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## Mind the gaps: Why conclusions about mindfulness may not be entirely conclusive.

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# Theory & Practice

## Mind the Gaps: Are Conclusions About Mindfulness Entirely Conclusive?

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Mindfulness has emerged as an important construct in the mental health field. Although evidence suggests benefits, it also appears that excitement over the clinical applications of mindfulness has largely suspended concentrated efforts to clarify fundamental elements of the construct. This article explores conceptual confusion and contrasts primary mindfulness-based techniques before investigating attrition factors, adverse effects of mindfulness practices, and populations contraindicated for mindfulness-based techniques. Implications for practice are provided.

**Keywords:** mindfulness meditation, mindfulness-based interventions, attrition factors, adverse effects, contraindicated populations

Mindfulness is generally regarded as a “quality of consciousness” (Brown, Ryan, & Creswell, 2007, p. 211); beyond this consensus, however, disagreement abounds. Currently, an abundance of evidence supports the benefits of mindfulness (e.g., Brown & Ryan, 2003; Eberth & Sedlmeier, 2012), with some researchers suggesting that the therapeutic benefits of mindfulness may be *transdiagnostic* (i.e., beneficial for a range of emotional and physical concerns as well as effective across a diversity of populations; e.g., Baer, 2007). Indeed, in such a climate of positive expectation, Ng (1999) suggested that “there may be social pressures upon the individual to experience and report benefits” (p. 203). Such fervor may have arrested a more balanced and temperate investigation of mindfulness (Brazier, 2013), and the existing evidence may be of questionable validity given a lack of conceptual and operational agreement as well as research designs of varying rigor (Chiesa & Malinowski, 2011; Goyal et al., 2014). Although the mindfulness literature undeniably suffers from the standard criticisms of modern scientific inquiry—methodological concerns, inadequate sample diversity, insufficient multicultural sensitivity, and so forth (e.g., Hickey, 2010)—this article primarily presents gaps more unique to the mindfulness literature

In this pursuit, we address current conflicts and gaps within the mindfulness literature, not as an exhaustive critique, but as an aggregation of concerns in hopes of stimulating dialogue and empirical attention to those areas in need of greater clarification. First, we introduce the roots of mindfulness, as informed by the Buddhist canon. Second, we address the difficulties Western researchers continue to navigate in

conceptually and operationally defining mindfulness. Third, we examine differences between two commonly conflated mindfulness practices: mindfulness meditation (MM) and mindfulness-based interventions (MBIs). Fourth, we discuss attrition factors, potential adverse effects of mindfulness, and populations contraindicated for mindfulness-based techniques. Finally, we review screening tools for individuals interested in participating in mindfulness-based practices and techniques, along with implications for practice.

### What Is Mindfulness?

#### History and Conceptual Definitions

Mindfulness is a central element of Buddhist scriptures, specifically addressed in the *Abhidhamma*, a collection of Buddhist psychological and philosophical treatises. Foundationally, the Buddhist tradition holds that suffering is fundamental to the human condition (Hanh, 1998). However, the Buddhist tradition also contends that suffering can be overcome by means of the Four Noble Truths (suffering exists, the origin of suffering can be known, suffering can end, and the end of suffering is the Eightfold Path) and the Eightfold Path (right understanding, right thought, right speech, right action, right livelihood, right effort, right mindfulness, and right concentration; Hanh, 1998). Situated as the seventh element of the Eightfold Path, mindfulness has been traditionally understood as “an understanding of what is occurring before or beyond conceptual and emotional classification about what is or has taken place” (Chiesa, 2013, p. 256). Within the Buddhist context, the development of mindfulness is not

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taken as a goal itself, but as a means of reducing suffering and promoting psychological well-being (Chiesa, 2013). Therefore, *right* mindfulness is an important qualifier given that mindfulness has been traditionally grounded in an ethical (i.e., Buddhist) framework, which situates mindful practice as a means to a greater end.

Difficulty understanding mindfulness begins with the translation of the Sanskrit word *smriti* or the Pali word *sati*. (Both Sanskrit and Pali are classical languages of India.) *Smriti* and *sati* are often translated into English as *mindfulness* and denote a quality of consciousness applied to internal and external phenomena such that experiences are clearly perceived, unclouded by preconceptions and biases. Scholars have attempted to capture the essence of mindfulness with terms such as *bare attention* and *pure/lucid awareness* (Chiesa & Malinowski, 2011). Although these phrasings may be conceptually helpful, they do little to assist in operationalizing a rather abstract construct.

*Smriti* and *sati* also connote memory or a remembering (Brazier, 2013). Grossman and Van Dam (2011) emphasized the active nature of *sati* by suggesting that “*to be mindful*” (p. 220; emphasis added) is a more accurate translation of this term. Brazier (2013) echoed this sentiment: “When our parents told us to be mindful of our manners . . . they meant to *remember* and *apply* them” (p. 118; emphasis added). In contrast, Kabat-Zinn’s (1994) introduction and popularization of MBIs in the West (Chiesa & Malinowski, 2011) have largely neglected the remembered or contextual foundation (e.g., Buddhist ethics) of the term *mindfulness* (Hickey, 2010). Kabat-Zinn (1994), using mindfulness-based techniques in an intentionally secularized fashion (i.e., ethically neutral), defined mindfulness as “paying attention in a particular way, on purpose, in the present moment, non-judgmentally” (p. 4). However, some theorists take exception to this definition, contending that it creates a disembodied term bound to a perpetual present (e.g., Barker, 2013) or a culture of “here-and-now-ism” (Brazier, 2013, p. 119).

More recently, growing dissatisfaction with Kabat-Zinn’s (1994) definition of mindfulness led to the emergence of alternative, conceptual definitions. Dreyfus (2011), drawing more directly from the Buddhist tradition, asserted that mindfulness is not necessarily present-moment oriented and nonjudgmental (e.g., nondiscursive). Dreyfus offered a broader definition in which mindfulness is conceived as “the ability of the mind to retain its object and not float away from it” (p. 51). This conceptualization of mindfulness is of particular interest because it provides support from the Buddhist canon linking mindfulness and cognition, and it also reflects the ethically grounded nature of mindfulness central to the Pali and Sanskrit origins. By suggesting that judgment (or discernment/evaluation) is an element of mindfulness—an assertion supported by recent empirical work linking mindfulness with distinct cognitive appraisal capacities (Hanley &

& Garland, 2014)—Dreyfus (2011) introduced an ethical or moral framework (informed by the Buddhist canon) into his conceptualization of mindfulness. It may be that the differences between Kabat-Zinn’s and Dreyfus’s definitions reflected traditionally discordant worldviews evidenced in the classic science (e.g., ethically neutral) versus religion (e.g., ethically valenced) dialectic. Thus, secularly oriented researchers and theorists may be more comfortable with Kabat-Zinn’s ethically neutral definition of mindfulness, whereas researchers and theorists ascribing to a Buddhist worldview may prefer Dreyfus’s interpretation.

