Mindfulness: A Promising Intervention Strategy in Need of Further Study

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Baer (2003; this issue) has provided a thoughtful conceptual and empirical review of mindfulness-based clinical interventions, emphasizing the need for further research. In this commentary we elaborate on some of the areas needing further study. The promising initial data suggest a need for basic experimental and treatment outcome research in order to determine active ingredients and mechanisms of action in mindfulness-based interventions. In addition, questions remain regarding the optimal mode of delivery of this treatment, as well as how to integrate the nonstriving aspect of mindfulness into clinical intervention.

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Recent treatment development efforts across a wide range of clinical disorders have begun to focus on mindfulness-based clinical interventions, both as stand-alone treatments (e.g., Kabat-Zinn, 1990; Segal, Williams, & Teasdale, 2002) and as aspects of integrative treatment approaches (e.g, Hayes, Strosahl, & Wilson, 1999; Linehan, 1993a; Marlatt & Gordon, 1985). Thus, Baer's (2003; this issue) thoughtful conceptual and empirical review of mindfulness training as a clinical intervention is certainly timely. Baer's review serves as an extremely useful starting point for our continued investigation of this seemingly promising intervention strategy, through both basic experimental and treatment outcome studies. As she notes, although initial efficacy data are encouraging, more research is needed to determine the specific effects of mindfulness on a variety of outcome measures, as well as the underlying mechanisms of action. Further, an investigation of the optimal form of delivering this intervention (or at least the advantages and disadvantages of different forms of delivery, such as stand-alone versus integrative treatments) is warranted.

Our interest in this topic comes from our current treatment development efforts, in which we are integrating mindfulness and acceptance elements into existing cognitive-behavioral treatments for generalized anxiety disorder (GAD; Roemer & Orsillo, 2002, Orsillo, Roemer, & Barlow, in press) and posttraumatic stress disorder (Orsillo & Batten, in press) to potentially improve efficacy. Our work draws somewhat on Kabat-Zinn's (1990) mindfulness-based stress reduction (MBSR) treatment, but also on other integrative treatments, such as Hayes and colleagues' (1999) acceptance and commitment therapy (ACT) and Linehan's (1993a, 1993b) dialectical behavior therapy (DBT), in addition to Borkovec's cognitive-behavioral treatment of GAD (Borkovec, Alcaine, & Behar, in press). Thus, we use Baer's review as a starting point to raise and expand on some of the questions that have arisen for us as we consider mindfulness as a clinical intervention.

WHAT WORKS IN MINDFULNESS-BASED INTERVENTIONS, HOW DOES IT WORK, AND IS IT NEW?

As Baer notes, although the current state of the literature suggests that mindfulness interventions may have beneficial effects on a range of mental health problems, dismantling and randomized controlled studies are needed to further support and elucidate these findings. In particular, it will be important to focus on isolating the active ingredients in these interventions and on identifying mechanisms of action. Baer notes that integrative treatments such as ACT and DBT need to be dismantled, but even interventions in which mindfulness is predominant may include additional active ingredients. For instance, although Baer includes mindfulness-based cognitive therapy (MBCT; Segal et al., 2002) as a mindfulness intervention (and clearly this intervention focuses heavily on mindfulness training), the authors describe it as an integrative therapy that includes cognitive-behavioral elements (Segal et al., 2002), some of which may be active ingredients. In MBCT therapists encourage clients to "intentionally face and move into difficulties or discomfort" (Teasdale et al., 2000, p. 618), which might be construed as exposure instructions (e.g., Barlow & Craske, 2000, Foa & Rothbaum, 1998). MBCT also includes an element called "pleasant events awareness" (Se-

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gal et al., 2002), which may be similar to behavioral activation and pleasant-events scheduling (Jacobson, Martell, & Dimidjian, 2001, Lewinsohn & Gotlib, 1995).

