

Mindfulness Training in High Stress Professions: Strengthening Attention and Resilience

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A key feature of psychological health is resilience. Resilience has been described as the ability to overcome stress and maintain an effective level of appropriate behavior or performance when confronted by challenges (Staal, Bolton, Yaroush, & Bourne, 2008). The benefits of resilience apply across a wide variety of high stress professional environments. An extreme context capable of inducing stress is military combat where resilience literally can mean the difference between life and death. Many business, legal, and medical professionals experience situations that elicit a strong stress response and trigger the same physiological pathways as the life or death stressors encountered by military service members. Moreover, high stress professions can transmit maladaptive responses to challenging situations to students training to become business, military, and community leaders, as well as lawyers and physicians. Yet most educational and professional development programs geared to high stress professionals do not offer structured guidance on how to cultivate resilience to stress and trauma.

In this chapter, we explore the construct of resilience from a cognitive neuroscience and cognitive training perspective. Specifically, we propose that strengthening the core cognitive systems of attention and working memory with mindfulness training (MT) may be a route by which to bolster resilience in high stress cohorts. In this chapter, we will: (1) review evidence that the executive functions that are critical for cognitive control and affective regulation are degraded with stress; (2) describe MT and review evidence for its salutary effects; (3) offer examples, using the context of the legal profession, of the ways MT is being introduced into high stress environments and suggest that it is a low-cost, low-tech, and portable form of mental training that may promote resilience in high stress cohorts via bolstering working memory and selective attention.

THEORETICAL AND EMPIRICAL FOUNDATIONS

Working Memory and Selective Attention

A large literature from risk and prevention research suggests that resilience is predicted by the ability to appropriately manage stress, and that successful self-regulation in response to stress requires high executive functioning (see [Greenberg, 2006](#)). Executive functioning is broadly defined as the set of abilities needed to achieve and maintain goal-directed behavior, and executive functions include processes such as working memory capacity (WMC) and selective attention ([Jha, 2002](#)).

WMC refers to the capacity to selectively maintain and manipulate goal-relevant information without getting distracted by irrelevant information over short intervals. As such, WMC comprises: (1) attentional processes to select information and appropriate behavioral responses; and (2) memory-related processes to maintain information in an active, easily accessible form so that task-relevant information can be manipulated in the service of current goals. Working memory is used during many everyday activities, from holding in mind why you walked into a room to remembering which member of the wait staff just took your order in a restaurant. A variety of types of information can be maintained in working memory, including visual (e.g., facial features of a waiter), spatial, conceptual, or phonetic. Importantly, errors in our ability to retrieve accurate information from working memory are most likely when we encounter distraction and interference. When, for example, one of your children stops you en route to get your phone from the living room to ask you what time dinner is (verbal interference), you may lose the working memory representation for “phone.” Or when all the wait staff is similarly uniformed (visual interference), you may stop the wrong waiter to ask for your check. Working memory is beneficial when short-term—but not long-term—storage of information is most useful. In the real world, our chances of getting our check improve if we stop our waiter from this evening’s dinner, as opposed to the one from our last visit to the restaurant.

Laboratory tasks of working memory attempt to capture the critical components of temporarily storing information over very short intervals while resisting distraction. One often used and well-validated task is the operation span task (Ospan) ([Conway *et al.*, 2005](#); [Turner & Engle, 1989](#); [Unsworth, Heitz, Shrock, & Engle, 2005](#)). In this task, participants are asked to memorize unrelated words (or, in some cases, letters) while verifying the correctness of simple mathematical equations (such as, is $10/2 - 2 = 1$?). The presentation of each new word is followed with an equation. After viewing a series of words, each followed by a math problem, the participants are asked to report all of the words in the correct order. Not surprisingly, as the number of words increases, participants become increasingly unable to recall them or the correct order in which they were presented. The number of words that are consecutively reported without error is used to calculate

an individual's operation span score. Performance measures on tasks indexing WMC, such as the Ospan, are highly correlated with performance on tasks measuring attentional processes (see Kane, Bleckley, Conway, & Engle, 2001). These include selective attention tasks which index attentional orienting (Unsworth, Shrock, & Engle, 2004) and conflict monitoring (Redick & Engle, 2006).

