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Mindfulness-Based Interventions for Anxiety and Depression

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Synopsis

This article reviews the ways in which cognitive and behavioral treatments for depression and anxiety have been advanced by the application of mindfulness practices. Research on mindfulness-based interventions (MBIs) has increased exponentially in the past decade. The most common include Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT). MBIs have demonstrated efficacy in reducing anxiety and depression symptom severity in a broad range of treatment-seeking individuals. MBIs consistently outperform non-evidence-based treatments and active control conditions, such as health education, relaxation training, and supportive psychotherapy. MBIs also perform comparably to cognitive-behavioral therapy (CBT). The treatment principles of MBIs for anxiety and depression are compatible with those of standard CBT.

Keywords

Mindfulness; mindfulness-based interventions; anxiety; depression; cognitive-behavioral therapy

Intro

Buddhist traditions first explored the concept of mindfulness in broad philosophical terms unfamiliar to most modern readers. Nevertheless, mindfulness has spread rapidly in Western psychology research and practice, in large part because of the success of standardized mindfulness-based interventions.[1] These interventions, namely *mindfulness-based stress reduction (MBSR)*[2] and *mindfulness-based cognitive therapy (MBCT)*,[3] incorporate the essence of Eastern mindfulness practices into Western cognitive-behavioral practice. The body of literature on *mindfulness-based interventions (MBIs)* has grown exponentially in recent years.[4,5] Despite the popularity of these interventions, the evidence base is still not

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fully established, in part because this literature is oversaturated with cross-sectional studies, waitlist-controlled trials, and other methodological shortcomings that limit the strength of conclusions that can be drawn from these studies.[1] Considering these weaknesses, clinical researchers have increasingly studied MBIs with more rigorous methodology, allowing for select meaningful conclusions to be drawn from the present body of work.

Recent reviews of well-designed, randomized controlled trials comparing mindfulness treatments (primarily MBSR and MBCT) to active control conditions indicate that MBIs are effective in treating a broad range of outcomes among diverse populations.[6–11] These outcomes include clinical disorders and symptoms such as anxiety,[8,12,13] risk of relapse for depression,[14,15] current depressive symptoms,[9] stress,[16–18] medical and well-being outcomes such as chronic pain,[19] quality of life,[14,20] and psychological or emotional distress.[21,22] Additionally, MBIs have been shown to work via changes in specific aspects of psychopathology, such as cognitive biases, affective dysregulation, and interpersonal effectiveness.[17,23,24]

In addition to the mindfulness-based treatment protocols, mindfulness principles have been integrated into other notable therapeutic interventions such as *Dialectical Behavioral Therapy (DBT)*[25] and *Acceptance and Commitment Therapy (ACT).*[26] Additionally, mindfulness has increasingly been explored within the context of *cognitive-behavioral therapy (CBT)* for emotional disorders.[27] The use of mindfulness in these treatment protocols is markedly different from MBSR and MBCT, in that mindfulness is merely a component of these interventions, whereas it is the core skill taught in mindfulness-based treatments. Additionally, these treatments include other, non-mindfulness therapeutic ingredients, thus making it difficult to attribute therapeutic effects to mindfulness skills specifically.[1,28] Despite these distinctions, MBIs are quite compatible with the dominant cognitive-behavioral psychotherapy practiced today. CBT is an umbrella term that refers to a conceptual model of treatment more than any one protocol.[29,30] Mindfulness and acceptance strategies are consistent with general CBT principles, because they target core processes, such as increased emotional awareness and regulation, cognitive flexibility, and goals-based behaviors.[31,32] This is a topic that is outside the boundaries of this chapter, but that is likely to become part of the future of psychotherapy. As we will discuss throughout this review, mindfulness targets one such core processes that has demonstrated efficacy in reducing anxiety and depression symptom severity, both as the core treatment ingredient, as well as when integrated into other treatments. The primary aim of this article is to explore the ways in which cognitive and behavioral treatments for depression and anxiety have been advanced by the application of mindfulness practices.

Overview of Mindfulness Treatments

The overarching theoretical premise of MBIs is that, by practicing mindfulness (e.g. through sitting meditation, yoga, or other mindfulness exercises), individuals will become less reactive to unpleasant internal phenomena but more reflective, which in turn will lead to positive psychological outcomes.[3,33] We will briefly review the most recent literature in mindfulness-based treatments for anxiety and depression, starting with current perspectives in the definition and measurement of mindfulness.

