

# Mindfulness-Based Interventions: A Brief Review of Their Application to Graduate Student Strain

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Graduate school is often a stressful period for budding industrial-organizational psychologists. One strategy for managing stress, both in graduate school and beyond, is the mindfulness-based intervention (MBI). This article examines the potential efficacy of MBIs for the graduate student population within a stressor-strain framework. First, we detail common graduate student stressors, then we define mindfulness and provide examples of mindfulness exercises. Next, we review meta-analytic evidence for the effectiveness of MBIs in reducing strain in broader populations. Last, we provide resources for beginning a mindfulness practice. Although this article focuses primarily on the graduate student population, the lessons learned from MBI research apply to most professional populations as well.

## Graduate Student Stressors

Stressors are external stimuli that elicit a response in an individual, whereas strains are the physical or emotional responses to stressors (Jex, Beehr, & Roberts, 1992). We reviewed five recent studies that collectively sampled 4,148 graduate students in order to determine the stressors and strains most commonly experienced by graduate students (El-Ghoroury, Galper, Sawaqdeh, & Bufka 2012; Hyun, Quinn,

Madon, & Lustig, 2006; Myers et al., 2012; Offstein, Larson, McNeill, & Mwale, 2004; Oswalt & Riddock, 2007). These common stressors include academic workload, competing demands, conflict between research interests and unrelated academic requirements, finances, holding a job, career planning, loneliness, adjusting to new environments, time management, and poor school/work-life balance.

These stressors may result in strains, as observed by Oswalt and Riddock (2007), who found that 74.8% of the 219 graduate students sampled reported being “stressed” or “very stressed.” Further, students may experience other negative outcomes, including interference with optimal functioning, burnout (El-Ghoroury et al., 2012), feeling overwhelmed or exhausted (Hyun et al., 2006), and decreased academic performance (Kernan, Bogart, & Wheat, 2011). In summation, the literature overwhelmingly demonstrates that graduate students are faced with a multitude of stressors that put them at risk for strains, which in turn may impact optimal functioning in both personal and professional domains.

Graduate students typically cope with stressors in a number of ways. The most prevalent coping strategies are talking with friends, classmates, or family; eating

comfort foods; watching T.V.; “vegging out;” exercising; and sleeping (El-Ghori et al., 2012; Oswalt & Riddock, 2007). Meditation did not emerge as a prevalent stress management technique, as it was only utilized by 12.8% of the 219 graduate students sampled by Oswalt and Riddock (2007). Thus, the purpose of this article is to provide an introduction to mindfulness meditation and demonstrate its utility to the graduate student population.

### ***Definition of Mindfulness***

The concept of mindfulness stems from the Buddhist tradition and has existed for 2,500 years as a way of fostering peace and spiritual awakening (Van Gordon, Shonin, Griffiths, & Singh, 2015). In modern spiritual terms, one may understand mindfulness as a form of meditation that utilizes present-moment awareness to reach a state of focus and tranquility. Mindfulness has been characterized by researchers as a combination of attention regulation, present-moment orientation, awareness of experience, and an attitude of acceptance and non-judgment toward one’s experience (Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007). Given the abundance of definitions in the literature, Bishop and colleagues (2004) offered a two-component operational definition for mindfulness:

The first component involves the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment. The second component in-

volves adopting a particular orientation toward one’s experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance. (p. 232)

Mindfulness may function as either a state of consciousness or a trait that can vary in magnitude between individuals (Brown & Ryan, 2003). State mindfulness is the non-judgmental observation of various aspects of consciousness including sensations, thoughts, and emotions that arise from moment to moment (Bishop et al., 2004). Whereas state mindfulness is a temporary and changeable state of consciousness, trait mindfulness is an attribute that every individual inherently possesses to some degree that can be increased via mindfulness meditation practice (Bodner & Langer, 2001), and is independent of state mindfulness (Brown & Ryan, 2003). All individuals are capable of attaining a mindful state (Kabat-Zinn, 2005), but trait mindfulness varies between individuals such that some possess more mindful dispositions and can maintain a mindful state of consciousness more frequently and with less effort than others (Baer, Smith, & Allen, 2004).

To that end, mindfulness meditation improves well-being by facilitating emotional regulation as well as reducing aversion and attachment to internal and external phenomena (Kumar, 2002). Hölzel et al. (2011) suggest that the benefits of mindfulness meditation arise through attention regulation, increased levels of body awareness, emotion regulation, and change in self-perspective. Put simply, mindfulness

meditation gives individuals the mental tools to gain perspective on their patterns of thought and emotions. By understanding experiences in a non-judgmental and accepting manner, mindful individuals are able to maintain focus on the present moment rather than ruminating on the past or worrying about the future.

### ***Practicing Mindfulness Meditation***

Mindfulness meditation may lead to a number of positive outcomes, but learning the technique requires practice. In this section, we first describe the different behaviors and attitudes that serve as the foundation of MBIs. A description of the most popular intervention, Kabat-Zinn's (1990) mindfulness based stress reduction (MBSR) program and the underlying psychological mechanisms that explain its effectiveness follows. Finally, we include exercises that can be easily integrated into daily activities.

