

Mindfulness-Based Interventions in Mental Health Populations

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Seek not to have that everything
should happen as you wish,
But wish for everything to happen
as it actually does happen,
and you will be serene.

—*Epictetus*

The growing interest in mindfulness-based interventions (MBIs) described in Chapter 4 has been paralleled by scientific research investigating the effects of these types of programs on a wide variety of patient populations as well as in healthy individuals. As with mindfulness research in general, research in this area has expanded rapidly in the 7 years since we wrote the first edition of this book, to the extent that it is impossible to be thorough in reviewing the literature. Hence, in this chapter, we focus on reviewing only seminal and newer research studies and review papers investigating the effects of MBIs (as defined in Chapter 4) in people with psychological problems.

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Depressive Disorders

**Mindful
Reminder:**
What is the
quality of your
heart right
now? Can you
keep it open
even as we
examine the
scientific
literature with
an analytical
mind?

PREVENTING DEPRESSION RELAPSE

Mindfulness-based cognitive therapy (MBCT) was developed specifically as an application to help prevent relapse in people with remitted major depressive disorder (MDD; see Chapter 4, this volume, for a description of MBCT). As such, the bulk of the early MBCT studies were with that target population. Initial studies of MBCT were conducted by Teasdale, Williams, and colleagues in the United Kingdom, who first developed this approach. The seminal study followed a sample of 132 remitted depressed patients randomized to MBCT or usual care (Teasdale et al., 2000). In patients who had three or more previous episodes of depression, MBCT halved the rate of relapse over the course of 1 year of follow-up: In the treatment as usual (TAU) control group, only about 35% remained depression-free after this time period, but that number was close to 70% in the MBCT group.

Additional work by this group replicated this finding in a trial of 75 patients who were in remission from depression, were at least 12 weeks free of antidepressant medication use, and had two or more previous episodes of depression and hence were at high risk for relapse (Ma & Teasdale, 2004). Similarly, for those with three or more previous episodes of MDD, MBCT in addition to TAU, compared with TAU only, resulted in significantly fewer relapses over a 1-year follow-up period (36% vs. 78% relapse).

Teasdale and others have gone on to subject MBCT to tougher tests of comparative efficacy against antidepressant medication and cognitive behavioral therapy (CBT) alone. For example, J. M. Williams, Crane, and Barnhofer (2014) compared standard MBCT with traditional CBT for depression and a TAU condition in a three-armed randomized controlled trial (RCT). In 274 remitted patients who had experienced three or more episodes of depression, overall there was no group difference in relapse rates over 12 months of follow-up. However, for patients who reported greater childhood abuse, the full-package MBCT outperformed the other two conditions, indicating that mindfulness-based approaches may be superior for patients with a history of trauma.

In the largest trial to date, the PREVENT study (Kuyken et al., 2015), U.K. researchers randomized 424 recurrently depressed patients to either continue on maintenance antidepressant treatment or receive MBCT with support to taper or discontinue their medication. People were followed for 2 years. Rates of relapse or recurrence over the study period were no different, showing that MBCT provided relapse protection on

par with maintenance antidepressant pharmacotherapy. As with the Williams study above, patients who reported high rates of childhood abuse did better in the MBCT group than on medication alone, with a lower rate of relapse (47% vs. 59%), which supports the hypothesis that MBCT might be especially helpful in traumatized and particularly vulnerable individuals.

Another study highlighted the importance of home practice in preventing depression relapse. Crane et al. (2014) found that patients who engaged in formal home practice of mindfulness meditation for 3 or more days a week during the 8-week intervention were half as likely to relapse over the year following treatment. In this case, the practice effect was independent of the severity of childhood trauma, so practice protected all patients.

TREATING MAJOR DEPRESSION

Although the original application of MBCT was to prevent relapse in remitted depression, MBCT may also have applications in those who are currently depressed. An early nonrandomized clinical audit study showed that for currently depressed and treatment-resistant patients with MDD, depression scores improved by an effect size of approximately 1.0 over the course of MBCT treatment, bringing them into the nonclinical range of symptomatology (Kenny & Williams, 2007).

Further supporting this, Strauss, Cavanagh, Oliver, and Pettman (2014) conducted a meta-analysis including 12 studies that utilized MBCT for patients with either active depression or anxiety disorders. Four of these studies were with patients with depressive disorders. There were significant benefits of MBCT relative to inactive control groups (i.e., usual care) on depressive symptom severity, but MBCT was not superior to active control interventions, where outcomes were similar. In another recent study of 124 remitted and 58 depressed patients, van Aalderen, Donders, Peffer, and Speckens (2015) reported that MBCT was more effective in reducing depressive symptoms and rumination and in increasing mindfulness and quality of life compared with usual care, over both the short and long term (1 year). Similarly, a study compared MBCT in 43 patients with MDD who did not achieve remission following at least 8 weeks of antidepressant treatment with a structurally equivalent psychoeducational control group (Chiesa et al., 2015). Greater improvements in depression scores, quality of life, and mindfulness were seen in MBCT compared with the active control group, which persisted over 6 months of follow-up.