What is Mindfulness?

Mindfulness refers to a process that leads to a mental state characterized by nonjudgmental awareness of the present moment experience, including one's sensations, thoughts, bodily states, consciousness, and the environment, while encouraging openness, curiosity, and acceptance.[34–36] Bishop and colleagues (2004)[34] distinguished two components of mindfulness, one that involves self-regulation of attention and one that involves an orientation toward the present moment characterized by curiosity, openness, and acceptance.

Mindfulness stands in stark contrast with much of our common daily experience, as the default mode of attention for many individuals is, in fact, non-attention. Mind wandering is ubiquitous,[37] as is the state of mindlessly going through our daily activities, or "running on autopilot."[38] When we do manage to focus on internal experiences in the present moment, this attention is often filled with self-critical, ruminative, or otherwise worrisome thoughts and emotions which we then attempt to suppress.[39] Indeed, the experience of attending to one's present moment can be so aversive that some people prefer almost anything else; a review of 11 laboratory studies with healthy adults found that most people choose to do mundane tasks, or even receive mild electric shocks over being left alone with their own thoughts.[40]

Despite their predominance in our daily life, mindless states have been demonstrated to be maladaptive. In a large study using ecological momentary assessment data, [37] it was found that approximately 47% of subjects' waking hours were spent in a state of mind wandering; furthermore, the authors demonstrated that mind wandering predicts subsequent unhappiness. In contrast, the capacity to keep one's mind focused on the present moment is associated with higher psychological well-being.[41] Taken together, these findings suggest that mindfulness is a difficult state to achieve, but is ultimately beneficial. This skill has been likened to the cognitive science theory of a "desirable difficulty," essentially a task that requires expenditure of cognitive resources, but results in higher cognitive flexibility, insight, and self-regulation abilities.[4]

Mindfulness is thus both a skill and a practice; the practice of mindfulness begets the skill of staying mindful. The stronger one's ability to adopt a mindful state throughout the perpetual ups and downs of life, the less suffering one will experience. This basic premise remains the foundation of mindful practices, as it has for centuries;[42] yet when clinical scientists attempt to parse apart the mechanisms of this seemingly simple process, the evidence rapidly becomes messy and ill-defined. Whichever mechanisms truly underlie mindfulness (see below for a review of key mechanisms), mindfulness practices appear to demonstrate therapeutic effects on emotional well-being, and thus continue to capture the interest of myriad clients, practitioners, and researchers.

MBSR

The first and perhaps the most well-known mindfulness-based intervention to gain empirical support in the treatment of psychological symptoms is mindfulness-based stress reduction (MBSR), developed by Jon Kabat-Zinn in the early 1980s.[2] MBSR is an 8-week treatment program that is aimed at reducing stress via enhanced mindfulness skills developed through

regular meditation practices. The program consists of weekly 2–2.5-hour group-based meditation classes with a trained teacher, daily audio-guided home practice (approximately 45 min/day), and a day-long mindfulness retreat occurring during the sixth week. Much of the course content is focused on learning how to mindfully attend to body sensations, using various mind-body meditative practices such as sitting meditation, body scans, gentle stretching, and yoga. Additionally, the group classes foster discussion of how to apply these mindful practices in daily life, with the ultimate effect of being able to handle stressors in a more adaptive way. The MBSR program was initially developed to treat medical patients with chronic pain,[2] but has since been applied to many other populations of medical and psychiatric patients, as well as community members.[43] Across these various groups, MBSR has consistently been found to be tolerable, with high rates of compliance, program completion, and patient satisfaction.[6,44,45]

Studies comparing MBSR to active control conditions have demonstrated that MBIs are superior in reducing anxiety symptoms. Hoge and colleagues[46] found that MBSR outperformed an active stress-management education program in a group of individuals with generalized anxiety disorder. More specifically, individuals in the MBSR group demonstrated significantly more reduction in anxiety symptom severity than the control group, as measured by self-report measures of anxiety as well as anxiety in response to a laboratory social stress challenge task. The MBSR group demonstrated a pre-post treatment effect size (Cohen's *d*) of 1.06, which is comparable to the effect sizes seen in CBT for anxiety. These results are supported by select meta-analyses that have demonstrated superiority of MBSR in reducing anxiety and stress relative to heterogenous control conditions.[8,47,48] Pre-post treatment effect sizes for these meta-analyses all fall in the moderate-large range (Hedge's *g* ranging from 0.24 – 1.54).

