to respond thoughtfully to what is occurring rather than habitually reacting. The individuals cited below speak to the value of mindfulness in interacting with others, whether it is the increased ability to listen, to demonstrate empathy, or to cooperate with one another.

Barbara Vacarr (2001) is a university faculty member. She believes that mindful presence, as developed by her meditation practice, has helped her in the classroom. Specifically, she believes that mindful presence "has much to offer teachers in developing the ability to respond fully to the tension and vulnerability that often accompany moments of crisis, or 'teachable moments'" (p. 28). As an example, she discusses a particularly tense exchange between an African-American and a White student in her classroom regarding the word tolerance, and how she responded to the exchange. McCormick (Kernochan et al., 2007), also a teacher, feels that mindfulness

makes his teaching more meaningful and increases empathy for and transcends expectations of his students. In another venue, Epstein (1999), a physician, feels that the "beginner's mind" approach developed in mindfulness practice can help a physician to truly listen to a patient so as to understand the patient's perspective and demonstrate empathy and compassion toward this perspective. Graduate psychology students who participated in an adapted mindfulness program with an emphasis placed on relational awareness experienced increased social connectedness (Cohen & Miller, 2009), a type of relational schema reflecting interpersonal closeness with the social world (Lee, Draper, & Lee, 2001). Individuals with high connectedness display more appropriate interpersonal behaviors as compared to those with low connectedness (Lee et al., 2001), which should facilitate relationships.

A recent special section of the *Harvard Negotiation Law Review*, published in conjunction with a live forum held on the same topic, featured an article on mindfulness meditation and law (Riskin, 2002) and commentaries offering various perspectives on its implications. Riskin (2002) argues, and others agree (Codiga, 2002; Freshman, Hayes, & Feldman, 2002; Keeva, 2002), that the present-moment focus and self-awareness that is cultivated through mindfulness practice will better allow lawyers to improve their ability to listen deeply, to entertain other perspectives, and to negotiate better by responding with awareness rather than reacting out of habit from an adversarial stance.

One of the most well-known applications of mindfulness practice to one's work is by National Basketball Association (NBA) coach Phil Jackson, former coach of the championship (1991-1993) Chicago Bulls and current coach of the championship (2000-2002, 2009) Los Angeles Lakers. He is known for his holistic approach to coaching, including his inclusion of Native American spiritual practices and mindfulness practices stemming from Eastern philosophy (Jackson & Delehanty, 1995). Jackson regularly holds mindfulness sessions for his players, conducted by psychologist and Zen enthusiast George Mumford, and considers these private and rarely discussed sessions to be a

competitive secret (Lazenby, 2001). Jackson has described basketball as a "game of moment-to-moment action" (Jackson & Rosen, 2001, p. 289) in which mindfulness is of considerable value. He describes how mindfulness affects his players and their relationships with one another:

> When players practice what is known as mindfulness—simply paying attention to what's actually happening—not only do they play better and win more, they also become more attuned with each other. And the joy they experience working in harmony is a powerful motivating force that comes from deep within, not from some frenzied coach pacing along the sidelines, shouting obscenities into the air. (Jackson & Delehanty, 1995, pp. 5-6)

He believes in mindfulness as a philosophy for all areas of life, teaching that "the trick is to experience each moment with a clear mind and an open heart. When you do that, the game—and life—will take care of itself" (Jackson & Delehanty, 1995, p. 7).

Thus, mindfulness seems to relate to overarching performance qualities such as stress/burnout, engagement, decision making, and interactions with others in such a way that I propose it will facilitate one's overall work performance. However, does mindfulness have any potential negative implications for performance? It is interesting to note that some potential outcomes, while likely benefiting the individual, may be viewed more questionably by the organization. Participants in Hunter and McCormick's (2008) qualitative study also reported a stronger inner focus, such that they were less concerned with external, work-related rewards and recognition or the approval of others. In addition, their focus shifted from their job as their primary source of meaning in their lives to finding multiple sources of meaning. It remains to be seen how such shifts in attitudes affect work-related performance and achievement in the long-term. The filmmaker states that "it may be that my career will be damaged by this (i.e., more realistic, less ambitious work goals). It may be that I will never achieve something I might have achieved. I don't care, because I'm enjoying my life" (Hunter & McCormick, 2008, pp. 12-13). Another interviewee stated that "I'm not sure where this (i.e., mindfulness) is going to lead, and I can even see getting to the point where I toss stop in this business altogether in

and go teach, or write a book, or go work with the kids" (Hunter & McCormick, 2008, p. 17). Peppet (2002), in response to Riskin's (2002) argument that mindfulness will facilitate negotiation, contends that a mindful approach may actually harm a lawyer's ability to negotiate. He maintains that as mindfulness transforms an individual, he or she becomes, over time, a different person—perhaps more ethical and more compassionate. Such an individual may no longer be able to effectively engage in the partisanship and adversarial stance that are required in certain negotiation strategies and that may be in the best interest of one's client. Blatt (2002) argues that the practice of mindfulness meditation cannot be separated from religion, and to encourage this practice is not without controversy for the workplace. Until organizations have a better understanding of how mindfulness practice affects one's work on balance, they are bound to be wary of the development of less attachment to work and its outcomes or compassion where competitiveness may be required.

However, on balance, the theoretical, empirical, and anecdotal evidence reviewed in this section seems to support the idea that mindfulness will benefit one's work performance. One lawyer, who works at a Minneapolis law firm that offered MBSR to its lawyers and support staff, describes it this way, "It's not as if practicing mindfulness can make you a good trial lawyer if you're not one, or make you feel like a different person…It's more like you've never been in shape before and suddenly you are, and you think, 'My God, this really enhances me'" (Keeva, 2004, p. 79). More so than even an enhancement, some see mindfulness as a necessity. Boyatzis and McKee (2005), in their book on resonant leadership, argue that "cultivating the capacity for mindfulness is not just a nice-to-have or something to be done for private reasons; it is actually essential for sustaining good leadership. It can be one of the most important things we do, resulting in a stepwise change in our effectiveness as leaders" (p. 114). For some individuals, it may not only benefit their work, but also change the way they view their work. One academic (McCormick, 2006) views mindful work as meditation itself. He defines mindful work

as "a meditative practice in which work itself is the object of concentration" (p. 1). In essence, individuals focus their attention on the emotions, thoughts, and sensations relevant to a given work activity.

Citizenship Behavior

As discussed earlier, citizenship behavior is a component of overall performance (Rotundo & Sackett, 2002) that has increasing importance in organizations that trend toward more flexible and team-based structures (Hanson & Borman, 2006; Ilgen & Pulakos, 1999; LePine et al., 2002). Mindfulness should foster citizenship in the workplace. MBSR encourages acceptance of, empathy for, and compassion for oneself as well as others and one's relationships (Kabat-Zinn, 1990). These feelings toward others are particularly relevant for helping others. Thus, citizenship behavior is examined as a separate dependent variable.

The citizenship component of performance has its own research literature that can contribute to our understanding of the construct. The work on citizenship behavior was begun by Organ and colleagues in the 1980s as they attempted to identify a dimension of performance that would relate to job satisfaction (Organ, 1988). Their work resulted in the construct of organizational citizenship behavior (OCB), originally defined as "individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization" (Organ, 1988, p. 4). As the construct has evolved, two aspects of the definition have proven to be problematic, that of the behavior as discretionary and as contractually unrewarded (Organ, 1997). There was difficulty with the notion that in-role and extra-role performance could be clearly separated, as well as questions as to the assumption that all in-role performance was formally rewarded by the organization (Organ, 1997). Thus, more current conceptualizations de-emphasize or exclude these components (Organ, 1997), such as this recent definition in a critical review and meta-analysis that defines OCB as "behavior that contributes indirectly to the organization

through the maintenance of the organization's social system" (LePine et al., 2002, p. 52). Related concepts that closely overlap with OCB include contextual performance (e.g., Borman & Motowidlo, 1993; Motowidlo & Van Scotter, 1994), extra-role behavior (Van Dyne, Cummings, & McLean Parks, 1995), and prosocial behavior (e.g., Brief & Motowidlo, 1986; George, 1990, 1991; George & Bettenhausen, 1990; O'Reilly & Chatman, 1986).

In an OCB meta-analysis, Podsakoff and colleagues (Podsakoff, MacKenzie, Paine, & Bachrach, 2000) noted that their examination of the literature identified almost 30 potentially different forms of citizenship behavior. The framework of citizenship behavior most commonly used in research has been Organ's (1988) five-dimension framework which includes altruism (e.g., helping a specific other person), conscientiousness (e.g., carrying out one's role well beyond minimum required levels), sportsmanship (e.g., not complaining or bringing petty grievances), courtesy (e.g., touching base with others whose work would be affected by one's decisions), and civic virtue (e.g., involvement in organizational life) (LePine et al., 2002). LePine and collaborators (LePine et al., 2002) examined the dimensionality of OCB and found that the five dimensions were highly related to one another and suggested that they are "not much more than equivalent indicators of OCB" (p. 61). They proposed that OCB be considered as a latent construct characterized as "a general tendency to be cooperative and helpful in organizational settings" (p. 61).

Researchers have also categorized OCB based on the beneficiary of the behavior. Williams and Anderson (1991) distinguish between organizational citizenship behavior directed at the organization (OCBO; e.g., conscientiousness, sportsmanship, and civic virtue dimensions) and behavior benefiting individuals (OCBI; e.g., altruism and courtesy dimensions). Citizenship behavior directed toward others in the workplace (i.e., OCBI) has received particular attention, perhaps due to the importance of interpersonal relationships in organizations increasingly organized by teams or other interdependent

structures (Settoon & Mossholder, 2002). This study examines citizenship behaviors directed toward others in the workplace, whether focused on people or tasks.

Citizenship behavior is important for both the individual and the organization. For individuals, it is taken into account when their performance is evaluated. In the Rotundo and Sackett (2002) policy-capturing study cited earlier, the authors found that citizenship behavior did play a significant role in managers' performance evaluations. This finding is consistent with meta-analytic results (Podsakoff et al., 2000) that found that citizenship behavior accounted for 43% of the variance in performance evaluations, as compared to objective performance, which accounted for 10%. In studies that controlled for common method variance, these figures were 19% and 11%, respectively. Various reasons are hypothesized for the influence of citizenship behavior on managerial performance evaluations, including the norm of reciprocity, implicit theories of performance in which citizenship and performance are believed to co-occur, and behavioral distinctiveness (e.g., citizenship behavior "sticks out" in managers' minds as distinctive because it is not formally required by the organization; Podsakoff et al., 2000).

At an organizational level, citizenship behaviors relate positively to organizational effectiveness, with studies testing various indicators such as performance quantity, performance quality, financial efficiency, and customer service (Podsakoff et al., 2000). A longitudinal study by Koys (2001) provides information about the causality of this relationship, finding that employee satisfaction and citizenship performance predicted organizational effectiveness; the reverse was not found to be true. Little is known, however, about the mechanisms by which citizenship behavior contributes to organizational effectiveness (Hanson & Borman, 2006).

Because of its consequence for both the individual and organization, it is crucial to understand how citizenship can be encouraged or facilitated. I suggest that mindfulness will be positively associated with one's citizenship behavior at work. A recent study provides some direct evidence on the relationship between mindfulness and

citizenship behavior. Avey, Wernsing, and Luthans (2008) studied the effect of psychological capital (a core factor consisting of hope, efficacy, optimism, and resilience) in predicting employee attitudes (e.g., engagement, cynicism) and behaviors (e.g., citizenship behavior, deviance) in response to organizational change. Mindfulness was positively correlated ($r = .27$) with organizational citizenship in their study. In addition, they found that psychological capital engendered positive emotions, which led to increased citizenship behavior. However, psychological capital interacted with mindfulness in predicting positive emotions, such that mindfulness had a compensatory effect when psychological capital was low. The authors turn to some key hallmarks of mindfulness—awareness and nonjudgment—to explain their findings. They suggest that mindful employees "have greater opportunity to become aware of thinking patterns that challenge their ability to be hopeful, efficacious, optimistic, and resilient at work…such awareness may lead employees to choose more hopeful, efficacious, optimistic, and resilient ways of dealing with stress and resistance to change" (p. 65).

Although this study is the only direct empirical evidence connecting mindfulness to citizenship behavior, we can again, as with job performance, refer to common relationships with other variables to understand how mindfulness and citizenship behavior may relate. In this case, I consider the impact of mindfulness on empathy for others as well as stress/burnout, and in turn, how these variables impact citizenship.

In the special issue of *Harvard Negotiation Law Review* discussed earlier, Peppet (2002) argued that mindfulness develops an ethical and compassionate mindset that may harm an attorney's ability to negotiate in the best interest of his or her client. However, such compassion would likely have the opposite effect on an individual's citizenship behavior. Indeed, mindfulness has been shown to contribute to the development of empathy (Block-Lerner et al., 2007; Cohen-Katz et al., 2005a; Shapiro et al., 1998; Tipsord, 2009), and anecdotal accounts of the teacher (Kernochan et al., 2007) and the physician (Epstein, 1999) discussed earlier support this data. In turn, more empathetic

individuals are more likely to engage in citizenship behavior at work (Settoon & Mossholder, 2002). In addition, I have discussed the empirical work demonstrating the ability of mindfulness to decrease stress and burnout, particularly the burnout dimension of emotional exhaustion (Cohen-Katz et al., 2004, 2005a, 2005b; Mackenzie et al., 2006; Rosenzweig et al., 2003; Shapiro et al., 1998). The evidence regarding the negative relationship between burnout and job performance was strong; some preliminary evidence (Cropanzano et al., 2003) also suggests that the emotional exhaustion dimension of burnout has a negative impact on citizenship behavior as well, mediated by a decrease in organizational commitment.

Thus, mindfulness is proposed to positively affect both performance and citizenship behavior. The preceding discussion begins to paint a portrait of a mindful individual. This individual is likely to be someone who is: more attentive to and aware of what is presently happening within themselves, their environment, and others in their environment; more open to and accepting of what it is they are observing and thus able to maintain a better sense of calmness and equanimity; more engaged in their work and less stressed or emotionally exhausted by their work; and more empathetic toward others. In short, characteristics inherent in mindfulness—the present-focused attention and awareness paired with the attitude of openness, acceptance, and nonjudgment—seem to afford these individuals a more effective response to their work and a healthier state of well-being. While there was some limited evidence presented that mindfulness may result in a level of detachment or compassion that could potentially negatively affect one's work performance, on the whole the empirical and anecdotal evidence presented suggests that mindfulness is a benefit to one's work outcomes. In the following section, I suggest that this benefit is partially due to the experienced affect of mindful individuals, which in turn, allows them to have higher quality relationships with others at work that positively affects these work outcomes. However, these processes are expected to partially mediate the effects of mindfulness on performance and citizenship behavior.

Thus, a test of the direct relationship between mindfulness and these work outcomes is also necessary. Therefore, I propose the following hypotheses:

Hypothesis 1a:

Individuals higher on mindfulness receive higher performance ratings from their supervisors.

Hypothesis 1b:

Individuals higher on mindfulness receive higher citizenship ratings from their supervisors.

Mechanisms of Mindfulness

As reviewed in the above discussion, mindfulness is associated with positive outcomes in the areas of physical health, mental health and psychological well-being, relationships, and work outcomes. However, it is likely that many of these effects are mediated by more proximal processes. While it is important to understand the relationships of mindfulness with outcomes, it is even more critical to understand why these relationships exist, that is, "to understand why relating differently to private experiences has an impact" (Hayes & Plumb, 2007, p. 243). I will briefly review the mindfulness literature with respect to mechanisms of mindfulness, and then will discuss in detail the processes I propose in this study that partially mediate the effects of mindfulness on work performance and citizenship behavior, namely, experienced affect and relationship quality.

Theoretical work and reviews of the mindfulness literature suggest several potential mechanisms of mindfulness. Improved self-regulation is often put forward as a probable mechanism (Baer, 2003; Brown, Ryan, & Creswell, 2007a; Masicampo & Baumeister, 2007; Shapiro et al., 2006). Masicampo and Baumeister (2007) liken the practice of mindfulness to "self-control exercise" through which participants increase their ability to adjust their responses as necessary. Brown and colleagues (Brown et al., 2007a) suggest that, because mindfulness encourages nonjudgment and present-moment

attention, mindful individuals are relieved of excess distractions or intrusive thoughts and emotions related to appraisal or something outside of the present experience. In this way, they have the potential to choose how to behave in accordance with the most appropriate response for the situation.

Several researchers propose exposure as a potential mediating process (Baer, 2003; Brown et al., 2007b; Shapiro et al., 2006). Mindfulness practice trains one to "sit with" all experiences, resulting in voluntary exposure to all experiences, even those which are unpleasant (i.e., exposure). For this reason, it is thought to build one's ability to tolerate a range of thoughts, emotions, and experiences. For example, a recent laboratory study (Arch & Craske, 2006) found that individuals who had undergone a "focused breathing" induction (a proxy for mindfulness as participants had no previous training in mindfulness) demonstrated less emotional reactivity and volatility, particularly in response to a negative stimulus (a block of slides) as compared to a control group.

Nonattachment has also been suggested as a mechanism (Brown et al., 2007b; McIntosh, 1997; Shapiro et al., 2006). Observing one's experience as an objective observer rather than an overly attached or identified participant means that one responds effectively rather than reacts habitually, and can do so with more flexibility. Evidence supports that non-attachment, a component of mindfulness, has been associated with more happiness and a greater ability to cope with stress as compared to attachment (McIntosh, 1997).

Shapiro and colleagues (Shapiro et al., 2006) posit that mindfulness leads to a fundamental shift in perspective, which they term reperceiving. They consider this to be a "meta-mechanism" in that it encompasses additional direct mechanisms. In reperceiving, what was once subject becomes object, and the capacity to observe one's experience objectively increases. According to the authors (Shapiro et al., 2006), this shift in perspective then facilitates additional mechanisms that lead to the positive outcomes associated with mindfulness. They suggest several, some of which have

already been discussed, including 1) self-regulation and self-management, 2) emotional, cognitive, and behavioral flexibility, 3) values clarification, and 4) exposure. In essence, through choosing to bring awareness and acceptance to their experiences, individuals are able to access a wider range of coping skills and choose healthy regulatory responses to experiences and responses more congruent with their value systems. Collectively, these mediating processes may play a role in mindfulness leading to a more integrated functioning (Brown et al., 2007b). An initial test of this theory of the mechanisms of mindfulness garnered mixed results (Carmody, Baer, Lykins, & Okendzki, 2009). All proposed mechanisms showed significant increases after participation in an MBSR program. However, evidence for mediation was weak. Mindfulness and reperceiving were found to be overlapping constructs that both change with participation in MBSR. However, values clarification as well as emotional, cognitive, and behavioral flexibility were found to partially mediate the relationship between a composite mindfulness/reperceiving variable and improved psychological outcomes.

In concert, these suggested processes indicate an enhanced ability to observe (e.g., reperceiving, nonattachment) and to regulate (e.g., exposure, self-regulation). One area in which such abilities would be critical is affect. After years of treating people at work as "cognitive stick figures whose behavior is unaffected by emotions" (Mowday & Sutton, 1993, p. 197), researchers have realized that emotions and moods are both produced at work and have consequences for work outcomes (Barsade & Gibson, 2007; Brief & Weiss, 2002). Mindfulness emphasizes present-moment attention and awareness as well as an acceptance of what it is one observes in the present moment. Applied to affect, mindfulness should allow individuals to attend to one's own and others' emotions. Acceptance of these emotions should allow one the "space" to more effectively respond to, or regulate, their emotions. Thus, mindful individuals should experience improved affect (i.e., more positive affect and less negative affect). Therefore, experienced affect is proposed as the mediating process most proximal to mindfulness.

Experienced Affect

> The secret of life is never to have an emotion that is unbecoming.
> Mrs. Allonby in Oscar Wilde's *A Woman of No Importance* (1903)

In order to discuss the influence of mindfulness on one's affect, we must first understand what affect is. The umbrella of affect encompasses emotions and moods (Matthews, Zeidner, & Roberts, 2002; Weiss, 2002). Emotion researchers have a general consensus as to the basic components of emotion. They are experiential states that are generally connected to some person, object, or defining event; they include recognizable, physiological changes and contain particular behavioral tendencies (Frijda, 1993). They are contrasted with moods, which are generally thought to be less intense, of shorter duration, and lacking an object or defining event (Fridja, 1993). As Barsade and Gibson (2007) note, "affect permeates organizations…strong affective feelings are present at any time we confront work issues that matter to us and our organizational performance" (p. 36). Thus, how one experiences affect at work becomes important. Experienced affect is proposed as the mediating process most proximal to mindfulness, and so I next turn to a discussion of mindfulness and affect.

In studies of affect across multiple cultures, two dominant dimensions, generally referred to as positive affect and negative affect, consistently emerge (Watson, Clark, & Tellegen, 1988). Positive affect reflects the extent to which a person feels enthusiastic, energetic, and alert. Negative affect reflects the extent to which someone feels a variety of unpleasurable moods, such as distress, nervousness, guilt, anger, or fear. Research results indicate a strong dispositional component of affect and affect variability, demonstrating that even transitory moods are a reflection of one's general or dispositional affective level (Watson, 2000; Watson & Clark, 1984; Watson et al., 1988). However, individuals' moods are also influenced by a variety of situational and environmental factors such as one's experiences or one's physical state (Watson, 2000). Affect, therefore, can be thought of as existing on a state-trait continuum. The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), a frequently used measure of

affect, illustrates this idea. Researchers choose over which time period to assess respondents' affect by varying the instructions, asking respondents to rate how they felt right now, today, during the past few days, during the past few weeks, during the past year, and generally or on average. For the shorter time periods (e.g., right now, today), researchers are primarily assessing state affect; as the length of time period increases, researchers are increasingly tapping into individuals' trait affect. High positive affect is generally associated with positive outcomes in the domains of work, love, and health as well as desirable attributes and behaviors such as positive self-concept, likability, and coping (Lyubomirsky et al., 2005). High-negative-affect individuals tend to focus on the negative aspects of people and situations, dwell on mistakes and frustrations, and are less satisfied with themselves and with life (Watson & Clark, 1984). Frequent or high negative affect is associated with health complaints and psychopathology (Watson, 2000). Experienced affect will be assessed in this study using measures of positive affect and negative affect (PANAS; Watson et al., 1988).

Over the years, researchers have debated the structure of affect, specifically whether positive affect and negative affect are opposite ends of a bipolar continuum (with activation, or level of arousal, as a separate dimension; e.g., Green, Goldman, & Salovey, 1993; Russell & Carroll, 1999) or two independent dimensions (but with activation implicit in the framework; e.g., Diener & Emmons, 1984; Tellegen, Watson & Clark, 1999; Watson & Tellegen, 1999). Yik, Russell, and Feldman Barrett (1999) propose an integrated pleasantness-activation circumplex. This figure is essentially a "two-dimensional space (which therefore necessarily shows independence), every dimension of which is bipolar" (Feldman Barrett & Russell, 1998, p. 981). Watson (2000), however, states that the well-debated, seemingly rival structures are in reality not so different, with both models "equally capable of explaining observed phenomena and…mathematically derivable from one another" (p. 33). Researchers in the mindfulness area generally

discuss and measure positive and negative affect as two independent dimensions and, thus, this is how these constructs will be portrayed in this study.

As affect is not predetermined by disposition, participation in a mindfulness program is an opportunity to impact affect. Indeed, individuals who participate in a mindfulness program generally experience improved affect. Evidence supports that participation in a mindfulness program results in increased positive affect and decreased negative affect (Davidson et al., 2003; Jain et al., 2007; Jimenez, 2008; Nyklíček & Kuijpers, 2008; Ortner, Kilner, & Zelazo, 2007; Schroevers & Brandsma, 2010; Sears & Kraus, 2009; Shapiro et al., 2007; Tipsord, 2009; Vieten & Astin, 2008). Such effects have been found in a variety of populations. For example, in the previously cited study of therapists in training, Shapiro and colleagues (Shapiro et al., 2007) found that participants in an MBSR program experienced significant increases in positive affect and decreases in negative affect. Similar results have been found with general community adults (Nyklíček & Kuijpers, 2008; Schroevers & Brandsma, 2010), college students (Jimenez, 2008; Tipsord, 2009), and pregnant women (Vieten & Astin, 2008).

Studies in this area generally assess outcomes using self-report measures from participants. However, neuroscience is beginning to provide other forms of evidence regarding the effects of mindfulness on affect. In a particularly interesting study using a randomized, controlled study design, Davidson and colleagues (Davidson et al., 2003) conducted a mindfulness-based program in a biotechnology corporation. They measured individuals' brain electrical activity before, immediately after, and then 4 months after the training program. The mindfulness program participants showed significantly greater brain activation, specifically left-sided anterior activation, in areas associated with positive emotion as well as faster recovery after negative events as compared to the control group.

These results make sense given what we know about the nature of mindfulness as well as positive and negative affect. In general, mindfulness is associated with "stronger

affect regulatory tendencies including a greater awareness, understanding, and acceptance of emotions, and a greater ability to correct or repair unpleasant mood states" (Brown et al., 2007, p. 220). As described above, high positive affect is described as a state of full concentration, one in which individuals are alert, energetic, and engaged (Watson et al., 1988). Such a description seems consistent with features inherent to mindfulness, such as one's full concentration on the present moment and engagement with present experience (Kabat-Zinn, 1990). In addition, mindfulness has been shown to positively correlate with individuals' reports of the extent to which they feel energized and vital, states indicative of positive affect (Brown & Ryan, 2003). As one would expect, meta-analytic evidence shows a moderate, positive correlation ($\rho = .41$; $SD_\rho = .08$) between mindfulness and trait positive affect (Giluk, 2009).

Again, negative affect reflects the extent to which someone feels a variety of unpleasurable moods (Watson et al., 1988). The portraits of a high-negative-affect individual and a mindful individual are largely a study in contrasts. High-negative-affect individuals are more likely to experience psychological distress and negative emotions and mood states (Watson & Clark, 1984). In contrast to mindful individuals, who are thought to have a greater ability to tolerate a range of thoughts, emotions, and experiences (Baer, 2003; Brown et al., 2007; Shapiro et al., 2006), individuals high in negative affect exhibit psychological discomfort or distress even in the absence of any obvious external stressor (Watson & Clark, 1984). The high-negative-affect individual is less likely to demonstrate psychological well-being (Diener, Suh, Lucas, & Smith, 1999; Watson & Clark, 1984) while the mindful individual is more likely to be psychologically well-adjusted (Brown et al., 2007b).