In any basic mindfulness intervention there are three types of behaviors that help participants adjust their relationships with inner thoughts and feelings through increases in awareness (Shapiro, Brown, & Biegel, 2007; Young, 2011). These include (a) *noting*, a rhythmic sequence that entails acknowledging and focusing intently on a sensation; (b) *doing nothing*, where the intention to control thoughts and direct attention is dropped; and (c) *nurturing positive thoughts*, or creating and concentrating on positive images and concepts (Young, 2011). These components are related to attitudes that form the foundation for mindfulness meditation techniques,

including nonjudgment of inner thoughts, nonstriving, patience, "beginner's mind" (i.e., a willingness to see everything as if for the first time), trust, acceptance, and a willingness to "let go" of thoughts (Hölzel et al., 2011; Kabat-Zinn, 1990). Over time, these techniques allow individuals to observe their thoughts from a distance (Keng, Smoski, & Robins, 2011). With repeated mindfulness practice, individuals develop a greater awareness of their beliefs and motivations, which eventually allows them to cope with stressors more effectively (Chiesa & Serretti, 2009).

One of the most popular and widely researched interventions is Kabat-Zinn's (1990) MBSR. As summarized by Chiesa and Serretti (2009), this structured group program integrates Buddhist philosophy with modern clinical and psychological practices. The intent of MBSR is to facilitate well-being by teaching individuals to maintain attention on thoughts and feelings without reacting impulsively. More specifically, trained instructors encourage participants to reflect on their internal state as well as the external environment with openness, curiosity, awareness, and nonjudgmental acceptance. Participants engage in (a) *body scanning*, which involves nonjudgmental awareness of physical sensations in different parts of the body; (b) *sitting meditation*, where participants focus on breathing while maintaining a nonjudgmental awareness of any cognitions that occur; and (c) *Hatha yoga*, or stretches for the purpose of strengthening and relaxing the musculoskeletal system. MBSR interventions are typically 8 weeks long and combine in-class instruc-

tion on formal and informal mindfulness practices with group sessions on topics more indirectly related to mindfulness such as interpersonal communication and stress physiology (Kabat-Zinn, 1990).

Though this may seem like a lot of information for MBI participants to process, MBSR can be understood through the four mechanisms proposed by Hölzel and colleagues (2011): (a) attention regulation, (b) body awareness, (c) emotion regulation, and (d) change in self-perspective. Typically, participants first learn *attention regulation* through focused meditation, where individuals notice and pay attention to a single thought, feeling, or object. With practice, such regulation enables focused attention for longer periods and an increased ability to filter out distractions. Another technique, *body awareness*, focuses attention on physical sensations (e.g., breathing and sensory experiences) in order to assist individuals in calibrating their internal thoughts and feelings with the external world. This should lead to greater clarity (Marianetti & Passmore, 2009) and emotional intelligence (Keng et al., 2011). The third mechanism, *emotion regulation*, refers to the adaptation of emotional responses from impulsivity to reflection and aids in observing experiences in a nonjudgmental manner. Finally, *change in perception of the self* refers to a shift from a feeling of stasis toward a more dynamic self-image. When people feel less static they become more liberated and experience a more positive sense of self (Flaxman & Bond, 2010). The most successful interventions (e.g., MBSR) utilize all four of these mechanisms at different

points to effectively increase mindfulness in participants (Hölzel et al., 2011).

The MBSR is one of the most popular MBIs because it is nonreligious, cross-culturally applicable, and grounded in scientific theory (Fortney, Luchterhand, Zakletskaia, Zgierska, & Rakel, 2013). However, the time commitment and group-based structure may dissuade some individuals from practicing mindfulness, including overloaded graduate students with little time to spare. Previous research has discovered that intervention length does not correlate with effectiveness in reducing psychological distress, suggesting that shorter interventions are equally as effective as the full 26-hour MBSR intervention (Carmody & Baer, 2009; Virgili, 2015). To that end, Table 1 delineates mindfulness techniques that easily fit into daily routines and allow graduate students to practice mindfulness.

### ***Effectiveness of MBIs***

The relationship between MBIs and strain reduction has been examined in a number of meta-analyses (Carmody & Baer, 2009; Eberth & Sedlmeier, 2012; Khoury, Sharma, Rush, & Fournier, 2015; Virgili, 2015). Across these studies, the effect of MBIs consistently ranges from 0.26 to 0.83 standard deviations for the various outcomes assessed. Carmody and Baer (2009) found that MBSR programs were associated with reductions in anxiety, depression, negative affect, and perceived stress. Similarly, Khoury et al. (2015) found that MBIs were related to reductions in anxiety, depression, stress, distress, burn-out, and improvements in quality of life,