MBSR appears to be a safe and effective treatment for the reduction of emotional dysregulation. Additionally, researchers have adapted the basic principles of the program into modified protocols to treat specific populations and outcomes. These include mindfulness based cognitive therapy (MBCT) for depression,[15] mindfulness-based relapse prevention (MBRP) for drug addiction,[49] mindfulness-based relationship enhancement (MBRE) to improve relationship functioning,[50] and a mindfulness-based program to foster healthy eating,[51] to name just a few.

MBCT

The most widely researched adaptation of MBSR is mindfulness-based cognitive therapy (MBCT), originally developed by John Teasdale, Zindel Segal, and Mark Williams to prevent relapse of major depression.[15] As its name implies, MBCT combines elements of both mindfulness training and cognitive therapy to reduce the recurrence of depression. Mindfulness principles are applied to aid individuals in recognizing deterioration of mood without immediately judging or reacting to this change. This enhanced internal awareness is then combined with principles of cognitive therapy that teach individuals to disengage from maladaptive patterns of repetitive negative thinking that contribute to depressive symptomatology.[52] Other than this additional cognitive therapy component, MBCT closely

follows the structure of MBSR, including the 8-week group-based format, and the length and type of homework assignments.

Since its initial development, several well-designed randomized-controlled trials examining the efficacy of MBCT relative to control conditions have demonstrated that the program is effective in reducing rates of relapse among individuals with major depression.[4] Furthermore, studies looking at individual moderators of treatment outcomes have found that MBCT may be most effective in preventing relapse among individuals with the greatest risk of relapse. These high-risk individuals include those with four or more previous major depressive episodes (Cohen's $h = 0.88$),[53] and those who suffered from maltreatment during childhood.[53,54] In addition to preventing rates of relapse, MBCT has also demonstrated efficacy in reducing current acute depression symptoms (Hedge's $g = 0.73$).[9]

In one of these trials, Eisendrath and colleagues[55] tested the efficacy of a modified MBCT program for individuals with current treatment-resistant depression. Results showed that MBCT reduced depressive symptoms posttreatment compared to a well-matched active control program (Health Enhancement Program, or HEP). Despite these promising findings, the MBCT and control groups did not differ significantly on rates of depression remission, suggesting that the effects of MBCT were not strong enough to impact full disorder remission. These findings also illustrate the importance of a well-matched control condition. Until recent years, most trials compared MBIs to waitlist controls, which introduce a multitude of confounding factors that limit the strength of conclusions that can be drawn from these trials. Given that MBCT was no better than a general health education program in achieving depression remission in this high-quality trial, the results of waitlist-controlled trials should be interpreted with great caution.

Other mindfulness-based treatments

MBSR and MBCT are intensive treatment programs requiring a sizeable commitment in terms of both patient and therapist time and training. In addition to these standardized treatments, mindfulness practices have been applied therapeutically in several other ways.

Retreats and residential programs—One popular treatment delivery method is mindfulness meditation retreats, which typically range from 1–3 days, but can extend as long as 3 months.[4] These retreats vary greatly in terms of their format and target population, and there is scant research on their short- and long-term effects. Nevertheless, these retreats are a relatively cost-effective way of delivering intensive and well-controlled doses of a mindfulness intervention, and recent trials have demonstrated promising effects on anxiety, stress, and other measures of psychosocial well-being and health.[56,57]

Brief mindfulness interventions—Some investigators have adapted the MBSR treatment protocol into abbreviated 2–3-week programs.[58,59] These programs have not been examined as thoroughly as the standard 8-week interventions; however, preliminary evidence indicates that these modest interventions can have beneficial effects on a variety of symptoms, including compassion[58] and working memory capacity.[59] It is as yet unclear whether these abbreviated mindfulness interventions can effectively reduce clinical levels of

anxiety or depression, though the potential for beneficial effects in a fraction the time warrants further study.