Similar to working memory, there are many everyday uses of our selective attention (i.e., orienting and conflict monitoring systems, Fan, McCandliss, Sommer, Raz, & Posner, 2002). Orienting involves voluntarily directing and restricting attention to only the most task-relevant information out of all currently available experiential inputs. During our child's baseball game, for example, we use our orienting system to selectively restrict our gaze toward him as he pitches. Because our intention to attend to our child might be interfered with by other competing inputs, such as the gentle buzz of an incoming text message, our conflict monitoring system helps us to prioritize between competing behaviors while overcoming habitual or automatic behavior. Another example of successful conflict monitoring is when we drive past our exit on the freeway to meet a friend for dinner at her home. While habit might lead us straight to our exit, our conflict monitoring system allows us to overcome this habitual behavior to guide us toward the appropriate destination for the task at hand (our friend's home). As is apparent from these real-life examples, working memory, orienting, and conflict monitoring are all engaged during common everyday scenarios. Even while orienting and conflict monitoring processes are guiding our present moment behavior (driving to our friend's home), it is our working memory system which keeps active our plans to join her for dinner. Thus, working memory is critical for guiding attentional processes in the service of current goals.

Tasks in which mental content is emotionally neutral, such as maintaining a list of items we need to purchase at the hardware store, are characterized as having "cold" cognitive demands. Complex analytical reasoning problems found on the GRE, LSAT, or IQ tests are highly demanding of "cold" cognitive control. It is well established that higher WMC is tied to greater success dealing with cold cognitive challenges. Performance on tasks of WMC corresponds with general fluid intelligence scores and academic achievement (see Kane *et al.*, 2001 for a review), in addition to performance on laboratory tests of orienting and conflict monitoring in which stimuli are digits, letters, words, or symbols (see Kane & Engle, 2003; Redick & Engle, 2006; Unsworth *et al.*, 2004).

Importantly, WMC is also sensitive to individual differences in the ability to manage mental content that is emotionally valenced, or "hot" (Unsworth, Heitz, & Engle, 2005). Individuals with lower WMC suffer from more emotionally intrusive thoughts, have less success in suppressing positive and negative emotions, and have difficulty with emotion suppression and reappraisal tasks (see Brewin & Smart, 2005; Schmeichel, Volokhov, & Demaree, 2008). Thus, WMC corresponds to an individual's success at intentionally guiding behavior while overcoming cognitive or affective (cold or hot) challenges, distractions, and conditioned response tendencies.

Military service, law, and other high stress professions require calculated and effective decision making in both hot and cold situations. Aspects of decision making (like following rules and perceiving risk) are linked to elements of executive functioning (see [Del Missier, Mäntylä, & Bruin, 2012](#)), and an individual's decisions are tied to the amount of information that can be kept in mind during the decision-making process (i.e., the WM load) ([Hinson, Jameson, & Whitney, 2003](#); [Pecchinenda, Dretsch, & Chapman, 2006](#)). A quintessential measure of decision making is the delay discounting paradigm where participants are asked to choose between a smaller immediate reward and a larger delayed reward (e.g., “Do you want \$300 now or \$1000 in 3 months?”). Performance on delay discounting measures is seen as a reflection of levels of impulsivity and/or future orientation ([McClure, Laibson, Loewenstein, & Cohen, 2004](#)). A study of delay discounting, impulsivity, and WMC found that as the WM load of a decision increased, participants chose smaller and more immediate rewards ([Hinson et al., 2003](#)). Analysis of self-report scales of executive functioning and impulsivity revealed that those with lower executive functioning were more impulsive and found less value in delayed rewards. In short, the set of cognitive abilities required for success in high stakes professions are highly interrelated.

While individuals differ in their baseline level of WMC, and thus in their degree of success at “cold” and “hot” control, individuals across a range of levels of WMC suffer from degradation in their WMC after engaging in highly demanding tasks ([Schmeichel, 2007](#)). Importantly, reduced WMC is observed regardless of whether the task requires cold cognitive processing, such as performing a conflict-monitoring task, or hot emotional processing, such as suppressing the experience of anxiety (see [Johns et al., 2008](#)) or inhibiting emotional expressions while watching an emotionally evocative video ([Schmeichel, 2007](#)). These lines of research reveal that WMC may be a “domain general” capacity in that it can be used for both cognitive control and emotion regulation. Thus, WMC is depletable, with limited capacity to overcome cognitive and/or affective challenges.

Interestingly, while WMC can be degraded and fatigued after engaging in demanding tasks, it can also be strengthened through training. Many studies have now found that performance on measures of WMC is bolstered with video game-styled computer-based training methods that require engaging in attention and working memory processes with affectively neutral stimuli (e.g., [Chein and Morrison, 2010](#); [Jaeggi, Buschkuhl, Jonides, & Perrig, 2008](#); [Richmond, Morrison, Olson, & Chein, 2011](#); [Schmiedek, Lövdén, & Lindenberger, 2010](#), but see [Redick et al., 2012](#)). Also, recent computer-based cognitive control training techniques report that in addition to improving attention and working memory, these training methods reduce clinical symptoms in patients with depression ([Papageorgiou & Wells, 2000](#); [Siegle, Ghinassi, & Thase, 2007](#)). In other words, these results suggest that it is possible to target improvements in cold cognitive operations and see benefits in affective symptoms. This directional relationship

is in line with findings that individuals with higher WMC, as indexed on cold cognitive control tasks like the Ospan, are more successful at emotion reappraisal tasks than individuals with lower WMC (see [Schmeichel et al., 2008](#)).