In addition, those high in negative affect tend to dwell upon mistakes and frustrations (Watson & Clark, 1984). Such rumination, which tends to exacerbate negative thoughts and feelings (Broderick, 2005), is inconsistent with the present-moment focus inherent in mindfulness. Leary and Tate (2007) maintain that a great deal

of negative affect is maintained and exacerbated by an individual's inner "self-talk," the running mental commentary in one's head. One must reduce this "self-talk" to be mindfully focused on the present. In fact, mindfulness training has been found to facilitate positive reappraisal, an adaptive coping process in which frustrations or stressful events are viewed as benign or beneficial (Garland, Gaylord, & Park, 2009). Meta-analytic evidence shows a strong, negative correlation ($\rho = -.51$; $SD_\rho = .07$) between mindfulness and trait negative affect (Giluk, 2009). The above analysis warrants the following hypothesis:

Hypothesis 2:

Individuals higher on mindfulness report higher positive affect and lower negative affect.

Relationships

> Man is a knot into which relationships are tied.
> Antoine de Saint-Exupéry, *Flight to Arras* (1942)

I next turn to a discussion of relationships at work. First I review literature regarding relationships, and then I discuss how an individual's experienced affect should affect the quality of their relationships. Reis and Rusbult (2004) acknowledge that it is difficult to precisely define the concept of relationship. According to a key book in the relationship field (Kelley et al., 1983), "if two people's behaviors, emotions, and thoughts are mutually and causally interconnected, the people are interdependent and a relationship exists. A relationship is defined as close to the extent that two people exert strong, frequent, and diverse effects on one another over an extended period of time" (Clark & Reis, 1988, p. 611).

The study of relationships, or relationship science, has been approached from theoretical perspectives as varied as an evolutionary orientation (i.e., the role of genetics in shaping relationship behavior), an attachment perspective (i.e., the effect of childhood experiences on one's mental models of relationships), and an interdependence orientation

(i.e., a focus on the nature of the relationship between people rather than the people themselves) (Reis & Rusbult, 2004). The latter perspective is most relevant to this study. Much of the work from this perspective is grounded in interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959). According to the theory, social interactions are shaped by properties including correspondence of outcomes (i.e., common or conflicting interests) and the degree, mutuality, and basis of dependence (Reis & Rusbult, 2004). However, these properties and their interaction are complex, as not even the participants always fully or accurately understand the nature of their interdependent relationship (Kelley & Thibaut, 1978). Reis and Rusbult (2004) maintain that the nature of an overall relationship, then, is a product of the unique characteristics of each person, the properties of their interdependence, and the ways in which their characteristics interact in the context of their interdependence with one another (p. 6).

While relationship science has thus far focused mainly on personal or intimate relationships (e.g., Brehm, Miller, Perlman, & Campbell, 2002; Reis & Rusbult, 2004), researchers' interest in relationships at work has recently surged, as evidenced by a recent edited book dedicated solely to positive relationships at work (Dutton & Ragins, 2007). This area of study builds on the fields of positive psychology (Seligman & Csikszentmihalyi, 2000; Snyder & Lopez, 2002), positive organizational scholarship (Cameron, Dutton, & Quinn, 2003), and positive organizational behavior (Nelson & Cooper, 2007) which emphasize studying positive aspects of people and organizations, in other words, our "strengths and virtues" rather than "weakness and damage" so that we can focus on "not just fixing what is broken," but on "nurturing what is best" (Seligman & Csikszentmihalyi, 2000, p. 7). In the study of positive relationships at work, "relationships represent not only the essence of meaning in people's lives, but they also reside deep in the core of organizational life; they are the means by which work is done and meaning is found in organizations" (Ragins & Dutton, 2007, pp. 4-5).

Regardless of where they take place, relationships can be conceived of as a series of interactions with some degree of mutuality, in that the behavior of one individual in the relationship builds off of or takes into account the behavior of the other (Hinde, 1979). Relationships are not static, but rather dynamic, developing and changing over time (Gabarro, 1987; Kelley et al., 1983). The nature of these interactions influences the relationship and one's view of that relationship. This statement is expected to be true with respect to the emotional experiences present in the relationship. Relationship representations are the schemas or mental models that individuals have about relationships (Pietromonaco et al., 2002). They include both abstract knowledge (e.g., the self, or work relationships in general) as well as knowledge about specific relationships and events (e.g., the self as it is in a particular relationship, or interactions with a particular coworker). Researchers in this area suggest that affect is central in the formation and organization of these knowledge structures. Thus, one's assessment of a relationship may be influenced by affective experience and expression (Pietromonaco et al., 2002). Indeed, affect and relationships are so intertwined that Ferris and colleagues (Ferris et al., 2009) assert that "there is little about a relationship that can be understood without understanding its affective tone, and the emotions and feelings, the partners experience in their association with each other" (p. 1384).

The affect literature supports the idea that positive affect is beneficial for individuals and for their relationships. Frederickson's (1998, 2004) broaden-and-build theory asserts that positive emotions broaden individuals' mindsets or modes of thinking which, in turn, builds their personal (e.g., resilience, optimism, creativity) and social (e.g., friendships, social support network) resources. This broadened mindset engendered by positive emotion is akin to a more cognitively flexible mode of thinking. Cognitive flexibility is a "critical quality of healthy relationships" (Ferris et al., 2009, p. 1390), particularly because it provides the mental space to notice unwise cognitive evaluations, which if unnoticed, can result in mistaken attitudes and emotions that affect well-being

(Moore & Malinowski, 2009) and likely relationship quality. In a recent empirical test of the build hypothesis of the theory, Frederickson and colleagues (Frederickson, Cohn, Coffey, Pek, & Finkel, 2008) conducted a field experiment of working adults, half of whom began a practice of loving-kindness meditation (often used in mindfulness-based programs). They found that the meditation practice did increase positive emotions, which in turn, increased a wide range of resources, including self-acceptance, pathways thinking (seeing that there are multiple ways to achieve goals), social support received, and positive relations with others.

Shiota and colleagues (Shiota et al., 2004) argue that positive emotions are critical to the formation and maintenance of social bonds. They assert that the experience and expression of positive emotion assists in regulating interpersonal relationships by providing information (e.g., about the status of the relationship), by evoking emotional responses in others (e.g., affect sharing), and by providing incentives for others' behaviors (e.g., positive emotion rewarding one's prosocial behavior). Consistent with the information-sharing function of emotions, individuals have even been found to infer interpersonal traits, such as affiliation or dominance, from one's expression of emotion (Knutson, 1996).

In a more general vein, individuals who experience frequent positive affect tend to focus on the positive aspects of their social relationships and social surroundings (Watson, 2000). Affect can influence individuals' sense of approach toward one another (Kuppens, Van Mechelen, & Meulders, 2004), with positive emotion expected to enhance a sense of approach and lead to connecting behaviors (Hareli & Rafaeli, 2008). Consistent with this idea, positive emotions may improve the chances that people will desire a future relationship with someone (e.g., Kopelman, Rosette, & Thompson, 2006). Expression of positive affect has been found to increase liking in relationships (Clark & Taraban, 1991). Indeed, in a comprehensive meta-analysis on the benefits of frequent positive affect, Lyubomirsky and colleagues (Lyubomirsky et al., 2005) pose the question

"Do happy people have better social relationships than their less happy peers?" and confidently answer "Our review reveals this to be one of the most robust findings in the literature on well-being" (p. 823). They find that happy people are better able to develop social relationships, have more friends, and enjoy a stronger network of support. They suggest that "the primary mechanism underlying the relation between long-term happiness and the quality and quantity of social relationships is the experience of frequent positive emotions" (p. 833).

Frequent negative affect, on the other hand, is not expected to be beneficial for relationships. Negative affect is associated with individuals' sense of avoidance toward one another (Kuppens et al., 2004), expected to lead to withdrawal, distancing, or disengagement behaviors (Hareli & Rafaeli, 2008). Expression of negative affect has been found to decrease liking in relationships (Clark & Taraban, 1991). Labianca and Brass (2006) suggest two ways in which negative affect may result in negative relationships. They state that individuals high in negative affect "may act in ways that alienate their coworkers, resulting in more negative interpersonal interactions" (Brief, Butcher, & Roberson, 1995, p. 56) because of their tendency to dwell on frustrations and shortcomings. In addition, they may focus more on and display greater reactivity to negative events (Brief et al., 1995), again leading to more negative interactions and relationships.

Affect often occurs within the context of social interactions and relationships. Emotions of others affect us and our emotions affect them. For this reason, some researchers consider regulation of emotion and one's resulting experienced affect to be a social process rather than an intraindividual one (c.f., de Rivera & Grinkis, 1986; Frijda & Mesquita, 1994; Hareli & Rafaeli, 2008; Morris & Keltner, 2000; Parkinson, Fischer & Manstead, 2005; Walden & Smith, 1997). In this social context, there are several mechanisms by which experienced affect may influence relationship quality. As a dyad can be considered a group (Dyer, 1984; Salas, Dickenson, Converse, & Tannenbaum,

1992), research on emotions and groups may be relevant here. Every emotional experience felt by a group becomes part of the group's emotional history (Kelly & Barsade, 2001). These past experiences then influence expectations and behaviors with respect to future experiences. For example, in terms of a relationship, a dyad that has pleasant interactions may lead individuals to look forward to future interactions with one another. They begin interaction in a pleasant mood, which then makes future positive interaction more likely. In the same way, a negative interaction may result in individuals anticipating further negative interaction. Thus, they may begin interaction in a negative mood, which then fuels further negativity. As De Dreu and colleagues (De Dreu, West, Fischer, & MacCurtain, 2001) note, "emotions, and especially the expression of emotions, thus have an important function in the creation of, but also the destruction of social relationships" (p. 202).

However, mindful individuals may be able to "counteract" or at least mitigate this effect of history. As previously mentioned, mindful individuals strive to approach their experiences with an orientation of openness and acceptance (i.e., a "beginner's mind;" Kabat-Zinn, 1990, pp. 35-36), with a willing curiosity and without preconceived expectations, as if experiencing the event for the first time. In terms of a relationship interaction, if one approaches the interaction with preconceived ideas, assumptions, or expectations that stem from the emotional history of the relationship, then one will not be able to experience the moment as it truly is. Thus, a mindful individual who is able to approach each interaction as a unique interaction, full of possibility to be different than previous interactions, has the power to potentially effect change in the relationship by contributing to a developing body of emotional history. For example, mindfulness allows an individual to respond effectively rather than react habitually to a situation and experience (Bishop et al., 2004; Kabat-Zinn, 1990).

The mindful approach, coupled with improved experienced affect on the part of one individual in a relationship, may then impact the affective experience of the other.

Group research demonstrates that members also converge on an affective tone, defined as "consistent or homogeneous affective reactions within a group" (George, 1990, p. 108), through the processes of emotional contagion and emotional comparison (Barsade, 2002; Bartel & Saavedra, 2000; Totterdell, 2000). Emotional contagion is a process of mimicry and synchronization of facial, vocal, and postural movement whereby individuals "catch" the emotions of other individuals (Hatfield et al., 1994). People also compare their emotions with others' emotions and make conscious judgments as to the appropriateness of their own emotions (Hsee et al., 1992), a process of emotional comparison which shapes their own emotional experience and expression. The more effective response to a situation or experience that results from a mindful approach (Bishop et al., 2004; Kabat-Zinn, 1990) may be manifested in high attunement to and effective regulation of emotion and improved experienced affect. The processes of emotional contagion and comparison then operate to influence the emotion of the other individual. People in relationships have been shown to become more emotionally similar over time (Anderson, Keltner, & John, 2003), and individuals that have frequent and continued contact, or are strongly interconnected, are more likely to converge with respect to emotional experience (Bartel & Saavedra, 2000).

Each of these processes—emotional history, emotional contagion, and emotional comparison—will influence the emotional experience of individuals in the relationship. The above discussion does not minimize the individual difference dispositional affect and the role it plays in affective experiences of individuals. Levels of the personality traits positive and negative affect within a group are positively related to the positive and negative affective tones of the group, respectively (George, 1990). These processes illustrate the manner in which individual-level affective experiences are shared, and therefore spread, among both individuals in the relationship or in a larger workgroup (Kelly & Barsade, 2001).

In sum, this review suggests that improved experienced affect will result in higher-quality relationships. Essentially, the mindful approach developed in the mindfulness-based program improves the experienced affect of one party in a relationship, which then influences the emotional experience of the other party. This influence occurs through the processes of emotion contagion and comparison and a continuously developing emotional history. Because affect is so intertwined with one's representation of a relationship, an improved or high-quality affective experience should be associated with a positive assessment of the quality of that relationship. For this reason, I hypothesize the following:

Hypothesis 3:

Individuals higher on mindfulness receive higher scores on relationship quality and this effect is mediated by experienced affect.

Experienced Affect and Performance/Citizenship Behavior

Thus far, I have argued that mindfulness, as developed through a mindfulness-based program, will impact performance and citizenship behavior directly as well as indirectly through improved experienced affect. In turn, experienced affect is expected to influence performance and citizenship behavior directly as well as indirectly through its positive effect on quality of relationships at work. I next review the evidence regarding how experienced affect is expected to influence performance and citizenship behavior directly. I then turn to the indirect effects, specifically, how relationship quality is expected to influence these work outcomes.

Experienced Affect and Performance

The improved experienced affect of mindfulness program participants is expected to facilitate work performance. In a review of why affect matters in organizations, Barsade and Gibson (2007) state that "the evidence is overwhelming that experiencing and expressing positive emotions and moods tends to enhance performance at individual, group, and organizational levels" (p. 51). A review of selected studies within this

literature shows that such a conclusion is supported for both trait and state affect and for a wide-ranging variety of performance outcomes.

For example, in conducting an MBA assessment project, Staw and Barsade (1993) found that trait positive affect facilitated decision making, interpersonal performance, and ratings of managerial performance. In terms of making decisions, high-positive-affect individuals requested more information, had a greater tendency to recognize situational contingencies, and made more accurate decisions. From an interpersonal perspective, they received higher peer ratings of contributions to group effectiveness as well as higher staff observer ratings of participation and leadership. High-positive-affect individuals also received higher ratings on a global measure of managerial potential based on observations, interviews, and simulation performance. In a longitudinal study, Staw and colleagues (Staw, Sutton, & Pelled, 1994) confirm the helpful role of positive emotion at work whereby positive emotion on the job resulted in more favorable supervisor evaluations. In addition, these positive employees had greater supervisor and coworker support, which suggests a supportive social context that should facilitate performance. Côté (1999) conducted a study of salespeople in which salespeople rated their experienced affect daily during a month-long period. Positive affect was positively associated with the number of sales achieved as well as the number of calls made to prospective buyers. Similarly, Sharma and Levy (2003) found that the positive affect that salespeople demonstrated toward their customers significantly predicted their sales performance.

Isen (1999) reviews how positive affect influences cognition. Research supports that positive affect can facilitate cognitive flexibility, creativity, and decision making. For example, in a series of four experiments, Isen and colleagues (Isen, Daubman, & Nowicki, 1987) found that an induced positive affect state resulted in improved performance on a creative task. Induced negative affect and an induced affectless state did not result in comparable performance improvements. The authors suggest that “good

feelings increase the tendency to combine material in new ways and to see relatedness between divergent stimuli" (p. 1130). Such an interpretation is consistent with Frederickson's (1998, 2004) broaden-and-build theory referenced earlier, in which positive emotions engender broadened or more cognitively flexible modes of thinking. In a study of positive affect and clinical reasoning (Estrada, Isen, & Young, 1997), physicians in whom positive affect had been induced were better able to integrate information as well as demonstrate less anchoring (inflexibility in thinking) in a diagnostic clinical problem solving exercise as compared to a control group. Isen (1999) does discuss some contradictory results in this area, where positive affect seems to impair systematic processing, but concludes that this appears to be the case only where the task is dull and unpleasant *and* people feel the task is unimportant. In Lyubomirsky and colleagues' (Lyubomirsky et al., 2005) meta-analysis of positive affect and numerous outcomes, they discuss similar contradictory evidence, but note that the mean effect size of positive affect for performance on complex mental tasks is .25.

Several mechanisms are suggested for the facilitative influence that positive affect has on performance. For example, George and Brief (1996) suggest that positive affect enhances both proximal and distal motivation. They propose that positive affect "enhances distal motivation by facilitating initial involvement, interest, and enthusiasm for work" (p. 89), partly due to its positive impact on employees' judgments related to their ability to complete the task successfully and achieve a reward or outcome that they desire (i.e., valence, instrumentality, and expectancy components of expectancy theory; Vroom, 1964). The authors also assert that positive affect spurs ongoing motivation in the midst of a task, or proximal motivation. They suggest that high-positive-affect employees will persist longer and exert more effort because they are more likely to positively evaluate progress toward their goals, and following these evaluations, set higher goals.

Tice and colleagues (Tice, Baumeister, & Zhang, 2004) take a self-regulatory approach and contend that positive emotions strengthen the self's capacity for regulating itself. Their research (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998; Muraven, Tice, & Baumeister, 1998; Baumeister, Dale, & Tice, 2002) supports the conclusion that self-regulation depends on a limited inner resource that operates like energy. Effective self-regulation depletes this resource, but positive emotion, similar to resting after expenditure of energy, appears to replenish or restore this resource, so that individuals can again effectively self-regulate.

With respect to negative affect, we would expect that high levels of trait or state negative affect are generally not helpful for job performance. High-negative-affect individuals are more likely to experience psychological distress and negative emotions and mood states, even in the absence of any obvious external stressor (Watson & Clark, 1984). Thus, individuals with high negative affect may be more likely to view the challenges and changes inherent in the work environment with fear, anxiety, and distress rather than positivity. Such emotional distress may lead them to be less effective on work-related tasks (e.g., Motowidlo et al., 1986). This view aligns with theories of learned helplessness, which support the idea that individuals with a negative or pessimistic explanatory style (attributing the cause of a negative outcome to internal, stable, and global characteristics of the person) are more likely to display cognitive and motivational deficits (e.g., decreased effort and persistence) and display symptoms of helplessness (Peterson & Seligman, 1984).

Empirical research supports a negative relationship between negative affect and performance. For example, in a study of pathology laboratory employees, trait negative affect interacted with job tenure to predict supervisor evaluations of performance. Specifically, negative affect had a negative impact on job performance for those with low tenure (Cropanzano, James, & Konovsky, 1993). Wright, Cropanzano, and Meyer (2004) studied the effect of mood on job performance. Their results clearly demonstrated that

negative mood has a negative relationship with job performance, even after controlling for positive mood, trait PA, trait NA, and psychological well-being. In addition, negative affect is linked with increased stress and burnout (Chen & Spector, 1991; Spector & O'Connell, 1994; Stoeva, Chiu, & Greenhaus, 2002; Thoresen, Kaplan, Barsky, Warren, & de Chermont, 2003), which have clearly been shown to have a negative impact on job performance (Cropanzano et al., 2003; Jex, 1998; Klein & Verbeke, 1999; Maslach et al., 2001; Motowidlo et al., 1986; Parker & Kulik, 1995; Wright & Bonett, 1997; Wright & Cropanzano, 1998).

Van Yperen (2003) points out we should also consider how positive and negative affect may interact to affect work-related outcomes. For example, in a study of 42 social services employees, he also found a negative relationship between negative affect and job performance but only when positive affect was low as well. When positive affect was high, negative affect was no longer negatively related to job performance. The author suggests that positive affect may "buffer" the negative effect of negative affect on job performance.

In sum, current theoretical and empirical evidence support the view that the improved experienced affect of mindfulness program participants should facilitate work performance.

Experienced Affect and Citizenship

As with performance, the improved experienced affect of mindfulness program participants is expected to facilitate citizenship behavior. It is well established that, in general, "positive affect promotes helpful, friendly, and socially responsible behavior" (Isen, 1999, p. 527; c.f. Carlson, Charlin, & Miller, 1988; Isen & Baron, 1991; Isen, Clark, & Schwartz, 1976; Salovey, Mayer, & Rosenhan, 1991).

Affect at work is predictive of citizenship behavior at work, though it has been found to be more predictive of citizenship behavior targeted toward individuals as compared to citizenship behavior targeted toward organizations (Lee & Allen, 2002). In

a well-cited study investigating positive mood and prosocial behavior at work, George (1991) found that retail salespeople who experienced positive moods at work "were more likely to be helpful, regardless of whether the helpful behavior in question was part of their job responsibilities or was above and beyond the call of duty" (p. 304). Trait positive affect, however, was not found to be associated with prosocial behavior. Williams and Shiaw (1999), in a study of employees in Singapore, obtained similar results, in that employees in a positive mood were more likely to express intentions to engage in citizenship behavior. In this study, however, both trait positive affect and positive mood predicted OCB intentions, and positive mood predicted OCB intentions even after controlling for trait positive affect. In a meta-analysis of personality and citizenship behavior (Borman et al., 2001), trait positive affect had a weighted mean correlation of .18 with citizenship. Lyubomirsky and colleagues' (Lyubomirsky et al., 2005) meta analysis finds similar results, with mean weighted correlations between frequent positive affect and prosocial behavior of .35 for cross-sectional data and .37 for experimental data.

Research has supported several theoretical rationales for the relationship between positive affect and citizenship or helping behavior (c.f., Carlson et al., 1988; Salovey et al., 1991). A positive mood often directs attention toward the self. This enhanced self-attention and awareness may help individuals focus on their own good fortune, which can increase their desire to help others, or at the least reinforce their social responsibility to help others. Individuals in positive moods also tend to see the positive sides of situations and others. Thus, individuals in positive moods are more likely to look favorably on opportunities to help others as well as the individuals who would be the beneficiaries of their helping efforts. In addition, individuals may help in order to maintain their positive moods.

While positive affect generally promotes helping, negative affect, on the other hand, does not generally seem to have the same effect. A meta-analysis of personality

and citizenship (Borman et al., 2001) showed a weighted mean correlation of -.14 between trait negative affect and citizenship. However, negative affect can promote helping under limited conditions (Carlson & Miller, 1987; Lyubomirsky et al., 2005; Salovey et al., 1991). In studies that have induced negative mood by highlighting others' misfortune (as opposed to one's own misfortune), participants seem to dwell on others' troubles, which makes them more likely to consider others and help when needed (Carlson & Miller, 1987). Helping is also more likely when individuals feel personally responsible for their negative affect (e.g., they are the cause of the negative event that precipitated it) and a norm or standard of citizenship is psychologically salient (Carlson & Miller, 1987). The idea that people in negative moods will help others in an attempt to elevate their mood has not been consistently supported, with the exception of the negative state of guilt (Carlson & Miller, 1987; Salovey et al., 1991). Thus, though negative affect can encourage helping under certain conditions, it does not have the impact of positive affect, which consistently leads to helping under the majority of circumstances (Carlson et al., 1988; Isen, 1999; Isen & Baron, 1991; Isen et al., 1976; Salovey et al. 1991).

Based on the overall evidence presented regarding experienced affect, performance, and citizenship, I hypothesize the following:

Hypothesis 4a:

Individuals higher on positive affect and lower on negative affect receive higher performance ratings from their supervisors.

Hypothesis 4b:

Individuals higher on positive affect and lower on negative affect receive higher citizenship ratings from their supervisors.

Relationship Quality and Performance/Citizenship Behavior

I have argued that mindfulness, as developed through a mindfulness-based program, will impact performance and citizenship behavior directly as well as indirectly through experienced affect and relationship quality. Mindful individuals should have

higher-quality relationships at work, driven in part by their affective experience. I next discuss how the quality of one's relationships at work is related to both one's performance and citizenship behavior.

Relationship Quality and Performance

High-quality relationships at work are expected to be positively associated with work performance. Managerial theory has long asserted that the ability to work effectively with and through others in order to accomplish work goals, which would seem to require quality relationships with others, is a key competency of effective managers and leaders at any level (Katz, 1974; Mann, 1965). This ability is also a factor that supervisors, peers, and subordinates take into account when developmentally rating individuals' performance (Scullen, Mount, & Judge, 2003).

However, the value of quality relationships is certainly not limited to managerial work. Recent theoretical pieces on positive relationships at work argue that positive relationships at work are "resource producing" or "capacity generating" (Baker & Dutton, 2007; Glynn & Wrobel, 2007) for anyone in them. Baker and Dutton (2007) explain that "just by being in one (of) these forms of connection, people create valuable assets like trust, confidence, affirmation, energy, and joy, which are durable resources that have impact" (p. 341) not only for the individuals, but also for the unit and the organization. They portray a work environment of high-quality connections as one which provides "task enabling" connections and opportunities (pp. 332-333).

Empirical evidence demonstrates a consistent positive association between relationships at work and performance. Leader-member exchange (LMX) theory suggests that the quality of the relationship between a leader and his or her follower affects both leader and follower attitudes and behaviors as well as outcomes at the group and organizational level (Gerstner & Day, 1997; Liden, Sparrowe, & Wayne, 1997). Meta-analytic estimates show that a high-quality relationship between leader and

follower is positively associated with performance (Gerstner & Day, 1997), though this association is stronger when relationship quality is rated by the leader.

Similar effects are observed with respect to coworker relationships. In a meta-analytic review of affective (e.g., displays of positive emotion such as friendliness) and instrumental (e.g., giving information or behavioral assistance) coworker support, Chiaburu and Harrison (2008) found that both types were positively associated with task performance. The teams literature provides similar conclusions. Teams consisting of members who consistently fulfill social roles such as encouraging others, cooperating, and satisfying teammates' emotional needs—behaviors which would seem to contribute to higher-quality relationships—have greater task performance as compared to those where not all members fulfill such roles (i.e., greater variance in social roles; Stewart, Fulmer, & Barrick, 2005). Cohesive teams (i.e., those with a shared liking for or attachment to one another) have stronger performance (Beal et al., 2003; Gully et al., 1995), regardless of whether performance is conceptualized in terms of behavior, outcomes, effectiveness, or efficiency (Beal et al., 2003).

Results demonstrating the positive association between individuals' relationships with coworkers and supervisors and their performance are often explained in an exchange framework. In other words, individuals who are treated well and given support by their supervisor and coworkers will "pay them back" by giving extra effort and attention to perform their job well, and vice versa. Their performance helps to advance the goals of the group and organization of which all members are a part. Such behavior is consistent with established theories such as the norm of reciprocity (Gouldner, 1960) and coordinated turn-taking (Kelley & Thibault, 1978).