A qualitative study looked at 30 people over the age of 65 with recurring depression who completed the MBCT program (A. Smith, Graham, & Senthinathan, 2007). Participants described having more awareness

of themselves and their environment and feeling more vividly alive as well as feeling more acceptance of the self and of things that couldn't be changed. Furthermore, participants described feeling more in control, over both what is attended to and one's emotional reactions and responses. They described better coping, letting go of attachments, and more awareness of the breath as well as changes in identity and lifestyle. They were able to enjoy life more, felt calmer, and felt others could also see the differences. In terms of symptoms, they felt more relaxed, calm, and energetic; had less pain; spent less energy ruminating; and could take things more lightly. When asked about the benefit of the program to their lives, those who described it as providing major benefit increased over a year of follow-up from 48% at the end of the course to 62% 1 year later. In summary, this growing body of work speaks to the potential for MBCT not only to help patients with a history of recurrent depression stay depression-free but also to alleviate mood symptoms in patients still struggling with moderate to mild levels of depression.

Bipolar Disorder

The U.K. developers of MBCT have applied MBCT to bipolar disorder as well as unipolar MDD (J. M. Williams et al., 2008). For a small group of people with bipolar disorder in remission, MBCT improved anxiety and depressive symptoms compared with a wait-list control group and also improved anxiety more than for those with unipolar MDD who also participated in MBCT. Williams and colleagues also investigated the usefulness of MBCT for patients with suicidal behaviors, theorizing that the techniques of MBCT should be useful in reducing suicidal thoughts (J. M. Williams, Duggan, Crane, & Fennell, 2006). So far, this idea has been supported only by case conceptualizations and theory, but clinical trials are investigating these effects (Mark, Williams, & Swales, 2004; Williams et al., 2006).

More recently, 95 participants with bipolar disorder were randomly allocated to either MBCT or usual care, but no significant differences were found between the groups on either time to first recurrence of a mood episode or total number of recurrences over a 12-month period (Perich, Manicavasagar, Mitchell, Ball, & Hadzi-Pavlovic, 2013). The only difference was found in state anxiety, favoring the MBCT group. In this case, participants in both groups were on standard medications for bipolar disorder. Further analysis showed that patients who meditated for 3 days a week or more had lower depression and anxiety scores at 12-month follow-up than did those who practiced less often (Perich, Manicavasagar, Mitchell, & Ball, 2013).

In a study of 23 bipolar patients with an uncontrolled wait-list (Ives-Deliperi et al., 2013), magnetic resonance imaging scans in the brains of 16 participants before and after MBCT compared with wait-listed patients and healthy controls showed significant improvements in the bipolar treatment group on measures of mindfulness, anxiety and emotion regulation, working memory, spatial memory, and verbal fluency compared with the bipolar wait-list group. These improvements were accompanied by increased activity in the medial prefrontal cortex, a brain area associated with executive function. Future research is needed to strengthen and expand these findings.

Research in the area of bipolar disorder is in early stages compared with work with unipolar depression but is similarly promising in highlighting the ability of MBIs to help treat troubling symptoms in this group of patients.

Anxiety Disorders

Jon Kabat-Zinn began the clinical research on mindfulness-based stress reduction (MBSR) with anxiety disorders and conducted basic program evaluation research on MBSR participants. This preliminary research was uncontrolled, employing pre- to postintervention designs, which is typical of initial research investigating the efficacy of a new intervention. Jon Kabat-Zinn and colleagues found that in a group of 22 participants diagnosed with generalized anxiety disorder, improvements were seen over the course of the program in anxiety levels, depressive symptoms, and generalized fears, measured with reliable objective scales (J. Kabat-Zinn et al., 1992). These improvements were still evident 3 years after intervention participation (Miller, Fletcher, & Kabat-Zinn, 1995) and, compared with a similar cohort from the program, the magnitude of improvements in this smaller sample was typical. The majority of the group reported still practicing mindfulness techniques at this 3-year follow-up.