There are many professions in which the pace and workload demands may promote depletion of WMC. In the context of military personnel, for example, the constant potentiality of being attacked may tax emotion regulation processes. In addition, the need to maintain attentive focus on all events transpiring around one's current position (referred to as "situational awareness") may tax attentional orienting processes as well as working memory maintenance and updating processes. While the outward circumstances of the battlefield appear to be in stark contrast to a courtroom, lawyers may also experience WMC depletion due to their professional demands. They must maintain many cases and regulations in mind while formulating legal theories and advancing legal arguments. They employ "situational awareness" when attending to the nonverbal information communicated by opposing counsel, as well as members of the jury and the judge, and they may use orienting attention to shift their line of questioning on-the-fly in the courtroom. Their professional performance may have serious consequences to their clients' business interests, future freedom, and/or financial security as well as their own professional goals (e.g., making "partner").

Unfortunately, circumstances that engage executive functions in the service of managing cognitive and affective challenges in one's professional environment have the potential to deplete WMC. This depletion could lead to a further cascade of poor emotion regulation and impaired decision making, which, in turn, could spiral downward into psychological disorders and disease. Thus, training programs that aim to provide methods for strengthening working memory and attention could be of benefit, not only for patients with clinical disorders, but those psychologically healthy yet highly stressed individuals whose profession may put them at risk for degrading WMC.

There is a growing body of research investigating whether MT benefits working memory and selective attention, when offered to individuals as a stress-reduction tool. Below, we describe what MT is, and how it might be a preferred form of mental training in certain contexts, as well as a complement to other methods of bolstering working memory and attention.

Mindfulness Training

Mindfulness has been described as a process of "bringing one's complete attention to the present experience on a moment-to-moment basis" ([Marlatt & Kristeller, 1999](#), p. 68) and as "paying attention in a particular way, on purpose, in the present moment, and nonjudgmentally" ([Kabat-Zinn, 1994](#), p. 4). Mindfulness is characterized by full attention to internal and external experience of the present moment, with attention employed equanimously without judgment, elaboration, or emotional reaction ([Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010](#)). In this way, mindfulness incorporates elements of attention and emotion

regulation, along with an open, accepting stance toward present moment experience. Numerous contemplative practices are used to train individuals to cultivate the mental mode of mindfulness, and MT programs help participants build mindfulness skills by offering them instruction and group practice, and guiding them to regularly engage in mindfulness exercises (Kabat-Zinn, 1990; Salzberg, 2010; Segal, Williams, & Teasedale, 2002).

MT programs have become widely available in medical contexts as psychological health promotion/stress-reduction programs. Over 750 medical centers around the US offer *mindfulness-based stress reduction* (MBSR) programs. MBSR courses meet once a week for 8 weeks and teach participants to practice mindfulness-based exercises (Kabat-Zinn, 2003; Kabat-Zinn *et al.*, 1992). Many studies have examined the effectiveness of MBSR for improving physical and psychological health for a variety of clinical disorders, and there is growing evidence that MBSR is effective in the treatment of many conditions, including chronic pain, skin-related diseases, binge eating, substance abuse, and fibromyalgia (see Grossman *et al.*, 2004, for a review). In addition, mindfulness courses have been incorporated into existing psychological treatment methods such as cognitive-behavioral therapy (e.g., Segal *et al.*, 2002) with beneficial effects for anxiety and depressive relapse. Thus, MT is increasingly being used as a successful tool to treat numerous psychological and physical conditions and to enhance health and quality of life.

A foundational practice exercise offered in MT programs is known as sitting meditation. Participants are instructed to sit in a relaxed upright posture and to direct their full attention to the sensations of breathing. Whenever their attention wanders, they are instructed to return it to the breath. Thus, a fundamental aspect of MT is attentional training, and the task instructions of many mindfulness exercises emphasize the role of attention. In addition to training attention, MT emphasizes the importance of repeatedly and intentionally bringing an affective quality of acceptance to present moment experience. This aspect of MT has led to several studies examining the impact of MT on emotion regulation processes (see Goldin and Gross, 2009; Lutz, Slagter, Dunne, & Davidson, 2008; Ortner, Kilner, & Zalazo, 2007; Taylor *et al.*, 2011 for a review). Below, we review attentional/cognitive and affective changes that accompany MT, as these are believed to be the proximal effects of MT most closely associated with engaging in specific mindfulness exercises, such as sitting meditation.