The impact of relationships on performance can also be accounted for through enhanced motivation and communication/coordination processes. These are two mechanisms used to explain why cohesive groups perform better (Beal et al., 2003). In addition, we know from leadership research that leaders who demonstrate concern,

respect, support, and appreciation for their followers (i.e., Consideration)—behaviors that would seem critical in developing high-quality relationships with them—have both more motivated followers and higher group-organization performance than leaders who do not demonstrate high Consideration (Judge, Piccolo, & Ilies, 2004).

Blatt and Camden (2007), in a recent qualitative study of temporary employees' sense of community, confirm that positive connections with others at work facilitate task performance. They also suggest that this task facilitation effect occurs through communication/coordination and motivational processes. In the words of one participant, positive connections "helped me because I can communicate with other people fairly easily. When I need to ask for something, I can just go straight to the person without any hesitation" (p. 259). Another participant remarked that bonds with coworkers "give(s) you more drive to do your job really well and go above and beyond" (p. 259).

Relationship Quality and Citizenship Behavior

Relationship quality is also expected to positively influence citizenship behavior. Interdependent relationships are proposed to be governed by norms that result in two distinct types of relationships (Clark & Mills, 1979, 1993). In exchange relationships, participants are concerned with equity and fairness in terms of what one gives to a relationship and what one gets from it. This is in contrast to communal relationships, in which the primary concern is one another's welfare; there is a mutual responsiveness to one another's needs. Contributions are theorized to be "tracked" in an exchange relationship, with prompt "repayment" expected; whereas the exchanges that take place in a communal relationship are not accounted for so quickly (Brehm et al., 2002). Both types of relationships can be "close" relationships (Reis & Rusbult, 2004) and norms governing the relationship are generally independent of length of relationship (Mills & Clark, 1994). More businesslike relationships generally operate according to an exchange model (Brehm et al., 2002). However, friendships may be either type, as communal and exchange norms are about equally likely to apply to them (Clark & Mills,

1993). It is also possible to have a communal and exchange relationship with the same person (e.g., sell something to a friend, have an intimate relationship with a coworker), with a distinction made between what is appropriate for the business as compared to the personal relationship (Mills & Clark, 1994).

However, both communal and exchange norms (Clark & Mills, 1979, 1993) should encourage citizenship behavior. In a communal relationship, the needs and welfare of the other party are of primary concern. Thus, in such a relationship, one would expect that individuals would engage in citizenship behavior if the other party needed help. In a high-quality exchange relationship, equity exists in terms of what one gives and receives in the relationship. Because there is a concern to maintain such fairness, any helping behavior by one party in the relationship is expected to be reciprocated by the other party. Thus, there would be an ongoing cycle of helping behavior in a high-quality exchange relationship.

Empirical evidence supports this expected association between relationship quality and citizenship behavior. In a study of nurses and their supervisors, Anderson and Williams (1996) found that the quality of one's working relationship with another was positively associated with helping behavior. Their results demonstrated that individuals in a high-quality relationship perceive lower costs associated with seeking help. Thus, they seek help from their coworkers and supervisors and are, in turn, more likely to receive it. Recent studies (Bowler & Brass, 2006; Chiaburu & Harrison, 2008; Chiaburu, Marinova, & Lim, 2007; Kamdar and Van Dyne, 2007; Venkataramani & Dalal, 2007) demonstrate similar results. In a study of engineers, their peers, and their supervisors, Kamdar and Van Dyne (2007) found that the quality of exchange relationship with supervisors (LMX) and coworkers (team-member exchange; TMX) was predictive of helping supervisors and coworkers, respectively. Chiaburu and colleagues showed that affective and instrumental coworker support (Chiaburu & Harrison, 2008), as well as satisfaction with and commitment to coworkers all lead to citizenship behavior

(Chiaburu et al., 2007). Strength of friendship (Bowler & Brass, 2006) and strength of positive affective relationship (Venkataramani & Dalal, 2007) have also been found to predict interpersonal citizenship or helping behavior. Additionally, meta-analytic evidence demonstrates that the quality of relationship with one's leader correlates positively with citizenship behavior, particularly behavior targeted toward individuals (Ilies, Nahrgang, & Morgeson, 2007). As the authors (Ilies et al., 2007) describe, "subordinates in higher quality LMX relationships 'pay back' their leaders by engaging in citizenship…behaviors that benefit the leader and others in the work setting" (p. 269). This explanation is the same as that generally given for the positive association of relationship quality with performance.

We can also examine variables that are generally markers of or expected to correlate positively with high-quality relationships. For example, variables such as trust, perception of support, perspective taking, and empathic concern—all generally indicators of high-quality relationships—have been found to be positively correlated with citizenship behaviors (McAllister, 1995; Settoon & Mossholder, 2002). In addition, one would expect positive relationships at work to be associated with positive mood states. Social psychology research shows that such mood states are associated with the tendency to engage in altruistic behaviors toward others (e.g., Isen & Baron, 1991; Isen et al., 1976; Salovey et al., 1991).

Relationship quality is the final mediator linking mindfulness to performance and citizenship behavior. I have argued that participation in a mindfulness-based training program will develop one's ability to purposefully pay attention to and be aware of the present moment and approach it with an attitude of openness, acceptance, and nonjudgment. This enables an improved affective experience, which has a positive effect on relationships with coworkers. The research reviewed above supports the idea that such an effect on relationship quality would facilitate positive outcomes in terms of

performance as well as citizenship. Thus, based on the above discussion, I posit the following:

Hypothesis 5a:

Individuals higher on mindfulness receive higher performance ratings from their supervisors and these effects are mediated by experienced affect and relationship quality.

Hypothesis 5b:

Individuals higher on mindfulness receive higher citizenship ratings from their supervisors and these effects are mediated by experienced affect and relationship quality.

Interdependence

The influence of mindfulness on performance and citizenship behavior is proposed to be moderated by type of job, such that this effect is stronger for individuals in jobs in which relationships are more critical to success. Specifically, this moderation effect will take place on the mediating link of relationship quality and the work outcomes. Relationships are likely to be more crucial for incumbents in jobs that are interdependent with other jobs and in which they must rely on others to complete their tasks. Thus, the literature regarding interdependence is relevant here and will be reviewed next.

What is Interdependence?

Interdependence is defined as the extent to which contextual elements outside an individual and his or her behavior (e.g., task and outcomes) require that individuals cooperate and work interactively to complete tasks (Stewart & Barrick, 2000; Wageman, 2001). This definition places emphasis on the structures in place (e.g., tasks, goals, rewards) that require interdependence and is differentiated from how people actually behave, which may not necessarily be congruent with the behavior that is desired (Wageman, 2001).

Interdependence is generally viewed as a multidimensional construct consisting of three main dimensions: task interdependence, goal interdependence, and reward interdependence (Campion et al., 1993; Wageman, 1995, 2001). Task interdependence exists when jobs are connected such that the performance of one depends on the successful performance of the other (Kiggundu, 1981, 1983). In an interdependent task, group members depend on one another to accomplish the work (Campion et al., 1993). According to Wageman (2001), multiple elements determine the level of task interdependence, including how the task is described, the rules or instructions about the process, the physical technology of the task, and resource distribution (e.g., skills, information, materials).

Goal interdependence refers to the extent to which goal attainment is contingent on collective performance (Wageman, 2001). Goals can be established for individuals, groups, or both (Wageman, 1995, 2001). For maximum effectiveness, it is recommended that both collective and individual goals exist and that individual goals be linked to collective goals (Campion et al., 1993). Reward interdependence refers to the extent to which individuals' rewards are dependent upon the performance of their coworkers (Wageman, 2001). Rewards can be based on individual performance, such as commission paid to an individual salesperson, or collective performance, such as a gainsharing plan, or both (Wageman, 2001). Together, goal and reward interdependence are often referred to as outcome interdependence (Wageman, 1995, 2001). Although task, goal, and reward interdependence are distinct, they are generally related and tap into a general interdependence factor (Gully et al., 2002). For this reason, in this study, I focus on task interdependence for simplicity and brevity of measure.

Interdependence as a Moderator of Mindfulness-Performance

Mindfulness facilitates relationship quality through experienced affect. It seems logical that tasks would be completed more effectively when individuals have good relationships with those with whom they work, but these effects should be stronger in

situations in which individuals must cooperate and interact with others in order to complete their tasks. Thus, interdependence should moderate the mindfulness-performance relationship, specifically on the mediating link from relationship quality to performance.

Indeed, the theory of relational coordination (Gittell, 2003b) argues that high-quality relationships are critical to highly interdependent work. In other words, interdependent work would benefit from the mutuality, positive regard, and responsiveness to one another's needs that are part of high-quality connections at work (Dutton & Heaphy, 2003). This perspective views the coordination that is required by interdependent work as a relational, rather than mechanistic, process. Based on her qualitative research in the airline industry, Gittell (2003a) describes Southwest Airlines as an example of using relationships to achieve performance. She portrays the airline industry as one in which interdependence among groups such as pilots, flight attendants, gate agents, etc. is required but where cooperation is often not the norm. Gittell (2003a) argues that Southwest achieves coordination and, in turn, performance through relationships characterized by shared goals, shared knowledge, and shared respect.

Other research examines interdependence as a moderator of variables that should reflect high-quality relationships (e.g., cohesion, communication) and performance. For instance, in meta-analyses of team performance, Gully and colleagues (Gully et al., 1995; Gully et al., 2002) established that cohesion had a stronger effect on team performance when tasks were highly interdependent ($\rho = .46$) as compared to when they were less interdependent ($\rho = .21$). Barrick and colleagues (Barrick, Bradley, Kristof-Brown, & Colbert, 2007) also demonstrated that interdependence moderates the relationship between team mechanisms (e.g., cohesion and communication) and firm performance. Although this empirical evidence reflects a different level of analysis (i.e., group and organization) than the individual-level relationships proposed in this study, it does provide supportive data for the logic of interdependence as a moderator of relationship

quality and performance. Cohesion and communication, the variables investigated in these studies, are consistent with characteristics one would expect to see in high-quality relationships, the variable I am investigating. Thus, because cohesion and communication have a stronger effect on performance in interdependent contexts, it is reasonable to posit that the quality of one's relationships with coworkers and supervisors will also matter more to performance in interdependent contexts.

Interdependence as a Moderator of Mindfulness-Citizenship Behavior

Mindfulness facilitates relationship quality through experienced affect. I have already argued that relationship quality will encourage citizenship behavior. This should be especially true in an interdependent context, where one would expect that norms of exchange and reciprocity would develop (Settoon & Mossholder, 2002). Thus, interdependence should moderate the mindfulness-citizenship relationship, specifically on the mediating link from relationship quality to citizenship behavior.

With respect to citizenship outcomes, studies have shown that interdependence is positively associated with individuals' engagement in citizenship (i.e., extrarole or prosocial) behavior (Anderson & Williams, 1996; Comeau & Griffith, 2005; Pearce and Gregersen, 1991). Comeau and Griffith (2005) found strong main effects of task and goal interdependence on organizational citizenship behavior. They also found an interaction effect, such that citizenship behavior was highest where both types of interdependence were high. Pearce and Gregersen (1991), however, demonstrated a mediated effect. Their results indicated that interdependence promoted a subjective feeling of responsibility that, in turn, influenced extrarole behavior. Anderson and Williams' (1996) results indicated that task interdependence was indirectly associated with helping behavior through its positive relationship with help-seeking behavior. In other words, there was a relationship between one person's help-seeking and another's helping; task interdependence directly encouraged help-seeking and indirectly

encouraged helping. Wageman's (1995) previously cited Xerox study also found a positive relationship between interdependence and developed norms of cooperation.

The above discussion leads to my final hypotheses:

Hypothesis 6a:

The positive relationship between relationship quality and performance is stronger when the interdependence level of an individual's role is high than when the interdependence is low.

Hypothesis 6b:

The positive relationship between relationship quality and citizenship is stronger when the interdependence level of an individual's role is high than when the interdependence is low.

In this chapter I reviewed the concept of mindfulness, a quality of consciousness that consists of a purposeful *attention* to and *awareness* of the *present moment*, approached with an attitude of *openness*, *acceptance*, and *nonjudgment*. I discussed the research on mindfulness and its beneficial connection with a host of outcomes in the areas of physical health, mental and psychological health, and intimate relationships. I then outlined a model in which mindfulness positively impacts work performance and citizenship behavior both directly and indirectly through its improvement of one's affective experience and the quality of relationships at work. Participation in a mindfulness-based training program is expected to result in improved experienced affect (i.e., increased positive affect and decreased negative affect). Mindful individuals have an enhanced ability to regulate affect. They are able to be more attentive to and aware of the present, including their own and others' emotional states. The attitudes of openness and nonjudgment that are encouraged in a mindful approach increases individuals' ability to tolerate a variety of emotions and experiences. They allow one the "space" to respond effectively rather than react habitually. In turn, improved experienced affect should enhance the quality of one's relationships at work. Affective experience is central to

one's relationship judgments, and thus, improved or high-quality emotional experience should be associated with a positive assessment of the quality of that relationship. Positive affect is critical to the formation, maintenance, and quality of relationships, while frequent negative affect has the potential to harm relationships. I contend that those with high-quality relationships at work are more likely to display both effective performance and citizenship behavior. Finally, I argued that interdependence will moderate the effect of mindfulness and these work outcomes, specifically on the link between relationship quality and the work outcomes. The effects of mindfulness as carried through relationship quality will be more pronounced in interdependent contexts in which relationships are more important. In the following chapter, I present the methodology of a field study designed to test the preceding hypotheses.

CHAPTER III

METHODOLOGY

In the previous chapter, I integrated the literatures on mindfulness, positive and negative affect, relationships, and performance and citizenship behavior to derive hypotheses explaining how mindfulness may influence performance and citizenship behavior. In addition, I also suggested how the level of interdependence of an individual's role may moderate the relationship between relationship quality and the ultimate dependent variables. Figure 1 in Chapter I depicts the hypothesized relationships. In this chapter I will describe a field study (IRB #200808720) conducted to empirically test these hypotheses.

Participants

The study employed an experimental group and a nonequivalent control group. Participants in the experimental group were enrolled in the Mindfulness-Based Stress Reduction (MBSR) program or Mindfulness-Based Cognitive Therapy (MBCT) program offered through University of Iowa (UI) Hospitals and Clinics (discussed in further detail below) during sessions offered in winter, spring, summer, and fall 2009. Participants in the nonequivalent control group were individuals who have not participated in the MBSR or MBCT programs. Control group participants were drawn from the pool of UI faculty and staff who had either completed the Personal Health Assessment (PHA) through UI Wellness or attended educational seminars offered by UI Wellness. As explained on the UI Wellness website (University of Iowa Wellness, n.d.), the PHA survey tool consists of questions "related to individual lifestyle practices and health history factors that have the highest impact on individual health, and biometric measures to determine health status… additionally, the PHA addresses a person's 'readiness to change' that allows for development of tailored interventions to meet specific needs." Individuals who complete the PHA are then contacted by a UI Wellness Health Coach for follow-up. Some of the individuals who complete the PHA may choose to enroll in the MBSR or MBCT program

based on UI Wellness recommendation. They were then eligible for the experimental group. Those that did not enroll in MBSR/MBCT were eligible for the control group. In addition to the PHA survey tool, UI Wellness offers educational seminars on topics such as obtaining a good night's sleep, eating healthfully, and managing one's energy through a focus on emotions, spirit, mind, and body. These free seminars are offered during the workday to UI faculty and staff. The research opportunity was presented at these seminars to attendees who had not previously completed a mindfulness-based training intervention. An equivalent control group is ideal and other research designs (e.g., a lagged design such that individuals also interested in enrolling in the mindfulness program serve as members of the control group before taking the class at a later date; Shadish, Cook, & Campbell, 2002) could potentially accomplish this ideal. However, such a design would not have been possible under this study's circumstances. Mindfulness programs are offered frequently such that anyone interested is able to begin the course immediately or in a time period shorter than the duration of this study (i.e., there is no built-up waitlist to serve as a lagged control group).

Because this study focuses on mindfulness and work outcomes, all participants were employed in a part-time or full-time job outside the home for which they were paid. Participation was voluntary. Participants must have read an informed consent document (see Appendix A for the informed consent document for the experimental group/mindfulness program participants and Appendix B for the informed consent document for the control group/Wellness referrals); completion of the surveys indicated consent.

The targeted sample size was between 120-140, including both the experimental and control groups. The goal was to enroll 80 participants (out of approximately 160 forecasted available) in the experimental group and 40-60 participants in the control group. This targeted sample size was not achieved in the experimental group. Twenty-nine individuals (27 MBSR participants and 2 MBCT participants) participated in the

experimental group out of 190 eligible individuals (165 MBSR participants and 25 MBCT participants). Thus, only 16% of MBSR and 8% of MBCT participants chose to enroll in the study (percents are approximate, as those who were not employed were not eligible, though the mindfulness course administrator estimates this to be a very small percentage). Of the 29 who participated at Time 1, 22 completed Time 2 and 23 completed Time 3 (note that the multiple timepoint study design is discussed in the procedures section). The targeted sample size was achieved for the control group. Fifty-nine individuals enrolled in the control group at Time 1, decreasing to 53 at Time 2 and 52 at Time 3. Approximately 475 individuals were presented with the opportunity to enroll in the control group, thus, 12% of those eligible chose to enroll in the study.

Experimental group participants were recruited with the assistance of Bev Klug, UI Mindfulness Programs Director. All those interested in participating in the MBSR or MBCT program must attend a mandatory information session conducted by Bev Klug. I attended 23 scheduled information sessions and introduced the study at each of these sessions (see Appendix C for the recruitment presentation outline). Control group participants were recruited with the assistance of Joni Troester, UI Wellness Director. Each individual who completes the PHA is contacted by a UI Wellness Health Service Coach, who introduced the study to the potential participants. After having difficulty reaching enrollment targets for control group participants, I implemented two additional recruitment methods. In September 2009, coaches contacted via e-mail their clients who had completed the PHA within the last two years to solicit their participation in the study. I also attended 12 Wellness educational seminars offered from September to December 2009 to introduce the study to potential participants at the seminars (For the control group, the Health Coaches and I used the same recruitment presentation outline shown in Appendix C, though talking points related to participation in a mindfulness program were not presented). All potential experimental and control group participants received three documents: a recruitment flyer (see Appendix D), the abovementioned informed consent

document (see Appendix A for experimental group and Appendix B for control group), and a sheet with the survey link to access the first survey electronically (see Appendix E for experimental group and Appendix F for control group). Participants who expressed interest in participating, but preferred to complete the surveys on paper were given a hard-copy survey packet at that time. Both experimental and control group participants were compensated for their participation. They were eligible to receive a $25 Amazon.com gift card for completing all phases of the study. Participants who only completed part of the study received a pro-rated gift card.

Participants in the study held a variety of jobs. Within the experimental group, individuals held jobs such as secretary, stocker, research assistant, nurse, business/administrative manager, social worker, pharmacy technician, professor, chef, and computer application developer. The most common job was research assistant, with 4 individuals (14% of experimental group) holding this job. Within the control group, participants' jobs reflected a similar diversity. Individuals held jobs such as secretary, mail clerk, network engineer, operations director, nurse, professor, security supervisor, consultant, pharmacist, custodian, and research assistant. The most common job was secretary/clerical, with 22 individuals (37% of control group) holding this type of job.

Coworkers and supervisors of participants in both the experimental and control groups also provided data (e.g., relationship quality by coworkers; citizenship behavior and performance by supervisors) regarding the participants. However, their participation was expected to last no longer than 15 minutes (across three time periods); thus, they were not compensated for their efforts. Coworkers and supervisors did not respond for all participants in the study. For the experimental group, coworkers rated relationship quality for all 29 participants at Time 1 but this drops to 25 at Time 2 and 23 by Time 3. Supervisors rated job performance and citizenship behavior for 24 participants at Time 1, 20 at Time 2, and 17 by Time 3. For the control group, coworkers rated relationship quality for 58 participants at Time 1, 53 at Time 2, and 50 by Time 3. Supervisors rated

job performance and citizenship behavior for 39 participants at Time 1, 33 (performance) or 34 (citizenship) at Time 2, and 24 by Time 3.

Mindfulness Program

The UI MBSR/MBCT programs are modeled on the stress reduction program founded by Jon Kabat-Zinn at the University of Massachusetts Medical Center in 1979 (Kabat-Zinn, 1990). A description of these mindfulness-based programs was presented in the previous chapter but is restated here for review, as it is central to the methodology of this study. The MBSR program is an 8-week program in which participants meet once per week for a two-hour group session for instruction, discussion, and practice in mindfulness and meditation as rooted in the Eastern perspective. The program also includes participation in a 6-hour retreat in which participants engage in various meditation practices in silence followed by a brief discussion at the end of the day. Participants are also asked to participate in formal mindfulness practice for 45 minutes six days per week as well as various informal practices. The MBCT program, targeted specifically toward those who have a history of multiple episodes of depression but who are currently in remission, is similar in format and structure. Participants in the MBCT program learn to integrate mindfulness meditation practices with cognitive-behavioral therapy in a group environment, though in a smaller group of participants as compared to a typical MBSR course.

Four types of formal mindfulness practice are learned in the program: body scan, yoga, sitting meditation, and walking meditation (Kabat-Zinn, 1990). In the body scan, participants are instructed to focus on various areas of the body, generally as they are lying down with their eyes closed, and observe the sensations in each area. Yoga involves gentle and slow movements drawn from hatha yoga. Participants focus on being fully present with their movement and breathing. Sitting meditation entails sitting in a relaxed yet alert position while one focuses on his or her breathing, continuing to observe other sensations that arise but generally returning to the breath. In walking meditation,

one walks slowly and purposefully, again focused on the breath and bodily sensations. Informal practices include conducting ordinary activities such as eating or brushing one's teeth in a mindful manner. Participants keep a log of their observations during formal and informal practice as part of the course. Both the formal and informal mindfulness practice is intended to help participants cultivate awareness and a higher quality of consciousness so that they may approach their lives and each activity within it in a mindful way.

I participated in the MBSR program during summer 2008 so that I would have an accurate and personal understanding of mindfulness and a mindfulness-based training program.

Procedures

My study was conducted with the cooperation of the UI MBSR/MBCT programs and UI Wellness. Participation by all individuals was voluntary. Data for the experimental group was collected pre-program, at the conclusion of the program ("post-program"), and one month after program completion. The control group followed a parallel collection effort, as did the coworkers and supervisors of the study participants. Table 1 illustrates this research design.

Table 1. Graphical Illustration of Research Design

	PreSurvey	Intervention	PostSurvey1[1]	PostSurvey 2[2]
MBSR/MBCT Training Group	O	X	O	O
Control Group	O		O	O

[1]PostSurvey 1 takes place at the conclusion of the training intervention

[2]PostSurvey 2 takes place 4 weeks after the conclusion of the training intervention

Prior to beginning the MBSR/MBCT program, experimental group participants completed the pre-survey (Survey #1; 158 items; see Appendix G for measures employed in the study). This survey included self-report measures of mindfulness, positive and negative affect, and role interdependence. They also provided contact information (i.e., name, e-mail, and phone number) for a representative sample of five coworkers (i.e., not simply one's "best friends" at work) and their supervisors.

Experimental group participants then participated in the 8-week MBSR/MBCT program. As part of the program, participants record their weekly mindfulness practice on logs that are then turned in to the instructor. These logs were collected as part of the study. At the end of the program, participants completed the first post-survey (Survey #2; 101 items), which consisted of the same self-report measures of mindfulness and positive and negative affect. In addition, they had the opportunity to respond to several open-ended questions (e.g., How has mindfulness affected your relationships with others at work?; How has mindfulness affected your work?) regarding mindfulness and their work to allow for a richer understanding of the relationships investigated in this study. Four weeks after the completion of the MBSR/MBCT course, these participants completed the final post-survey (Survey #3; 105 items). This was the same survey as Survey #2, however, it also added in questions regarding their amount of mindfulness practice since the course has ended. Each survey was expected to take approximately 25 minutes to complete.

As previously mentioned, the data collection effort took place in accordance with MBSR/MBCT sessions offered in the winter, spring, summer, and fall of 2009. Thus, the above cycle took place during four time periods: four courses in winter 2009, three courses in spring 2009, one course in summer 2009, and three courses in fall 2009. Participants had the option of completing the surveys online, through the UI Websurveyor system, or on paper, using packets containing all the measures and returned to Bev Klug, the mindfulness program director.

The control group followed a parallel collection effort in terms of survey content (with the exception of questions regarding formal mindfulness practice and open-ended questions about mindfulness and work) and the timing of survey completion (i.e., Survey #1 coinciding with the experimental groups' pre-training survey, Survey #2 given 7-8 weeks later at "program completion" time, Survey #3 completed four weeks after that). Enrollment of control group participants was ongoing throughout the data collection period, however, individuals were "held aside" to start in organized groups that match the timing of data collection for the experimental group. This was done because having simultaneous experimental and control group data collection can assist in ruling out external forces as alternative explanations for any effects found. Like the experimental group, control group participants had the option of completing the surveys electronically or on paper.

Both experimental and control group participants were asked to provide contact information (i.e., name and e-mail) for a representative sample of five coworkers and their supervisors. Coworkers were asked to provide independent measures of relationship quality with participants. Supervisors were asked to complete a measure of participants' citizenship behavior and overall work performance. The complete survey for coworkers consisted of 24 items and for supervisors, 33 items. Once the pre-survey (Survey #1) was completed by experimental and control group participants, e-mails were sent to the listed coworkers and supervisors (see Appendix H for the coworker e-mail and Appendix I for the supervisor e-mail). The e-mail informed them that their coworker/employee was participating in a university study about work (i.e., specific participation in a MBSR/MBCT program remained confidential), and contained a link to the abovementioned surveys on UI Websurveyor. Coworkers and supervisors were only given the option to complete surveys electronically. Data provided by coworkers and supervisors remained confidential such that their assessments of the study participants were not shared with the participants. Coworkers and supervisors were asked to

complete surveys at the same time intervals as the study participants (i.e., Time 1 survey, Time 2 survey given 7-8 weeks later at "program completion," Time 3 survey completed four weeks after that). The same survey was used at all three timepoints for the coworkers and supervisors. There was a slight delay in completion of the first survey simply because participants had to provide the contact information in their pre-survey before coworkers and supervisors could then be contacted, but this delay was minimal (e.g., a few days). Nonrespondent coworkers and supervisors received one reminder e-mail one week after the initial e-mail (see Appendix J for the coworker reminder e-mail and Appendix K for the supervisor reminder e-mail). If coworkers and supervisors still did not respond, then I assumed they were not interested in participating in the study and sent them no further communication about the study, including subsequent surveys.