Table 1

*Mindfulness Techniques, Mechanisms of Action, and Instructions*

Exercise	Mechanism	Instructions
Body scan	Attention regulation	Focus attention on your feet and slowly shift attention up to the top of your head, concentrating on one body part at a time.
Counting method	Attention regulation	Repetitively count your breaths from 'one' to 'ten' and back to 'one'. If you lose count, return to 'one' and begin again.
Loving kindness sessions/Metta	Emotion regulation Change in self-perspective	Visualize the target of your feelings, recognize his or her positive qualities and repeat an internalized mantra that can be used to trigger future similar reflections.
Mindful eating	Change in self-perspective Attention regulation	Begin eating slowly. Experience the flavors on each area of the tongue, noticing its pattern and consistency. Swallow and follow its path to the stomach.
Walking meditation	Attention regulation	Focus on the sensations of your feet leaving and touching the ground, the movement of your arms and other parts of the body. Pick a short area to walk back and forth so as not to be distracted by the setting.
Focused breathing	Attention regulation Emotion regulation	Direct full attention to your breath for ~20 breaths, noticing the end point of each in-breath and out-breath.

Note. Exercises drawn from Cohen-Katz et al., 2005; Gregoire and Lachance, 2015; Marianetti and Passanore, 2009; Ramsburg and Youmans, 2014; Sears and Kraus, 2009.

state mindfulness, compassion, spirituality, and empathy. Eberth and Sedlmeier (2012) found that MBIs were associated with reductions in the effects of negative personality traits, stress, and neuroticism while improving well-being and attention. Virgili (2015) found that MBIs were associated with decreases in perceived stress, negative affect, depression, anxiety, job stress, state anxiety, and trait anxiety. These effects were maintained at an average follow-up of 5 weeks post intervention (Virgili, 2015). In addition, these effects hold even in samples of healthy individuals (Khouri et al., 2015), and no differences have been observed when comparing clinical versus nonclinical populations (Carmody & Baer, 2009).

Although these findings are encouraging, we echo Virgili's (2015) cautions that research in this area remains preliminary as researchers examine the effectiveness of MBIs in different populations and compare them to other stress reduction techniques. Specifically, there is little evidence for the

incremental validity of MBIs compared to other stress reduction techniques due, in part, to the relatively small number of studies that include alternative relaxation techniques for comparison purposes. Eberth and Sedlmeier (2012), however, found that MBSR interventions had a slightly higher validity ( $r = .31$ ) than studies utilizing other meditation techniques ( $r = .25$ ).

Only a few studies have examined the effectiveness of mindfulness practices in reducing stress in the graduate student population. Myers et al. (2012) found that mindful acceptance of experiences was negatively related to perceived stress, and Offstein et al. (2004) reported that self-awareness is commonly utilized as a strategy for reducing internal conflict. Shapiro et al. (2007) conducted an MBSR intervention with 54 graduate students and observed decreases in rumination ( $\beta = -0.57$ ), anxiety ( $\beta = -0.52$ ), and perceived stress ( $\beta = -0.65$ ), and an increase in self-compassion ( $\beta = 0.58$ ) as compared to a control group. The results of these stud-

Table 2

*Resources for Beginning Mindfulness Meditation*

Resource	Link
Mindfulness Based Stress Reduction	<a href="http://www.umassmed.edu/cfm/stress-reduction">http://www.umassmed.edu/cfm/stress-reduction</a>
Headspace	<a href="http://www.headspace.com">http://www.headspace.com</a>
The Mindfulness Training App	Available on the iPhone/Android App Stores
Calm	Available on the iPhone/Android App Stores

ies suggest that the observed meta-analytic effects generalize to the graduate student population, however more research is needed to confirm this hypothesis.

***Resources for Practicing Mindfulness Meditation***

In Oswalt and Riddock's 2007 study, 41.8% of students stated they were interested in learning about meditation, and 44.1% said they would use it if offered by the university. Luckily with the advent of technology, a governing institution need not formally offer meditation programs. In Table 2 we provide four resources for beginning a mindfulness meditation practice.

The first link presented is for Dr. Kabat-Zinn's MBSR program. As the one of the foremost experts of mindfulness practice, his program is the starting point for many other interventions. Second is Headspace, which is good for beginners looking to ease into a mindfulness practice. During the free introductory 10-day period, animations illustrate and define mindful awareness. Users can select whether each session is 10, 15, or 20 minutes long and after the 10-day introductory period, users can choose themed packs tailored to their goals (e.g., reducing stress, improving self-esteem,

improving relationships). Third is the Mindfulness Training app, which offers a store containing guided meditations by Dr. Kabat-Zinn, Thich Nhat Hanh, and other spiritual teachers. Finally, Calm is an app that offers a free 7-day introductory program that provides relaxation and meditation techniques. A subscription allows users to access a variety of goal-focused programs, including improving sleep, self-esteem, and concentration. Self-guided sessions and the ability to track the length and frequency of your daily meditation sessions are available without a subscription.

The effectiveness of mindfulness meditation cannot be understated. It can be a powerful resource for coping with stressors and improving quality of life. Graduate school is a difficult experience for many and the stressors involved may persist upon entering the workforce. We hope that the brief review provided here induces this population to consider mindfulness meditation a useful tool for coping with strain.

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