Recently, cognitive and affective neuroscientists have shown an interest in MT, as a form of mental training that may alter brain structure and function in specific and tractable ways. These structural and functional alterations are proposed to occur as a result of the neuroplasticity of the brain (Slagter *et al.*, 2011). Neuroplasticity refers to the changes that occur in the organization of the brain as a result of experience. While stress and trauma can alter brain structure so that brain functioning is compromised (Bremner, Elzinga, Schmahl, & Vermetten, 2008), MT may alter brain structure and functions to bolster

psychological health. According to the neuroplasticity view of MT, attention and emotion regulation are ongoing, malleable processes that need to be understood and studied as skills that can be trained, similar to other human skills like learning how to play a sport or a musical instrument. The brain of an “expert,” who has a long history of practice and experience, is functionally and structurally different than that of a nonexpert. For example, London taxi cab drivers, who are “experts” at cognitive mapping, have larger hippocampi (a brain region believed to subservise cognitive mapping functions) than matched controls; and the amount of time the individual has worked as a cab driver corresponds to the size of the posterior hippocampi (Maguire *et al.*, 2000). Further work suggests that these differences in hippocampal size are the result of experience and training and not simply due to pre-existing differences in hippocampal structure (Maguire *et al.*, 2003). Professional musicians show gray matter volume differences in motor, auditory, and visual–spatial regions of the brain compared with matched groups of amateur musicians and nonmusical controls (Gaser & Schlaug, 2003). Furthermore, robust associations have been found between these anatomical variables and measures of music practice intensity. Thus, neuroplasticity has the potential to shape the brain in ways that are helpful (changes related to skill learning) or harmful (changes related to stress). These findings raise the possibility that training and practices that are specifically designed to promote psychological health and prevent stress-related dysfunction may similarly produce alterations in brain structure and function.

Several recent studies suggest that MT does, indeed, result in improved structural and functional brain organization. In a study by Lazar and colleagues (2005), magnetic resonance imaging was used to assess cortical thickness in 20 participants with extensive MT. Brain regions associated with attention, interoception, and sensory processing were thicker in meditation participants than matched controls, including the prefrontal cortex and right anterior insula. Between-group differences in prefrontal cortical thickness were most marked in older participants, suggesting that MT might hold at bay age-related cortical thinning. These structural group-wise differences suggest that, similar to other skills training, MT results in experience-dependent neuroplastic alterations (see also Hölzel *et al.*, 2011). More recently, Luders *et al.* (2012) reported that cortical gyrification (the degree and specific pattern of cortical folding) was greater in long-term practitioners vs. novices to MT. The distribution of effects was in line with the results of Lazar *et al.* (2005), with prominent group-wise differences in the right anterior dorsal insula.

Functional brain changes as a result of MT have also been reported. Brefczynski-Lewis and colleagues (2007) report that the lifetime hours of MT modified the pattern of neural activity produced during performance of an attention-demanding task. Persons with relatively few hours engaging in formal mindfulness exercises had stronger activation in regions subserving attention and emotion regulation (e.g., prefrontal cortex, parietal cortex, and amygdala) compared to those with more extensive hours of practice. The

authors of that study suggested that this reduction in activity in those with mindfulness expertise reflects the “improved efficiency” of attentional control operations that arises from MT. These structural and functional differences coincide with behavioral improvements in the functions of attention and emotion regulation that correspond with lifetime hours of MT (see [Lutz *et al.*, 2008](#) for a review). For example, findings from our own lab ([Jha, Krompinger, & Baime, 2007](#)) demonstrated that in participants who completed an intensive 1-month MT retreat, the magnitude of attentional improvements in the alerting system of attention correlated with the total lifetime hours of MT. That is, greater pre-retreat experience in MT resulted in improved performance on tasks of attentional readiness after the retreat. Behavioral improvements with MT are also observed in orienting attention ([Jha *et al.*, 2007](#); [van den Hurk, Giommi, Gielen, Speckens, & Barendregt, 2009](#)), consolidation in working memory ([Slagter *et al.*, 2007](#)), and resisting distraction from emotionally evocative stimuli ([Ortner *et al.*, 2007](#)). More recently, several studies have suggested that the subjective experience of pain and corresponding neural activity within somatosensory regions is reduced in individuals who received MT vs. novices ([Grant, Courtemanche, Duerden, Duncan, & Rainville, 2010](#); [Zeidan, Johnson, Diamond, David, & Goolkasian, 2010](#)). Collectively, these findings support the view that attention and emotion regulation processes are trainable skills that can be enhanced through engaging in mindfulness exercises.