Measures

Each of the measures used in the study is described in detail below. The scales with complete items are contained in Appendix G.

Mindfulness. There were two mindfulness-related measures. First, because the study used both an experimental and control group in a training intervention setting, a dichotomous variable was coded (0-1) indicating whether individuals did (1) or did not (0) participate in the MBSR/MBCT program.

Second, participants completed the Five Factor Mindfulness Questionnaire (FFMQ; Baer et al., 2006; Baer et al., 2008). The FFMQ is the most recently developed scale of mindfulness, and combines items from five previously established scales, including the Mindfulness Awareness and Attention scale (MAAS; Brown & Ryan, 2003), the Freiburg Mindfulness Inventory (FMI; Buchheld et al., 2002; Walach et al., 2006), the Kentucky Inventory of Mindfulness Scale (KIMS; Baer et al., 2004), the Cognitive and Affective Mindfulness Scale (CAMS; Feldman, Hayes, Kumar, & Greeson, 2004), and the Mindfulness Questionnaire (MQ; Chadwick, Hember, Mead, Lilley, & Dagnan, 2005). The 39-item FFMQ measures five facets of mindfulness: observing,

describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. Respondents indicate the frequency with which each statement describes themselves on a five-point Likert scale (1 = never or very rarely true, 5 = very often or always true). Sample items include "I pay attention to how my emotions affect my thoughts and behavior" (observing), "I can easily put my beliefs, opinions, and expectations into words" (describing), "I rush through activities without being really attentive to them" (acting with awareness), "I tell myself I shouldn't be feeling the way I'm feeling" (nonjudging of inner experience), and "I perceive my feelings and emotions without having to react to them" (nonreactivity to inner experience). Alpha coefficients for all facets have been generally in the adequate-to-good range (.72-.92) across multiple samples (Baer et al., 2008). In the current study, coefficient alpha for the mindfulness scale as a single measure was .94. Confirmatory factor analysis to verify the structure of a single measure could not be conducted in this study due to sample size. Total sample size was less than the number of parameters to be estimated at all timepoints, and thus, analysis would not have been appropriate. However, facets have been combined into a single measure of mindfulness in previous published research (e.g., Carmody & Baer, 2008).

Experienced Affect. I used measures of positive and negative affect to assess individuals' experienced affect. Positive and negative affect were measured using the brief version of the Positive and Negative Affect Scale (PANAS; Watson et al., 1988). This 20-item scale consists of a list of adjectives that describe different feelings and emotions. Respondents use a five-point Likert scale (1 = very slightly or not at all, 5 = extremely) to indicate the extent to which they generally feel that way for Survey #1. Surveys #2 and #3 ask respondents to indicate the extent to which they have felt that way during the last 3-4 weeks. Sample items include "afraid" and "nervous" (negative affect) as well as "active" and "interested" (positive affect). Reliabilities of the scales for

various time instructions are high (α = .86-.90 for PA and .84-.87 for NA; Watson et al., 1988). Coefficient alpha for this sample was .93 for PA and .90 for NA.

Though previous research has verified that positive and negative affect are generally two dimensions (Watson et al., 1988; Watson, 2000), I conducted a confirmatory factor analysis of Time 1 data (sample sizes at Time 2 and 3 are not generally sufficient, as total sample size is generally less than the number of parameters to be estimated for confirmatory factor analyses of measures) to verify the appropriateness of considering these as two variables versus one variable of experienced affect. Though neither model indicated wholly acceptable fit, a two-factor model provided improved fit over the one-factor model. A two-factor model provided the following fit to the data, χ^2 (169) = 377.20, p = .00; non-normed fit index (NNFI) = .91; standardized root-mean-square-residual (SRMR) = .08 and root-mean-square-error of approximation (RMSEA) = .11. (Note that recommended cutoffs for these fit indices to indicate acceptable fit are generally as follows: NNFI, .95; SRMR, .08; RMSEA, .05; Hu & Bentler, 1999). A one-factor model, merging these two factors, produced significantly worse fit to the data, χ^2 (170) = 673.01, p = .00; NNFI = .78; SRMR = .16 and RMSEA = .17. The chi-square nested model comparison can be used to compare nested models and tests the null hypothesis that the restricted model fits as well as the unrestricted model. The chi-square result was χ^2 (1) = 295.81, p = .00. This significant result indicates that constraining the constructs to be one factor results in a significant loss of fit (Bollen, 1989). Given these results and consistent with the literature, I treated positive affect and negative affect as two distinct measures of affect.

Relationship Quality. Relationship quality was measured with a scale previously used by May and colleagues (May et al., 2004) to measure rewarding coworker relations. Because coworkers were rating the quality of their relationship with one particular study participant, the scale was adapted to reflect the appropriate referent. The scale consists of 10 items. Respondents use a five-point Likert scale (1 = strongly disagree, 5 = strongly

agree). Sample items (with the referent singular as if completed by a coworker who is rating their relationship with a particular study participant) include "My interactions with my coworker are rewarding," "My coworker listens to what I have to say," and "I sense a real connection with my coworker." Coefficient alpha reliability has been high (.93; May et al., 2004). Note that participants were instructed to select a representative sample of coworkers to complete the survey (i.e., not simply select one's "best friends" at work). Coefficient alpha in the current study was .96. Because each participant was rated by multiple coworkers, aggregation analyses were conducted for this variable; results are reported in the next chapter.

Performance. General work performance was measured with a scale adapted from Barrick and colleagues' work (Colbert et al., 2008), previously adapted from Barrick, Parks, & Mount (2005) and Barrick, Stewart, Neubert & Mount (1998) and following Campbell's (1990a) performance taxonomy. The adapted scale was a nine-item scale that assessed four aspects of performance: task performance, communication, teamwork, and change (although the scale was expected to be unidimensional based on previous studies). Two items from Colbert et al. (2008) were excluded because they involved management/administration and leadership/supervision. Participants in this study held a variety of jobs; not all of the participants were in a role that involved management or supervision. Thus, the "Leadership" aspect in Colbert et al. (2008), which included the adaptation to and management of change as well as the more general leadership items, was modified to include only the items focused on change. Supervisors assessed participants' performance on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Sample items include "Job Knowledge: Understands work responsibilities, scope of job tasks, and routines to be performed" and "Adapting to Change: Overcomes natural resistance to organizational change; strives to behave in ways that are consistent with the change goals and corporate strategy." The scale has

shown high reliability (α = .93; Colbert et al., 2008). Coefficient alpha in this sample was .94.

Citizenship Behavior. Citizenship behavior was measured using Settoon and Mossholder's (2002) measure of interpersonal citizenship behavior. This 14-item scale measures two types of citizenship behavior: person-focused and task-focused. Respondents (supervisors in this study) use a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) to assess if each statement describes the participant. Sample items include "Takes time to listen to coworkers' problems and worries" (person-focused) and "Takes on extra responsibilities in order to help coworkers when things get demanding at work" (task-focused). The subscales have shown high reliability (α = .93-.95; Settoon & Mossholder, 2002). Coefficient alpha for the subscales combined as a single measure was .97 in this study.

Because citizenship behavior is a component of general work performance (Rotundo & Sackett, 2002) and both were rated by supervisors in this study, I conducted a confirmatory factor analysis of Time 1 data to verify the appropriateness of analyzing these as two variables. Though neither model indicated wholly acceptable fit, a two-factor model provided improved fit over the one-factor model. A two-factor model provided the following fit to the data, χ^2 (229) = 621.02, p = .00; NNFI = .92; SRMR = .08 and RMSEA = .16. A one-factor model, merging these two factors, produced significantly worse fit to the data, χ^2 (230) = 765.36, p = .00; NNFI = .89; SRMR = .11 and RMSEA = .21. The chi-square nested model comparison result was χ^2 (1) = 144.34, p = .00. Given these results and the desire to specifically analyze citizenship behavior as described in earlier chapters, I analyzed both job performance and citizenship behavior as dependent variables in this study.

Role Interdependence. I measured interdependence with a scale developed by Pearce and Gregersen (1991) and also used in Anderson and Williams (1996). This 8-item scale measures two dimensions of role interdependence: reciprocal interdependence

with other jobs and independence, or the extent to which an employee relies on others to complete their tasks. Respondents use a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) to assess the interdependence of their jobs. Sample items include "My work requires me to consult with others fairly frequently" (reciprocal interdependence) and "I can plan my own work with little need to coordinate with others" (independence). In previous research, coefficient alpha was .76 for interdependence and .61 for independence (Pearce & Gregersen, 1991), but .85 for the subscales combined into a single measure (Anderson & Williams, 1996). Following Anderson and Williams (1996), subscales were combined into a single measure; coefficient alpha for this single measure was .83 in this study.

Analyses

There are essentially two phases of analysis in this study. First, the effectiveness of the mindfulness-based training program was assessed. I evaluated differences *between* the experimental and control groups as well as *within* groups across timepoints. To examine between groups, the difference between means for each variable for the experimental and control group is reported as Cohen's *d*, an effect size calculated as the difference between two means divided by the pooled standard deviation. Independent *t*-tests were conducted to investigate the significance of the difference between the means. To examine within groups, a parallel analysis was conducted within the experimental and control groups, with Cohen's *d* reported for the means at each timepoint within each group and paired sample *t*-tests conducted to investigate the significance of the difference between the means. In addition, post-training mindfulness was regressed on pre-training mindfulness and training participation (coded as a dummy variable) to examine the effect of training participation on mindfulness.

In the second phase of analysis, the overall proposed model is assessed. This model proposed that mindfulness positively affects the work outcomes of performance and citizenship and that these effects are mediated through experienced affect and

relationship quality. In addition, interdependence was proposed as a moderator of the relationship quality-work outcomes relationship. Analytic strategy is comprised of correlational analysis as well as analytical procedures for moderated mediation. Because the proposed model contains mediation and moderation, I used analytical techniques for moderated mediation developed by Edwards and Lambert (2007). This technique integrates moderated regression analysis and path analysis. It involves performing a series of regressions to establish path estimates for each of the linkages in the model. Bootstrapping techniques are then used to assess variances and enable creation of confidence intervals. As will be discussed in further detail in the next chapter, given the results of the first phase of analysis as well as the small sample size, particularly of the experimental group, the decision was made to collapse the experimental and control groups for this second phase of analysis. Thus, analyses of the proposed model, including testing of the hypotheses, were conducted on the overall combined group.

As noted previously in this chapter, ratings of relationship quality were made by multiple coworkers of each participant. Data from the coworkers was intended to be aggregated to obtain an overall relationship quality rating from the perspective of each participant's coworkers. The average level of relationship quality is expected to increase and it is this average that will be used to test the hypotheses. Appropriate indices of interrater reliability and agreement were examined to verify if aggregation was warranted. I examined both the interclass correlation statistic (Bliese, 2000) and the r_{WG} (James, Demaree, & Wolf, 1984, 1993) statistic. Because relationship quality figures in both phases of analyses for this study, results of the aggregation are reported in the next chapter prior to discussing the main analyses (i.e., the first and second phase of analyses).

CHAPTER IV

RESULTS

In this chapter I present analyses of the data from the study described in the previous chapter. I first discuss aggregation analyses conducted to establish the study variable of relationship quality. I then report results of the two-phase analysis. In the first phase, the effectiveness of the mindfulness-based training program is assessed. I report results of examination of differences in means between groups and within groups using Cohen's *d* and appropriate *t*-tests. I also report results of regression analyses to evaluate the impact of training participation on mindfulness. In the second phase of analysis, the overall proposed model is assessed. In this model, mindfulness affects work outcomes through experienced affect and relationship quality, with the latter link between relationship quality and work outcomes moderated by role interdependence. I report results from correlational analyses, regression analyses, and path analyses in testing the six hypotheses outlined in Chapter II. The proposed model is depicted in Figure 1 in Chapter I.

Aggregation of Relationship Quality Ratings

I begin with discussion of aggregation analyses. Ratings of relationship quality were made by multiple coworkers of each participant. Data from the coworkers was intended to be aggregated to obtain an overall relationship quality rating from the perspective of each participant's coworkers. I report aggregation statistics ICC(1), ICC(2), and r_{WG} in Table 2.

The ICC(1) statistic can be interpreted as an index of interrater reliability (i.e., the extent to which raters are interchangeable) and ICC(2) is an estimate of the reliability of the group mean (Bliese, 2000). The ICC(1) value at Time 1 is small. Average coworker group size at Time 1 was 3.83 (decreasing to 3.41 at Time 2 and 3.21 at Time 3). Given that large groups will provide a reliable estimate of aggregate variables when ICC(1) is small, but small groups (as found in this study) will not (Bliese, 1998), the ICC (2) value

Table 2. Aggregation Statistics: Intraclass Correlation (1), Intraclass Correlation (2), and Mean r_{WG}

			Uniform Distribution	Normal Distribution	Triangular Distribution
	ICC(1)	ICC(2)	r_{WG} Mean (St. Dev.)	r_{WG} Mean (St. Dev.)	r_{WG} Mean (St. Dev.)
Relationship Quality T1	.16	.42	.77 (.29)	.65 (.36)	.70 (.34)
Relationship Quality T2	.05	.16	.75 (.33)	.64 (.37)	.68 (.36)
Relationship Quality T3	-.01	-.03	.74 (.32)	.61 (.38)	.66 (.36)

does not reach the recommended .70. In addition, both the ICC(1) and ICC(2) values deteriorate over time to negative values at Time 3. Negative values suggest that "individual variability, relative to a group mean, is an important source of variability" (Bliese, 2000, p. 356). It may be that relationship quality with only select coworkers changed over time, and thus ratings diverged. However, as the regression analyses in this study focus on Time 1 (this will be discussed shortly) and the overall r_{WG} data support aggregation (discussed in the next paragraph), the decision was made to aggregate the ratings for relationship quality in spite of the imperfect ICC results.

The r_{WG} statistic (James et al., 1984, 1993) is a measure of interrater agreement. Interrater agreement "refers to the absolute consensus in scores furnished by multiple judges for one or more targets" (LeBreton & Senter, 2007, p. 2) and is used to assess whether ratings provided by judges are interchangeable. The r_{WG} statistic is computed for each target individually and takes into account agreement among the raters of each target but not between groups of raters of different targets. Researchers must specify the form of the null distribution if raters responded randomly in order to calculate the r_{WG} statistic. The traditional reliance on the uniform, or rectangular, distribution has been

criticized as unrealistic in many cases and researchers are encouraged to model alternative distributions (James et al., 1984; LeBreton & Senter, 2007).

I show results under the assumption of a uniform, normal, and triangular (corresponding to a central tendency bias) distribution. Approximately 15% of the targets reflected negative r_{WG} values, indicating that observed variance exceeded expected variance for a random response null distribution (LeBreton & Senter, 2007). This may be due to sampling error, given the small number of coworkers rating each participant (James et al., 1984). These out-of-range values were set to zero (James et al., 1984; LeBreton & Senter, 2007), indicating total lack of agreement. LeBreton and Senter (2007) suggest that values of r_{WG} above .51 indicate moderate agreement and those above .71 indicate strong agreement. Prior to setting any negative values to zero, on average, approximately 80%, 71%, and 75% of the targets under the rectangular, normal and triangular distributions, respectively met the .51 moderate agreement standard. Thus, the average of coworkers' ratings for a majority of targets met a standard of reasonable agreement. The r_{WG} results after the recommended adjustment support the aggregation of coworker ratings for relationship quality. Overall, however, given the ICC results, the aggregation of this measure of relationship quality may be questionable.

Assessment of Mindfulness-Based Program Effectiveness

In the first phase of the analysis, I assess the effectiveness of the mindfulness-based training program. Before presenting these results, however, I review information reported in the previous section regarding sample size achieved. For the experimental group, 29 program participants enrolled in the study, decreasing to 22 at Time 2 and 23 at Time 3. Coworkers rated relationship quality for all experimental group participants at each timepoint. However, supervisors did not respond for all participants in the study. Supervisors rated job performance and citizenship behavior for 24 participants at Time 1, 20 at Time 2, and 17 by Time 3. For the control group, 59 individuals enrolled in the study at Time 1, decreasing to 53 at Time 2 and 52 at Time 3. Coworkers and

supervisors did not respond for all control participants. Coworkers rated relationship quality for 58 participants at Time 1, 53 at Time 2, and 50 by Time 3. Supervisors rated job performance and citizenship behavior for 39 participants at Time 1, 33 (performance) or 34 (citizenship) at Time 2, and 24 by Time 3. Thus, supervisor and coworker response was such that data on the latter proposed mediator (relationship quality) and the dependent variables (job performance and citizenship behavior) are available for only a portion of the participants. Due to the small sample size achieved, data was retained for analyses whenever possible rather than limiting analyses only to complete cases. Thus, sample size will vary for analyses throughout and is noted throughout the results reported.

I now turn to the assessment of the mindfulness-based training program. In evaluating the program, I first compare means *between* the experimental and control group at each timepoint. Then, I compare means *within* the groups across timepoints. Recall that, of the 29 experimental group participants, 27 completed MBSR and 2 completed MBCT. I compared the difference between the means (Cohen's *d*) of all variables at all timepoints. There were no significant differences. Thus, no differentiation will be made between the MBSR and MBCT participants; they will comprise one experimental group. Table 3 reports the means and standard deviations of all variables at all timepoints for the experimental group, the control group, and the combined overall group. In addition, Cohen's *d* results are reported for each experimental and control group mean pair. Cohen's *d* is an effect size calculated as the difference between two means divided by the pooled standard deviation. Independent *t*-tests (to compare means *between* the experimental and control group) were conducted to investigate the significance of the difference between the means. Because a number of *t*-tests were conducted, there is a risk of an inflated familywise error rate. In other words, there is a larger probability of making a Type 1 error, or falsely rejecting the null hypothesis and concluding there is a significant difference when there is not.

Table 3. Means, Standard Deviations, and Cohen's *d* for the Overall, Experimental and Control Group

	Overall Group			Experimental Group			Control Group			E-C
Variable	N	Mean	SD	N	Mean	SD	N	Mean	SD	*d*
Training Participation	88	.33	.473							
Time 1 Measurement										
Mindfulness T1	88	3.31	.54	29	2.94	.44	59	3.50	.49	-1.18**[a]
Positive Affect T1	88	3.35	.72	29	3.09	.78	59	3.48	.65	-.56*
Negative Affect T1	88	2.05	.77	29	2.45	.63	59	1.86	.76	.81**[a]
Relationship Quality T1	87	4.31	.51	29	4.35	.38	58	4.29	.56	.12
Job Performance T1	63	3.86	.83	24	4.04	.69	39	3.75	.89	.36
Citizenship Behavior T1	63	4.07	.82	24	4.13	.84	39	4.03	.81	.12
Interdependence	88	3.59	.72	29	3.46	.83	59	3.64	.66	-.25
Time 2 Measurement										
Mindfulness T2	75	3.62	.46	22	3.72	.31	53	3.58	.51	.30
Positive Affect T2	75	3.58	.73	22	3.67	.76	53	3.54	.72	.18
Negative Affect T2	75	1.86	.70	22	1.90	.78	53	1.84	.68	.08
Relationship Quality T2	78	4.27	.51	25	4.34	.52	53	4.24	.51	.20
Job Performance T2	53	3.94	.80	20	3.95	.98	33	3.94	.69	.01
Citizenship Behavior T2	54	4.00	1.02	20	3.94	1.18	34	4.04	.93	-.10
Time 3 Measurement										
Mindfulness T3	75	3.69	.48	23	3.81	.44	52	3.64	.49	.36
Positive Affect T3	75	3.51	.82	23	3.52	.78	52	3.50	.84	.02
Negative Affect T3	75	1.93	.78	23	1.90	.63	52	1.95	.85	-.06
Relationship Quality T3	73	4.34	.54	23	4.34	.54	50	4.34	.55	.00
Job Performance T3	41	3.98	.79	17	4.31	.83	24	3.75	.68	.75*
Citizenship Behavior T3	41	4.11	1.02	17	4.03	1.26	24	4.16	.85	-.13

Cohen's *d* is calculated for means of the experimental and control group; *p<.05, **p<.01, [a] = significant with Bonferroni correction

One way to control the familywise error rate is via a Bonferroni correction (Hays, 1994). In this method, α is divided by the number of comparisons to ensure that the cumulative Type 1 error rate is below .05, though there is a tradeoff in terms of statistical power. The table indicates whether *d* is significant with and without the Bonferroni correction.

Very few of the means are significantly different *between* the experimental and control groups. Comparing the groups, there is a significant difference in mindfulness, positive affect, and negative affect at Time 1 pre-training (i.e., the groups are not equivalent in these characteristics prior to training). Pre-training, the experimental group is significantly lower in mindfulness (M = 2.94, SD = .44) than the control group (M = 3.50, SD = .49), $t(86) = -5.20$, $p < .01$, $d = -1.18$. The experimental group is also lower in positive affect (M = 3.09, SD = .78) than the control group (M = 3.48, SD = .65), $t(86) = -2.47$, $p < .01$, $d = -.56$, though this difference is no longer significant after the Bonferroni correction. The experimental group is higher in negative affect (M = 2.45, SD = .63) than the control group (M = 1.86, SD = .76), $t(86) = 3.63$, $p < .01$, $d = .81$). These differences between the groups disappear post-training, supporting that the mindfulness program was effective both in increasing mindfulness and improving affect for program participants. The only other significant difference is job performance at Time 3, though this difference is no longer significant after the Bonferroni correction. Such a difference is not apparent at Time 2. This difference will be further discussed, however, in the context of the next analyses within groups.

I now turn to evaluation of means within the groups across timepoints. Table 4 reports means, standard deviations, and Cohen's *d* results for the means at each timepoint within the experimental and control group. Paired sample *t*-tests (to compare means *within* the experimental or control group) were conducted to investigate the significance of the difference between the means. Again, the table indicates whether *d* is significant with and without the Bonferroni correction.

Table 4. Means, Standard Deviations, and Cohen's *d* within the Experimental and Control Group

	Time 1			Time 2			Time 3			T1 – T2	T2 – T3	T1 – T3
Variable	N	Mean	SD	N	Mean	SD	N	Mean	SD	*d*	*d*	*d*
Experimental Group												
Mindfulness	22	3.01	.42	22	3.72	.31	22	3.80	.45	-1.92**[a]	-.21	-1.82**[a]
Positive Affect	22	3.20	.71	22	3.67	.76	22	3.46	.76	-.64**	.28	-.35
Negative Affect	22	2.41	.59	22	1.90	.78	22	1.93	.62	.74**	-.04	.79**
Relationship Quality	25	4.33	.39	25	4.34	.52	23	4.34	.54	-.02	-.04	-.09
Job Performance	20	4.15	.63	20	3.95	.98	17	4.31	.83	.24	-.41	-.28
Citizenship Behavior	20	4.25	.82	20	3.94	1.18	17	4.03	1.26	.31	-.14	.16
Control Group												
Mindfulness	53	3.49	.48	53	3.58	.51	52	3.64	.49	-.18*	-.12	-.29**
Positive Affect	53	3.47	.63	53	3.54	.72	52	3.50	.84	-.10	.06	.00
Negative Affect	53	1.86	.76	53	1.84	.68	52	1.95	.85	.03	-.16	-.10
Relationship Quality	53	4.28	.56	53	4.24	.51	50	4.34	.55	.08	-.16*	-.02
Job Performance	33	3.74	.88	33	3.94	.69	24	3.75	.68	-.25	.20	-.10
Citizenship Behavior	33	4.01	.82	33	4.03	.94	24	4.16	.85	-.02	-.01	-.23

*p<.05, **p<.01, [a] = significant with Bonferroni correction

Looking *within* groups, we can see that on average, participants in the mindfulness program experience significantly greater mindfulness (M = 3.72, SD = .31) immediately after completing the program as compared to baseline (M = 3.01, SD = .42), $t(21) = -7.73$, $p < .01$, $d = -1.92$. This significant difference in mindfulness remains one month after completing the program (M = 3.80, SD = .45), $t(22) = -8.31$, $p < .01$, $d = -1.82$ as compared to baseline. A similar pattern is seen for negative affect. Mindfulness program participants experience significantly less negative affect (M = 1.90, SD = .78) immediately after completing the program as compared to baseline (M = 2.41, SD = .59), $t(21) = 3.07$, $p < .01$, $d = .74$. This significant difference in negative affect remains one month after completing the program (M = 1.93, SD = .62), $t(22) = 3.17$, $p < .01$, $d = .79$ as compared to baseline. For positive affect, mindfulness program participants experience an increase (M = 3.67, SD = .76) as compared to baseline (M = 3.20, SD = .71), $t(21) = -3.26$, $p < .01$, $d = -.64$, though the increase does not remain significant one month post-program (M = 3.46, SD = .76) as compared to baseline, $t(22) = -1.60$, $p > .05$, $d = -.35$. Within the experimental group, only the differences in mindfulness remain significant after the Bonferroni correction.

Within the control group, there were several differences that were found to be significant—namely, mindfulness from Time 1 to 2 and from Time 1 to 3 and relationship quality from Time 2 to Time 3. However, these differences form no discernable pattern. They are also unexpected; for example, there is no identifiable reason that control group participants, who did not participate in the mindfulness-based intervention, would be expected to increase in mindfulness as compared to baseline. However, these differences are no longer significant after the Bonferroni correction.

The within-groups analysis can also put in context the previously mentioned significant difference in job performance at Time 3 between the experimental and control groups. We can see that within group, job performance does not significantly change between any of the timepoints. The experimental group experiences an insignificant drop

from Time 1 to Time 2 and then an insignificant rise from Time 2 to Time 3. The control group experiences an insignificant rise from Time 1 to Time 2 and then an insignificant drop from Time 2 to Time 3. These insignificant fluctuations within groups produce a significant difference between groups at Time 3. However, given the lack of significant difference in job performance within groups across timepoints and the fact that the significant difference between the groups at Time 3 is no longer significant after the Bonferroni correction, it would be inappropriately aggressive to conclude that the mindfulness-based training improved job performance for the experimental group.