Another emerging adaptation of standard MBIs is even shorter 3- or 4-day lab-based mindfulness training.[60] These brief and highly controlled interventions typically involve 20-to-30-minute group sessions conducted by a trained meditation instructor, and minimal-to-no required practice outside of the lab.[61] Though these mindfulness interventions are too truncated to expect any long-term effects, studies indicate that they can have immediate effects on psychological and neuroendocrine responses to social stress,[60] and perceived pain severity in response to noxious heat stimulation.[61] These significant effects after only a few days of mindfulness training are exciting, and future research should explore whether such brief interventions can have similar effects on symptoms of anxiety or depression. Regardless, these shorter mindfulness interventions offer one clear benefit already in that they afford greater research flexibility to conduct both efficacy and mechanisms-focused trials.[4]

Internet and smartphone MBIs—Another new development in the mindfulness literature is the recent surge of internet- and app-based MBIs. These interventions vary a great deal in the treatment length, ranging from 8-week programs that closely mimic the MBSR protocol,[62] to 2- or 3-week self-guided interventions with little formal structure.[58,63] Though these technology-delivered interventions are still in their infancy, a recent meta-analysis of 15 RCTs found that, relative to control or waitlist conditions, technology-delivered MBIs had a significant beneficial impact on depression, anxiety, stress, well-being, and mindfulness (Hedge's *g* ranging from 0.22 for anxiety to 0.51 for stress).[64] Although studies have not yet examined the efficacy of online MBIs compared to in-person approaches, these preliminary findings are promising and warrant further research.

Summary: Efficacy of MBIs for Anxiety and Depression

Randomized-controlled trials comparing MBSR to active control conditions indicate that MBSR is moderately-to-largely effective at reducing anxiety and depression symptom severity among individuals with a broad range of medical and psychiatric conditions. The most comprehensive review to date [6] examined the effects of 209 trials of mindfulness-based interventions among 12,145 patients with a variety of disorders. The results indicated that MBIs are more effective in reducing psychological and medical symptom severity than waitlist, psychoeducation, supportive psychotherapy, relaxation training, and imagery or suppression techniques. Post-treatment effect sizes were largest for psychological outcomes, relative to physical or medical outcomes, with the strongest effects found for anxiety, followed by depression. These beneficial effects remained relatively stable after follow-up periods (ranging from 3 weeks to 3 years, with a median of 28 weeks), though the comparative effect sizes for MBI versus control treatment conditions diminished at follow-up.[6] Collectively, these results indicate that MBIs are more effective than non-evidence-based treatments in reducing anxiety and depression symptom severity among a broad range of treatment-seeking individuals. However, as noted by Dimidjian and Segal, [65] the field has been limited by a number of methodological gaps that restrict both the reach and relevance of the conclusions that can be drawn from the current literature.

Mindfulness in the Context of CBT

Mindfulness-based treatments and traditional (Beckian) CBT share many similar characteristics.[45] Both aim to reduce psychopathological suffering, and approach this goal with a combination of cognitive and behavioral therapeutic exercises. Both involve a desensitization of conditioned fear responses, though MBIs approach this effect through sustained attention, while traditional CBT directly focuses on severing the conditioned response through exposure-based processes.[66] Another key similarity between traditional CBT and MBIs is the directive to view one's internal phenomena (thoughts, feelings, sensations) as temporary and without inherent worth or meaning. Again, MBIs approach this process through simple observation, whereas traditional CBT involves directly challenging metacognitions about such phenomena.[67] Lastly, both treatments involve relaxation and improvements in self-modulatory efforts,[45] though it is unclear whether these effects are attributable to a specific treatment component, or simply engaging in a therapeutic process.

There are also key differences between mindfulness interventions and traditional CBT. Perhaps the most evident difference is the focus on accepting versus changing maladaptive cognitions. Although traditional CBT includes elements of both these directives, the overall aim of traditional CBT is to challenge automatic thoughts by holding them up to disconfirming evidence, and then to change them into different thoughts.[68] This "cognitive restructuring" process is antithetical to mindfulness principles, which encourage a complete lack of engagement with one's cognitive and emotional processes. Another key distinction is the degree to which each treatment is goal-oriented. CBT typically begins with the client identifying their primary treatment goals (e.g. improve mood, reduce maladaptive behaviors), and continues helping them strive toward these goals. Though clients seek mindfulness-based treatments for similar reasons, the therapeutic process involves little attention to such goals, instead cultivating a seemingly paradoxical attitude of non-striving.[45]

Despite these differences, the result of both approaches is ultimately quite similar: By changing one's perspective on unpleasant thoughts, feelings, or sensations, the individual comes to realize that these internal phenomena are not as dangerous or powerful as previously believed, and the cycle of maladaptive cognitions, emotions, and behaviors gradually weakens. As we will now discuss, these similarities may perhaps be responsible for the compatibility of mindfulness and cognitive-behavioral treatments.