In addition to neural and attention/affective changes with MT, as reviewed, there is considerable evidence that MT reduces affective symptoms and improves affective experience among patients with affective disorders, including generalized anxiety disorder and depression (see [Evans *et al.*, 2008](#); [Segal *et al.*, 2002](#); [Williams, Russell, & Russell, 2008](#)). Similar results are found when healthy individuals take part in an MBSR vs. relaxation training course. Jain and her colleagues found that MBSR participants, but not relaxation training participants, reported significant reductions in perceived stress and rumination ([Jain *et al.*, 2007](#)). Similarly, [Broderick \(2005\)](#) found that under induced negative mood, receiving brief mindfulness instructions reduced negative mood more than instructions to use a distraction strategy. [Carmody and Baer \(2008\)](#) extended these findings by explicitly investigating the link between practice duration and mindfulness-related changes in affective experience and clinical symptoms. They investigated whether the time that individuals spent engaging in formal mindfulness practices while participating in an 8-week clinical MBSR course related to a change in their subsequent experience of medical symptoms and mood following training. Importantly, they found a significant correlation (again akin to a dose–response relationship) between practice time and self-reported improvements in well-being and other symptom measures.

Thus, there is growing support that MT improves emotional experience and psychological health. Yet, it is unclear why MT improves emotional experience. One possibility is that the effects of MT are similar to computer-based

cognitive control training (Siegle *et al.*, 2007), in that MT may bolster cognitive control, which leads to improvements in emotional experience. According to this hypothesis, cognitive control may mediate the salutary influence of MT on emotional experience. Another possibility is that the effects of MT on emotional experience are a direct result of training and are not mediated by improvements in cognitive control processes (Desbordes *et al.*, 2012; Hölzel *et al.*, 2011). A third possibility is that MT has both direct and indirect effects on emotion regulation processes.

One recent study investigated the effects of duration of mindfulness practice on both cognitive control and emotional experience in the military context (Jha *et al.*, 2010). The influence of MT on WMC during the high stress, resource-depleting period of pre-deployment military training in a group of Marine reservists was investigated. All participants ($N=31$) took part in an 8-week MT course called Mindfulness-Based Mind Fitness Training (Stanley, Schaldach, Kiyonaga, & Jha, 2011), modeled after mindfulness-based stress reduction (MBSR; see Kabat-Zinn, 1990) but modified for the military context. Reservists received MT beginning 4 months prior to their deployment to Iraq. Given the difficulty of identifying a well-matched military cohort, instruments for indexing WMC and affect were utilized that are well studied, well validated, and known to be highly stable over time. These included the Ospan task described above (Conway *et al.*, 2005) and the Positive and Negative Affect Schedule (PANAS; Crawford & Henry, 2004), which provides separate scores for positive and negative affect. All participants performed the Ospan task and completed the PANAS 1 week before (Time 1) and 1 week after (Time 2) the 8-week MT course.

The study sought to shed light on two questions: First, can MT bolster WMC and resilience to affective experiences? Participants were divided into two equally sized groups according to the amount of mindfulness practice they reported outside of the course instruction, a high practice group (that averaged 634 minutes of practice over the 8-week course) and a low practice group (that averaged 151 minutes of practice over the 8 weeks of training). Ospan and positive affect scores were significantly higher, and negative affect scores were lower at Time 2 in those who engaged in more practice time. In addition, while those with less practice time saw significant degradation in their Ospan and PANAS scores at Time 2, those with more practice time demonstrated modest improvements or maintained their Time 1 scores over time.

Second, does WMC mediate the relationship between practice time and affective experience? A mediation analysis revealed a linear association between mindfulness practice time and Time 2 Ospan scores, akin to dose-response effects. Interestingly, mediation results revealed support for mindfulness practice time's indirect effects (through WMC) on negative affect (PANAS), but only for direct effects on positive affect (PANAS). These findings suggest that negative and positive affect may be regulated through different mechanisms. That is, in the context of a high stress interval where

negative stressors are rampant, WMC may be used to control negative affect, but not to boost positive affect.

MINDFULNESS TRAINING IN THE LEGAL PROFESSION

While the MT in the previous study was for military service members preparing for combat, there are other professions in which workplace stress runs extremely high, and in which challenging and threatening situations can be experienced as if they are matters of life and death. One such high stress professional context is law where, in the past 15 years, mindfulness practices have been introduced to thousands of lawyers, law students, law professors, mediators, and judges (Magee, 2011; Riskin, 2012; Rogers & Jacobowitz, 2012; Rogers, *forthcoming*). While the reasons for undergoing MT are many, the adversarial nature of dispute resolution leads many to look toward mindfulness as a means of reducing stress and maintaining high-level cognitive functioning amid moments (and sometimes months) of chaos. These moments are often intentionally manipulated by opposing counsel to exacerbate the stressfulness of the situation (Halpern, 2012). And indeed, levels of anxiety, depression, and substance abuse among lawyers and law students are not only higher than in the population generally, but can even exceed those of cohorts in other high stress careers (Beck, Sales, & Benjamin, 1996; Benjamin, Kazniak, Sales, & Shanfield, 1986; Sheldon & Krieger, 2004). Owing to heavy caseloads, long trials, tight budgets, unprofessional attorneys, occasional traumatic cases, and angry parties, judges, like lawyers, experience not only anxiety and depression, but secondary traumatic stress, burnout, and numerous health problems (Chamberlain & Miller, 2009; Rogers, Freeman, & LaSage, 1991).