### Operational Definitions and Instrumentation Concerns

Competing operational definitions are another concern in the mindfulness literature (see Bergomi, Tschacher, & Kupper, 2013). Some theorists suggested that mindfulness should be measured unidimensionally, whereas others contend that a multidimensional operationalization provides a more authentic representation of mindfulness (Chiesa, 2013). The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is one of the most frequently used unidimensional measures of mindfulness, but it is confusing that the MAAS asserts two qualities as primary to mindfulness: attention and awareness. Despite strong psychometric properties (e.g., Brown & Ryan, 2003), recent criticisms of the MAAS point to the regular conflation of the terms *attention* and *awareness* in the literature as a distinct limitation of this measure and operationalization (Chiesa, 2013). Further criticism of the MAAS stems from all items being negatively worded, leading some researchers to conclude that the MAAS measures how generally unaware individuals believe themselves to be, not how mindful. Indeed, not endorsing a particular state does not necessarily imply the presence of that state’s opposite (i.e., not being sad does not necessarily make one happy).

Other theorists have asserted that mindfulness cannot be understood as a discrete construct and have operationalized mindfulness as a collection of mindful behaviors (e.g., the Five Facet Mindfulness Questionnaire [FFMQ]; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). An advantage of this method of assessment is that it accords with more traditional Buddhist understandings of the interrelated nature of mindfulness with lived experience. Measuring mindful behavior also avoids difficulties associated with measuring a quality of consciousness that may be difficult (especially for novice practitioners) to represent semantically (Bergomi et al., 2013). Nevertheless, criticism has been leveled against the FFMQ with respect to differential item functioning (e.g., Van Dam, Earleywine, & Danoff-Burg, 2009) and, more generally, that the FFMQ does not measure mindfulness per se as a quality of consciousness but rather respondents’ beliefs as to the frequency with which they engage in (or avoid) behaviors thought to be representative of living mindfully.

Thus, differing assessments may support implicitly distinct theoretical positions with respect to operationalizing mindfulness. Bergomi et al. (2013) concluded that researchers must be well informed and intentional in their selection of assessment tools because the breadth of currently available assessments provides researchers with a variety of measures (i.e., eight dispositional and one state mindfulness measure), each with specific strengths and weaknesses. Not surprisingly, the various measures resulting from the diverse operational definitions of mindfulness have, at times, been found to be uncorrelated or only modestly associated (Bergomi et al., 2013), providing further evidence of confusion within the mindfulness literature. Indeed, this operational confusion has led some researchers to conclude that phenomenological approaches (i.e., qualitative interviewing techniques) may be the most appropriate method of investigating mindfulness (Brown & Cordon, 2009).

### “Mindfulness” Means Many Things

A further, modern complication of the mindfulness construct has resulted from mindfulness being simultaneously used within the literature in four distinct but interrelated ways: (a) a state of being, (b) a dispositional quality, (c) a type of practice, and (d) a classification of therapeutic intervention (Vago & Silbersweig, 2012). Mindfulness practices are thought to promote mindful *states*, and the regular cultivation of mindful states is believed to encourage a more mindful *disposition*. Mindfulness, as a dispositional quality, is believed to be an inherent human capacity (Brown & Ryan, 2003). MBIs use mindfulness practices, often in concert with complementary therapeutic techniques, such as process group elements and cognitive behavior interventions (e.g., thought records, activity planning). Given this semantic flexibility, it is unsurprising that all of these terms are often conflated in the literature, underscoring the need for researchers and theorists to explicitly define their use of the term *mindfulness* (Vago & Silbersweig, 2012).

However, even when the definition of mindfulness is explicitly stated, the diversity of mindfulness practices gives rise to another area of conceptual confusion. Practices as varied as yoga (in diverse forms), centering prayer, Zen Buddhism, tai chi, qigong, and the generically termed *mindfulness meditation* (MM) have all been taken to constitute mindfulness practices. Even informal mindfulness practices, such as dishwashing (Hanley, Warner, Dehili, Canto, & Garland, 2014), are being explored. Moreover, studies incorporating mindfulness practices frequently fail to report the type of mindfulness practice used (e.g., focused attention or open monitoring). This oversight may be muddying mindfulness results, given that varying practice styles use distinct techniques. To address and clarify this oversight, Lutz, Slagter, Dunne, and Davidson (2008) proposed process models for both major methods of mindfulness practice: focused attention practices, which rely

on maintaining a particular object as the focus of attention (associated with the Samatha tradition), and open monitoring practices, which emphasize awareness of the present moment without sustaining attention on any particular object (associated with the Vipassana tradition). Although detailed models provide important progress in operationalizing mindfulness, exploring differences in the most common meditation practices is critical for the advancement of mindfulness research. Moreover, the emergence of MBIs (e.g., mindfulness-based stress reduction [MBSR], mindfulness-based cognitive therapy [MBCT], mindfulness-oriented recovery enhancement, dialectical behavioral therapy [DBT], and acceptance and commitment therapy [ACT]), which use mindful practices to target emotional and physical distress, has created further complexity and confusion in the mindfulness literature base.

Thus, the term *mindfulness* is linguistically complex. Conceptually, mindfulness can be defined in a historical, ethically grounded manner as informed by Buddhism, or it can be defined in more modern, secular terms. In the empirical literature, mindfulness is simultaneously used in four distinct but interconnected ways. Moreover, the range of activities that could conceivably be classified as mindfulness practices is quite diverse and expanding in such a way that there may not be a clear delineation between activities that could be considered mindful practices and those that could not. Operationally, mindfulness has been proposed to be a unidimensional construct reflective of a quality of consciousness or a multidimensional aggregation of behavioral representations of mindful living. Tellingly, such conceptual and operational complexity has resulted in the *Oxford English Dictionary* concluding that the word *mindfulness* (“Mindfulness,” 2015) is currently “in weakened use,” a phrasing illustrative of a foundational gap in the mindfulness literature.

### MM Versus MBIs

As stated earlier, Lutz et al. (2008) described MM practices (e.g., focused attention practices/Samatha and open monitoring practices/Vipassana) as distinctly different from MBIs (e.g., MBSR, DBT). MM practices are generally grouped into two primary types: focused attention and open monitoring (Vago & Silbersweig, 2012). Focused attention practices use a specific attentional object (often the breath) to develop mental stability. Practitioners’ self-monitoring skills are also thought to be enhanced as they repeatedly return attention to the designated object following inevitable distractions. Open monitoring practices promote a general awareness of experience without attachment to cognitive or emotional events. This style of practice is also designed to cultivate equanimity and reduce habitual or reactive responding (Vago & Silbersweig, 2012). Theoretically, focused attention practices are more cognitively oriented, whereas open monitoring practices are believed to engage emotional systems alongside cognitive

systems (Ainsworth, Eddershaw, Meron, Baldwin, & Garner, 2013). However, the relationship between these two practice styles is just beginning to be empirically addressed (e.g., Ainsworth et al., 2013).