Isolation of active ingredients in an intervention is intricately linked to questions regarding mechanisms of action. Baer's thoughtful discussion of the potential mechanisms underlying mindfulness as a clinical intervention implicitly raises the issue of whether mindfulness adds something unique to existing cognitive-behavioral interventions.

Several of the mechanisms Baer reviews highlight both similarities and potential differences between mindfulness interventions and existing cognitive-behavioral interventions. For instance, she notes that mindfulness may be associated with relaxation effects, although mindfulness is not particularly aimed at reducing stress (and in fact includes nonjudgmental awareness of internal states of discomfort). A recent study compared EEGs of individuals trained in relaxation, concentrative meditation, and mindfulness meditation and found statistically reliable differences in EEG patterns, with mindfulness meditation associated with less slow wave activity and more fast wave activity than relaxation was (Dunn, Hartigan, & Mikulas, 1999). Nonetheless, studies are needed to determine whether the psychological effects of mindfulness are distinct from those of relaxation.

Mindfulness interventions also seem to be associated with cognitive change, although the nature of these changes may be different from those typically associated with cognitive therapy (CT). As both Baer (2003) and Segal and colleagues (2002) note, cognitive therapy typically focuses on changing the *content* of (particularly "irrational") cognitions (although some newer cognitive approaches focus on cognitive processes rather than content, e.g., Wells, 2000). On the other hand, mindfulness approaches focus on changing one's *relationship to* one's thoughts and feelings, encouraging the viewing of thoughts as thoughts rather than as reality (Teasdale et al., 2002; Segal et al., 2002). This approach is similar to Hayes and colleagues' (1999) concept of cognitive defusion, in which the emphasis is on changing the context or relationship to mental activity, not the content of the mental activity itself. Process and outcome research aimed at testing these theories is needed, because changes in context may also result in content changes or vice versa. For example, Teasdale and colleagues (2002) found that both MBCT and cognitive therapy (CT) were associated with increases in "metacognitive awareness," defined as one's decentered relationship to one's thoughts and feelings while recounting an autobiographical memory. These findings suggest that this type of contextual shift may not be unique to mindfulness-based approaches, although more research is clearly needed in this area.

Baer and others (e.g., Kabat-Zinn et al., 1992; Linehan, 1993a, 1993b) have highlighted the possible role of exposure in the efficacy of mindfulness, in that a mindfulness stance encourages exposure to internal emotional and physiological states (similar to interoceptive exposure; Barlow & Craske, 2000, but without intentionally creating these states). Although the stated goal of mindfulness is different, in that clients are *not* encouraged to expect their distress to reduce or extinguish as a result of this exposure, it may be that similar mechanisms are at work. The specific and unique contribution of encouraging clients to "let go" of their efforts to "feel better" deserves further study, given recent theory and research highlighting the potential difficulties associated with attempts to control one's internal experience (e.g., Hayes et al., 1999; Wegner, 1994).

This nonjudgmental, accepting stance toward internal experience is considered a foundational aspect of mindfulness interventions (Baer, 2003) and seems more explicitly integrated into these approaches than it is into traditional cognitive-behavioral treatments, which often include elements of experiential control, rather than acceptance. Nonetheless, such a stance may also be an implicit element of exposure (e.g., in interoceptive exposure clients are encouraged to fully experience their anxiety symptoms and discouraged from attempts to control them [Barlow & Craske, 2000], and a similar emphasis on emotional engagement is inherent in prolonged exposure [Foa & Rothbaum, 1998] and other exposure-based treatments for posttraumatic stress disorder). It remains to be seen whether acceptance is an active ingredient in these interventions. To date, no published basic experimental research has explored the effects of acceptance in order to determine whether in fact it is beneficial (although its utility has long been incorporated in clinical theory, e.g., Greenberg & Safran, 1987; Rogers, 1961). Some studies have demonstrated negative effects of nonacceptance, or efforts to control one's internal experience (e.g., Wegner, 1994), but even studies of the clinical relevance of mental control yield inconsistent findings (see Purdon, 1999, for a review). However, recent unpublished experimental studies have begun to suggest some promising effects for accept-

ance. For example, Heffner and colleagues (2000) found that participants who received acceptance instructions demonstrated less avoidance behavior and subjective discomfort during a CO_2 challenge and were more willing to participate in a similar study again than were participants who received either control instructions or no instructions. Thus, there is a substantial need for both clinical and experimental studies that explore the effects of nonjudgmental awareness or acceptance in a controlled manner.