Some of the first MT for members of the legal profession took place in 1987 when Jon Kabat-Zinn conducted a mindfulness session for a group of judges (Kabat-Zinn, 1990, pp. 125–126), and in 1998, when a week-long training was offered to students at Yale Law School (Riskin, 2002; Rogers, *forthcoming*). Notably, little has been written about the beneficial impact of the training, and not unlike the military, members of the legal profession often do not care to admit to vulnerability or that the quality of their work product might be affected by stress. Because the law was slow to embrace mindfulness, the training programs for judges and attorneys noted above were relatively isolated events.

A more engaged and sustained interest in introducing mindfulness to the legal profession began to surface in 2002 following a Harvard Law School symposium on the role of mindfulness in the lives and careers of lawyers and law students (Magee, 2011; Riskin, 2002). This interest has reached a tipping point as the practice of law has become increasingly stressful, medical and neuroscience research on the benefits of mindfulness continues to be picked up by the popular media, and the role of contemplative practices across society has become more commonplace. Meanwhile, the legal landscape has become

so disconcerting that a Carnegie Report, commissioned by the American Bar Association, recommended significant overhauls to the legal education system, leading many law schools to look toward mindfulness and related practices as a means to respond to the call (Magee, 2011). Some law schools are addressing these concerns by implementing multi-week mindfulness programs aimed at arming students with the tools they will need, both throughout their legal education and when they enter the practice to deal with the stresses of an often unfriendly and unforgiving profession (Riskin, 2012; Rogers, 2012; Rogers & Jacobowitz, 2012). The following discussion centers on MT programs developed by Scott Rogers specifically for law students at the University of Miami School of Law (Miami Law). These programs were designed with the intention of bolstering attention and working memory to improve academic performance, as well as to provide stress reduction techniques. At present, the effects of these courses on cognition and emotion have not been empirically tested. Yet, based on the work cited above and the targeted course design, we predict that students who participate in these courses and engage in mindfulness practice will benefit.

The Mindfulness in Law Program at Miami Law

Miami Law's Mindfulness in Law Program offers a comprehensive collection of mindfulness offerings to students, ranging from mindfulness workshops, to sitting groups, to law classes that integrate mindfulness into the curriculum (Rogers, 2012). Two instances of this integration will be discussed for the ways they expose law students to mindfulness, with the specific objective of bolstering attentional skills and promoting resilience. One is the 8-Week Jurisight class taught each year to entering students on a voluntary basis and the other are three courses offered as part of the curriculum. Research into the efficacy of these forms of mindfulness integration and training on dimensions such as academic success, bar passage rates, and general well-being, are in the beginning stages (Rogers, 2012) and, as such, student observations pertaining to resilience are noted.

Jurisight: An 8-Week Mindfulness Training for Law Students

The Jurisight class has two primary components: mindfulness discussion and mindfulness exercises, and is contextualized for the law student population. One of the aspects of the Jurisight program that has helped it gain traction with law students is the creative use of legal terms and images to introduce fundamental mindfulness insights and teach mindfulness exercises (Riskin, 2012; Rogers, 2012). Examples include terms like "Pain & Suffering" (unlike in law where there is a direct relationship between the amount of pain and suffering a plaintiff experiences, a discussion in the mindfulness class contemplates the paradoxical idea that the more one embraces the pain, the less one suffers), and "Justice" (to effect Justice, it is important to accept the world as it "Just Is") (Rogers, 2009a, 2009b).