MBIs, although often incorporating MM practices, generally do so within a larger collection of therapeutic techniques. The most common MBIs are MBSR (Kabat-Zinn, 1990), MBCT (Segal, Williams, & Teasdale, 2002), DBT (Linehan, 1993), and ACT (Hayes, Strosahl, & Wilson, 1999). More recently, specialized MBIs, such as mindfulness-oriented recovery enhancement (Garland et al., 2014), have begun to emerge. MBIs can be delivered in group or individual settings, but the majority of research to date reflects group-based interventions (e.g., Goyal et al., 2014). MBSR and MBCT use both practice styles—a focused attention practice known as a *body scan* and an open monitoring practice generically termed *seated meditation*. DBT and ACT do not typically include traditional mindfulness practices (Chiesa & Malinowski, 2011).

Rapgay and Bystrisky (2009) contended that the differences between MM practices and MBIs result primarily from operational differences and insufficiently defined terminology. The purpose of meditative practice is another difference that Rapgay and Bystrisky outlined, a distinction very similar to Brazier's (2013) criticism that MBIs promote a decontextualized meditative practice. Comparatively, traditional MM practices are understood as a means by which practitioners can “observe what triggers and maintains adaptive and maladaptive mental events in order to increase the former and decrease the latter” (Rapgay & Bystrisky, 2009, p. 152). This process is inherently goal oriented and often couched within the Buddhist commitment to the alleviation of suffering in all beings.

Rapgay and Bystrisky (2009) suggested further differences between MM and MBIs, including the following:

- *Ideas about the nature of mindfulness.* MBIs emphasize cognition and affect, whereas MM emphasizes perceptual processes.
- *Temporal orientation.* MBIs emphasize the present moment, whereas MM is not necessarily time restricted.
- *Degree of attentional training needed to practice mindfulness.* MM emphasizes greater training, whereas MBIs may or may not emphasize training and do not necessarily differentiate between attention and awareness.
- *The role of acceptance.* MBIs emphasize acceptance, whereas MM emphasizes awareness.
- *The use of mindfulness to explore emotion.* MBIs emphasize emotional processing, whereas MM may or may not be emotionally oriented.

In summary, MM emphasizes the value of encountering experiences as they actually are rather than as one might imagine

experiences to be, whereas MBIs promote the benefits of encountering experiences without resistance as a precursor to relief from craving or discomfort. Although Chiesa and Malinowski (2011) included a discussion of a common mechanism of change in both MM practices and MBIs, their review of mindfulness-based approaches concludes that insufficient evidence exists to firmly assert this position.

The differences between MM and MBIs may be a function of differences between distinct worldviews, reflective of the earlier conceptual definition confusion (i.e., a worldview informed by the traditional Buddhist canon vs. a more secularized Western worldview). Moreover, it is likely that individuals seeking either practice may be distinctly different, with the majority of MBIs used to target specific psychological or physical complaints and the majority of MM practices used to attract more spiritually or religiously oriented participants. A semantic observation may illustrate this difference. Individuals engaging in MM may generally be understood to be “practitioners,” whereas individuals engaging in MBIs may be more frequently described as “participants.” Although admittedly anecdotal, this difference would appear to point to a disparity in autonomy or volition associated with involvement in the respective modalities.

Obvious structural differences can be found between MBIs and MM. The traditional MBI format, as established by MBSR, is an 8-week program during which participants attend regularly scheduled, 2-hour group meetings and are encouraged to practice individually (often with the aid of audio recordings) for 45 minutes a day (e.g., Kabat-Zinn, 1990). There is considerable format variation with respect to the other MBIs, but those programs used for empirical investigation are frequently comparable in format (e.g., MBCT: 8 weeks [Coelho, Canter, & Ernst, 2013]; DBT: 12 weeks [Kliem, Kröger, & Kosfelder, 2010]; ACT: 8–12 weeks [Hayes, Luoma, Bond, Masuda, & Lillis, 2006]). In contrast, MM tends to be significantly less structured.

Instructor differences represent another difference between MM and MBIs, and minimal attention has been paid to instructor effects despite the critical role instructors play in individual outcomes. Moreover, it is likely that instructors would vary systematically by the type of practice. MM instructors may be more oriented to spiritual or existential concerns, whereas MBI instructors may have a more pragmatic, mental health focus. Generally, instructor quality has also been indicated as a potential confound with respect to positive outcomes in the mindfulness literature (e.g., Goyal et al., 2014). However, little, if any, empirical attention has addressed the relationship between instructor quality and participant outcomes, much less the potential relationship between instructor quality and adverse effects of meditation. Specifically, Hickey (2010) noted that although MBSR instructors are encouraged to attend a standardized training, no formal credentialing process or regulatory system has been



implemented to ensure quality instruction. A final consideration regarding mindfulness instructors relates to the instructor's personal engagement with mindfulness. It may be that instructors with regular mindfulness practices are better able to relate the challenges and benefits of mindfulness to novice practitioners. However, again, very little empirical evidence exists to support or contradict this assumption.

In summary, two primary modes of mindful service delivery exist—MM and MBIs. The most apparent similarity between these two modes is the foundational emphasis on cultivating mindfulness; however, a number of differences also exist, including differences in the respective techniques' general understanding of mindfulness (e.g., MBI: cognitive and affective; MM: attentional) and the ultimate purposes of mindfulness practices (e.g., MBI: symptom reduction; MM: alleviating the suffering of all things). Individuals attracted to either MM or MBIs may be fundamentally different as a result of these core differences. The same may be expected for instructors of the respective practices, and instructor quality is a variable in need of considerable investigation. Given such differences, it may be that direct, empirical comparison is as of yet inappropriate. Nevertheless, it is important to continue differentiating between these modes of delivery. Researchers and theorists should be cautioned in assuming evidence from research on MM generalizes to investigations of MBIs and vice versa.

## ■ The Other Side of Mindfulness

A thorough investigation of the mindfulness literature revealed a lack of attention to the potentially adverse effects of mindfulness. This section outlines both theoretical and empirical evidence cautioning against the emerging belief that mindfulness may be a panacea. First, although not a direct indicator of adverse effects, factors related to participant attrition in MBIs are explored. Second, the reported adverse effects of mindfulness are detailed. Finally, populations contraindicated for mindfulness practices are investigated, and screening measures designed to protect at-risk participants or populations from the potential ill effects of mindfulness practice are introduced.