Mindfulness as a Component of Cognitive-Behavioral Treatments

Before the widespread interest in mindfulness-specific treatments, mindfulness was included as a component of broader evidence-based interventions, such as dialectical behavior therapy (DBT), acceptance and commitment therapy (ACT), cognitive behavioral stress management, and integrative body–mind training.[4] Though these treatments focus on disparate clinical populations and symptoms, efficacy evidence for each suggests that mindfulness training is indeed a key beneficial component of these interventions.[69] We will briefly review the two most common therapies (DBT and ACT) and the role mindfulness plays in each.

DBT—Dialectical behavior therapy was developed by Marsha Linehan for the treatment of individuals with borderline personality disorder.[25] This multifaceted intervention is founded on the concept of a unified dialectic, essentially, the view that life is composed of opposing forces which must be simultaneously accepted to achieve beneficial change. Mindfulness is taught as a skill to help clients recognize and synthesize the key dialectic, namely the contrast between acceptance and change. Mindfulness skills taught in DBT are similar to those in MBSR, particularly the nonjudgmental observation of internal phenomena; however, the format in which these skills are taught differs considerably. Unlike MBSR, which prescribes a specific dose of meditative practice, mindfulness training is one of many skills taught throughout a year-long weekly skills group (other skills include interpersonal effectiveness, emotion regulation, and distress tolerance). Additionally, clients learn mindfulness through numerous exercises, rather than predominantly through meditation as in MBSR. These exercises include imagery practices (e.g. imagining the mind is a conveyor belt), breath-focused exercises (e.g. breath counting, coordinating breaths with footsteps), and various other exercises that encourage clients to practice mindfulness throughout daily tasks such as showering or doing the dishes.[25,45] Clients may choose which mindfulness exercises they wish to practice and when, which allows all individuals to benefit from mindfulness training regardless of their severity or willingness to meditate.[45]

ACT—Acceptance and commitment therapy was developed by Steve Hayes as a contemporary approach to general adult outpatient psychotherapy based in classic behavior-analytic principles.[26] ACT does not include meditation practices, and rarely uses the term ‘mindfulness’ in its treatment protocol, but the therapeutic strategies of ACT are practically identical to mindfulness skills as described in this review. For example, a core principle of ACT is the “observing self,” in which clients cultivate the ability to simply observe internal phenomena, without attaching to, evaluating, or attempting to change them. Clients attempt to see themselves as separate from their distressing thoughts, feelings, and sensations, and are encouraged to accept such phenomena as they are, while changing maladaptive behaviors to improve their lives.[26,45]

Summary

Mindfulness- and acceptance-based interventions – including DBT, ACT, MBSR, and MBCT – are examples of the so-called “third-wave” of cognitive-behavioral therapies.[70] After a contentious debate about the meaning, validity, and relevance of the term “third wave” [4,29] Two prominent representatives from both camps (Steven Hayes and Stefan Hofmann, who is also the first author of this article), recently joined forces based on the evidence and their shared beliefs and values. The result is a call to redirect clinical practice away from treating medical syndromes and toward focusing on processes and core competencies. Mindfulness-based interventions target one such process. A more detailed discussion of this can be found elsewhere.[31,32]

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Key Points

- Research on mindfulness-based interventions (MBIs) for anxiety and depression has increased exponentially in the past decade. The most common include Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT).
- MBIs have demonstrated efficacy in reducing anxiety and depression symptom severity in a broad range of treatment-seeking individuals.
- MBIs consistently outperform non-evidence-based treatments and active control conditions, such as health education, relaxation training, and supportive psychotherapy.
- MBIs also perform comparably to cognitive-behavioral therapy (CBT). The treatment principles of MBIs for anxiety and depression are compatible with those of standard CBT.