Subsequent research in MBSR has used controlled types of designs, yielding important findings. One study compared MBSR with the gold-standard treatment of 12 weekly sessions of CBT in 53 patients with social anxiety disorder (Koszycki, Bengler, Shlik, & Bradwejn, 2007). Both interventions resulted in improved mood, functionality, and quality of life, but CBT proved superior in terms of improving specific measures of the severity of social anxiety. This finding is not surprising considering the focus of CBT is specifically on alleviation of symptoms associated with the disorder, whereas the MBSR program targets general overall well-being and quality of life.

M. Weiss, Nordlie, and Siegel (2005) added MBSR training to psychotherapy for a group of outpatients with primarily anxiety and depressive symptoms. When compared with a group who received psychotherapy only, both groups improved similarly on psychological distress, but those in MBSR showed greater gains on a measure of goal achievement and were able to terminate therapy sooner. Another RCT looked at MBSR as an adjunct to pharmacotherapy in anxiety disorders, compared with an anxiety disorder education program (Lee et al., 2007). Patients in the MBSR program improved more than did their counterparts on several self- and clinician-rated measures of anxiety and on hostility, but there were no group differences on measures of depression.

In more recent work, one study compared MBSR with aerobic exercise for social anxiety disorder in 56 adults (Jazaieri, Goldin, Werner, Ziv, & Gross, 2012). Both MBSR and exercise were effective for decreasing social anxiety and depression, both immediately postintervention and at 3 months follow-up. These researchers also compared CBT with MBCT in a larger group of 108 people with social anxiety (Goldin et al., 2016). The treatments offered to both groups were equally efficacious for improving a wide range of outcomes over a full year of follow-up. These studies offer further support that although MBIs are certainly more efficacious than usual care, they may be similar in outcomes to other active behavioral interventions such as CBT or, in this case, exercise, for a number of mental health conditions. This point was made in a well-publicized 2014 review of the larger meditation research, which summarized all studies that compared MBIs with active control conditions. The authors concluded that although there was moderate evidence for improvements in anxiety, depression, and pain after MBIs, other outcomes, including positive mood, attention, substance use, eating habits, sleep, and weight, needed more study (Goyal et al., 2014).

Eating Disorders

Kristeller and colleagues published the first study of the application of an adapted form of MBSR (later to be called mindfulness-based eating awareness training, or MB-EAT) specifically designed in 1999 for persons with binge-eating disorder (for an extensive discussion of MB-EAT program development, see Kristeller, Baer, & Quillian-Wolever, 2006). This pilot work showed a significant decrease pre- to postintervention on measures of mood and bingeing frequency. Subsequently, many other groups began adapting and applying MBIs to disordered eating behaviors and weight control. For example, Daubenmeier et al. (2011) randomized 47 overweight women into MB-EAT or wait-list groups and reported

decreases in the intervention group on external and emotional eating; also, intervention participants stabilized their weight, whereas the control group participants continued gaining weight over the 4-month intervention period.

Two review papers summarize the literature on MBIs for eating disorder behaviors and obesity (Katterman, Kleinman, Hood, Nackers, & Corsica, 2014; O'Reilly, Cook, Spruijt-Metz, & Black, 2014). Katterman et al. (2014) looked at 14 studies investigating MBIs for treating binge eating, emotional eating, and/or weight change. Study results showed decreases in binge eating and emotional eating in these populations. For weight control, evidence is more mixed. Similarly, O'Reilly et al. (2014) reviewed 21 papers, using broader inclusion criteria. MBIs included combined mindfulness and cognitive behavioral therapies, MBSR, acceptance-based therapies, mindful eating programs, and combinations of mindfulness exercises. Of the reviewed studies, 18 (86%) reported improvements in the targeted eating behaviors of binge eating, emotional eating, external eating, and dietary intake.

Among the studies reviewed, the most well-designed and largest was an RCT by Kristeller, Wolever, and Sheets (2013), which randomized 150 overweight participants with binge-eating disorder to MB-EAT, education control, or TAU wait-list. Postintervention, 95% of MB-EAT participants, 76% of the education group, and 48% of control participants no longer met diagnostic criteria for binge-eating disorder, and the size of binges for those who reported still bingeing at follow-up was smallest for MB-EAT participants. Within the MB-EAT condition, more meditation was associated with better binge-eating outcomes and greater weight loss.

Addictions

Mindfulness approaches have also been applied to addictions research (Bowen et al., 2006; Bowen, Witkiewitz, Dillworth, & Marlatt, 2007; Marlatt & Chawla, 2007). In the best-known and largest early study in this area, a sample of 173 incarcerated individuals completed a 10-day course in mindfulness (Vipassana)¹ meditation and provided follow-up data 3 and 6 months postintervention (Bowen et al., 2006). Although not the same format as MBSR, the mindfulness meditation practices were similar. Participants' postrelease behavior was compared with that of inmates who had chosen not to participate in the meditation program.