Mindfulness is also characterized by attention-to--present-moment experience, rather than past events or future fears, which may be a critical mechanism of change. Cognitive-behavioral interventions similarly teach clients to attend to their current experiences, although the nature of this attention tends to be more structured (for instance, testing beliefs or monitoring anxious responses), whereas mindfulness encourages a more general stance of nonjudgmental awareness. Baer (2003) suggests that this present-moment awareness may facilitate self-management in that individuals may be more likely to use a range of coping skills as a result of being more self-aware (similar to the rationale commonly given for self-monitoring). Relatedly, this exclusive focus on present-moment experience may facilitate adaptive, flexible responding to environmental contingencies, as opposed to more rigid, rule-governed (e.g., Hayes et al., 1999) patterns of responding that are not based in current circumstances (Borkovec, 2002; Kabat-Zinn, 1994).

This review of potential mechanisms of change in mindfulness interventions (e.g., relaxation, cognitive change, exposure, acceptance, present-moment attention) brings to light the multifaceted nature of mindfulness itself, suggesting it may be beneficial to dismantle it and study the effects of each aspect (in addition to dismantling the complex protocols that include it). Mindfulness includes attention to present internal (and external) experience, (implicit) normalization of negative thoughts and feelings, deep breathing (which typically accompanies mindfulness exercises), and a nonjudgmental stance (which itself may have two components—decentering (Segal et al., 2002) or defusion (Hayes et al., 1999) of cognitive content and an attitude of acceptance or compassion toward oneself and one's experience [e.g., "kindly awareness," Segal et al. (2002)]. Any or all of these elements may contribute to the clinical effects of these interventions. For instance, deep breathing may increase parasympathetic activity and vagal tone, thus facilitating attention and affect regulation (Thayer, Friedman, Borkovec, Johnsen, & Molina, 2000). Also, as noted, attention to present-moment experience is similar to some aspects of self-monitoring, which may be an active ingredient in cognitive-behavioral treatments (Korotitsch & Nelson-Gray, 1999). The potential therapeutic effects of acceptance and decentering already have been discussed.

THE EFFECTS OF MINDFULNESS

Baer notes that one of the challenges in subjecting mindfulness approaches to empirical study is operationalizing the expected effects of mindfulness. In some ways this challenge extends beyond mindfulness in that the importance of identifying broader, less symptom-based, measures of clinical functioning has become evident throughout the field (e.g., Gladis, Gosch, Dishuk, & Crits-Christoph, 1999). Given that symptom reduction (the typical outcome assessed in efficacy studies) is explicitly not the target of mindfulness interventions, it will be particularly important to explore the impact of this intervention on measures of functioning and quality of life.

In addition, it will be important to determine whether mindfulness training alters one's relationship to one's thoughts, feelings and symptoms, the stated target of this intervention. This is a challenging dependent measure to operationalize. One can assess an individual's *beliefs* about thoughts, feelings, and symptoms through a variety of self-report measures (e.g., the MetaCognition Questionnaire [Cartwright-Hatton & Wells, 1997]; the Acceptance and Action Questionnaire [Hayes et al., 2003]; the Anxiety Sensitivity Index; [Peterson & Reiss, 1992]; the Affective Control Scale [Williams, Chambless, & Ahrens, 1997]). We are using this approach in our treatment development work and have found preliminary evidence that our integrative treatment increases reports of experiential acceptance (Orsillo et al., in press). However, as Teasdale and colleagues (2002) note, the target of mindfulness is one's *experience* of thoughts as thoughts and feelings as feelings, rather than one's *beliefs* that thoughts are thoughts. As such, these researchers developed the Measure of Awareness and Coping and Autobiographical Memory and used it to have raters code participants' relationships to their own thoughts and feelings after listening to them recount autobiographical vignettes. As noted, they found that both CT and MBCT increased metacognitive awareness. Future research focused on developing similarly innovative assessments of metacognitive (and emotional) awareness and experiential

