



A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being

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ABSTRACT

Mindful individuals orient to ongoing events and experiences in a receptive, attentive manner. This experiential mode of processing suggests implications for the perception of and response to stress situations. Using laboratory-based, longitudinal, and daily diary designs, four studies examined the role of mindfulness on appraisals of and coping with stress experiences in college students, and the consequences of such stress processing for well-being. Across the four studies (n 's = 65 – 141), results demonstrated that mindful individuals made more benign stress appraisals, reported less frequent use of avoidant coping strategies, and in two studies, reported higher use of approach coping. In turn, more adaptive stress responses and coping partially or fully mediated the relation between mindfulness and well-being. Implications for the role of mindfulness in stress and well-being are discussed.

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1. Introduction

Throughout their lives, people are exposed to acute and chronic demands that can negatively impact them in a variety of physical and psychological ways. Yet while all individuals face demands and challenges, there are notable inter-individual and intra-individual variations in responses to such life events that have important consequences for well-being (Larsen, 2000). In recent years there has been considerable research interest in *mindfulness* as a protective factor with regard to the effects of difficult life events. Mindfulness concerns a receptive state of mind wherein attention, informed by a sensitive awareness, simply observes what is taking place in the present (Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007).

Empirically, research on dispositional mindfulness, experimentally induced mindful states, and mindfulness training programs have shown that this attribute is related to or predicts a variety of mental health and well-being indicators (e.g., Broderick, 2005; Brown & Ryan, 2003; Shapiro, Brown, & Biegel, 2007). These findings have led researchers to speculate about the processes through which such benefits may accrue (e.g., Baer, 2003; Shapiro, Carlson, Astin, & Freedman, 2006). In line with these interests, the present series of studies focus on processes that may mediate these relations between mindfulness and psychological well-being. We specifically examine whether mindfulness alters the stress process by attenuating negative appraisals of stress in demanding situations

and by facilitating the use of adaptive forms of coping with stressful situations. In turn, we examine whether mindfulness helps to support psychological well-being through the adaptive use of those regulation strategies. This model is implied by a series of related studies described below; and has been assumed, but not investigated directly in coherent and externally valid research. These set of studies are therefore designed to provide the empirical foundation for further investigation into mindfulness effects on stress, coping, and well-being.

To date, most research on the effects of mindfulness on stress, mood, and other indicators of mental health and well-being has been conducted within the context of treatment interventions, including mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990) and mindfulness-based cognitive therapy (MBCT; Segal, Williams, & Teasdale, 2002). The primary aim of these interventions is to cultivate mindful presence to facilitate stress reduction and enhance well-being. Controlled and uncontrolled trials with MBSR, MBCT, and other mindfulness-based and mindfulness-integrated interventions have demonstrated success in producing these and other effects over both short- and long-term follow-up periods (see Baer, 2003 and Grossman, Niemann, Schmidt, & Walach, 2004 for meta-analytic reviews).

Mindfulness-based interventions have multiple components, including mindfulness practice exercises, didactic instruction, and social support; so it is unclear to which ingredients the well-being effects of these interventions can be attributed (Bishop, 2002). But recent research suggests that mindfulness itself has well-being consequences. For example, Brown and Ryan (2003) found that both trait and state mindfulness predicted lower levels of negative

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affect over 2- and 3-week periods in student and community adult samples, respectively. Both Brown and Ryan (2003) and Shapiro et al. (2007) found that increases in mindfulness over the course of MBSR training were related to declines in anxiety, mood disturbance, and other indicators of poor psychological well-being.

The processes through which mindfulness has salutary effects on well-being have received very limited empirical attention to date. Nonetheless, based on the emerging theory and evidence (e.g., Baer, 2003; Bishop, 2002; Brown et al., 2007; Shapiro et al., 2006), we suggest two primary ways through which mindfulness may produce salutary effects. First, mindfulness may promote a less defensive, more willing exposure to challenging and threatening events and experiences, which may reduce negative cognitive appraisals of those situations, thus rendering lower levels of perceived stress. Second, mindfulness may foster an enhanced capacity to adaptively cope with situations perceived as challenging, threatening, or harmful. That is, we hypothesize that mindfulness will be related to both a lower tendency to appraise or construe events as stressful, and more adaptive coping in stressful situations. A considerable body of research indicates that both factors are important to well-being outcomes (e.g., Folkman, Lazarus, Gruen, & DeLongis, 1986).

1.1. Stress appraisals

Stress appraisals concern the cognitive processes through which an individual evaluates or appraises events. Most basically, events are perceived as good, bad, or neutral, positive or negative, or as involving challenge (generally positive appraisals) or threat, harm, or loss (negative appraisals). Individuals often appraise a situation in a way that alters its emotional significance or meaning, either by changing their view of the situation or their perceived capacity to manage the demands that it presents. Of key interest to us in this process is the extent to which situations are appraised as negative, too demanding, or as *stressful* (Cohen, Kessler, & Underwood Gordon, 1995; Gross & Thompson, 2007). The experience of stress specifically results not only from events themselves but also from the appraisal that such events tax or exceed a person's adaptive capacity (e.g., Cohen, Kamarack, & Melmelstein, 1983; Lazarus, 1977).