¹*Vipassana*, or "insight meditation" refers to meditation techniques practiced by many branches of modern Theravada Buddhism. Vipassana is often referred to simply as "mindfulness meditation."

Despite the lack of randomization, at baseline no significant differences between the groups were found on substance use or demographic variables, including gender, income, education, or ethnicity. Over the course of follow-up, participants in the meditation program showed significantly greater reductions in alcohol, marijuana, and crack cocaine use and had decreases in alcohol-related problems and psychiatric symptoms. They also had larger increases in internal drinking-related locus of control and optimism. In addition, mediational analyses showed that course participants had decreased use of thought suppression about substance use, which is thought to backfire in preventing relapse. This decrease in avoidance of thoughts about abusing substances was found to partially mediate the use of alcohol after prison release.

The application of MBIs in addictions research has broadened significantly in scope and number of studies. A systematic review published in 2014 (Chiesa & Serretti, 2014) identified 24 studies in the general area of MBIs for treating substance use disorders. Conclusions of the review were that MBIs can reduce the consumption of alcohol, cocaine, amphetamines, marijuana, cigarettes, and opiates to a significantly greater extent than can wait-list controls, nonspecific educational support groups, and some specific control groups. In terms of mechanisms, MBIs seem to work through reducing cravings as well as increasing levels of mindfulness. The best studies identified by that review included large sample sizes, active comparison groups, and objective outcome measures. For example, in the largest RCT, Witkiewitz and Bowen (2010) compared MBRP with a TAU control based on the 12-step program in 168 people with alcohol and drug abuse problems. Substance use decreased more in the MBRP group compared with control postintervention. Two months later, MBRP participants reported an average of 2.1 days of substance use, whereas control participants had an average of 5.4 days of use.

MBIs have also been applied to smoking cessation. For example, Brewer et al. (2011) compared mindfulness training based on MBRP with the American Lung Association's Freedom From Smoking treatment, a gold-standard behavioral therapy for smoking cessation, in 88 smokers. Participants in the mindfulness training had greater reduction in cigarette use than did those in the comparison condition pre- to postintervention, a result that persisted at a 17-week follow-up (31% cessation in mindfulness training group; 6% in control group).

Overall, the addictions research shows promise for MBIs with regard to reducing cravings and showing efficacy for decreasing cigarette, alcohol, and drug consumption in people with addictions. Although not all studies find positive results, and many trials are still small and do not compare MBIs with other efficacious treatments such as CBT, the area of addictions appears promising and is the focus of considerable research and clinical interest.

Trauma and Posttraumatic Stress Disorder

One area that wasn't represented in our previous edition is the application of MBIs to people suffering trauma, including combat stress in war veterans. Previously, clinicians were cautious about applying mindfulness to people with trauma symptoms, speculating that such unblinking attention to difficult symptoms and flashbacks might exacerbate rather than ameliorate symptoms. However, in the past decade this assumption has been challenged, and now there is a growing body of research investigating the application of mindfulness training to help treat trauma symptoms and inoculate people from developing stress-related trauma.

A 2015 review paper (Canadian Agency for Drugs and Technologies in Health, 2015) focused only on RCTs and located three studies comparing MBIs with a control condition in veterans with posttraumatic stress disorder (PTSD), each of which compared MBSR with usual care. In a group of 62 veterans with PTSD in Iran, Omidi et al. (2013) reported that depression, fatigue, tension, and dizziness improved more in the MBSR group than in the control, but anger and vitality did not. Directly assessing PTSD symptoms, Kearney, McDermott, Malte, Martinez, and Simpson (2013) didn't show any group differences in PTSD symptoms in 47 veterans but found greater benefit for MBSR participants on mental health scores. Finally, most recently, an RCT on American veterans with PTSD compared MBSR with an active control, person-centered therapy (Polusny et al., 2015). In a relatively large sample of 116 veterans, the MBSR group improved more on PTSD symptoms than did the active control group, with a moderate effect size. However, the MBSR participants were no more likely to lose the PTSD diagnosis than were those in the control condition postintervention. As a whole, these studies show some promise for MBIs in treating combat trauma specifically, but substantially more work needs to be done in this area.

Attention-Deficit Disorders

MBIs have also been applied to children, adolescents, and adults with attention-deficit disorders. It makes good sense that attentional training such as is offered through MBIs might be beneficial for this group. A feasibility pre-post study of mindfulness meditation training with

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Reminder:**
Is there an
urgency to
your reading,
or a relaxed
alertness?