The Jurisight workshop meets for weekly 90-minute sessions for 8 weeks during law students' stressful first semester. The timing of this class is intended to offer

students resilience training as they are being exposed to a new, challenging, and often grueling experience. Over the course of the 8 weeks, the didactic portion is shortened as the mindfulness practice becomes increasingly longer. Students learn basic mindfulness exercises, both short form practices that take a few moments and more traditional long form practices, and are encouraged to practice during the day and at home, both as a means in itself and during times of stress. The mindfulness insights explore key coping strategies that may be tied to resilience including embracing uncertainty, relating more effectively to worrisome thoughts and rumination, and regarding classmates from a place of openness and respect. The mindfulness exercises are drawn from traditional mindfulness practices along with those utilized in programs like MBSR, and include breath and body awareness as well as mindful eating, mindful walking, and compassion practices. Students are offered context contoured exercises such as learning the “CASE Method,” where students practice Concentrating Awareness—Sensory Expansion, and the “Just Is Holmes,” where the great supreme court justice Oliver Wendell Holmes’ admonition to “stop, look, and listen” becomes a sitting practice instruction that is, in fact, a variation of the MBCT “three-minute breathing space” exercise. Through these exercises students find themselves learning and practicing mindfulness exercises that feel integrated and a part of the very environment of which they are quickly becoming acclimated. Two representative samples of student feedback include:

“Jurisight has reinforced the behavior of stopping to take a breath to refocus and realize that things are doable and nothing is as bad as it may seem.”

“Every time that I begin to stress out and think that I don’t have enough time to get something done I stop and take a few breaths and remind myself that there is plenty of time to get everything done. Also, when little things begin to bother me I remember to step back and look at the big picture. Doing this helps me to lower my stress level, concentrate better, and improve my work product.”

Mindfulness in the Curriculum

Miami Law offers three courses that integrate mindfulness into the curriculum: Mindfulness in Law, Mindful Leadership, and Mindful Ethics, each of which introduces students to mindfulness in a contextually relevant manner to deepen their understanding of mindfulness and provide them with the tools to integrate mindfulness practices into areas of the legal profession that interest them or are integral to the practice of law. Through this integration, students are able to infuse into their learning experience an approach to study and practice that offers insight, develops attention skills, and cultivates resilience.

“Mindfulness in Law” introduces students to mindfulness practices in the context of practice areas such as mediation, negotiation, trial practice, ethics, and decision making. Each of these areas of law practice carries with it stressful conditions and is ripe for the natural integration of mindfulness. For example, mediators charged with maintaining a neutral stance can become attached to specific outcomes and parties, and mindful awareness can facilitate their

becoming more effective at their craft as well as less agitated throughout the process. “Mindful Leadership” looks to the ways that students can relate to leadership opportunities and the uncertainties inherent in leadership roles in a manner that is affirming, engaged, and less egoically driven (George, 2010; Dunoon & Langer, 2012). Mindful Ethics is a course teaching the rules of professional responsibility that offers students mindfulness and neuroscience insights into the nature of human behavior and decision making. Framed in the context of the ethical dilemmas lawyers commonly face and the rules that govern attorney conduct, students learn and practice a collection of mindfulness exercises directed at increasing attention and decreasing reactivity (Rogers & Jacobowitz, 2012). The integration of mindfulness and ethics was perceived to be especially important to law student resilience due to the pressures lawyers can face to disregard their ethical compass in order to zealously represent their client or respond, in kind, to the bad conduct of their adversaries (Krieger, 2005).

In each of these classes, students learn and practice (both in class and at home) an evolving series of traditional mindfulness practices. These include basic breath awareness practices often draped in legal garb, such as the “Just Is Holmes,” discussed earlier, and the “Just Is Story,” named after one of the first Supreme Court Justices, Joseph Story, where the sitting practice is viewed as an opportunity to notice the “story” running through the mind. Students also engage in mixed cognitive/experiential practices like the “Motion for Relief from Judgment,” which offers students insight into the nature of judgment and the ways observing the judgmental mind can be a source of relief, and body awareness practices, such as “Noticing” where students learn to pay attention to body sensations and their connection to thoughts and feelings. Lastly, there are exercises specifically developed to help students relate to unwanted situations and uncertainty; and mindful listening practices, such as the “Preliminary Hearing,” where sound becomes the object of attention (Jacobowitz, 2013; Rogers, 2009a, 2009b, 2012; Rogers & Jacobowitz, 2012). Class time reinforces these practices and applies the insights students gain from the exercises to challenging situations and decisions. The following comment, from the Mindful Ethics class, typifies the student experience (Rogers & Jacobowitz, 2012):

“My favorite part of the day was the few minutes before class actually began in which we would do various breathing exercises. I was surprised how much it calmed me down and actually allowed me to re-focus on what was happening at that moment.”

CASE STUDY

The individual described here was a student who participated in the Jurisight class in his first year and the Mindful Ethics class in his second. Certain facts have been modified so as to offer privacy to the student, who agreed to be represented in this case study.

“The account is written by Scott Rogers, Director of the Mindfulness and Law Program and teacher of Jurisight, who is referred to in this case study in the first person.”