acceptance, along with studies that explore the effects of mindfulness on these constructs, will increase our understanding of the effects and mechanisms of this approach.

Another outcome that may be particularly useful to explore is emotion regulation or emotional flexibility. Linehan (1994) suggests that mindfulness improves distress tolerance, and Kabat-Zinn (1990) suggests that a mindful response is distinct from a stress reaction in that an individual may experience arousal but he or she is aware of the full context and therefore is able to return to a state of equilibrium more rapidly. Thus, researchers suggest that one outcome of mindfulness is improved emotion regulation. It is important to distinguish emotion regulation from emotional control in this context: As noted, mindfulness is not necessarily expected to reduce distress in the moment; in fact awareness may increase distress by precluding avoidance. However, nonjudgmental acceptance and decentering are expected to help one respond to the emotional content of a given context and recover from that response more quickly than an individual who is unable to see the larger context. Thus, studies that specifically explore the impact of mindfulness on emotional flexibility (i.e., experiencing emotions and recovering from those emotional responses) may be beneficial. The association between heart rate variability and emotion/affect regulation (Porges, 1991) and findings that reduced heart rate variability is associated with several clinical disorders (e.g., generalized anxiety disorder, panic disorder, obsessive-compulsive disorder; see Barlow, 2002, for a review) suggest that this may be a promising dependent variable for this area of research.

Similar to the emotional flexibility thought to result from mindfulness, cognitive flexibility may be an important outcome (and mechanism) to explore more fully. Williams, Teasdale, Segal, and Soulsby (2000) explored the impact of MBCT on overgeneral autobiographical memory deficits and found that individuals who received MBCT recounted more specific autobiographical memories than the treatment-as-usual comparison group. These authors conclude that MBCT can alter the trait-like avoidant style of cognitive processing that typically characterizes individuals with recurrent depression. This conclusion suggests that rigid cognitive patterns may be altered by mindfulness interventions. Similarly, using Langer's definition of mindfulness, which differs from the one used here but does overlap in some ways as noted by Baer (2003), Alexander and colleagues (1989) found that both transcendental meditation and mindfulness were associated with increased cognitive flexibility (as measured by lower Stroop interference scores) in comparison to relaxation and no-treatment conditions. It will be important to replicate these findings, operationalizing mindfulness in a way that is more consistent with the definition used clinically; nonetheless, these findings do suggest that mindfulness may affect cognitive flexibility, which could have clinical relevance. Further, Borkovec (2002) has recently suggested that present-moment awareness (i.e., mindfulness) may enhance behavioral flexibility, particularly adaptive responding based on actual, rather than imagined, contingencies: a proposal that also merits empirical study.

One of the challenges in exploring the effects and mechanisms of mindfulness is the difficulties inherent in trying to reproduce mindfulness or nonjudgmental acceptance in the laboratory. Clearly this is a response that requires extensive training and practice, so it is difficult to devise a way of experimentally manipulating it in a more controlled environment. Nonetheless, some studies have taken advantage of clinical trials and included assessments of these potential mechanisms pre- and posttreatment (e.g., Teasdale et al., 2002; Williams et al., 2000), whereas others have randomly assigned participants to extensive training conditions in order to explore the effects of mindfulness (e.g., Alexander et al., 1989; Dunn et al., 1999). More studies of this nature are clearly needed in order to increase the field's understanding of the mechanisms and effects of this potentially useful intervention.