32 adults and adolescents with attention-deficit/hyperactivity disorder (ADHD) found self-reported improvements in ADHD symptoms of inattentiveness and hyperactivity as well as decreases in anxiety and depressive symptoms (Zylowska et al., 2008). Participants also demonstrated enhanced performance on tasks measuring attention and cognitive inhibition (the Attention Network Test). The skills that improved—filtering conflicting attentional demands and set-shifting—are thought to play an important role in the development of inhibition and self-regulation, which are the key deficits in individuals with ADHD (Zylowska et al., 2008).

Mitchell, Zylowska, and Kollins (2015) systematically reviewed the ADHD literature and identified seven studies that evaluated MBIs for improving symptoms and behavior in children and adolescents. Some of these were for the children alone, and some incorporated training for both parents and children. Overall conclusions were that mindfulness meditation training in the ADHD population is feasible and acceptable and may improve self- and other-reported behaviors and symptoms of ADHD. However, methodological issues such as small sample sizes (most studies were in the 10s or 20s of participants), the use of multiple outcome variables, a lack of active treatment comparison groups (or any comparison group in most studies), a lack of accounting for the effects of pharmacotherapy, atypical sample composition (e.g., high IQ and parental education levels), and short follow-up assessment periods (i.e., none beyond 16 weeks) limit generalizability and support the need for larger, more methodologically rigorous trials. In adults they identified nine studies that were similarly promising but also suffered from methodological shortcomings.

Psychosis

Early research in MBIs steered away from applying interventions to persons with psychosis; however, recent research demonstrates the potential of MBIs to be of benefit with this population. A 2012 paper reviewed the application of MBIs for people with severe mental illness, including psychotic disorders such as schizophrenia and schizoaffective disorder (Davis & Kurzban, 2012). This is another population that clinicians have been cautious about applying mindfulness training to, fearing that mindfulness practices may exacerbate psychotic symptoms. However, in the past 5 years preliminary investigation of the possibility of benefit has been conducted, with the idea that if people with psychotic symptoms such as hearing voices could learn to be less bothered by the voices and

what they had to say, not believing the voices as real or what they say as true, they might be less troubled even if the voices did not go away.

The majority of work in this area involves small pre–post studies, with limited RCTs. In the largest pre–post study, Dannahy et al. (2011) utilized an intervention similar to MBCT for people with psychotic disorders, emphasizing acceptance of voice hearing. The program included teaching participants to accept unpleasant experiences associated with voice hearing through decentered awareness and shortened formal mindfulness exercises. In a sample of 62 people with schizophrenia or schizoaffective disorder experiencing treatment-resistant auditory hallucinations, significant improvements in well-being were documented posttreatment and at a 3-month follow-up. In addition, self-reported ratings of distress related to hearing voices and perceived control that voices had over participants significantly decreased at both time points.

In one small RCT of 22 patients with schizophrenia comparing an MBI with TAU (Chadwick, Hughes, Russell, Russell, & Dagnan, 2009), the treatment group showed significant improvement in clinical functioning and mindfulness of distressing thoughts and images, but differences between the TAU control condition did not reach significance. A more recent 2015 review of 15 studies concluded that evidence from qualitative studies suggested that people distressed by hearing voices could engage meaningfully in mindfulness practice and that MBIs were acceptable and safe in this population, but the lack of adequately powered RCTs meant that conclusions about effectiveness or mechanisms of action could not be drawn (Strauss, Thomas, & Hayward, 2015).

Summary

The research investigating the efficacy of MBIs for the treatment of psychological symptoms and disorders continues to grow at a fast pace. We could not have predicted the scale of the exponential growth of both clinical and research interest in this topic since the first edition. With the number of studies currently under way, undoubtedly the next decade will see the publication of many more large randomized trials investigating the efficacy of MBIs for a variety of populations, using increasingly sophisticated design elements. As it stands, there is solid evidence that mindfulness-based treatments can be successfully applied to the treatment of symptoms of anxiety and depression, both for those currently experiencing symptoms and for those in remission. There has also been progress in documenting the benefits of MBIs for various addictions and

other psychological problems such as attention deficit and trauma. It is heartening to review the current state of the science and see significant improvement in the quality of studies currently being published. Well-designed future research continues to be necessary to determine the details of what is effective for whom and for treating which individuals suffering from what symptoms, in what setting, and over what time period. Furthermore, the mechanisms by which these multimodal interventions are helping individuals have only begun to be explored, and this area merits significant future attention. As can be seen, there are numerous fruitful directions for future research, which we discuss in greater detail in Chapter 10.