Another way to examine effectiveness of the mindfulness-based training program, particularly in terms of its main goal of increasing mindfulness, is regression analyses. To conduct these analyses, each study participant was assigned a dummy code of 0 if a member of the control group that had not participated in a mindfulness program and 1 if a member of the experimental group that completed a mindfulness program. Continuous variables were standardized prior to doing the regression analyses, but the dummy-coded training variable was not. Table 5 displays results of regression analyses to examine intervention effectiveness. Analyses indicate that participation in the mindfulness-based program increased mindfulness.

Post-training mindfulness (at Time 2 and then Time 3, respectively) was regressed on pre-training mindfulness and training participation. With mindfulness at Time 2 (immediately after training completion) as the dependent variable, Step 2 shows that training (ß = 1.09, 95% CI is .72 $\leq$ 1.09 $\leq$ 1.46) accounts for significant variance beyond the control variable of pre-training mindfulness (ΔR^2 = .20). In Step 3, the interaction of mindfulness at Time 1 and training participation was entered as a predictor. Results show that the interaction (ß = -.73, 95% CI is -1.09 $\leq$ -.77 $\leq$ -.38) accounts for significant

Table 5. Regressions of Post-Training Mindfulness on Pre-Training Mindfulness and Training Participation

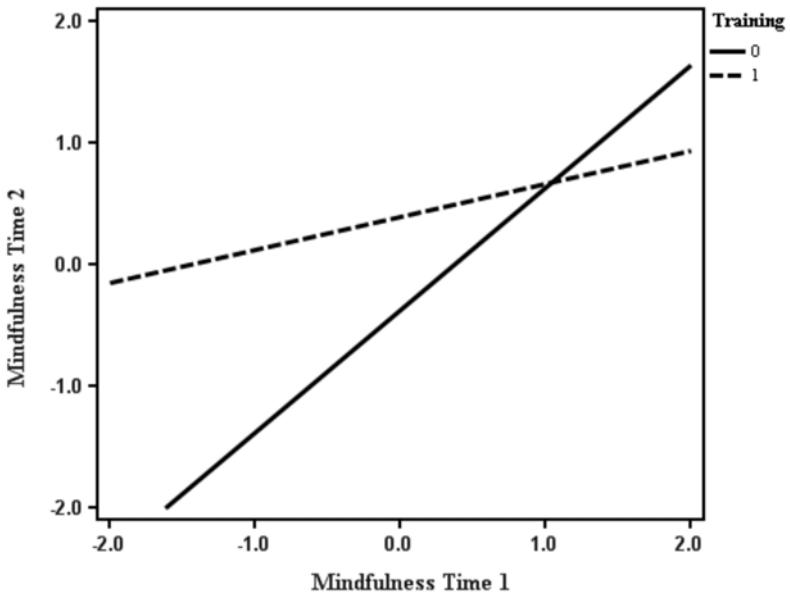
	ß	95%CI	R^2	ΔR^2
Dependent Variable = Mindfulness Time 2				
Step 1				
Mindfulness Time 1	.65	(.46,.84)	.38	
Step 2				
Mindfulness Time 1	.83	(.67,1.00)		
Training	1.09	(.72,1.46)	.58	.20
Step 3				
Mindfulness Time 1	1.01	(.83,1.18)		
Training	.76	(.39,1.13)		
Mindfulness Time 1 * Training	-.73	(-1.09,-.38)	.66	.08
Dependent Variable = Mindfulness Time 3				
Step 1				
Mindfulness Time 1	.50	(.29,.70)	.25	
Step 2				
Mindfulness Time 1	.72	(.52,.92)		
Training	1.05	(.63,1.48)	.44	.19
Step 3				
Mindfulness Time 1	.81	(.58,1.04)		
Training	.90	(.43,1.37)		
Mindfulness Time 1 * Training	-.35	(-.81,.10)	.45	.01

N = 75

variance beyond the predictors of pre-training mindfulness and training participation ($\Delta R^2 = .08$). With mindfulness at Time 3 (one month after training completion) as the dependent variable, Step 2 shows that training (ß = 1.05, 95% CI is $.63 \leq 1.05 \leq 1.48$) accounts for significant variance beyond the control variable of pre-training mindfulness ($\Delta R^2 = .19$). In Step 3, the interaction of mindfulness at Time 1 and training participation was entered as a predictor. The interaction (ß = -.35, 95% CI is $-.81 \leq -.35 \leq .10$) does not account for significant variance beyond the predictors of pre-training mindfulness and training participation ($\Delta R^2 = .01$).

Figure 2 shows a graph of the significant interaction of pre-training mindfulness and training participation to predict post-training mindfulness at Time 2. Reflecting the dummy coding, the dotted line marked "1" indicates the experimental group and the solid line marked "0" indicates the control group. As illustrated in Figure 2 by the dotted experimental group line, individuals with lower levels of mindfulness at Time 1 benefited most from training participation as compared to training participants that began with higher levels of mindfulness. As would be expected, the solid control group line indicates a much steeper slope and a nearly linear relationship between mindfulness at Time 1 and Time 2.

Figure 2. Interaction of Pre-Training Mindfulness and Training Participation to Predict Post-Training Mindfulness at Time 2



Thus, the comparison of means between and within groups as well as the regression analyses are consistent in their indication that participation in the mindfulness-

based training program increased mindfulness. In addition, the comparison of means between groups indicate that participation in training also improved affect, as signficant differences between the experimental and control groups pre-training disappear after training participation. A similar pattern of improved affect was seen in the analysis of mean differences within the experimental group, though this difference was no longer signficant after the Bonferroni correction. Significant differences in relationship quality, job performance, or citizenship behavior were not observed. In sum, results from this first phase of analyses indicate that the mindfulness-based training program effectively increased mindfulness and improved affect of program participants.

Evaluation of Proposed Model

In the second phase of analysis, the overall proposed model is assessed. In this model, mindfulness affects work outcomes through experienced affect and relationship quality, with the latter link between relationship quality and work outcomes moderated by role interdependence. I first examine correlations between the variables for the experimental and control groups. I then discuss the decision to collapse the groups for further analyses. Finally, I report results from correlational analyses, regression analyses, and path analyses of the combined group in testing the six hypotheses outlined in Chapter II. The proposed model is depicted in Figure 1 in Chapter I.

Table 6 reports the correlations between variables for the experimental group and Table 7 reports them for the control group. Because sample sizes vary throughout the tables, a sample size and 95% confidence interval (CI) is given for each correlation. Because the sampling distribution of r is not normally distributed, confidence intervals were calculated using the Fisher's z' transformation. The sampling distribution of z' depends only on sample size and is nearly normal for relatively small sample sizes, as found in this study (Cohen, Cohen, West, & Aiken, 2003). In this process, r is converted to z', a confidence interval is computed in terms of z', and then the confidence interval is converted back to r.

Table 6. Intercorrelations Between Variables for the Experimental Group

Variable	1	2	3	4	5	6	7	8
1. Mindfulness T1	1							
2. Positive Affect T1	.50* N=29 (.16,.73)	1						
3. Negative Affect T1	-.40* N=29 (-.67,-.04)	-.39* N=29 (-.66,-.03)	1					
4. Relationship Quality T1	-.24 N=29 (-.56,.14)	-.06 N=29 (-.42,.31)	.04 N=29 (-.33,.40)	1				
5. Job Performance T1	.18 N=24 (-.24,.54)	.09 N=24 (-.33,.48)	-.03 N=24 (-.43,.38)	.35 N=24 (-.06,.66)	1			
6. Citizenship Behavior T1	.02 N=24 (-.39,.42)	.06 N=24 (-.35,.45)	-.27 N=24 (-.61,.15)	.46* N=24 (.07,.73)	.71* N=24 (.43,.87)	1		
7. Interdependence	.39* N=29 (.03,.66)	.09 N=29 (-.29,.44)	.01 N=29 (-.36,.38)	-.29 N=29 (-.59,.09)	.35 N=24 (-.06,.66)	.15 N=24 (-.27,.52)	1	

Table 6 (cont.)

Variable	1	2	3	4	5	6	7	8
8. Mindfulness T2	.34 N=22 (-.10,.67)	.19 N=22 (-.25,.57)	-.62* N=22 (-.83,-.27)	-.003 N=22 (-.42,.42)	-.005 N=20 (-.45,.44)	-.03 N=20 (-.47..42)	-.10 N=22 (-.50,.34)	1
9. Positive Affect T2	.45* N=22 (.04,.73)	.57* N=22 (.20,.80)	-.55* N=22 (-.79,-.17)	-.07 N=22 (-.48,.36)	-.16 N=20 (-.56,.30)	-.09 N=20 (-.51,.37)	.13 N=22 (-.31,.52)	.44* N=22 (.02,.73)
10. Negative Affect T2	-.05 N=22 (-.46,.38)	-.09 N=22 (-.49,.34)	.38 N=22 (.-05,.69)	.17 N=22 (-.27,.55)	.08 N=20 (-.38,.50)	.23 N=20 (-.24,.61)	.06 N=22 (-.37,.47)	-.52* N=22 (-.77,-.13)
11 Relationship Quality T2	-.19 N=25 (-.54,.22)	-.03 N=25 (-.42,.37)	-.05 N=25 (-.44,.35)	.54* N=25 (.18,.77)	.28 N=22 (-.16,.63)	.09 N=22 (-.34,.49)	.13 N=25 (-.28,.50)	.14 N=22 (-.30,.53)
12. Job Performance T2	.21 N=20 (-.26,.60)	.01 N=20 (-.43,.45)	.05 N=20 (-.40,.48)	.48* N=20 (.05,.76)	.40 N=20 (-.05,.72)	.30 N=20 (-.16,.66)	-.06 N=20 (-.49,.39)	.10 N=18 (-.38,.54)
13. Citizenship Behavior T2	-.12 N=20 (-.53,.34)	-.23 N=20 (-.61,.24)	.11 N=20 (-.35,.53)	.70* N=20 (.37,.87)	.29 N=20 (-.17,.65)	.19 N=20 (-.28,.58)	-.32 N=20 (-.67,.14)	-.09 N=18 (-.53,.39)
14. Mindfulness T3	.40 N=23 (-.01,.70)	.30 N=23 (-.13,.63)	-.45* N=23 (-.73,-.05)	-.01 N=23 (-.42,.40)	-.08 N=21 (-.49,.36)	-.07 N=21 (-.49,.37)	-.01 N=23 (-.42,.40)	.81* N=22 (.59,.92)

Table 6 (cont.)

Variable	1	2	3	4	5	6	7	8
15. Positive Affect T3	.15 N=23 (-.28,.53)	.27 N=23 (-.16,.61)	-.32 N=23 (-.65,.11)	-.09 N=23 (-.48,.33)	-.42 N=21 (-.72,.01)	-.18 N=21 (-.57,.27)	-.24 N=23 (-.59,.19)	.18 N=22 (-.26,.56)
16. Negative Affect T3	.09 N=23 (-.33,.48)	-.22 N=23 (-.58,.21)	.32 N=23 (-.11,.65)	.19 N=23 (-.24,.56)	.35 N=21 (-.10,.68)	.16 N=21 (-.29,.55)	.15 N=23 (-.28,.53)	-.24 N=22 (-.60,.20)
17 Relationship Quality T3	-.11 N=23 (-.50,.32)	.08 (N=23) (-.34,.48)	-.08 N=23 (-.48,.34)	.65* N=23 (.32,.84)	.23 N=21 (-.22,.60)	.10 N=21 (-.35,.51)	-.15 N=23 (-.53,.28)	.04 N=21 (-.40,.46)
18. Job Performance T3	.03 N=17 (-.46,.50)	-.17 N=17 (-.60,.34)	.13 N=17 (-.37,.57)	.45 N=17 (-.04,.77)	.87* N=17 (.67,.95)	.71* N=17 (.35,.89)	.10 N=17 (-.40,55)	-.04 N=15 (-.54,.48)
19. Citizenship Behavior T3	.06 N=17 (-.43,.53)	-.21 N=17 (-.63,.30)	-.05 N=17 (-.52,.44)	.52* N=17 (.05,.80)	.42 N=17 (-.08,.75)	.51* N=17 (.04,.80)	-.27 N=17 (-.66,.24)	.10 N=15 (-.43,.58)

Table 6 (cont.)

Variable	9	10	11	12	13	14	15	16
9. Positive Affect T2	1							
10. Negative Affect T2	-.31 N=22 (-.65,.13)	1						
11 Relationship Quality T2	-.03 N=22 (-.45,.40)	.06 N=22 (-.37,.47)	1					
12. Job Performance T2	-.03 N=18 (-.49,.44)	.29 N=18 (-.20,.67)	.14 N=20 (-.32,.55)	1				
13. Citizenship Behavior T2	-.12 N=18 (-.56,.37)	.05 N=18 (-.43,.51)	.50* N=20 (.07,.77)	.59* N=20 (.20,.82)	1			
14. Mindfulness T3	.35 N=22 (-.08,.67)	-.47 N=22 (-.74,-.06)	.03 N=23 (-.39,.44)	.38 N=19 (-.09,.71)	-.02 N=19 (-.47,.44)	1		
15. Positive Affect T3	.41 N=22 (-.01,.71)	-.14 N=22 (-.53,.30)	-.09 N=23 (-.48,.33)	.33 N=19 (-.15,.68)	.21 N=19 (-.27,.61)	.48* N=23 (.08,.74)	1	

Table 6 (cont.)

Variable	9	10	11	12	13	14	15	16
16. Negative Affect T3	-.10 N=22 (-.50,.34)	.58* N=22 (.21,.80)	.14 N=23 (-.29,.52)	-.12 N=19 (-.54,.35)	-.10 N=19 (-.53,.37)	-.49* N=23 (-.75,-.10)	-.60* N=23 (-.81,-.25)	1
17 Relationship Quality T3	-.10 N=21 (-.51,.35)	.04 N=21 (-.40,.46)	.70* N=23 (.40,.86)	.28 N=19 (-.20,.65)	.67* N=19 (.31,.86)	.01 N=22 (-.41,.43)	.02 N=22 (-.41,.44)	.01 N=22 (-.41,.43)
18. Job Performance T3	-.26 N=15 (-.68,.29)	.27 N=15 (-.28,.69)	.09 N=17 (-.41,.55)	.54* N=17 (.08,.81)	.23 N=17 (-.28,.64)	-.06 N=16 (-.54,.45)	-.44 N=16 (-.77,.07)	.35 N=16 (-.18,.72)
19. Citizenship Behavior T3	-.29 N=15 (-.70,.26)	.26 N=15 (-.29,.68)	.10 N=17 (-.40,.55)	.90* N=17 (.74,.96)	.69* N=17 (.31,.88)	.27 N=16 (.26,.68)	.17 N=16 (-.36,.61)	-.11 N=16 (-.57,.41)

Table 6 (cont.)

Variable	17	18	19
17 Relationship Quality T3	1		
18. Job Performance T3	-.01 N=16 (-.50,.49)	1	
19. Citizenship Behavior T3	.21 N=16 (-.32,.64)	.58* N=17 (.14,.83)	1

Note. Each cell contains the correlation, the sample size N applicable to that correlation, and the 95% confidence interval. For correlations marked with an *, the 95% confidence interval does not include zero.

Table 7. Intercorrelations Between Variables for the Control Group

Variable	1	2	3	4	5	6	7	8
1. Mindfulness T1	1							
2. Positive Affect T1	.36* N=59 (.11,.56)	1						
3. Negative Affect T1	-.72* N=59 (-.82,-.57)	-.36* N=59 (-.56,-.11)	1					
4. Relationship Quality T1	-.10 N=58 (-.35,.16)	.29* N=58 (.03,.51)	.01 N=58 (-.25,.27)	1				
5. Job Performance T1	-.29 N=39 (-.55,.03)	-.24 N=39 (-.52,.08)	.30 N=39 (-.02,.56)	.10 N=38 (-.23,.41)	1			
6. Citizenship Behavior T1	-.46* N=39 (-.68,-.17)	-.25 N=39 (-.52,.07)	.46* N=39 (.17,.68)	.09 N=38 (-.24,.40)	.72* N=39 (.52,.84)	1		
7. Interdependence	-.01 N=59 (-.27,.25)	.003 N=59 (-.25,.26)	.01 N=59 (-.25,.27)	.07 N=58 (-.19,.32)	.10 N=39 (-.22,.40)	-.01 N=39 (-.32,.31)	1	

Table 7 (cont.)

Variable	1	2	3	4	5	6	7	8
8. Mindfulness T2	.86* N=53 (.77,.92)	.48* N=53 (.24,.66)	-.55* N=53 (-.71,-.33)	.13 N=52 (-.15,.39)	-.06 N=36 (-.38,.27)	-.24 N=36 (-.53,.10)	.04 N=53 (-.23,.31)	1
9. Positive Affect T2	.33* N=53 (.07,.55)	.77* N=53 (.63,.86)	-.28* N=53 (-.51,-.01)	.30* N=52 (.03,.53)	-.11 N=36 (-.42,.23)	-.17 N=36 (-.47,.17)	-.09 N=53 (-.35,.18)	.51* N=53 (.28,.69)
10. Negative Affect T2	-.66* N=53 (-.79,-.47)	-.43* N=53 (-.63,-.18)	.81* N=53 (.69,.89)	-.003 N=52 (-.28,.27)	.22 N=36 (-.12,.51)	.23 N=36 (-.11,.52)	-.03 N=53 (-.30,.24)	-.58* N=53 (-.74,-.37)
11 Relationship Quality T2	-.10 N=53 (-.36,.18)	.20 N=53 (-.07,.45)	.05 N=53 (-.22,.32)	.71* N=53 (.54,.82)	.07 N=35 (-.27,.39)	.22 N=35 (-.12,.52)	.12 N=53 (-.16,.38)	.06 N=50 (-.22,.33)
12. Job Performance T2	-.06 N=33 (-.40,.29)	.26 N=33 (-.09,.55)	.11 N=33 (-.24,.44)	.37* N=32 (.02,.64)	.58* N=33 (.30,.77)	.24 N=33 (-.11,.54)	.18 N=33 (-.17,.49)	.04 N=31 (-.32,.39)
13. Citizenship Behavior T2	-.27 N=34 (-.56,.08)	-.14 N=34 (-.46,.21)	.25 N=34 (-.10,.54)	.19 N=33 (-.16,.50)	.04 N=33 (-.31,.38)	.29 N=33 (-.06,.58)	.04 N=34 (-.30,.37)	-.27 N=32 (-.57,.09)
14. Mindfulness T3	.73* N=52 (.57,.84)	.41* N=52 (.15,.61)	-.48* N=52 (-.67,-.24)	-.01 N=51 (-.28,.27)	-.03 N=35 (-.36,.31)	-.10 N=35 (-.42,.24)	.10 N=52 (-.18,.36)	.83* N=51 (.72,.90)

Table 7 (cont.)

Variable	1	2	3	4	5	6	7	8
15. Positive Affect T3	.41* N=52 (.15,.61)	.76* N=52 (.61,.86)	-.32* N=52 (-.55,-.05)	.23 N=51 (-.05,.48)	-.02 N=35 (-.35,.32)	-.08 N=35 (-.40,.26)	-.08 N=52 (-.35,.20)	.52* N=51 (.29,.69)
16. Negative Affect T3	-.52* N=52 (-.69,-.29)	-.42* N=52 (-.62,-.17)	.60* N=52 (.39,.75)	.15 N=51 (-.13,.41)	.23 N=35 (-.11,.52)	.15 N=35 (-.19,.46)	-.03 N=52 (-.30,.24)	-.46* N=51 (-.65,-.21)
17 Relationship Quality T3	-.12 N=50 (-.39,.16)	.21 N=50 (-.07,.46)	.03 N=50 (-.25,.31)	.80* N=50 (.67,.88)	.03 N=33 (-.32,.37)	.20 N=33 (-.15,.51)	.17 N=50 (-.11,.43)	.02 N=49 (-.26,.30)
18. Job Performance T3	-.18 N=24 (-.54,.24)	.09 N=24 (-.33,.48)	.28 N=24 (-.14,.61)	.25 N=23 (-.18,.60)	.78* N=24 (.55,.90)	.59* N=24 (.24,.80)	-.16 N=24 (-.53,.26)	-.09 N=24 (-.48,.33)
19. Citizenship Behavior T3	-.26 N=24 (-.60,.16)	.18 N=24 (-.24,.54)	.41* N=24 (.01,.70)	.41 N=23 (.00,.70)	.37 N=24 (-.04,.67)	.48* N=24 (.09,.74)	.12 N=24 (-.30,.50)	-.07 N=24 (-.46,.34)

Table 7 (cont.)

Variable	9	10	11	12	13	14	15	16
9. Positive Affect T2	1							
10. Negative Affect T2	-.36* N=53 (-.57,-.10)	1						
11 Relationship Quality T2	.21 N=50 (-.07,.46)	.08 N=50 (-.20,.35)	1					
12. Job Performance T2	.20 N=31 (-.17,.52)	.24 N=31 (-.12,.55)	.24 N=30 (-.13,.55)	1				
13. Citizenship Behavior T2	-.10 N=32 (-.43,.26)	.27 N=32 (-.09,.57)	.18 N=31 (-.19,.50)	.09 N=33 (-.26,.42)	1			
14. Mindfulness T3	.38* N=51 (.12,.59)	-.48* N=51 (-.67,-.24)	.03 N=50 (-.25,.31)	.11 N=30 (-.26,.45)	-.12 N=31 (-.45,.24)	1		
15. Positive Affect T3	.74* N=51 (.58,.84)	-.40* N=51 (-.61,-.14)	.13 N=50 (-.15,.39)	.41* N=30 (.06,.67)	-.26 N=31 (-.56,.10)	.47* N=52 (.23,.66)	1	

Table 7 (cont.)

Variable	9	10	11	12	13	14	15	16
16. Negative Affect T3	-.29* N=51 (-.52,-.02)	.73* N=51 (.57,.84)	.16 N=50 (-.12,.42)	-.05 N=30 (-.40,.32)	.02 N=31 (-.34,.37)	-.56* N=52 (-.72,-.34)	-.43* N=52 (-.56,-.07)	1
17 Relationship Quality T3	.20 N=49 (-.09,.46)	.06 N=49 (-.22,.34)	.87* N=50 (.78,.92)	.23 N=28 (-.16,.56)	.25 N=29 (-.13,.56)	-.03 N=50 (-.31,.25)	.08 N=50 (-.20,.35)	.05 N=50 (-.23,.32)
18. Job Performance T3	.02 N=24 (-.39,.42)	.22 N=24 (-.20,.57)	.34 N=21 (-.11,.67)	.76* N=24 (.51,.89)	.42* N=24 (.02,.70)	-.04 N=23 (-.44,.38)	.16 N=23 (-.27,.54)	.10 N=23 (-.33,.49)
19. Citizenship Behavior T3	.03 N=24 (-.38,.43)	.40 N=24 (.00,.69)	.63* N=21 (.27,.83)	.63* N=24 (.30,.82)	.81* N=24 (.60,.91)	.03 N=23 (-.39,.44)	.10 N=23 (-.33,.49)	.01 N=23 (-.40,.42)

Table 7 (cont.)

Variable	17	18	19
17 Relationship Quality T3	1		
18. Job Performance T3	.31 N=21 (-.14,.65)	1	
19. Citizenship Behavior T3	.64* N=21 (.29,.84)	.64 N=24 (.32,.83)	1

Note. Each cell contains the correlation, the sample size N applicable to that correlation, and the 95% confidence interval. For correlations marked with an *, the 95% confidence interval does not include zero

In the experimental group, mindfulness is consistently significantly positively associated with positive affect (Time 1 r = .50, 95% CI is .16 ≤ .50 ≤ .73; Time 2 r = .44; 95% CI is .02 ≤ .44 ≤ .73; Time 3 r = .48; 95% CI is .08 ≤ .48 ≤ .74) and negatively with negative affect (Time 1 r = -.40, 95% CI is -.67 ≤ -.40 ≤ -.04; Time 2 r = -.52; 95% CI is -.77 ≤ .-.52 ≤ -.13; Time 3 r = -.49; 95% CI is -.75 ≤ -.49 ≤ -.10). The control group shows a similar and consistent pattern. In the control group, mindfulness is consistently significantly associated with positive affect (Time 1 r = .36, 95% CI is .11 ≤ .36 ≤ .56; Time 2 r = .51; 95% CI is .28 ≤ .51 ≤ .69; Time 3 r = .47; 95% CI is .23 ≤ .47 ≤ .66) as well as negative affect (Time 1 r = -.72, 95% CI is -.82 ≤ -.72 ≤ -.57; Time 2 r = -.58; 95% CI is -.74 ≤ .-.58 ≤ -.37; Time 3 r = -.56; 95% CI is -.72 ≤ -.56 ≤ -.34).

However, mindfulness did not show the expected significant effects with respect to relationship quality, job performance, or citizenship behavior. With the exception of mindfulness and citizenship behavior at Time 1 in the control group (r = -.46, 95% CI is -.68 ≤ -.46 ≤ -.17), the correlations between mindfulness and these outcome variables were generally small or near zero, with their 95% CIs including zero. Trends in directionality of relationship could generally not be noted, as correlations bounced among negative, positive, and no relationship among the timepoints for each outcome. This is likely due to sampling error based on the small sample size of the study.

The analyses of the means, SDs, d values and t-test results performed in the first phase indicate no viable differences between the experimental and control groups in the outcome variables. Initial analysis of the correlations in this second phase indicates a lack of significant relationships between mindfulness and the outcome variables. Given these initial results as well as the small sample size, particularly of the experimental group, the decision was made to collapse the groups for further analyses and testing of the hypotheses. Thus, analyses of the proposed model in this second phase will proceed using the combined group. So as not to confound the results of these analyses with the training intervention, all further analyses will be conducted on Time 1 data, that is, data

collected from the groups prior to participation of the experimental group in the mindfulness program.

As previously noted, Table 3 reports the means and standard deviations of all variables at all timepoints for the combined overall group. Table 8 reports the correlations between variables for the combined overall group. These correlations will be discussed next in the evaluation of the hypotheses, to which I now turn.

Figure 3 again depicts the proposed model, with each link labeled with its respective hypotheses. Note, however, that the observed variable of mindfulness training participation that previously preceded the mindfulness variable is no longer pictured in the model, as the analysis of the training program was completed in the first phase.