Why should mindfulness alter cognitive appraisals of events? First, the quality of attention that is brought to bear on situations is thought to impact cognitive appraisals (Gross & Thompson, 2007). While much of the literature on attentional deployment in the appraisal process has focused on forms that can have mixed or negative appraisal consequences, such as distraction and rumination, theory and research suggest that mindful attention may promote more adaptive appraisals. Several authors have argued (e.g., Baer, 2003; Brown et al., 2007) that mindfulness involves a greater willingness or ability to receptively process internal and external stimuli as they occur. This stands in contrast to a conceptually driven mode of processing in which occurrences are habitually filtered through conditioned evaluations, memories, beliefs, and other forms of cognitive manipulation (see Brown et al., 2007). If mindfulness fosters more objectively informed responding, then situations can potentially be viewed in more benign or neutral terms. Recent research supports this claim, showing that mindfulness promotes desensitization and a reduction in emotional reactivity to potentially threatening stimuli (Arch & Craske, 2006; Broderick, 2005; Creswell, Way, Eisenberger, & Lieberman, 2007). Thus, mindfulness may promote cognitive change by a 'turning down' or attenuation of negative appraisals of events. Given the key role of cognitive appraisal in emotional and other mental health outcomes, we suggest that one process through which mindfulness may enhance mental health and well-being is a reduced tendency to perceive situations in stress-inducing ways.

1.2. Coping responses

In the literature on stress processes, considerable attention has been given to *coping*, a class of affect regulation strategies that operate by altering physiological, experiential, or behavioral responses to stressful situations (Gross & Thompson, 2007; Larsen, 2000). Coping encompasses a range of activities, including behavioral engagement (e.g., problem-solving), behavioral disengagement (e.g., substance use), emotional expression, and such "emotion-focused" activities as exercise and relaxation. Coping has been broadly classified into avoidant and approach types (Roth & Cohen, 1986). *Avoidant coping* reflects a defensive form of regulation that involves ignoring, distorting, or escaping threatening stimuli. Several research groups have conceptualized avoidant coping in terms of behavioral disengagement, mental disengagement, and denial (e.g., Deisinger, Cassisi, & Whitaker, 1996; Fontaine, Manstead, & Wagner, 1993; Stowell, Kiecolt-Glaser, & Glaser, 2001). While avoidant coping can reduce distress in the short-term, it is ultimately ineffective in supporting well-being (Davies & Clark, 1998). In contrast, *approach coping* involves a cognitive, emotional, or behavioral 'turning toward' stressful situations. Three predominant forms have been consistently identified: active coping (direct action to deal with a stressful situation), acceptance (cognitive and emotional acknowledgement of stressful realities), and cognitive reinterpretation (learning, finding the good in the threat, harm, or loss situation, or choosing to use the situation to develop as a person) (e.g., Fortune, Richards, Main, & Griffiths, 2002; Lyne & Roger, 2000; Stowell et al., 2001). Approach coping is generally considered adaptive in that effort is directed toward resolving stressful situations or overcoming the stress associated with them. As a result, these strategies are believed to facilitate the assimilation and transcendence of stress in a way that ultimately enhances well-being (Shontz, 1975).

There is a theoretical basis to hypothesize that mindfulness supports adaptive (less avoidant, more approach) coping. Specifically, if more mindful individuals are able or willing to objectively observe internal events, thoughts, and emotions as they occur instead of engaging in past- or future-oriented negative or distorted thinking patterns (e.g., rumination, catastrophizing), they may be more likely to cope in adaptive ways, rather than in ways that can perpetuate stress and ill-being (McCullough, Orsulak, Brandon, & Akers, 2007). Additionally, mindful states are characterized by fuller levels of attention, and such attention during stressful experiences are thought to reduce distortion and dysregulation in systemic affective responding (Larsen, 2000), indicated by higher use of approach and lower use of avoidant coping. Initial evidence, though indirect, suggests that mindfulness may promote less avoidant coping, in that trait mindfulness has been associated with lower levels of rumination, thought suppression, and other negative thinking styles associated with poorer emotional outcomes (e.g., Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Shapiro et al., 2007). Despite these studies' contributions to understanding effects of mindfulness on stress and coping, mindfulness effects have not been addressed in a systematic way.

One way in which research efforts have not systematically addressed mindfulness effects has been by exploring potential confounds for these effects. In fact, there is a notable lack of research demonstrating these effects are independently predictive when accounting for other personality characteristics expected to influence stress responses. In other words, mindfulness has not been differentiated from other personality characteristics and shown to independently predict adaptive coping and stress responses. The question arises, is it that mindfulness influences stress, or that individuals who are mindful also have other positive attributes, allowing them to more adaptively respond to stress? Two possible constructs that could be responsible for the effects

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