### Attrition Factors

Attrition rates vary greatly but are rarely investigated thoroughly in MBIs (Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Goyal et al., 2014) and even less frequently in MM. Nevertheless, some attrition factors have been explored with respect to two of the most common MBIs: MBSR and MBCT.

Two published studies were found that specifically addressed MBSR attrition factors. Kabat-Zinn and Chapman-Waldrop (1988) identified patients with chronic pain as more likely to drop out of MBSR programs—with men twice as likely as women—when compared with participants reporting

stress-related concerns. Salmon, Santorelli, and Kabat-Zinn (1998) found that participants cited practice time demands, unease with the group format, and discomfort with the mindfulness-based treatment approach as the primary reasons for a lack of program adherence. Furthermore, at least two studies (Kaplan, Goldenberg, & Galvin-Nadeau, 1993; Salmon et al., 1998) have suggested that those participants not completing MBSR programs tend to drop out early, typically before the third class session.

More recent studies have addressed factors linked with attrition in MBCT programs. Ma and Teasdale (2004), investigating the efficacy of MBCT with individuals currently in remission or recovery from major depression, observed that participants with a history of fewer than three depressive episodes were less likely to complete the program. This finding is potentially suggestive of differences in participants with early and late onset of depression and their readiness for a mindfulness-based approach (Ma & Teasdale, 2004). Kuyken et al. (2008) found that MBCT participants with a history of suicide were more likely to drop out of treatment. Moreover, Kuyken et al. reported that in prescreening interviews, individuals declining participation cited an unwillingness to invest the requisite time in the MBCT program and a discomfort with the group format, factors echoing Salmon et al.'s (1998) conclusions.

Crane and Williams (2010) explored attrition in an MBCT group for patients with a history of suicidal depression and found that participants demonstrating greater "cognitive reactivity, brooding and depressive rumination" (p. 10) were less likely to complete the program; furthermore, younger participants and those less likely to be consistently taking antidepressants were more likely to leave the MBCT program early. A more recent qualitative analysis by Langdon, Jones, Hutton, and Holtum (2011) suggested that older participants were more hesitant to engage in MBCT, a finding in conflict with Crane and Williams's conclusions. Langdon et al. also noted that MBCT requires considerable effort, leading Fjorback, Arendt, Ørnbøl, Fink, and Walach (2011), in their review of MBCT randomized control trials, to assert that self-selection bias may strongly influence studies of MBCT. Thus, participants' motivation and intent to practice appear to be important factors to consider when discussing course engagement and completion. In the most recent investigation of MBCT attrition factors, Herdt, Bührlen, Bader, and Hännly (2012) concluded that only the number of initial program sessions attended predicted treatment completion in a diverse sample of psychiatric patients. Attrition could not be predicted from participants' demographics (e.g., age, sex), depressive symptomatology, or dispositional mindfulness (Herdt et al., 2012).

Therefore, the literature to date suggests that participant completion rates in both MBSR and MBCT programs appear to be primarily a function of motivation and, by association, attendance in the early stages of the respective programs. In

Bohlmeijer et al.'s (2010) meta-analysis of MBSR programs, attrition rates rose above 25% in seven of the eight reviewed studies, thus emphasizing the need to better understand the factors that support participants in completing MBIs. However, although attrition may give indication of a mismatch between a participant and a treatment, it does not necessarily suggest that participants experienced adverse effects associated with mindfulness practices—a topic addressed in the next section.

### Adverse Effects of Mindfulness Practices

Very little attention has been paid to the potentially adverse effects of mindfulness practices. Dobkin, Irving, and Amar (2012) concluded that, within the mindfulness literature, “adverse events are not systematically monitored or reported” (p. 45), and Lustyk, Chawla, Nolan, and Marlatt (2009) similarly asserted that “systematic evaluations of [MM’s] safety have not been reported” (p. 21). Nevertheless, one quasi-experimental study (Shapiro, 1992) and a handful of case studies (Kuijpers, Van der Heijden, Tuinier, & Verhoeven, 2007) have been published on the adverse effects of mindfulness practices, which we describe in the following sections.

*Meditation.* Shapiro (1992) investigated the adverse effects of meditation among a group of 27 experienced meditators following a 10-day silent Vipassana meditation retreat. Although participants highly endorsed the positive effects of meditation (approximately 80% at each assessment time), results indicated that a significant portion of respondents also endorsed negative effects before the retreat began (Time 1 = 56%), at 1 month (Time 2 = 44%), and 6 months after the retreat ended (Time 3 = 39%). According to Shapiro, adverse effects were reported in three major domains: intrapersonal (e.g., increased negativity, disorientation, addiction to meditation, boredom, pain), interpersonal (e.g., family conflicts, more judgmental), and societal effects (e.g., increased alienation, discomfort with the real world). It is interesting to note that respondents with the longest meditation practice history reported the highest rate of adverse effects at each time point (Time 1 = 75%, Time 2 = 66%, Time 3 = 66%). Given these results, Shapiro concluded that “for some individuals the adverse effects seem to be transformed over time, and are seen not as problems, but as something from which a person can learn” (p. 65).

The same sentiment is echoed in Castillo’s (1990) earlier work on meditation and depersonalization. Castillo contended that MM may promote the conditions by which depersonalization occurs. Although depersonalization represents a psychological state that is generally understood to be disordered in the Western world, it may be considered central to mindfulness states and dispositional tendencies (e.g., decentering, or self-as-context). Indeed, Castillo stated that experiences of depersonalization are regularly accompanied by experiences of anxiety and, less frequently, panic, but “the presence or

absence or panic/anxiety in association with depersonalization can be a function of the nature of the ideational construction of the experience in the mind of the individual” (p. 167). Thus, context or expectation, Castillo asserted, is a significant determinant of psychological distress associated with MM, a belief shared by more recent criticisms of the current mindfulness movement (Brazier, 2013). In the current climate of decontextualized mindfulness practices, novice practitioners and clinicians may mistakenly hold the belief that mindfulness is primarily a stress reduction technique or a practice to singularly cultivate well-being. However, as Brazier (2013) pointed out, “Buddha [was not] interested in stress reduction . . . if [mindfulness was intended to have] any effect on stress, it was supposed to increase it” (p. 118). Although the notion of mindfulness as a stress-increasing technique is seemingly paradoxical, Brazier appeared to be emphasizing the role of mindfulness practices in promoting contact with all forms of experience, both positive and negative. Instead of avoiding unwanted or uncomfortable experiences, mindfulness practices encourage practitioners to consciously engage with these experiences; attend to them; and, ultimately, observe their transitory nature. Insight obtained in this manner is believed to ultimately lead to the alleviation rather than the exacerbation of suffering.