Hypothesis 1a predicted that individuals higher on mindfulness receive higher performance ratings from their supervisors. Although the effect was in the opposite direction as hypothesized, mindfulness ($r = -.22$, 95% CI is $-.44 \leq -.22 \leq .03$) did not have a significant relationship with job performance, as the confidence interval includes zero. Thus, Hypothesis 1a was not supported.

Hypothesis 1b made a parallel prediction for citizenship behavior, that is, that individuals higher on mindfulness receive higher citizenship ratings from their supervisors. Mindfulness was significantly correlated with citizenship behavior ($r = -.28$, 95% CI is $-.49 \leq -.28 \leq -.03$), however, it was in the opposite direction as predicted. Consequently, Hypothesis 1b was not supported.

Hypothesis 2 proposed that individuals higher on mindfulness report higher positive affect and lower negative affect. This hypothesis was strongly supported for positive affect ($r = .47$, 95% CI is $.29 \leq .47 \leq .62$) as well as negative affect ($r = -.69$, 95% CI is $-.79 \leq -.69 \leq -.56$).

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Table 8. Intercorrelations Between Variables for the Combined Group

Variable	1	2	3	4	5	6	7	8
1. Training	1							
2. Mindfulness T1	-.49* N=88 (-.63,-.31)	.94						
3. Positive Affect T1	-.26* N=88 (-.45,-.05)	.47* N=88 (.29,.62)	.93					
4. Negative Affect T1	.37* N=88 (.17,.54)	-.69* N=88 (-.79,-.56)	-.42* N=88 (-.58,-.23)	.90				
5. Relationship Quality T1	.05 N=87 (-.16,.26)	-.14 N=87 (-.34,.07)	.16 N=87 (-.05,.36)	.04 N=87 (-.17,.25)	.96			
6. Job Performance T1	.17 N=63 (-.08,.40)	-.22 N=63 (-.44,.03)	-.16 N=63 (-.39,.09)	.26* N=63 (.01,.48)	.16 N=62 (-.09,.39)	.94		
7. Citizenship Behavior T1	.06 N=63 (-.19,.30)	-.28* N=63 (-.49,-.03)	-.12 N=63 (-.36,.13)	.24 N=63 (-.01,.46)	.20 N=62 (-.05,.43)	.71* N=63 (.56,.81)	.97	

Table 8 (cont.)

Variable	1	2	3	4	5	6	7	8
8. Interdependence	-.12 N=88 (-.32,.09)	.17 N=88 (-.04,.37)	.07 N=88 (-.14,.28)	-.04 N=88 (-.25,.17)	-.04 N=87 (-.25,.17)	.17 N=63 (-.08,.40)	.05 N=63 (-.20,.29)	.83
9. Mindfulness T2	.14 N=75 (-.09,.36)	.62* N=75 (.46,.74)	.36* N=75 (.14,.54)	-.47* N=75 (-.63,-.27)	.10 N=74 (-.13,.32)	-.02 N=56 (-.28,.24)	-.17 N=56 (-.41,.10)	.00 N=75 (-.23,.23)
10. Positive Affect T2	.09 N=75 (-.14,.31)	.29* N=75 (.07,.49)	.68* N=75 (.54,.79)	-.30* N=75 (-.49,-.08)	.20 N=74 (-.03,.41)	-.11 N=56 (-.36,.16)	-.13 N=56 (-.38,.14)	-.02 N=75 (-.25,.21)
11. Negative Affect T2	.04 N=75 (-.19,.26)	-.45* N=75 (-.61,-.25)	-.31* N=75 (-.50,-.09)	.66* N=75 (.51,.77)	.04 N=74 (-.19,.27)	.18 N=56 (-.09,.42)	.23 N=56 (-.04,.46)	.01 N=75 (-.22,.24)
12 Relationship Quality T2	.09 N=78 (-.14,.31)	-.15 N=78 (-.36,.08)	.09 N=78 (-.14,.31)	.05 N=78 (-.17,.27)	.66* N=78 (.51,.77)	.15 N=57 (-.12,.40)	.17 N=57 (-.09,.41)	.11 N=78 (-.12,.32)
13. Job Performance T2	.01 N=53 (-.26,.28)	.03 N=53 (-.24,.30)	.12 N=53 (-.16,.38)	.08 N=53 (-.19,.34)	.39* N=52 (.13,.60)	.48* N=53 (.24,.67)	.26 N=53 (-.01,.50)	.07 N=53 (-.20,.33)
14. Citizenship Behavior T2	-.05 N=54 (-.31,.22)	-.16 N=54 (-.41,.11)	-.17 N=54 (-.42,.10)	.16 N=54 (-.11,.41)	.36* N=53 (.10,.57)	.11 N=53 (-.17,.37)	.24 N=53 (-.03,.48)	-.12 N=54 (-.38,.15)

Table 8 (cont.)

Variable	1	2	3	4	5	6	7	8
15. Mindfulness T3	.16 N=75 (-.07,.37)	.50* N=75 (.31,.65)	.33* N=75 (.11,.52)	-.39* N=75 (-.57,-.18)	-.01 N=74 (-.24,.22)	-.01 N=56 (-.27,.25)	-.08 N=56 (-.34,.19)	.05 N=75 (-.18,.27)
16. Positive Affect T3	.01 N=75 (-.22,.24)	.30* N=75 (.08,.49)	.59* N=75 (.42,.72)	-.31* N=75 (-.50,-.09)	.15 N=74 (-.08,.37)	-.14 N=56 (-.39,.13)	-.12 N=56 (-.37,.15)	-.14 N=75 (-.36,.09)
17. Negative Affect T3	-.04 N=75 (-.26,.19)	-.32* N=75 (-.51,-.10)	-.35* N=75 (-.53,-.13)	.50* N=75 (.31,.65)	.16 N=74 (-.07,.37)	.24 N=56 (-.02,.47)	.14 N=56 (-.13,.39)	.03 N=75 (-.20,.26)
18 Relationship Quality T3	-.001 N=73 (-.23,.23)	-.01 N=73 (-.24,.22)	.16 N=73 (-.07,.38)	.003 N=73 (-.23,.23)	.75* N=73 (.63,.84)	.09 N=54 (-.18,.35)	.16 N=54 (-.11,.41)	.05 N=73 (-.18,.28)
19. Job Performance T3	.35* N=41 (.05,.59)	-.26 N=41 (-.53,.05)	-.08 N=41 (-.38,.23)	.32* N=41 (.01,.57)	.28 N=40 (-.03,.54)	.81* N=41 (.67,.89)	.64* N=41 (.41,.79)	.04 N=41 (-.27,.34)
20. Citizenship Behavior T3	-.06 N=41 (-.36,.25)	-.05 N=41 (-.35,.26)	-.01 N=41 (-.32,.30)	.16 N=41 (-.16,.45)	.43* N=40 (.14,.65)	.34* N=41 (.04,.59)	.47* N=41 (.19,.68)	-.09 N=41 (-.39,.22)

Table 8 (cont.)

Variable	9	10	11	12	13	14	15	16
9. Mindfulness T2	.94							
10. Positive Affect T2	.49* N=75 (.30,.65)	.93						
11 Negative Affect T2	-.53* N=75 (-.68,-.34)	-.34* N=75 (-.53,-.12)	.90					
12. Relationship Quality T2	.08 N=72 (-.15,.31)	.13 N=72 (-.10,.35)	.07 N=72 (-.16,.30)	.96				
13. Job Performance T2	.06 N=49 (-.22,.34)	.09 N=49 (-.20,.36)	.26 N=49 (-.02,.50)	.19 N=50 (-.09,.44)	.94			
14. Citizenship Behavior T3	-.21 N=50 (-.46,.07)	-.11 N=50 (-.38,.17)	.16 N=50 (-.12,.42)	.31* N=51 (.04,.54)	.35* N=53 (.09,.57)	.97		
15. Mindfulness T3	.82* N=73 (.73,.88)	.38* N=73 (.16,.56)	-.46* N=73 (-.62,-.26)	.04 N=73 (-.19,.27)	.23 N=49 (-.05,.48)	-.09 N=50 (-.36,.19)	.94	

Table 8 (cont.)

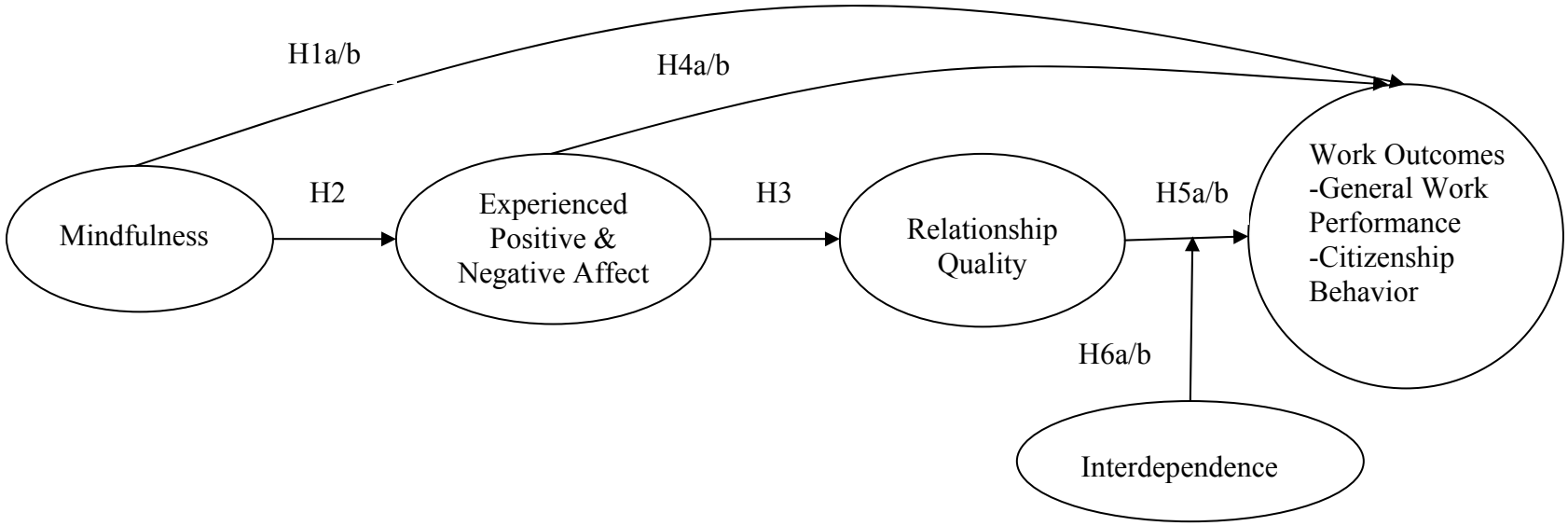
Variable	9	10	11	12	13	14	15	16
16. Positive Affect T3	.44* N=73 (.23,.61)	.64* N=73 (.48,.76)	-.32* N=73 (-.51,-.10)	.06 N=73 (-.17,.29)	.37* N=49 (.10,.59)	-.06 N=50 (-.33,.22)	.47* N=75 (.27,.63)	.93
17 Negative Affect T3	-.42* N=73 (-.59,-.21)	-.24* N=73 (-.45,-.01)	.68* N=73 (.53,.79)	.15 N=73 (-.08,.37)	-.08 N=49 (-.35,.21)	-.02 N=50 (-.30,.26)	-.54* N=75 (-.68,-.36)	-.47* N=75 (-.63,-.27)
18. Relationship Quality T3	.02 N=70 (-.22,.25)	.11 N=70 (-.13,.34)	.05 N=70 (-.19,.28)	.82* N=73 (.73,.88)	.23 N=47 (-.06,.49)	.38* N=48 (.11,.60)	-.02 N=72 (-.25,.21)	.06 N=72 (-.17,.29)
19. Job Performance T3	-.03 N=39 (-.34,.29)	-.02 N=39 (-.33,.30)	.30 N=39 (-.02,.56)	.28 N=38 (-.04,.55)	.60* N=41 (.36,.77)	.24 N=41 (-.07,.51)	.01 N=39 (-.31,.32)	-.12 N=39 (-.42,.20)
20. Citizenship Behavior T3	-.01 N=39 (-.32,.31)	-.12 N=39 (-.42,.20)	.29 N=39 (-.03,.55)	.28 N=38 (-.04,.55)	.79* N=41 (.64,.88)	.73* N=41 (.54,.85)	.13 N=39 (-.19,.43)	.14 N=39 (-.18,.44)

Table 8 (cont.)

Variable	17	18	19	20
17 Negative Affect T3	.90			
18. Relationship Quality T3	.04 N=72 (-.19,.27)	.96		
19. Job Performance T3	.23 N=39 (-.09,.51)	.21 N=37 (-.12,.50)	.94	
20. Citizenship Behavior T3	-.06 N=39 (-.37,.26)	.37* N=37 (.05,.62)	.54* N=41 (.28,.73)	.97

Note. Each cell contains the correlation, the sample size N applicable to that correlation, and the 95% confidence interval. For correlations marked with an *, the 95% confidence interval does not include zero. Coefficient alpha reliability estimates are shown on the diagonal.

Figure 3. Proposed Model for the Study



Hypothesis 3 predicted that individuals higher on mindfulness receive higher scores on relationship quality and this effect is mediated by experienced affect. Although the effect is in the opposite direction as hypothesized, mindfulness did not show a significant correlation with relationship quality ($r = -.14$, 95% CI is $-.34 \leq -.14 \leq .07$), as the confidence interval includes zero.

To assess whether the effect of mindfulness on relationship quality is mediated by experienced affect, I used the Baron and Kenny (1986) procedure. Mediation is supported if the following four requirements are met. First, the predictor (mindfulness) must relate to the outcome (relationship quality), though some have advised that this requirement may not be necessary (e.g., Collins, Graham, & Flaherty, 1998; MacKinnon, Krull, & Lockwood, 2000; Shrout & Bolger, 2002). For example, Shrout and Bolger (2002) argue that if the effect of the predictor on the dependent variable may be temporally distal and the magnitude of the expected effect small (as may likely be the case with mindfulness and relationship quality), this step is not necessary. In an update of the procedure, Kenny and colleagues (Kenny, Kashy, & Bolger, 1998) state that the first step is not required, but that "a path from the initial variable to the outcome is implied if Steps 2 and 3 are met" (p. 260). Second, the predictor (mindfulness) must relate to the mediator (experienced affect). Third, the mediator (experienced affect) must relate to the outcome (relationship quality) after controlling for the predictor (mindfulness). Last, the relationship between the predictor (mindfulness) and outcome (relationship quality) after controlling for the mediator (experienced affect) is evaluated. A lack of relationship would indicate full mediation while the continued existence of a relationship, albeit a reduced one, indicates partial mediation. Table 9 displays the results of a series of regressions to perform the Baron and Kenny (1986) procedure for testing mediation.

Table 9. Within-Time 1 Coefficient Estimates for Mediators of Relationship Quality

		ß	95% CI	R^2
Requirement 1				
Dependent Variable = Relationship Quality (N = 87)				
Mindfulness (M)	b_{11}	-.14	(-.35, .07)	.02
Requirement 2a				
Dependent Variable = Positive Affect (N = 88)				
Mindfulness (M)	b_{11}	.47	(.28, .66)	.22
Requirement 2b				
Dependent Variable = Negative Affect (N = 88)				
Mindfulness (M)	b_{21}	-.69	(-.85, -.54)	.48
Requirements 3 & 4				
Dependent Variable = Relationship Quality (N = 87)				
Mindfulness (M)	b_{31}	-.32	(-.62, -.02)	
Positive Affect (PA)	b_{32}	.29	(.05, .53)	
Negative Affect (NA)	b_{33}	-.06	(-.36, .24)	.09

First, relationship quality was regressed on mindfulness. As previously stated, this overall relationship was not significant (ß = -.14, 95% CI is -.35 ≤ -.14 ≤ .07). Thus, the first criterion was not met. Next, each of the affective mediators was regressed separately on mindfulness. As was shown in Hypothesis 2, these coefficients are significant for both positive affect (ß = .47, 95% CI is .28 ≤ .47 ≤ .66) as well as negative affect (ß = -.69, 95% CI is -.85 ≤ -.69 ≤ -.54)**.** Thus, this requirement is met. Next, relationship quality was regressed on mindfulness, positive affect, and negative affect. Positive affect (ß = .29, 95% CI is .05 ≤ -.29 ≤ .53) was still significantly related to relationship quality after controlling for mindfulness and negative affect, though negative affect was not significant (ß = -.06, 95% CI is -.36 ≤ -.06 ≤ .24) after controlling for other predictors. Thus, the third requirement was only partially met. Mindfulness was a significant predictor of relationship quality (ß = -.32, 95% CI is -.62 ≤ -.32 ≤ -.02) after controlling for the mediators, providing support for partial mediation through positive

affect. Results of a Sobel test (Baron & Kenny, 1986; Sobel, 1982) indicate that this indirect path through positive affect is significant ($Z = 2.18$, $p < .05$). The effect of mindfulness, however, is negative, which is in the opposite direction as hypothesized. As a result, Hypothesis 3 was not supported.

Hypothesis 4a proposed that individuals higher on positive affect and lower on negative affect receive higher performance ratings from their supervisors. This hypothesis was not supported for positive affect ($r = -.16$, 95% CI is $-.39 \leq -.16 \leq .09$), as the confidence interval includes zero. Negative affect ($r = .26$, 95% CI is $.01 \leq .26 \leq .48$) was significantly associated with job performance, however, the effect was in the opposite direction as hypothesized. Thus, Hypothesis 4a was not supported.

Hypothesis 4b made a parallel prediction for citizenship behavior, that is, that individuals higher on positive affect and lower on negative affect receive higher citizenship ratings from their supervisors. The effects were in the opposite direction as predicted, however, neither positive affect ($r = -.12$, 95% CI is $-.36 \leq -.12 \leq .13$) nor negative affect ($r = .24$, 95% CI is $-.01 \leq .24 \leq .46$) were significantly correlated with citizenship behavior as the confidence intervals included zero. Therefore, Hypothesis 4b was not supported.

The remaining hypotheses were tested using analytical techniques for moderated mediation developed by Edwards and Lambert (2007). As previously explained, this technique integrates moderated regression analysis and path analysis. It involves performing a series of regressions to establish path estimates for each linkage in the model. Bootstrapping techniques are then used to assess variances to create confidence intervals. Path estimates of the linkages shown in the proposed model are presented as standardized coefficients in Table 10.

Table 10. Within-Time 1 Coefficient Estimates for Mediators and Moderator of Job Performance and Citizenship Behavior

		ß	95% CI	R^2
Step 1				
Dependent Variable = Positive Affect (N = 88)				
Mindfulness (M)	b_{11}	.47	(.28, .66)	.22
Step 2				
Dependent Variable = Negative Affect (N = 88)				
Mindfulness (M)	b_{21}	-.69	(-.85, -.54)	.48
Step 3				
Dependent Variable = Relationship Quality (N = 87)				
Mindfulness (M)	b_{31}	-.32	(-.62, -.02)	
Positive Affect (PA)	b_{32}	.29	(.05, .53)	
Negative Affect (NA)	b_{33}	-.06	(-.36, .24)	.09
Step 4				
Dependent Variable = Job Performance (N = 62)				
Mindfulness (M)	b_{41}	.01	(-.40, .37)	
Positive Affect (PA)	b_{42}	-.10	(-.39, .20)	
Negative Affect (NA)	b_{43}	.24	(-.13, .60)	
Relationship Quality	b_{44}	.16	(-.10, .42)	
Interdependence (I)	b_{45}	.21	(-.04, .47)	
Interaction (RQ * I)	b_{46}	-.10	(-.32, .13)	.16
Step 4				
Dependent Variable = Citizenship Behavior (N = 62)				
Mindfulness (M)	b_{41}	-.19	(-.58, .20)	
Positive Affect (PA)	b_{42}	-.004	(-.31, .30)	
Negative Affect (NA)	b_{43}	.11	(-.26, .48)	
Relationship Quality	b_{44}	.16	(-.10, .43)	
Interdependence (I)	b_{45}	.10	(-.16, .36)	
Interaction (RQ. * I)	b_{46}	-.05	(-.28, .19)	.13

Turning first to the dependent variable of job performance, Hypothesis 5a predicted that individuals higher on mindfulness receive higher performance ratings from their supervisors and these effects are mediated by experienced affect and relationship quality. Mindfulness (ß = .01, 95% CI is -.40 $\leq$ .01 $\leq$ .37) was not a significant predictor of job performance. Positive affect (ß = -.10, 95% CI is -.39 $\leq$ -.10 $\leq$ .20), negative affect (ß = .24, 95% CI is -.13 $\leq$ .24 $\leq$ .60), and relationship quality (ß = .16, 95% CI is -.10

≤ .16 ≤ .42) were also non-significant predictors. Hypothesis 6a predicted that the positive relationship between relationship quality and performance is stronger when the interdependence level of an individual's role is high than when the interdependence is low. However, relationship quality and role interdependence did not interact to explain job performance (ß = -.10, 95% CI is -.32 ≤ -.10 ≤ .13).

The final hypotheses predict the same pattern of relationships for the dependent variable citizenship behavior. Hypothesis 5b proposed that individuals higher on mindfulness receive higher citizenship ratings from their supervisors and these effects are mediated by experienced affect and relationship quality. Although the coefficient is in the opposite direction as predicted, mindfulness (ß = -.19, 95% CI is -.58 ≤ -.19 ≤ .20) was not a significant predictor of citizenship behavior, as its confidence interval included zero. Positive affect (ß = -.004, 95% CI is -.31 ≤ -.004 ≤ .30), negative affect (ß = .11, 95% CI is -.26 ≤ .11 ≤ .48), and relationship quality (ß = .16, 95% CI is -.10 ≤ .16 ≤ .43) were also non-significant predictors. Hypothesis 6b predicted that the positive relationship between relationship quality and citizenship behavior is stronger when the interdependence level of an individual's role is high than when the interdependence is low. However, relationship quality and role interdependence did not interact to explain citizenship behavior (ß = -.05, 95% CI is -.28 ≤ -.05 ≤ .19).

The coefficients presented in Table 10 were used to calculate direct and indirect effects on job performance and citizenship behavior, as well as differences at high and low levels of role interdependence (Edwards & Lambert, 2007). These results are shown in Table 11. Mediation was not supported through positive affect (Path = -.017, 95% CI is -.10 ≤ -.017 ≤ .06 for low interdependence; Path = -.037, 95% CI is -.17 ≤ -.037 ≤ .07 for high interdependence) or negative affect (Path = -.005, 95% CI is -.10 ≤ -.005 ≤ .03 for low interdependence; Path = -.011, 95% CI is -.17 ≤ -.011 ≤ .04 for high interdependence) for job performance.

Table 11. Analysis of Simple Effects for Mediators and Moderator of Job Performance and Citizenship Behavior

	Low Interdependence		High Interdependence		Differences	
	Path	95% CI	Path	95%CI	Effect	95% CI
			Dependent Variable = Job Performance			
Through PA	-.017	(-.10, .06)	-.037	(-.17, .07)	-.020	(-.08,.01)
Through NA	-.005	(-.10, .03)	-.011	(-.17, .04)	-.006	(-.07,.01)
Total Effect	-.023	(-.15, .08)	-.048	(-.29, .08)	-.026	(-.12,.01)
			Dependent Variable = Citizenship Behavior			
Through PA	.003	(-.07, .10)	-.007	(-.15, .11)	-.010	(-.08,.02)
Through NA	.001	(-.05, .07)	-.002	(-.11, .06)	-.003	(-.07,.01)
Total Effect	.004	(-.09, .14)	-.009	(-.22, .14)	-.013	(-.11,-.00)

Note. N = 62.

Path columns represent simple effects calculated using coefficient estimates reported in Table 10. For Low Interdependence Z = 2.87, for High Interdependence Z = 4.31. From Table 10 Through Positive Affect (PA) = $\beta_{11} * \beta_{32}$ * ($\beta_{44} + (\beta_{46} * Z)$); From Table 10 Through Negative Affect (NA) = $\beta_{11} * \beta_{32}$ * ($\beta_{44} + (\beta_{46} * Z)$). Total Effects Differences in paths were computed by subtracting the effect for Low Interdependence from the effect for High Interdependence. Confidence intervals derived from bootstrap estimates.

Similar non-significant results were found for citizenship behavior. Mediation was not supported through positive affect (Path = .003, 95% CI is -.07 ≤ .003 ≤ .10 for low interdependence; Path = -.007, 95% CI is -.15 ≤ -.007 ≤ .11 for high interdependence) or negative affect (Path = .001, 95% CI is -.05 ≤ .001 ≤ .07 for low interdependence; Path = -.002, 95% CI is -.11 ≤ -.002 ≤ .06 for high interdependence) for citizenship behavior. The total effect through experienced affect was also non-significant for both job performance (Path = -.023, 95% CI is -.15 ≤ -.023 ≤ .08 for low interdependence; Path = -.048, 95% CI is -.29 ≤ -.048 ≤ .08 for high interdependence) and for citizenship behavior (Path = .004, 95% CI is -.09 ≤ .004 ≤ .14 for low interdependence; Path = -.009, 95% CI is -.22 ≤ -.009 ≤ .14 for high interdependence). Given the above results, the final hypotheses, 5a/b and 6a/b, were not supported. Thus, this second phase of analysis indicates that the proposed model was generally not supported.

Summary

In this study, I set out to understand the effects of mindfulness in a work setting. I proposed that mindfulness, as developed in a mindfulness-based program, would have a positive effect on individuals' job performance and citizenship behavior via their improved experienced affect and quality of relationships at work. In this chapter, I reviewed the results of a two-phase analysis conducted, first, to assess the effectiveness of the mindfulness-based training program and, second, to test the overall proposed model.

Results from the first phase of analyses indicate that the mindfulness-based training program effectively increased mindfulness and improved affect of program participants. Comparison of means between and within groups as well as the regression analyses were consistent in their indication that participation in the mindfulness-based training program increased mindfulness. In addition, the comparison of means between groups indicated that participation in training also improved affect, as signficant pre-

training differences between the experimental and control groups disappeared after training participation.