Student Background

Frank, a 25-year-old male, had been a confident, high achieving college student with a strong analytical mind and many social connections when he entered law school. He participated in the Jurisight program during his first semester as he was interested in maintaining his enthusiasm for the law school experience and thriving without falling prey to the stresses associated with a demanding work load and intense pressure to perform.

Frank was confident in his abilities due to his prior academic successes and having handily gained entrance to law school. He kept to himself as a general rule and maintained a high level of studiousness enjoying the first year curriculum. In Jurisight, Frank was a vocal participant enjoying the intellectual play of mindfulness insights and appreciating its experiential aspect.

The Trials and Tribulations of the First Semester

As the end of the semester loomed, Frank and his fellow students hunkered down for the arduous task of re-reading the huge volume of first-year class materials and working them into outlines, coordinating and engaging in study sessions, and memorizing case names—all oriented around the singular objective of performing as well as possible on final exams. Law school brings together a group of high achievers destined to be distinguished by a mandatory grading curve. For many, this fuels anxiety, augments the frequency and range of mood fluctuations, and compromises immune function and overall well-being.

At the beginning of the next semester, Frank informed me that he had been placed on academic probation. As difficult as the news was to receive, he said that a classroom mindfulness demonstration, known as the “Spiral,” reminded him that the unpleasant experience was one of life’s “events,” and that he felt mindfulness could help him not only learn from the experience, but maximize his future success and well-being. He asked to meet in order to further explore mindfulness insights and to develop a stronger personal practice. During this meeting, we reviewed several mindfulness exercises and developed a plan for regular practice over the coming months.

Response to Mindfulness Practice and Insight

During his second semester, Frank practiced mindfulness and developed a facility at noticing when his mind began to wrap around self-doubt and worry. Rather than experience the usual drama associated with these thoughts, Frank would bring awareness to the breath and find a more grounded place to make smart decisions—including asking classmates who performed well for pointers, seeking guidance from faculty, and maintaining an attentive focus on learning the material in a way responsive to the professor’s expectations. Occasionally,

he would notice panic take hold and by bringing awareness to his body and breathing, he would, in his words, “feel its grip melt away.”

Resilience in Action

From time to time, Frank came by my office, and we practiced mindful sitting together and discussed the role mindful awareness played in relating more effectively to challenging situations. Though he did not know how he would perform this time around, Frank felt good about moving into the discomfort and braving it, rather than soothing himself with the litany of distractions readily accessible to students. He commented on how it felt good to take responsibility for his poor performance, rather than make excuses, and he appreciated that while his grades had been lackluster, the first semester experience was positive in many respects. Upon the conclusion of his exams, he wrote to me:

“Well, I wrapped up my last exam today and feel at peace with how I performed in all my classes. Of course, the uncertainty that my confidence may be misplaced is causing me some anxiety but I am working on setting that aside until the grades are released. I do know for sure that I had a far better command of the material in each of the courses than in any of the courses from last semester. I trust that will be enough! If so, please know that I am very excited to be in your Mindful Ethics class next semester. I will update you when I get my grades, rain or shine.”

When second semester grades were posted, Frank learned that he had done extremely well, performing at the top of the class. I was taken by the humility with which he related to his superior performance. Rather than explain away his first semester performance as an outlier, he maintained a balanced appreciation for it as an important lesson he learned and as a starting point for his career in law. In Mindful Ethics, Frank distinguished himself, as he continued to do throughout his law school career. During his third year, Frank shared how mindful awareness and practice transformed his relationship to challenging situations he experienced from time to time. Truly, challenges became viewed as opportunities.

Frank was clearly influenced by his exposure to mindfulness and drew upon it as an important tool to help support his efforts to succeed and maintain his well-being. Frank’s resilience was contagious, inspiring faculty and classmates alike.

CONCLUSIONS

As a growing number of law schools are introducing mindfulness into their curriculum, the ranks of practicing lawyers who have been exposed to mindfulness are swelling, thereby facilitating more discussion and engagement in complementary approaches to dispute resolution—even within the traditionally hostile environment of litigation. With this change, law faculty and their collaborators in the psychological sciences are teaming together to research

the impact of mindfulness offerings on the cognitive systems of working memory and attention, along with performance and well-being. These studies, including those in which the co-authors of this chapter are engaged, are actively in development. Our predictions are that just as MT successfully protects against stress-related decline in military service members, so too will it bolster working memory, attention, and mood in those who engage in MT contextualized for the legal profession.

Given the salutary effects of MT on executive functions that are critical for cognitive control and emotion regulation, further exploration of MT as a route by which to bolster resilience is warranted. In the current socioeconomic climate where competition for jobs is high and workplace stress is rampant, stress and trauma are not relegated to only those who have spent time on the battlefield or in the courtroom. MT should be considered as a low-cost, low-tech, and portable training program that can be offered in many workplace contexts.

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