This understanding of mindfulness practice may have prompted Manocha (2000) to assert that “meditation is contraindicated in those [individuals] suffering from psychosis and should only be applied with great caution in those with severe psychological problems” (pp. 1137–1138). Directly investigating individuals demonstrating severe adverse reactions to meditation, Kuijpers et al. (2007) reported on the case study of a young man who experienced psychotic symptoms following meditation. It is important to note that the young man reported a history of mental illness along with a number of external stressors, physical changes, and intense and unguided meditation practice—although the intensity of practice was not reported—before he experienced two psychotic breaks. The second break included “paranoid and delusional thoughts, intense anxieties, mood swings, and suicidal ideation” (Kuijpers et al., 2007, p. 462). Nevertheless, the young man experienced complete recovery within 6 months with the aid of medication.

Kuijpers et al. (2007) also reported on 10 other manuscripts addressing cases of meditation-induced psychosis. In more than half of the cases, individuals were reported to have psychiatric histories, most frequently some schizotypal disruption (e.g., schizophrenia, schizoid personality disorder), but depression and a rather vague “poor social skills” were also reported. Recovery time after the meditation-induced psychosis ranged from a few days to 5 months, and one individual was reported to have attempted suicide. Fasting was implicated in four cases and sleep reduction in nine (Kuijpers et al., 2007). Thus, Kuijpers et al. concluded that “there



seems to be an increased risk for meditation-related occurrence of psychotic symptoms in individuals with a history of psychiatric symptoms or with a certain personality structure, and in cases of sleep deprivation or physical exhaustion” (p. 462). Arriving at a similar conclusion after reviewing the literature on meditation-induced psychosis, Arias, Steinberg, Banga, and Trestman (2006) suggested that interpreting the relationship between meditation and psychosis is difficult given the frequently observed “confounding sleep and food deprivation” (p. 823).

*Qigong.* Qigong is a 3,000-year-old Chinese meditation practice “that integrates physical postures, breathing techniques and focused attention” (National Qigong Association, 2014, para. 1). Qigong was repressed during China’s Cultural Revolution in the 1940s and has only recently reemerged, with targeted empirical investigations of the practice beginning in the 1980s (Ng, 1999). Given its lengthy heritage, qigong practice and its adverse effects have been chronicled traditionally. More recently, the third edition of the *Chinese Classification of Mental Disorders* (Chinese Society of Psychiatry, 2001) allowed diagnosticians to qualify disorders as qigong induced.

In a cross-cultural parallel study, Ng (1999) reviewed instances of qigong-induced mental disorders. Ng reported three traditional types of disturbances associated with qigong practice: sensory, motor, and psychic. Individuals experiencing sensory disruptions may report difficulty breathing, nervousness, disturbed sleep, and numbness or aching—a constellation of symptoms, Ng suggested, similar to a neurotic disorder. Motor disturbances are typically observed as twitching, tremors, or involuntary movements in the head or torso, an outcome resonating with Lustyk et al.’s (2009) suggestion that meditation may increase epileptogenesis. Finally, psychic disturbances are also reported to emerge from qigong practice with alterations in consciousness (e.g., confusion and disorientation), spirit possession (e.g., hallucination, feelings of bodily possession), distracting thoughts, and mental derangement (e.g., delusions—frequently grandiose—sometimes with incoherent speech, depression, fear, or even catatonia).

*MBSR.* Dobkin et al. (2012) attempted to aggregate all published accounts of the adverse effects of MBSR. In their unsystematic review of the MBSR program, Dobkin et al. reported that participants’ experiences were generally described as beneficial, a finding in concert with Shapiro’s (1992) findings. However, Dobkin et al. observed that some participants also reported “increases in perceived stress or scores over the cut-point on a screen for depression at the end of the program (24% for depressive symptoms)” (p. 47). Similar to Brazier (2013), Dobkin et al. suggested that mindfulness training may bring both positive and negative experience into awareness, potentially highlighting negative cognitive or emotional experiences that have been previously guarded against. Dobkin and colleagues further reported that following the standard day of silent meditation in the

MBSR program, participants sometimes reported exhaustion and feelings of disorientation, which may be similar to symptomatology equated with depersonalization (Castillo, 1990) or mild meditation-induced psychosis (Kuijpers et al., 2007). However, Dobkin et al. reported an attrition rate of only 5%, suggesting that appropriate guidance and support may help individuals navigate potentially adverse effects, a belief similarly espoused by Castillo (1990) and in support of the necessity of qualified mindfulness instructors.

*Categories of adverse effects.* Lustyk et al. (2009) contended that there are three primary categories of potential adverse effects of mindfulness practice: mental, physical, and spiritual. Lustyk et al. further asserted that adverse mental effects are the most commonly experienced, a conclusion supported by the present investigation of the mindfulness literature yielding reports of psychosis (e.g., acute schizophrenic episode, schizophreniform psychosis), dissociative states, as well as affective and anxious disorders (e.g., bipolar disorder, manic states, feelings of depression, feelings of anxiety) being reported as consequences of various types of meditation practices (Castillo, 1990; Kuijpers et al., 2007; Lustyk et al., 2009; Shapiro, 1992). Although adverse mental consequences are rare, reports of adverse physical (e.g., Lustyk et al., 2009; Shapiro, 1992), spiritual, and social (Shapiro, 1992) consequences resulting from mindfulness practices are even less frequent. It may be that Lustyk et al.’s categories should be augmented to include a social category as suggested by Shapiro (1992), yielding four major categories of potential adverse effects: mental, physical, spiritual, and social.

*Summary.* Although evidence suggests that adverse effects can result from mindfulness practices, it is unclear why such adverse reactions occur. It may simply be, as suggested by Brazier (2013), that stripping away the distractions of daily life results in unmanageable levels of distress. When confronted with distressing thoughts and emotions, typically avoided or subdued by the hustle of everyday life, individuals may not have the requisite distress tolerance or coping skills to successfully navigate the emotional and physical stress accompanying mindfulness practices. Furthermore, the physical demands (e.g., sitting still and erect for lengthy periods of time, typically on the ground) are likely to intensify the cognitive and emotion strain and reduce self-regulatory capacities (e.g., ego depletion; Baumeister, Bratslavsky, Muraven, & Tice, 1998). However, no known research has addressed the mechanisms by which mindfulness practices lead to adverse effects, and it is unlikely that a single mechanism can account for all adverse effects associated with mindfulness practice. Indeed, it is more likely that there are several interrelated mechanisms contributing to adverse effects, which parallel the host of mechanisms proposed to encourage the benefits of mindfulness (Hölzel et al., 2011). It is worth considering that internally oriented interventions, such as MBIs, may



encourage reduced attention to more pragmatic or interpersonal aspects of problems in daily living, thus inadvertently increasing adverse social reactions.