Results from the second phase of analyses, however, indicated that the proposed model was not supported. The only aspect of the model that was supported was the relationship between mindfulness and experienced affect. Mindfulness had a strong, positive relationship with positive affect and a strong, negative relationship with negative affect. However, mindfulness was generally found to have non-significant effects. Where it did have significant effects, they were often in the opposite direction as hypothesized. Mindfulness was significantly negatively correlated with citizenship behavior. In addition, in a model of mindfulness and experienced affect predicting relationship quality, mindfulness displayed a moderate, negative coefficient mediated through positive affect. In the overall model, all coefficients for mindfulness, affect, relationship quality, interdependence, and the interaction of the latter predictors were non-significant in the prediction of both job performance and citizenship behavior. In the next section, I discuss these findings and the study in more detail as well as implications for mindfulness-based programs in the workplace as well as future research.

CHAPTER V

DISCUSSION

Mindfulness—a purposeful *attention* to and *awareness* of the *present moment*, approached with an attitude of *openness*, *acceptance*, and *nonjudgment* (Bishop et al., 2004; Kabat-Zinn, 1990, 1994)—is a construct just beginning to be studied in the workplace. Though research evidence is clear in terms of the positive effects of mindfulness on mental health and psychological well-being and physical health (Baer, 2003; Brown & Ryan, 2003; Brown et al., 2007b; Grossman et al., 2004), little is currently known about the effects of mindfulness in a work setting. This study proposed that mindfulness, as developed in a mindfulness-based program, would have a positive effect on individuals' job performance and citizenship behavior via their improved experienced affect and quality of relationships at work.

Results

Results from the first phase of analyses indicate that the mindfulness-based programs, MBSR and MBCT, were effective in increasing mindfulness. This was particularly true for those participants who were lower in mindfulness prior to program participation. Though the experimental group was significantly lower in mindfulness than the control group prior to program participation, at the end of the program their mean level of mindfulness was essentially equivalent to others. The mindfulness-based training program also improved the affect of program participants. In particular, individuals in the experimental group were significantly higher in negative affect than the control group pre-training, but this difference disappeared post-training.

The broad purpose of the training program is to enhance mindfulness, that is, to teach participants the principles of mindfulness and the practice of mindfulness meditation so that they can learn to relate mindfully to whatever they experience. Individuals are trained to practice mindfulness not to achieve a particular end goal (though beneficial psychological and physical outcomes often do result), but rather to

simply participate in the experience, a "non-striving" of sorts (Kabat-Zinn, 1990). Given this purpose, the program in this study is successful.

The second phase of analyses, however, indicates that the proposed model (see Figure 3 in the previous chapter) was not supported. Mindfulness was generally found to have non-significant effects on work-related outcomes. Where it did have significant effects, they were often in the opposite direction as hypothesized. Before discussing this in further detail, I review the hypothesis that did receive support.

One aspect of the model that was supported was the relationship between mindfulness and experienced affect (Hypothesis 2). Mindfulness exhibited a strong, positive relationship with positive affect. Mindful individuals have a greater ability to regulate affect (Brown et al., 2007) and both high-positive-affect and mindful individuals more often exist in a state of full concentration and engagement and feel energized by their experiences (Kabat-Zinn, 1990; Watson et al., 1988). Mindfulness displayed a strong, negative relationship with negative affect. Mindful individuals, with their greater ability to tolerate a variety of thoughts, emotions, and experiences (Baer, 2003; Brown et al., 2007, Shapiro et al., 2006) are less susceptible to psychological distress and more likely to be psychologically well-adjusted (Brown et al., 2007) as compared to high-negative-affect individuals, who are more likely to experience psychological distress and negative emotions and mood states (Watson & Clark, 1984).

Study results for mindfulness and experienced affect are consistent with current meta-analytic estimates of these relationships (Giluk, 2009). For those who develop mindfulness as a result of participation in a mindfulness-based program, the experience of increased positive affect and decreased negative affect are an expected and generally realized benefit (Davidson et al., 2003; Jain et al., 2007; Jimenez, 2008; Nyklíček & Kuijpers, 2008; Ortner et al., 2007; Schroevers & Brandsma, 2010; Sears & Kraus, 2009; Shapiro et al., 2007; Tipsord, 2009; Vieten & Astin, 2008). Thus, this finding aligns with current empirical evidence on mindfulness and affect.

Improved affect should also provide a benefit to individuals in the workplace and their organizations. Broad reviews of affect research conclude that positive affect tends to enhance performance (Barsade & Gibson, 2007) and promote citizenship behavior (Carlson et al., 1988; Isen, 1999). The same cannot be said of negative affect, which is generally negatively associated with these work outcomes, though it may facilitate them under limited conditions (Barsade & Gibson, 2007; Carlson & Miller, 1987; Salovey et al., 1991).

The remaining hypotheses were not supported, mainly due to non-significant results. Mindfulness had non-significant correlations with job performance (Hypothesis 1a) and relationship quality (Hypothesis 3). Experienced affect did not significantly relate to job performance (Hypothesis 4a) or citizenship (Hypothesis 4b; with the exception of negative affect and job performance, to be discussed shortly), despite a history of evidence suggesting that positive affect should facilitate these outcomes and negative affect should generally inhibit them (Barsade & Gibson, 2007; Carlson et al., 1988; Isen, 1999; Lyubomirsky et al, 2005). In evaluating the model as a whole (Hypotheses 5a/b and 6a/b), all coefficients for mindfulness, affect, relationship quality, interdependence, and the interaction of the latter predictors were non-significant in the prediction of both job performance and citizenship behavior.

Several hypotheses, however, were not supported partially due to significant relationships in the opposite direction than predicted. Mindfulness had a moderate, negative relationship with citizenship behavior (Hypothesis 1b), though the upper end of the 95% confidence interval was close to zero (-.03). This is in contrast to the expected positive effect based on evidence showing that mindfulness contributes to the development of empathy (Block-Lerner et al., 2007; Cohen-Katz et al., 2005a; Shapiro et al., 1998; Tipsord, 2009), a characteristic associated with increased citizenship behavior (Settoon & Mossholder, 2002), as well as initial empirical evidence that found a moderate, positive correlation between mindfulness and citizenship (Avey et al., 2008).

In a model of mindfulness and experienced affect predicting relationship quality (Hypothesis 3), mindfulness displayed a moderate, negative coefficient mediated through positive affect, though the upper end of this 95% confidence interval was virtually zero (-.02). This was unexpected, given the rationale that the improved experienced affect of mindful individuals would result in enhanced relationship quality through shared affective experiences and processes (e.g., Barsade, 2002; Bartel & Saavedra, 2000; Kelly & Barsade, 2001). Further discussion of these negative effects of mindfulness on outcomes appears later in this chapter in the discussion of limitations as well as future research.

Lastly, negative affect was positively associated with job performance (Hypothesis 4a), though the lower end of the 95% confidence interval was also near zero (.01). Though positive affect enjoys a strong and varied evidence base for its facilitating effect on performance, the "evidence for the deleterious effects of individual negative affect is substantial" (Barsade & Gibson, 2007, p. 52). However, Barsade and Gibson (2007) also suggest that the influence of negative affect is complex and that there may be conditions under which negative affect responses lead to positive organizational outcomes, for example, in negotiations (Van Kleef, De Dreu, & Manstead, 2004) or situations of injustice (George, 2000).

In sum, this study proposed that mindfulness, as developed in a mindfulness-based program, would have a positive effect on individuals' job performance and citizenship behavior via their improved experienced affect and quality of relationships at work. However, this proposed model was not supported. The only aspect of the model that was supported was the relationship between mindfulness and experienced affect. In the overall model, all coefficients for mindfulness, affect, relationship quality, interdependence, and the interaction of the latter predictors were non-significant in the prediction of both job performance and citizenship behavior. I turn now to a discussion of limitations that may have contributed to these null findings.

Limitations of the Study

In evaluating the overall results of the study, there are several potential limitations that may contribute to the explanation for the outcomes. An obvious limitation of the study applicable to both phases of analyses is the obtained sample size. For example, sample size for the phase-two analyses of the combined group at Time 1 ranged from 62 to 88. The sample size achieved for the multiple regression equations conducted for the overall model (Hypotheses 5 and 6) was 62. Power refers to the ability of a test to detect relationships that exist in the population (Cohen, 1988). A post-hoc statistical power analysis (using the alpha level, number of predictors, observed R^2, and sample size and with the caveat that power analysis is more commonly completed a priori to determine sample size) indicates that the observed power for these analyses was .68 and .55 for job performance and citizenship behavior, respectively. These are below the .80 minimal power standard proposed by Cohen (1988). Thus, the small sample size and its corresponding lack of statistical power may have contributed to the study's non-significant results.

Another limitation may relate to the measure of relationship quality. The relationship quality variable was an aggregate of multiple coworkers' ratings of their relationship with the study participant. The hypotheses were tested using this aggregate measure with the theory that average relationship quality would increase. However, as discussed in the results section, given the ICC results, the aggregation of the measure of relationship quality may be questionable. Raters may not be interchangeable because, in essence, they are not rating the same construct; each individual is rating their particular relationship with the study participant. It may be that different relationships are affected differently and, therefore, changes in relationship quality are best analyzed at the individual level rather than as an aggregated construct. Unfortunately, in this study, I do not have additional information about the individual relationships to make such an analysis viable. For example, different levels of interdependence may exist in each

relationship, but I only have a measure of interdependence of each participant's overall role. Other information that may be relevant (e.g., length of relationship) is also not available.

Specific to the phase-one analysis of training program effectiveness, the time lag of the study may have been insufficient. Program participants were assessed at three timepoints: pre-training, at program completion, and four weeks post-program. The control group followed a parallel time structure. A significant improvement in both mindfulness and affect was observed immediately post-program as compared to baseline. However, improvements were not observed in the work-related variables of interest, namely, relationship quality, job performance, and citizenship behavior neither immediately post-program or four weeks post-program. It may be that more time is warranted in order to observe effects in these areas.

For example, I briefly discussed the significant difference in job performance between the experimental and control groups at Time 3. This significant difference *between* groups was produced by insignificant fluctuations *within* groups, and was no longer a significant difference after the Bonferroni correction. Thus, I concluded that it would be overly aggressive, given the pattern of data, to conclude that participation in the mindfulness-based program improved job performance. However, given additional time, perhaps more data would be revealed that would support such a conclusion. Significant improvements may appear within the experimental group at a later timepoint that would form a pattern or produce a statistically significant difference post-correction. Time may also be relevant with respect to the significant, negative relationships of mindfulness with citizenship behavior and relationship quality (this latter effect mediated through positive affect). It may be that, early on in the process, participants are absorbed with the task of learning to practice mindfulness and to integrate into their lives. They may be focused on themselves during this process such that outcomes related to others, such as citizenship behavior and relationship quality, are not yet impacted and perhaps even momentarily

suffer. However, for those individuals whose mindfulness practice becomes more ingrained as part of their lives, perhaps they would begin to "focus" their practice on others and outcomes related to others would take a positive turn.

Then again, one must also interpret the significant results indicating improved mindfulness and affect with some caution due to a potential selection bias. As the comparison of means at Time 1 pre-training demonstrated, the average person in the experimental group was not equivalent to the average person in the control group with respect to mindfulness or affect. Random assignment to conditions is ideal, but this was not possible in this study. Individuals self-selected into mindfulness program participation. Shadish, Cook, and Campbell (2002) note that it is a potential threat to the validity of a study whenever individuals are selected or select themselves because they have scores higher or lower than the average on some measure. It is certainly plausible that this self-selection into the course was based on individuals' stress, depression, anxiety, or other affect-related conditions (i.e. their scores would be higher in these areas, consistent with the lower positive affect and higher negative affect scores that were observed pre-training). In such a case, regression to the mean is likely, where these individuals are likely to score less extremely on a retest of the same measure due to random error, even if the treatment (training participation) had no effect. Regression toward the mean can also be observed simply as an artifact of time and circumstances. Individuals often select into an intervention of this nature due to a temporary crisis (e.g., divorce, death, diagnosis), as some participants indicated they did here. As Shadish and colleagues (2002) explain, any "measured progress is partly a movement back toward their stable individual mean as the temporary shock that led them to (the intervention)…grows less acute" (p. 59). Thus, because the experimental group was more extreme in some ways and not equivalent to the control group to begin with, one should be careful not to over-interpret the observed improvements of the experimental group post-training.

Mindfulness-Based Programs in Work Settings

However, assuming for a moment that mindfulness does have the capability to benefit work outcomes (as argued in the development of this study's hypotheses), the lack of supportive results in the study raises an issue. As mentioned in the previous chapter, this study was conducted with the cooperation of the UI MBSR/MBCT programs and UI Wellness. Anyone may participate in the mindfulness-based programs, whether or not they are affiliated with the University of Iowa. However, many university employees do enroll and there is certainly an incentive for them to do so, as UI Wellness may pay 75% of the $400 program fee for participating employees. Organizations often sponsor training, though a recent survey estimates that only 50% of training investments result in individual or organizational improvements (Saks, 2002). Without evidence that program participation is beneficial for the workplace, however, the UI may find its sponsorship to be in the undesirable half of training investments. Consistent with the mindfulness literature, this study demonstrates that participation in the sponsored MBSR/MBCT program increases mindfulness. How can the university facilitate an outcome in which participation in this program and its resulting increased level of mindfulness benefits individuals at work and the broader organization?

A research literature that may offer some guidance in this respect is the training transfer literature. Transfer of training refers to "the degree to which trainees effectively apply the knowledge, skills, and attitudes gained in a training context to the job" (Baldwin & Ford, 1988, p. 63). In successful transfer, learning will not only be generalized to the job context but also maintained over a period of time (Baldwin & Ford, 1988). Organizations wish to avoid, of course, situations of zero transfer, where the training intervention has no effect, or at worst, negative transfer, where the training actually worsens job performance or other work outcomes (Burke, 2001). Extensive research has been done on the factors that influence transfer of training, including those related to the individual, intervention design and delivery, and the work environment

(Burke & Hutchins, 2007). Not all factors can be easily influenced or manipulated by the organization. For example, trainees' cognitive ability enhances transfer (corrected correlation of .43; Colquitt, LePine, & Noe, 2000), but, short of "trading up" to smarter employees in future selection efforts, this factor is not immediately remediable. However, several factors that are well-supported by empirical research may be viable strategies for the university with respect to improving the transfer of the knowledge, skills, and attitudes learned in the mindfulness-based programs to the workplace.

At the individual level, self-efficacy, or judgments that individuals make about their capabilities to perform a particular task or to execute a course of action (Bandura, 1982), positively relates to transfer (Burke & Hutchins, 2007; Colquitt et al., 2000). Self-efficacy is malleable (Bandura, 1982; Burke & Hutchins, 2007) and, thus, something the organization can proactively endeavor to influence. Kabat-Zinn (1990) helps us to understand why such an effort may be necessary.

In discussing the end of the numerous eight-week mindfulness-based program cycles he has been involved with over the years, Kabat-Zinn (1990) remarks that participants do not want the program to end. They wish to continue meeting weekly and practicing together. As he characterizes their experience "Nothing much has changed on a big scale in their lives. Except, in some subtle way that comes out as we review what it has meant for them to come this far on the journey, everything" (Kabat-Zinn, 1990, p. 423). The end of the course signals a purposeful removal of external supports "so that people can work at sustaining the momentum of mindfulness on their own" (Kabat-Zinn, 1990, pp. 423-424). However, given the inherent challenge of maintaining a present-moment focus and foregoing the human tendency to categorize and judge our experiences, program participants may find this newfound autonomy with respect to mindfulness intimidating. The ongoing time commitment (45 minutes/day) recommended for the formal practice that would facilitate sustained mindfulness likely also seems daunting. The organization may be able to adapt the mindfulness program to include a component

focused on increasing participants' self-efficacy to sustain mindfulness post-program. For example, self-management strategies have been previously used in an effective post-training transfer intervention (Gist, Stevens, & Bavetta, 1991).

Transfer can be also be enhanced when participants perceive that the training has utility or value for improving work outcomes such as performance (Burke & Hutchins, 2007). One way to help participants connect mindfulness to their work would be to make the connection more explicit. This could be done by adapting the mindfulness-based program to focus on a work context. For example, in discussing the impact of mindfulness on relationships, I previously referenced the now-published dissertation of James Carson (Carson et al., 2004). As part of the study, he specifically designed a novel intervention, mindfulness-based relationship enhancement. This program was directly modeled on Kabat-Zinn's mindfulness program in terms of format, teaching style, sequence of techniques, composition of topics, and homework assignments. However, modifications were made that were specific to the goal of relationship enhancement for nondistressed couples, such as partner versions of exercises, a greater emphasis on loving-kindness meditation, application of mindfulness to emotion-focused and problem-focused approaches to relationship issues, and homework assignments focusing on shared as opposed to individual experiences of mindfulness practice. Couples participating in the program reported higher levels of relationship satisfaction, closeness, acceptance of one another, and lower levels of relationship distress.

A mindfulness-based program specifically modified for work enhancement may increase participants' judgments of the utility and value of mindfulness for their work. Such a program may also facilitate use of a key principle of adult learning, that is, that "people need to use their own life or work-related experiences as a basis for learning" (Burke, 2001, p. 97). In a program designed to focus on a work context, people can integrate their work experiences and work problems with their learning and practice of mindfulness. Also of note is Alliger and colleagues' (Alliger, Tannenbaum, Bennett,

Traver, & Shotland, 1997) meta-analytic finding that learner utility judgments have a stronger relationship with transfer as compared to learner affective or emotional reactions. Given the strong influence of mindfulness on experienced affect, the design of the intervention must assist participants to go beyond their affective reaction to see explicit connections to their work and enhance utility judgments.

At the level of the work environment, supervisor and peer support has been found to increase transfer. Burke and Hutchins (2007) refer to this as "perhaps the most consistent factor explaining the relationships between the work environment and transfer" (p. 281). Support from peers and supervisors is an important feature of a positive transfer climate, which refers to the perceptions of the work environment characteristics that inhibit or facilitate the transfer of what has been learned in training to the job (Rouiller & Goldstein, 1993). Examples of supervisor and peer supportive behaviors include discussing new learning, sharing ideas about course content, positive feedback, and involvement in training (Burke & Hutchins, 2007).

Given this, one strategy that may facilitate the transfer of mindfulness skills to the work context is participation at the department or unit level. Currently, participation in the mindfulness-based program is an individual endeavor; though it takes place in a group setting, the participants do not normally know one another beforehand. Supervisors and peers could more easily support one another if everyone within a department/unit participated in the program. They would share a common understanding and language regarding content. Shared participation may also ensure that the values and attitudes promoted in training—the importance of *present-moment attention* approached with an attitude of *openness*, *acceptance*, and *nonjudgment* (Bishop et al., 2004; Kabat-Zinn, 1990, 1994)—are consistent with the values on the job. Such consistency is another important feature of transfer climate (Burke, 2001). One can envision the development of a "community of practice" (Lave & Wenger, 1991; Wenger, 1999), in which members engage in the common quest of a mindful approach to work and, in doing

so, learn from one another. This strategy of participation at the department/unit level would be particularly powerful when combined with a mindfulness-based program modified for the work context as described previously.

Thus, the university (or any organization sponsoring mindfulness-based programs) can take tangible steps to increase the probability that participation in this program and its resulting increased level of mindfulness benefits individuals at work and the broader organization. The suggested focus on participants' self-efficacy, participants' utility/value judgments regarding the training, and supervisor/peer support are but three of the potential mechanisms by which the organization can enhance transfer. Based on current empirical evidence (Burke & Hutchins, 2007), though, they are three of the most viable strategies.

I have reviewed the overall results of the study, discussed several study limitations, and suggested implications related to mindfulness-based training programs in the workplace. I now consider future research regarding mindfulness and work. Given the lack of results, what does this study suggest for next steps in terms of research?

Future Research

Participants' comments suggest two potential substantive directions for future research. In the final survey one month after program completion, members of the experimental group were asked to share their views as to how mindfulness affected their relationships at work and their work in general. Though the results of this study did not reflect positive relationships of mindfulness with work outcomes, some individuals saw a change after having completed the mindfulness program:

> It has improved my relationships with people who I previously avoided or became easily irritated by.
>
> I think I'm calmer so I approach my work that way and it seems to go smoother and I seem to be more efficient.
>
> It has made me appreciate my work more when I concentrate more on it. I feel more valuable when I put more effort and concentration into my work.

> I believe I have become a more patient boss, more tolerant of things I used to find annoying or distracting…I used to react to things, now I see my feelings about them, and decide how to respond accordingly.
>
> I have greater capacity to feel compassion toward those I am caring for; sometimes when people are really stressing, I just breath (sic) mindfully and it really helps those in crisis.
>
> I try to observe how my actions are affecting my coworker and the people I am caring for. I am much less reactive to crisis situations that arise at work.

Some of these comments (e.g., "…made me appreciate my work more…", "I have become…more tolerant of things (on the job)…") suggest that work attitudes, such as employee engagement or job satisfaction, may be a more appropriate area on which to focus in terms of mediators or work outcomes. Work attitudes were not present in the proposed model. Work attitudes often have appreciable relationships with performance-related outcomes (e.g., a mean true correlation of .30 between job satisfaction and job performance; Judge, Thoresen, Bono, & Patton, 2001), however, so even if mindfulness does positively relate to work attitudes, this does not fully explain the lack of results here. It may be that mindfulness does have positive implications for individuals' experience of work, but for some reason, it does not materialize in tangible work outcomes. Given that there are so many factors that influence these outcomes, perhaps mindfulness has a comparatively smaller influence and gets "lost in the shuffle." Exploring the relationship between mindfulness and work attitudes, though, may be a more fruitful avenue.

Another possibility, particularly as it applies to the significant negative relationship of mindfulness (controlling for experienced affect) with relationship quality and with citizenship behavior, is that mindfulness may not facilitate work outcomes at all. It is worth taking another look at some selected program participants' comments regarding the effect of mindfulness on their work. Comments from some participants raise the interesting question of whether mindfulness works too well in terms of improving experienced affect and reducing stress in the workplace (though this latter effect was not measured in this study, it is fairly well-established; e.g., Cohen-Katz et al.,

2004, 2005a, 2005b; Galantino et al., 2005; Irving et al., 2009; Klatt et al., 2009; Mackenzie et al., 2006; Pipe et al., 2009) and what type of effect this may have on participants at work. Following are selected additional comments from program participants regarding their mindfulness and their work:

> I have taken a more relaxed position about backorders and dealing with the vendors then (sic) I had been doing. I do what I can during the day and not stress out if everything does not get done. I do not stay a lot of extra hours as I had been doing.
>
> Previously I jumped anytime someone had a problem (regardless of whether or not it was my job to fix it). Now I am less reactive to my colleagues' crises when I think the crises are self-created or their demands are unreasonable.
>
> Perhaps I've become a bit less worried about letting my students down if I don't spend hours on each lecture. Perhaps I'm a bit more able to 'go with the flow' in class.
>
> I have come to the realization that if my employer is not going to invest in me, then I need to stop wearing my heart on my sleeve and not be so invested.
>
> I am not quite as tied to my work.

These comments align with some similar outcomes from the eight participants in Hunter and McCormick's (2008) qualitative study of a mindful approach to work. Those participants reported a stronger inner focus, such that they were less concerned with external, work-related rewards and recognition or the approval of others. In addition, their focus shifted from their job as their primary source of meaning in their lives to finding multiple sources of meaning. It remains to be seen how such shifts in attitudes affect work-related relationships, performance, and achievement in the long-term. It may be that relationship quality, performance, and citizenship behavior are not affected or are negatively affected by a mindful approach because participants in the mindfulness-based program are now focused on "self-care" more so than others or their organization. Of course, given the previous discussion of the aggregated measure of relationship quality as a potential limitation, future research should investigate the impact of mindfulness on

relationship quality through an examination of relationship quality at the individual relationship level.

This potential scenario of a negative effect of mindfulness on work-related outcomes also raises an interesting question. If an organization pays for employees to participate in a program that makes the employees less stressed and more "happy," but also potentially less committed to working hard for the organization in order to maintain this state, is that a good thing? The answer may be different from the perspective of the individual versus the organization. Both parties may be interested in the individual's well-being and value a program that increases it, but there may be a point when interests diverge, particularly if increased well-being comes at the expense of work outcomes. There are also likely short-term and long-term perspectives. The implications of this "more relaxed position" with respect to work may not seem beneficial for the organization in the short-term, particularly as it relates to productivity and financial concerns (e.g., has this employee's productivity decreased and, if so, does this new level of productivity warrant his or her salary?). However, this approach may offer benefits in the long-term, for example, in the organization's ability to retain employees with critical organizational experience and knowledge or to recruit new employees who are interested in a workplace in which they can maintain a strong work-life balance. Beyond the specific organization, such an approach to work may alter our society if taken by a critical mass of individuals. Some individuals may find the "work to live" approach (where there is less emphasis on what one does for a living and family and leisure time are central to the culture) more desirable than the United States' current "live to work" culture (where what you do may seem more important than who you are and family and leisure time are often sacrificed for work; cf. Hochschild, 1997; Hofstede, 2001). This scenario certainly suggests some paradoxes, and there is no easy answer to them. A potential negative effect of mindfulness on work outcomes certainly warrants research consideration.

On a broad note with respect to future research, a qualitative effort to study mindfulness and work might be a good next step given the lack of empirical support for what seemed to be a theoretically-supported model. It would help to ensure a rich understanding of mindfulness' impact and the process by which this occurs so that more viable models can be proposed and empirically tested. In view of the potential "negative" implications raised by the limited qualitative data in this study in contrast to the positive outcomes of mindfulness that research has supported thus far (e.g., mental health, physical health, intimate relationships), any qualitative effort should utilize a grounded theory approach (Glaser & Strauss, 1967; Corbin & Strauss, 2008). In such an approach, the researchers let the theory of mindfulness and work emerge from what the data are telling them (rather than beginning with preconceived expectations), but then continually "toggle" between theory and data in order to systematically validate the emerging theory.

From a procedural perspective, it would be wise to pursue such research in an organization in which the program is offered directly in the organization and the study is explicitly sponsored by the organization. The program investigated in this study took place at the University of Iowa Hospitals and Clinics. Program participants were informed of university and program administration sponsorship of the study. Anyone in the community is eligible to participate in the mindfulness program, thus, not all individuals were employed by the university and such individuals may have been less invested in participating in a university-sponsored study. In addition, because it is a hospital-based program, some individuals enroll in the program due to physician referral for health-related issues (e.g., for chronic pain or anxiety). The health-related nature of their program participation may have made some program participants reluctant to enroll in the research study, in spite of the fact that their participation in the program would be kept confidential from their coworkers and supervisor. The need to maintain the confidentiality of the program participants also meant that coworkers and supervisors,

though aware the study was being conducted by researchers at the university, were not aware that the university was sponsoring the study. Explicit organization sponsorship may spur participation, but this study was unable to realize that potential benefit. Thus, an organization setting and explicit organization sponsorship may make future study efforts more productive.