Considerable more time and attention are needed to fully understand the potential harms that could emerge from mindfulness practice. Ongoing work at Brown University's Clinical and Affective Neuroscience Laboratory is currently undertaking a line of research exploring the potential adverse effects of mindfulness-based techniques. The Britton laboratory at Brown is compiling phenomenological data from long-term meditators on a wide range of meditation experiences, including stress responses and coping techniques used when confronting adverse effects. The recent publication of the laboratory's first article, detailing experiences of meditation-induced visual hallucinations of light or luminescence (Lindahl, Kaplan, Winget, & Britton, 2014), offers hope that efforts are under way to provide a more balanced and complete view of the effects of meditation practice.

### Contraindicated Populations and Screening Measures

Little empirical evidence exists concerning populations contraindicated for mindfulness-based practices. Dobkin et al. (2012) explored the extant literature on populations contraindicated for MBIs and uncovered no clear conclusions as to contraindicated populations. However, opinions informed by the aforementioned literature, clinical intuition, and theoretical orientation have been proposed. At various points in the evolution of the mindfulness literature, and with respect to a variety of practices, individuals with schizophrenia (Walsh & Roche, 1979), bipolar disorder (Walsh & Roche, 1979), obsessive-compulsive disorder (Didonna, 2009), posttraumatic stress disorder (PTSD; Germer, 2005), and "feelings of emptiness" (Didonna & Gonzalez, 2009) have been cautioned against engaging in mindfulness practices.

The MBSR Standards of Practice (Santorelli, 2014) suggest that five psychological issues could exclude prospective participants from involvement with MBSR programs: "suicidality, psychosis (not treatable with medication), PTSD, depression (clinical) or other major psychiatric diagnosis (if it interferes with participation in the [stress reduction program]), and social anxiety (difficulty being in a classroom situation)" (p. 7). However, the MBSR Standards of Practice allow for exceptions should the potential participant demonstrate high motivation and also actively seek treatment to address the specific exclusion criteria (Santorelli, 2014).

Two other methods of screening individuals interested in participating in mindfulness practices have also been proposed. Lustyk et al. (2009) offered two screening schematics. One of the screening schematics is designed for emotional/psychological health considerations (e.g., judging the appropriateness of fit for someone with PTSD), whereas the other schematic specifically addresses physical health con-

siderations (e.g., seizure disorder/epilepsy). Beyond Lustyk et al.'s decisional schematic, Dobkin et al. (2012) proposed a standardized pre-MBSR interview. First, in alignment with the MBSR Standards of Practice (Santorelli, 2014), participants should be screened for psychiatric problems, addictions, and PTSD (Dobkin et al., 2012). Second, also in alignment with the MBSR Standards of Practice, participants endorsing a history of psychopathology should be strongly encouraged to seek treatment in tandem with their participation. Third, participants' expectations should be explored along with an explanation of the time and effort required for mindfulness practices—a screening element reflective of the attrition discussion—and the potential for adverse experiences. Fourth, a referral protocol should be established to efficiently address any adverse effects that may arise beyond the counselor's competency. Finally, individuals should be empowered to make decisions concerning their involvement with practices, thus enabling them to avoid practices that they perceive as potentially problematic or harmful (Dobkin et al., 2012).

### Implications for Counseling

This article has several important implications for counseling. First, mindfulness should not be viewed as a panacea. Despite evidence suggesting that mindfulness is beneficial for a diversity of concerns (e.g., Eberth & Sedlmeier, 2012), the inconclusive state of the literature (particularly with respect to potential adverse effects of mindfulness practice) suggests that counselors should exercise caution and be intentional with their use of mindfulness-based treatments. Moreover, clients and participants should be actively encouraged to reflect on whether they believe that mindfulness-based treatments are appropriate for them. To help individuals make informed decisions, counselors should deliberately present both the possible benefits and the possible risks of using a mindfulness-based treatment while also eliciting and discussing clients' expectations and concerns about mindfulness-based techniques.

Second, in alignment with professional guidelines (e.g., of the American Counseling Association and the American Psychological Association), clinicians should not engage in mindfulness-based treatments (MM or MBIs) if such modalities fall outside their range of clinical competencies. Clinical competencies may differ significantly with respect to the type of treatment given the differences between MM and MBIs addressed in the previous sections. Knowledge of how a particular mindfulness-based practice or intervention is expected to work along with complementary skills and interventions to support its successful implementation is necessary. Supervision is a vital component of developing any clinical competency, and we suggest that interested counselors seek out supervisory experiences and professional trainings.

Third, we further suggest that counselors have an experiential understanding of any mindfulness-based technique

they use clinically. For example, if the counselor is going to introduce a focused attention practice with a client, it is suggested that the counselor have a firm understanding of the technique through his or her own involvement with the practice so as to assist the client in understanding the momentary experience of the practice, the expected benefits, and the difficulties that may arise as a result of the practice. Personally experiencing the frustration that can accompany initial attempts at mindfulness practices is likely to increase a counselor's empathy and ability to communicate the mindfulness technique to the client.

Fourth, it is important to remain flexible in the application of mindfulness-based techniques. Some clients may have a difficult time attending to internal experience because they have spent a great deal of time avoiding these experiences. Working from the outside-in with these clients may be beneficial. For example, using auditory/visual awareness activities ("right now I hear/see . . .") can be more accessible for clients who evidence less insight or willingness to contact internal experiences. Anecdotally, focused attention practices (e.g., body scan, mindfulness of the breath) seem to be more easily grasped than the more abstract open monitoring practice. Focused attention practices also provide a direction for novice practitioners, thus reducing their tendency to feel that they "aren't doing it right." Relatedly, it is important to convey that it is the process of practicing that is valuable, not achieving some transcendent state. Novice practitioners may harbor misconceptions that mindfulness practices are intended to remove the individual from the present moment (e.g., foster a trancelike state) instead of encouraging direct contact and engagement with experience. Addressing such misconceptions is of considerable value in clinical work.

Finally, outcome measures should be considered as important complements to clinical work, providing indication of progress, strengths, and areas of deficit. We suggest that the FFMQ may represent the most clinically relevant assessment of mindfulness, providing both an overall indication of general mindfulness and a more nuanced indication of mindful behaviors.

## Conclusion

Mindfulness is an exciting new construct in Western psychology, which informs clinical work and stimulates empirical investigation. However, excitement over the potential benefits of mindfulness practice may be overwhelming foundational conversations, without which clinical work may be misguided and empirical investigations misinformed. Noncritical adoption of popular treatment modalities risks misapplication as well as inflated and oversimplified expectations for client outcomes. Specifically, greater clarity is needed with respect to conceptual

and operational definitions of mindfulness. Furthermore, points of commonality and differences between MM and MBIs need to be addressed, along with participant and instructor differences that may be associated with the respective modes of delivery. Exploration of attrition factors related to MBIs, adverse effects of mindfulness practice, and populations contraindicated for mindfulness-based treatments have been grossly overlooked. Relatedly, greater discussion is needed to inform screening tools to ensure that participants can be safe while engaging in mindfulness practices. Finally (but not discussed here), there is a desperate need for targeted dialogue concerning the role that the mindfulness movement is playing in promoting issues of social justice and reform.