Conclusion

As I stated in the introduction to this study, from a research perspective, the influence of mindfulness at work is largely uncharted territory. This study was a first step in beginning to understand its influence. Though the results of the study are disappointing, an important development for the mindfulness construct is that the "scholarly conversation" (Huff, 1999) regarding mindfulness and work begins to flourish; in that respect, it is hoped that this study may contribute. As Brown and his colleagues (Brown et al., 2007b) noted, interest in mindfulness has "quietly exploded" (p. 211) over the past two decades and it seems that this interest will only continue to gain momentum. For as Jon Kabat-Zinn (2007) observed, "The bell of mindfulness *tolls in each moment*, inviting us to *come to our senses*, reminding us that we can wake up to our lives, *now*, while we have them to live" (Lesson #105).

APPENDIX A

INFORMED CONSENT DOCUMENT—EXPERIMENTAL GROUP

FOR IRB USE ONLY
APPROVED BY: IRB-01
IRB ID #: 200808720
APPROVAL DATE: 08/17/09
EXPIRATION DATE: 08/17/10

Dear Mindfulness Participant:

We are inviting you to participate in a research study. The purpose of this study is to determine how mindfulness contributes to work-related outcomes, such as the quality of your relationships at work, your work attitudes, and your work performance.

We are inviting you to participate in this research study because you are an adult currently employed in a part-time or full-time job outside of the home for which you are paid. In addition, you are participating in the mindfulness-based stress reduction program at the University of Iowa Hospitals and Clinics. Approximately 150 people will take part in this study conducted by investigators at the University of Iowa.

If you choose to participate in this study, we ask you to fill out questionnaires at the beginning and end of your mindfulness program. As part of your mindfulness program, you will complete a homework record each week in order to log your mindfulness practice. If you participate in the research study, we will keep copies of your weekly homework records. One month after the end of your mindfulness program, we will ask that you complete an additional follow-up questionnaire.

The questionnaires for this research study will include questions about your work attitudes and experiences, your personality, and the way you approach your emotions and interactions with others. Each time you fill out a questionnaire it will take 25-30 minutes. You are free not to answer any question that you would prefer not to answer.

In addition, we will ask that you provide the names, e-mail addresses, and work phone numbers of your supervisor at work as well as five co-workers. We will then send questionnaires to these individuals at the same time that you receive questionnaires (i.e., at the beginning and end of the mindfulness program and one month after the end of the mindfulness program). Their questionnaires will include questions about your relationship with them and your helping behavior at work. The questionnaire sent to your supervisor will also include questions about your work performance. Each time these individuals fill out questionnaires it will take about 10 minutes and the answers they provide will not be shared with you. They are free not to answer any question that they would prefer not to answer. Note that it is not necessary for your co-workers or supervisor to be aware of your participation in the mindfulness program in order to complete the surveys. The research team will not inform them of your participation in the mindfulness program but rather only that you are participating in a University research study on work. Thus, if you wish to keep your participation in the mindfulness program private, you can participate in the research study without compromising that preference. As long as you complete the required questionnaires and provide the names, e-mail addresses, and work phone numbers of your supervisor and five co-workers, then you are able to participate in the study.

If you choose to participate, you can complete questionnaires on the internet or on paper. If you choose to provide us with an e-mail or physical address, then the final questionnaire will be sent to you one month after the end of the program. If you do not wish to participate in the study, simply mark the answer "no" in the online survey and you will be directed out of the survey. If you chose to complete paper surveys and do not wish to participate in the study, simply do not complete the survey. You will not be contacted further.

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We will keep the information you provide confidential, however, federal regulatory agencies and the University of Iowa Institutional Review Board (a committee that reviews and approves research studies) may inspect and copy records pertaining to this research. We will ask that you provide your name to complete the surveys. It is necessary to provide your co-workers and supervisor with your name so that they know the name of the individual about whom they will complete their surveys. However, once the data are compiled, we will remove all identifying information from all data. Data will be stored in a password-protected computer in a locked office. No one outside of the research team will see your data. If we write a report about this study, we will do so in such a way that you cannot be identified.

There are no known or foreseeable risks from participating in this study. You will not benefit personally from being in this study. However, we hope that others may benefit in the future from what we learn as a result of this study. This study may help us to better understand how mindfulness relates to work outcomes, which may be helpful for both employees and organizations.

You will not have any costs for being in this research study.

You will receive a $25 gift certificate to amazon.com for completing the the three questionnaires used in this study. You will be asked to complete one questionnaire before your class begins, at the end of the class, and one month after the class. If you do not complete all of the questionnaires, then your compensation will be pro-rated based on the percentage of the study that you have completed. In order to receive compensation for your participation in this study, you will need to provide an e-mail address.

Taking part in this research study is completely voluntary. You can take part in the mindfulness program without taking part in this research study. If you decide not to be in this study, or if you stop participating at any time, you won't be penalized or lose any benefits for which you otherwise qualify.

If you have any questions about the research study itself, please contact: Tamara Giluk, MBA, at 319-545-7710 or Greg Stewart, PhD, at (319) 335-1947. If you experience a research-related injury, please contact Tamara Giluk, MBA, at 319-545-7710 or Greg Stewart, PhD, at (319) 335-1947. If you have questions about the rights of research subjects, please contact the Human Subjects Office, 340 College of Medicine Administration Building, The University of Iowa, Iowa City, Iowa, 52242, (319) 335-6564, or e-mail irb@uiowa.edu. General information about being a research subject can be found by clicking "Info for Public" on the Human Subjects Office web site, http://research.uiowa.edu/hso. To offer input about your experiences as a research subject or to speak to someone other than the research staff, call the Human Subjects Office at the number above.

Thank you very much for your consideration. Completing the online or paper questionnaire indicates your willingness to participate in the study.

Sincerely,
Bev Klug, MA
Director of Mindfulness Programs
University of Iowa Hospitals and Clinics

APPENDIX B

INFORMED CONSENT DOCUMENT—CONTROL GROUP

FOR IRB USE ONLY
APPROVED BY: IRB-01
IRB ID #: 200808720
APPROVAL DATE: 08/17/09
EXPIRATION DATE: 08/17/10

Dear Prospective Research Participant:

We are inviting you to participate in a research study. The purpose of this study is to determine how mindfulness contributes to work-related outcomes, such as the quality of your relationships at work, your work attitudes, and your work performance.

We are inviting you to participate in this research study because you are an adult currently employed in a part-time or full-time job outside of the home for which you are paid. Approximately 150 people will take part in this study conducted by investigators at the University of Iowa.

If you choose to participate in this study, we ask you to fill out three questionnaires. The first you will complete upon agreeing to participate. We will ask you to complete a second questionnaire approximately seven weeks after the first, and then the third and final questionnaire four weeks after that.

The questionnaires for this research study will include questions about your work attitudes and experiences, your personality, and the way you approach your emotions and interactions with others. Each time you fill out a questionnaire it will take 25-30 minutes. You are free not to answer any question that you would prefer not to answer.

In addition, we will ask that you provide the names, e-mail addresses, and work phone numbers of your supervisor at work as well as five co-workers. We will then send questionnaires to these individuals at the same time that you receive questionnaires (i.e., once you have completed the first questionnaire, seven weeks later, and then four weeks after that). Their questionnaires will include questions about your relationship with them and your helping behavior at work. The questionnaire sent to your supervisor will also include questions about your work performance. Each time these individuals fill out questionnaires it will take about 10 minutes and their answers to the questions will not be shared with you. They are free not to answer any question that they would prefer not to answer. As long as you complete the required questionnaires and provide the names, e-mail addresses, and phone numbers of your supervisor and five co-workers, then you are able to participate in the study.

If you choose to participate, you can complete questionnaires on the internet or on paper. If you do not wish to participate in the study, simply mark the answer "no" in the online survey and you will be directed out of the survey. If you chose to complete paper surveys and do not wish to participate in the study, simply do not complete the survey. You will not be contacted further.

We will keep the information you provide confidential, however, federal regulatory agencies and the University of Iowa Institutional Review Board (a committee that reviews and approves research studies) may inspect and copy records pertaining to this research. We will ask that you provide your name to complete the surveys. It is necessary to provide your co-workers and supervisor with your name so that they know the name of the individual about whom they will complete their surveys. However, once the data are compiled, we will remove all identifying information from all data. Data will be stored in a password-protected computer in a locked office. No one outside of the research team will see your data. If we write a report about this study, we will do so in such a way that you cannot be identified.

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There are no known or foreseeable risks from participating in this study. You will not benefit personally from being in this study. However, we hope that others may benefit in the future from what we learn as a result of this study. This study may help us to better understand how mindfulness relates to work outcomes, which may be helpful for both employees and organizations.

You will not have any costs for being in this research study.

You will receive a $25 gift certificate to amazon.com for completing all three questionnaires in this study. If you do not complete all of the questionnaires, then your compensation will be pro-rated based on the percentage of the study that you have completed. In order to receive compensation for your participation in this study, you will need to provide an e-mail address.

Taking part in this research study is completely voluntary. If you decide not to be in this study, or if you stop participating at any time, you won't be penalized or lose any benefits for which you otherwise qualify.

If you have any questions about the research study itself, please contact: Tamara Giluk, MBA, at 319-545-7710 or Greg Stewart, PhD, at (319) 335-1947. If you experience a research-related injury, please contact Tamara Giluk, MBA at 319-545-7710 or Greg Stewart, PhD, at (319) 335-1947. If you have questions about the rights of research subjects, please contact the Human Subjects Office, 340 College of Medicine Administration Building, The University of Iowa, Iowa City, Iowa, 52242, (319) 335-6564, or e-mail irb@uiowa.edu. General information about being a research subject can be found by clicking "Info for Public" on the Human Subjects Office web site, http://research.uiowa.edu/hso. To offer input about your experiences as a research subject or to speak to someone other than the research staff, call the Human Subjects Office at the number above.

Thank you very much for your consideration. Completing the online or paper questionnaire indicates your willingness to participate in the study.

Sincerely,
Bev Klug, MA
Director of Mindfulness Programs
University of Iowa Hospitals and Clinics

APPENDIX C

RECRUITMENT PRESENTATION OUTLINE

I. The purpose of the study
To learn more about the effect of mindfulness on work outcomes

II. The study population
Employed participants in the UI Mindfulness-Based Stress Reduction Program
Other employed adults (control group)

III. The study procedure
Pre-survey—approximately 30 minutes
Approximately 7 weeks later, post-survey—approximately 30 minutes
Approximately 4 weeks after that, post-survey—approximately 30 minutes
We will also ask that you provide us with the names, e-mails, and work phone numbers of your supervisor and five coworkers so that they may complete 3 surveys during the same timeframe—approximately 10 minutes each.

IV. Survey content
Participant surveys include questions regarding work attitudes and experiences, personality, and the way subjects approach their emotions and interactions with others.
Coworker and supervisor surveys include questions regarding the quality of their relationship with you and their view of your citizenship/helping behaviors. In addition, your supervisor's survey will include questions about your general work performance.

V. Protecting confidentiality
We will ask that you provide your name to complete the surveys. This is necessary to provide your coworkers and supervisor with your name so that they know the name of the individual about whom they will complete the surveys.
It is not necessary that co-workers and supervisors be made aware that you are participating in the MBSR program in order to complete the surveys. The research team will not reveal this fact. Co-workers and supervisors will only be told that you are participating in a research study about work and they will be asked to complete the surveys. Thus, if you wish to keep your MBSR participation private, you can participate in the research project without compromising that preference.
Removal of identifying information from final data set.

VI. Benefits, Costs, and Compensation
No costs or personal benefits
$25 Amazon gift card for completion of study (pro-rated to reflect partial participation)

VII. Voluntary Nature of Study
May quit at any time
You do not need to participate in the study to take the MBSR class

VII. Questions

APPENDIX D

RECRUITMENT FLYER

You are invited to participate in a research study

on MINDFULNESS AND WORK OUTCOMES

Research indicates that mindfulness positively impacts mental health and psychological well-being, physical health, and quality of intimate relationships. However, few researchers have studied the effects of mindfulness in a work setting. This study will explore how mindfulness affects one's work relationships, attitudes, and performance. It will also study the processes by which mindfulness may affect some of these outcomes.

Your participation may help us to understand…
Does mindfulness have an impact on relationships, attitudes, and performance at work?
How does mindfulness lead to these outcomes?

Participation means:

Filling out three questionnaires: the first questionnaire soon after you agree to participate, the second eight weeks later, and the third four weeks after that. Each time you fill out questionnaires it will take approximately 30 minutes. Your responses will be kept confidential.

In addition, we will ask you to provide the names, e-mail addresses, and work phone numbers of five coworkers and your supervisor to provide additional information related to the study. They will fill out three questionnaires at the same time intervals as you that will take approximately 10 minutes each. They will only be told that you are participating in a University research study about work.

Compensation is available.

Questions?

We welcome any questions you may have.
Please call Tamara Giluk, MBA, at (319) 335-1504 or e-mail tamara-giluk@uiowa.edu.

APPENDIX E

SURVEY LINK—EXPERIMENTAL GROUP

MINDFULNESS AND WORK OUTCOMES

SURVEY #1

MBSR/MBCT PARTICIPANTS

If you are completing the survey on the Internet, here is the link to Survey #1:

http://survey.uiowa.edu/wsb.dll/779/survey1e.htm

(The character after the word survey near the end of the link is the number 1, not the letter l).

Please complete the survey prior to attending your first MBSR/MBCT class.

APPENDIX F

SURVEY LINK—CONTROL GROUP

MINDFULNESS AND WORK OUTCOMES

SURVEY #1

PARTICIPANTS THROUGH UI WELLNESS

If you are completing the survey on the Internet, here is the link to Survey #1:

http://survey.uiowa.edu/wsb.dll/779/survey1c.htm

(The character after the word survey near the end of the link is the number 1, not the letter l).

Please complete the survey prior to September 30, 2009.

Questions about the research study? Contact Tamara Giluk at (319) 335-1504 or tamara-giluk@uiowa.edu

APPENDIX G

MEASURES EMPLOYED IN THE RESEARCH STUDY

Five Factor Mindfulness Questionnaire (FFMQ; Baer et al., 2006; Baer et al., 2008)

(Instructions at Time 1) In this survey, we will ask questions about you. Please read each item carefully and indicate the frequency on the scale that best describes you. We know that some of the items may seem similar, but it is important that you think about each item individually as you respond to it.

(Instructions at Time 2 and 3) In this survey, we will ask questions about you. Please read each item carefully and indicate the frequency on the scale that best describes you **in the last 3-4 weeks**. We know that some of the items may seem similar, but it is important that you think about each item individually as you respond to it.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5

Never or Very Rarely True	Rarely True	Sometimes True	Often True	Always True

Factor 1: Nonreactivity to Inner Experience
1. I perceive my feelings and emotions without having to react to them.
2. I watch my feelings without getting lost in them.
3. In difficult situations, I can pause without immediately reacting.
4. Usually when I have distressing thoughts or images, I am able just to notice them without reacting.
5. Usually when I have distressing thoughts or images, I feel calm soon after.
6. Usually when I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
7. Usually when I have distressing thoughts or images, I just notice them and let them go.

Factor 2: Observing/noticing/attending to sensations/perceptions/thoughts/feelings
8. When I'm walking, I deliberately notice the sensations of my body moving.
9. When I take a shower or bath, I stay alert to the sensations of water on my body.
10. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
11. I pay attention to sensations, such as the wind in my hair or sun on my face.
12. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
13. I notice the smells and aromas of things.
14. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
15. I pay attention to how my emotions affect my thoughts and behavior.

Factor 3: Acting with awareness/automatic pilot/concentration/nondistraction
16. I find it difficult to stay focused on what's happening in the present.
17. It seems I am "running on automatic" without much awareness of what I'm doing.
18. I rush through activities without being really attentive to them.
19. I do jobs or tasks automatically, without being aware of what I'm doing.
20. I find myself doing things without paying attention.

21. When I do things, my mind wanders off and I'm easily distracted.
22. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
23. I am easily distracted.

Factor 4: Describing/labeling with words
24. I'm good at finding the words to describe my feelings.
25. I can easily put my beliefs, opinions, and expectations into words.
26. It's hard for me to find the words to describe what I'm thinking.
27. I have trouble thinking of the right words to express how I feel about things.
28. When I have a sensation in my body, it's hard for me to describe it because I can't find the right words.
29. Even when I'm feeling terribly upset, I can find a way to put it into words.
30. My natural tendency is to put my experiences into words.
31. I can usually describe how I feel at the moment in considerable detail.

Factor 5: Nonjudging of experience
32. I criticize myself for having irrational or inappropriate thoughts.
33. I tell myself that I shouldn't be feeling the way I'm feeling.
34. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
35. I make judgments about whether my thoughts are good or bad.
36. I tell myself I shouldn't be thinking the way I'm thinking.
37. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
38. I disapprove of myself when I have irrational ideas.
39. Usually when I have distressing thoughts or images, I judge myself as good or bad, depending on what the thought/image is about.

Positive and Negative Affect Schedule (PANAS, Watson, Clark, & Tellegen, 1988)

(Instructions at Time 1) Following are words that describe different feelings and emotions. Please read each item carefully and indicate to what extent you generally feel this way using the scale below.

(Instructions at Time 2 and 3) Following are words that describe different feelings and emotions. Please read each item carefully and indicate to what extent you have felt this way **in the last 3-4 weeks** using the scale below.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5

Very Slightly or Not at All | A Little | Moderately | Quite a Bit | Extremely

NA: afraid, scared, nervous, jittery, irritable, hostile, guilty, ashamed, upset, distressed
PA: active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, strong

Relationship Quality (adapted from May, Gilson, & Harter, 2004)

The following survey asks you to evaluate statements about the particular coworker referenced in the e-mail which directed you to this survey. Please read each item carefully and indicate your agreement with it with respect to this particular coworker BASED ON THE LAST 3-4 WEEKS using the scale below.

1 ---------- 2 ---------- 3 ----------4 ---------- 5

Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree

1. My interactions with this person are rewarding.
2. This person values my input.
3. This person listens to what I have to say.
4. This person really knows who I am.
5. I believe that this person appreciates who I am.
6. I sense a real connection with this person.
7. This person and I have mutual respect for one another.
8. I feel a real 'kinship' with this person.
9. I feel worthwhile when I am around this person.
10. I trust this person.

General Work Performance (adapted from Colbert, Kristof-Brown, Bradley, & Barrick, 2008)

Please rate this particular subordinate on the following performance dimensions BASED ON THE LAST 3-4 WEEKS using the scale below.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5

Below Requirements	Somewhat Below Requirements	Meets Requirements	At Times Exceeds Requirements	Consistently Exceeds Requirements

1. Job Knowledge: Understands work responsibilities, scope of job tasks, and routines to be performed.
2. Quality of Work: Completes work thoroughly, accurately, and according to specifications.
3. Adherence to Rules: Acts with integrity; avoids law or rules infractions, excessive absenteeism, or other behaviors that may have a negative impact on the organization or other employees.
4. Written Communication: Clearly and appropriately communicates information in writing.
5. Oral Communication: Clearly and appropriately communicates information orally.

6. Teamwork: Contributes to the team by supporting other team members, resolving conflict between members, and contributing to general team functioning.
7. Helping Others: Supports peers and performs cooperative, considerate, and helpful acts that assist co-workers' performance.
8. Adapting to Change: Overcomes natural resistance to organizational change; strives to behave in ways that are consistent with change goals and company strategy.
9. Managing Change: Effectively manages the transition period while organizational changes are being implemented. This involves dealing with the rate at which change is introduced and the processes used to introduce change.

Interpersonal Citizenship Behavior (Settoon & Mossholder, 2002)

(Instruction for supervisor) Please read each item carefully and indicate your agreement with it with respect to this particular subordinate BASED ON THE LAST 3-4 WEEKS using the scale below.

1 ---------- 2 ---------- 3 ---------- 4 ---------- 5

Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree

Person-focused

1. This person listens to coworkers when they have to get something off their chest.
2. This person takes time to listen to coworkers' problems and worries.
3. This person takes a personal interest in coworkers.
4. This person shows concern and courtesy toward coworkers, even under the most trying business situations.
5. This person makes an extra effort to understand the problems faced by coworkers.
6. This person always goes out of the way to make newer employees feel welcome in the work group.
7. This person tries to cheer up coworkers who are having a bad day.
8. This person compliments coworkers when they succeed at work.

Task-focused

1. This person takes on extra responsibilities in order to help coworkers when things get demanding at work.
2. This person helps coworkers with difficult assignments, even when assistance is not directly requested.
3. This person assists coworkers with heavy work loads even though it is not part of his or her job.
4. This person helps coworkers who are running behind in their work activities.
5. This person helps coworkers with work when they have been absent.
6. This person goes out of his or her way to help coworkers with work-related problems.

Interdependence (Pearce & Gregersen, 1991)

Following are statements about your work and work experiences. Please read each item carefully and indicate your agreement with it using the scale below.

1 ---------- 2 ---------- 3 ---------- 4 ----------5

Strongly Disagree	Somewhat Disagree	Neither Agree Nor Disagree	Somewhat Agree	Strongly Agree

1. I work closely with others in doing my work.
2. I frequently must coordinate my efforts with others.
3. My own performance is dependent on receiving accurate information from others.
4. The way I perform my job has a significant impact on others.
5. My work requires me to consult with others fairly frequently.
6. I work fairly independently of others in my work.
7. I can plan my own work with little need to coordinate with others.
8. I rarely have to obtain information from others to complete my work

APPENDIX H

COWORKER E-MAIL

Co-worker E-mail 1

Dear COWORKER'S NAME,

Your coworker, SUBJECT'S NAME, is participating in a research study on work at the University of Iowa. Your name and e-mail address was given to us by SUBJECT'S NAME so that we may ask you to provide additional information related to this study. If you choose to participate, you will be asked to complete three brief surveys that will take approximately 10 minutes each to complete. We would ask you to complete the first survey now, the second in seven weeks, and the third four weeks after that. We would very much appreciate your participation, as your input is important and necessary for the completion of our study.

You can access the first survey by clicking on the following link:

SURVEY LINK (UI Websurveyor system)

Your responses will be kept confidential. They will not be shown to SUBJECT'S NAME or anyone outside of the research team.

You will be asked to enter an ID number at the beginning of each survey. This will allow us to match your responses across the surveys. Please enter ID number XXX.

We would like to receive your responses by XXX XX, 20XX. If you have any questions, please feel free to contact me. If you do not wish to participate in the survey, you may e-mail me at tamara-giluk@uiowa.edu or contact me at 319-335-1504 and you will receive no further contact about this study.

Thank you in advance for your participation.

Tamara Giluk, M.B.A.
Ph.D. candidate, Management & Organizations
University of Iowa
108 Pappajohn Business Building
Iowa City, IA 52242
319-335-1504
tamara-giluk@uiowa.edu

APPENDIX I

SUPERVISOR E-MAIL

Supervisor E-mail 1

Dear SUPERVISOR'S NAME,

Your employee, SUBJECT'S NAME, is participating in a research study on work at the University of Iowa. Your name and e-mail address was given to us by SUBJECT'S NAME so that we may ask you to provide additional information related to this study. If you choose to participate, you will be asked to complete three brief surveys that will take approximately 10 minutes each to complete. We would ask you to complete the first survey now, the second in seven weeks, and the third four weeks after that. We would very much appreciate your participation, as your input is important and necessary for the completion of our study.

You can access the first survey by clicking on the following link:

SURVEY LINK (UI Websurveyor system)

Your responses will be kept confidential. They will not be shown to SUBJECT'S NAME or anyone outside of the research team.

You will be asked to enter an ID number at the beginning of each survey. This will allow us to match your responses across the surveys. Please enter ID number XXX.

We would like to receive your responses by XXX XX, 20XX. If you have any questions, please feel free to contact me. If you do not wish to participate in the survey, you may e-mail me at tamara-giluk@uiowa.edu or contact me at 319-335-1504 and you will receive no further contact about this study.

Thank you in advance for your participation.

Tamara Giluk, M.B.A.
Ph.D. candidate, Management & Organizations
University of Iowa
108 Pappajohn Business Building
Iowa City, IA 52242
319-335-1504
tamara-giluk@uiowa.edu

APPENDIX J

COWORKER REMINDER E-MAIL

Coworker Reminder E-mail

Dear COWORKER'S NAME,

I recently sent you the below e-mail regarding a study in which your coworker SUBJECT'S NAME is participating. I have not yet received a response from you. I wanted to check in to see if you had received the e-mail, if you wished to participate, and if you have any questions about the study.

You can access the survey by using the following link:

SURVEY LINK (UI Websurveyor system)

You will be asked to enter an ID number at the beginning of each survey. This will allow us to match your responses across the surveys. Please enter ID number XXX.

If you have any questions, please feel free to contact me. If you do not wish to participate in the survey, you may e-mail me at tamara-giluk@uiowa.edu or contact me at 319-335-1504 and you will receive no further contact about this study.

Thank you in advance for your participation.

Tamara Giluk, M.B.A.
Ph.D. candidate, Management & Organizations
University of Iowa
108 Pappajohn Business Building
Iowa City, IA 52242
319-335-1504
tamara-giluk@uiowa.edu

APPENDIX K

SUPERVISOR REMINDER E-MAIL

Supervisor Reminder E-mail

Dear SUPERVISOR'S NAME,

I recently sent you the below e-mail regarding a study in which your employee SUBJECT'S NAME is participating. I have not yet received a response from you. I wanted to check in to see if you had received the e-mail, if you wished to participate, and if you have any questions about the study.

You can access the survey by using the following link:

SURVEY LINK (UI Websurveyor system)

You will be asked to enter an ID number at the beginning of each survey. This will allow us to match your responses across the surveys. Please enter ID number XXX.

If you have any questions, please feel free to contact me. If you do not wish to participate in the survey, you may e-mail me at tamara-giluk@uiowa.edu or contact me at 319-335-1504 and you will receive no further contact about this study.

Thank you in advance for your participation.

Tamara Giluk, M.B.A.
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