Although the mindfulness literature appears to be struggling through the growing pains of conceptual adolescence, there is an enthusiasm for the topic that we hope will sustain empirical efforts to a greater, and more balanced, understanding of what mindfulness means in the West. In this fervent intellectual environment, being swept along without a true commitment to critically analyzing the state of the literature can be easy. This article was meant to encourage such reflection. After a review of the literature, there seems to be several areas in need of further exploration and clarification before the positive effects of MM and MBIs reported in the extant mindfulness literature can be assumed valid and reliable.

## References

- Ainsworth, B., Eddershaw, R., Meron, D., Baldwin, D. S., & Garner, M. (2013). The effect of focused attention and open monitoring meditation on attention network function in healthy volunteers. *Psychiatric Research, 210*, 1226–1231. doi:10.1016/j.psychres.2013.09.002
- Arias, A. J., Steinberg, K., Banga, A., & Trestman, R. L. (2006). Systematic review of the efficacy of meditation techniques as treatments for medical illness. *Journal of Alternative and Complementary Medicine, 12*, 817–832.
- Baer, R. A. (2007). Mindfulness, assessment, and transdiagnostic processes. *Psychological Inquiry, 18*, 238–242. doi:10.1080/10478400701598306
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27–45. doi:10.1177/1073191105283504
- Barker, M. (2013). Towards a critically informed mindful therapy. *European Journal of Psychotherapy & Counselling, 15*, 163–173. doi:10.1080/13642537.2013.793733
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology, 74*, 1252–1265. doi:10.1037/0022-3514.74.5.1252

- Bergomi, C., Tschacher, W., & Kupper, Z. (2013). The assessment of mindfulness with self-report measures: Existing scales and open issues. *Mindfulness, 4*, 191–202. doi:10.1007/s12671-012-0110-9
- Bohlmeijer, E., Prenger, R., Taal, E., & Cuijpers, P. (2010). The effects of mindfulness-based stress reduction therapy on mental health of adults with a chronic medical disease: A meta-analysis. *Journal of Psychosomatic Research, 68*, 539–544. doi:10.1016/j.jpsychores.2009.10.005
- Brazier, D. (2013). Mindfulness reconsidered. *European Journal of Psychotherapy & Counselling, 15*, 116–126. doi:10.1080/13642537.2013.795335
- Brown, K. W., & Cordon, S. L. (2009). Toward a phenomenology of mindfulness: Subjective experience and emotional correlates. In F. Didonna (Ed.), *Clinical handbook of mindfulness* (pp. 50–81). New York, NY: Springer.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822–848. doi:10.1037/0022-3514.84.4.822
- Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry, 18*, 211–237. doi:10.1080/10478400701598298
- Castillo, R. J. (1990). Depersonalization and meditation. *Psychiatry: Interpersonal and Biological Processes, 53*, 158–168.
- Chiesa, A. (2013). The difficulty of defining mindfulness: Current thought and critical issues. *Mindfulness, 4*, 255–268. doi:10.1007/s12671-012-0123-4
- Chiesa, A., & Malinowski, P. (2011). Mindfulness-based approaches: Are they all the same? *Journal of Clinical Psychology, 67*, 404–424. doi:10.1002/jclp.20776
- Chinese Society of Psychiatry. (2001). *The Chinese classification and diagnostic criteria of mental disorders, Version 3 (CCMD-3)*. Jinan, China: Author.
- Coelho, H. F., Canter, P. H., & Ernst, E. (2013). Mindfulness-based cognitive therapy. *Psychology of Consciousness: Theory, Research, and Practice, 1*, 97–107. doi:10.1037/2326-5523.1.S.97
- Crane, C., & Williams, J. M. G. (2010). Factors associated with attrition from mindfulness-based cognitive therapy in patients with a history of suicidal depression. *Mindfulness, 1*, 10–20. doi:10.1007/s12671-010-0003-8
- Didonna, F. (2009). Mindfulness and obsessive-compulsive disorder: Developing a way to trust and validate one's internal experience. In F. Didonna (Ed.), *Clinical handbook of mindfulness* (pp. 189–219). New York, NY: Springer.
- Didonna, F., & Gonzalez, Y. R. (2009). Mindfulness and feelings of emptiness. In F. Didonna (Ed.), *Clinical handbook of mindfulness* (pp. 125–151). New York, NY: Springer.
- Dobkin, P. L., Irving, J. A., & Amar, S. (2012). For whom may participation in a mindfulness-based stress reduction program be contraindicated? *Mindfulness, 3*, 44–50. doi:10.1007/s12671-011-0079-9
- Dreyfus, G. (2011). Is mindfulness present-centred and non-judgmental? A discussion of the cognitive dimensions of mindfulness. *Contemporary Buddhism, 12*, 41–54. doi:10.1080/14639947.2011.564815
- Eberth, J., & Sedlmeier, P. (2012). The effects of mindfulness meditation: A meta-analysis. *Mindfulness, 3*, 174–189. doi:10.1007/s12671-012-0101-x
- Fjorback, L. O., Arendt, M., Ørnboel, E., Fink, P., & Walach, H. (2011). Mindfulness-based stress reduction and mindfulness-based cognitive therapy: A systematic review of randomized controlled trials. *Acta Psychiatrica Scandinavica, 124*, 102–119. doi:10.1111/j.1600-0447.2011.01704.x
- Garland, E. L., Manusov, E. G., Froeliger, B., Kelly, A., Williams, J. M., & Howard, M. O. (2014). Mindfulness-oriented recovery enhancement for chronic pain and prescription opioid misuse: Results from an early-stage randomized controlled trial. *Journal of Consulting and Clinical Psychology, 82*, 448–459. doi:10.1037/a0035798
- Germer, C. K. (2005). Teaching mindfulness in therapy. In C. K. Germer, R. D. Siegel, & P. R. Fulton (Eds.), *Mindfulness and psychotherapy* (pp. 113–129). New York, NY: Guilford Press.
- Goyal, M., Singh, S., Sibinga, E. M., Gould, N. F., Rowland-Seymour, A., Sharma, R., . . . Haythornthwaite, J. A. (2014). Meditation programs for psychological stress and well-being: A systematic review and meta-analysis. *JAMA Internal Medicine, 174*, 357–358. doi:10.1001/jamainternmed.2013.13018
- Grossman, P., & Van Dam, N. T. (2011). Mindfulness, by any other name . . . : Trials and tribulations of *sati* in Western psychology and science. *Contemporary Buddhism, 12*, 219–239. doi:10.1080/14639947.2011.564841
- Hanh, T. N. (1998). *The heart of the Buddha's teaching: Transforming suffering into peace, joy & liberation—The Four Noble Truths, the Noble Eightfold Path, and other basic Buddhist teachings*. Berkeley, CA: Broadway.
- Hanley, A. W., & Garland, E. L. (2014). Dispositional mindfulness co-varies with positive reappraisal. *Personality and Individual Differences, 66*, 146–152.
- Hanley, A. W., Warner, A. R., Dehili, V., Canto, A. I., & Garland, E. L. (2014). Washing dishes to wash the dishes: Brief instruction in an informal mindfulness practice. *Mindfulness, 6*, 1095–1103.
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*, 1–25. doi:10.1016/j.brat.2005.06.006
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. New York, NY: Guilford Press.
- Herd, J., Bührlen, B., Bader, K., & Hännly, C. (2012). Participation in an adapted version of MBCT in psychiatric care. *Mindfulness, 3*, 218–226. doi:10.1007/s12671-012-0120-7
- Hickey, W. S. (2010). Meditation as medicine: A critique. *Cross-Currents, 60*, 168–184. doi:10.1111/j.1939-3881.2010.00118.x

- Hölzel, B. K., Lazar, S. W., Gard, T., Schuman-Olivier, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on Psychological Science*, *6*, 537–559. doi:10.1177/1745691611419671
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness*. New York, NY: Delta.
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York, NY: Hyperion.
- Kabat-Zinn, J., & Chapman-Waldrop, A. (1988). Compliance with an outpatient stress reduction program: Rates and predictors of program completion. *Journal of Behavioral Medicine*, *11*, 333–352.
- Kaplan, K. H., Goldenberg, D. L., & Galvin-Nadeau, M. (1993). The impact of a meditation-based stress reduction program on fibromyalgia. *General Hospital Psychiatry*, *15*, 284–289. doi:10.1016/0163-8343(93)90020-O
- Kliem, S., Kröger, C., & Kosfelder, J. (2010). Dialectical behavior therapy for borderline personality disorder: A meta-analysis using mixed-effects modeling. *Journal of Consulting and Clinical Psychology*, *78*, 936–951. doi:10.1037/a0021015
- Kuijpers, H. J. H., Van der Heijden, F. M. M. A., Tuinier, S., & Verhoeven, W. M. A. (2007). Meditation-induced psychosis. *Psychopathology*, *40*, 461–464. doi:10.1159/000108125
- Kuyken, W., Byford, S., Taylor, R. S., Watkins, E., Holden, E., White, K., . . . Teasdale, J. D. (2008). Mindfulness-based cognitive therapy to prevent relapse in recurrent depression. *Journal of Consulting and Clinical Psychology*, *76*, 966–978. doi:10.1037/a0013786
- Langdon, S., Jones, F. W., Hutton, J., & Holttum, S. (2011). A grounded-theory study of mindfulness practice following mindfulness-based cognitive therapy. *Mindfulness*, *2*, 270–281. doi:10.1007/s12671-011-0070-5
- Lindahl, J. R., Kaplan, C., Winget, E., & Britton, W. B. (2014). A phenomenology of meditation-induced light experiences: Traditional Buddhist and neurobiological perspectives. *Frontiers in Psychology*, *4*, 1–16. doi:10.3389/fpsyg.2013.00973
- Linehan, M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY: Guilford Press.
- Lustyk, M. K., Chawla, N., Nolan, R. S., & Marlatt, G. A. (2009). Mindfulness meditation research: Issues of participant screening, safety procedures, and researcher training. *Advances in Mind-Body Medicine*, *24*, 20–30.
- Lutz, A., Slagter, H. A., Dunne, J. D., & Davidson, R. J. (2008). Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences*, *12*, 163–169. doi:10.1016/j.tics.2008.01.005
- Ma, S. H., & Teasdale, J. D. (2004). Mindfulness-based cognitive therapy for depression: Replication and exploration of differential relapse prevention effects. *Journal of Consulting and Clinical Psychology*, *72*, 31–40. doi:10.1037/0022-006X.72.1.31
- Manocha, R. (2000). Why meditation? *Australian Family Physician*, *29*, 1135–1138.
- Mindfulness. (2015). In *Oxford English dictionary*. Retrieved from <http://www.oed.com/view/Entry/118742?redirectedFrom=mindfulness>
- National Qigong Association. (2014). *What is qigong?* Retrieved from <http://nqa.org/resources/what-is-qigong/>
- Ng, B. Y. (1999). Qigong-induced mental disorders: A review. *Australian and New Zealand Journal of Psychiatry*, *33*, 197–206. doi:10.1046/j.1440-1614.1999.00536.x
- Rappay, L., & Bystrisky, A. (2009). Classical mindfulness. *Annals of the New York Academy of Sciences*, *1172*, 148–162. doi:10.1111/j.1749-6632.2009.04405.x
- Salmon, P. G., Santorelli, S. F., & Kabat-Zinn, J. (1998). Intervention elements promoting adherence to mindfulness-based stress reduction programs in the clinical behavioral medicine setting. In S. A. Shumaker, E. B. Schron, J. K. Ockene, & W. L. Bee (Eds.), *The handbook of health behavior change* (2nd ed., pp. 239–268). New York, NY: Springer.
- Santorelli, S. F. (2014). *Mindfulness-based stress reduction (MBSR): Standards of practice*. Retrieved from [http://www.umassmed.edu/PageFiles/63144/mbsr\\_standards\\_of\\_practice\\_2014.pdf](http://www.umassmed.edu/PageFiles/63144/mbsr_standards_of_practice_2014.pdf)
- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York, NY: Guilford Press.
- Shapiro, D. H. (1992). Adverse effects of meditation: A preliminary investigation of long-term meditators. *International Journal of Psychosomatics*, *39*, 62–67.
- Vago, D. R., & Silbersweig, D. A. (2012). Self-awareness, self-regulation, and self-transcendence (S-ART): A framework for understanding the neurobiological mechanisms of mindfulness. *Frontiers in Human Neuroscience*, *6*, 1–30. doi:10.3389/fnhum.2012.00296
- Van Dam, N. T., Earleywine, M., & Danoff-Burg, S. (2009). Differential item function across meditators and non-meditators on the Five Facet Mindfulness Questionnaire. *Personality and Individual Differences*, *47*, 516–521. doi:10.1016/j.paid.2009.05.005
- Walsh, R., & Roche, L. (1979). Precipitation of acute psychotic episodes by intensive meditation in individuals with a history of schizophrenia. *American Journal of Psychiatry*, *136*, 1085–1086.