THE OPTIMAL FORM OF DELIVERY

In addition to questions regarding specific efficacy, mechanisms of change, and associated outcomes, many questions remain regarding the optimal form of delivery of mindfulness interventions. Some approaches have focused heavily (almost exclusively) on mindfulness techniques, using therapy sessions for extensive mindfulness practice (e.g., 45-min body scans, an 8-hr mindfulness session) and assigning extensive homework, such as 6 days of 45 min of mindfulness practice a week (e.g., Kabat-Zinn, 1990; Segal et al., 2002) Other approaches have included briefer mindfulness exercises within the context of a range of other interventions, with less clearly prescribed amounts of mindfulness practice between sessions (Hayes et al., 1999; Linehan, 1993a, 1993b). Although these two approaches clearly share many of the same emphases and goals (e.g., nonjudgmental acceptance, increased awareness), they differ

substantially in the sheer amount of time devoted to mindfulness. Research is needed to determine the costs and benefits of these differences. Mindfulness is clearly a difficult approach to master; integrative treatments may face challenges due to the breadth of material being covered in addition to mindfulness. On the other hand, an exclusive focus on mindfulness may preclude other important elements of treatment. For instance, as noted, Baer (2003) suggests that mindfulness may facilitate the use of coping skills or attention to environmental contingencies that facilitate behavior change. Although such changes may in fact naturally evolve from mindful practice, behavior change may be facilitated by therapeutic interventions directly aimed at change (such as the skills training incorporated in DBT or the focus on acting in ways consistent with one's values incorporated into ACT). Further, Linehan (1994) notes that some individuals may not be able to meditate for the duration prescribed in MBSR; more flexible applications of mindfulness may be needed for more distressed clients, although this is also an empirical question. Finally, although Baer (2003) reviews data suggesting that many clients treated with MBSR continue to meditate in some form after treatment ends, the data cited indicate that, for most, the frequency declines substantially (from the daily, 45-min practice during treatment), despite maintenance of symptomatic gains. For instance, of the 75% of participants in Kabat-Zinn, Lipworth, Burney, & Sellers (1987) who still meditated, only 43% did so regularly (> three times per week), while the rest either meditated briefly (<15 min at a time) or infrequently (two or fewer times per week), or both. This finding might suggest that less intensive practice still has effects, or it may be that more intensive practice is helpful initially, but not necessary over time.

Another important question regarding the form of delivery of mindfulness training is the role of outside sources of mindfulness practice in psychological interventions. In the treatment of depression, therapists often recommend, or even prescribe, exercise as an important element of treatment; however, clients do not typically exercise within the context of therapy. As external contexts for mindfulness practice (e.g., meditation retreats, meditation classes or groups, yoga or tai chi classes) are more and more common, it will be worth exploring whether clients can effectively use these contexts to support their experiences in therapy. An advantage to explicitly including such outside contexts is that clients can continue their practice with external support after therapy has concluded, which may have implications for the maintenance of therapeutic effects.

HOW TO INCORPORATE "NONSTRIVING" IN CLINICAL INTERVENTIONS

In addition to these empirical questions, clinical questions also arise when one considers mindfulness training as an intervention, one of which we would like to mention here. As Baer (2003) notes, mindfulness is associated with nonstriving. Thus, mindfulness practice is not engaged in with any particular goal in mind. However, clients attend psychotherapy with very explicit goals, most commonly goals that are quite contrary to mindfulness practice (e.g., to feel better, stop worrying, relax more, not get so angry). Cognitive-behavioral approaches typically outline goals for therapy and often include assessment of progress toward these goals. How does one integrate these seemingly contradictory contexts? Segal and colleagues (2002) suggest balancing helping a client "let go" of expectations for change with encouraging him or her to be willing to believe that mindfulness may in fact result in important changes. Hayes and colleagues (1999) begin their therapy by directly challenging the change agenda that clients typically bring to therapy (instilling a sense of "creative hopelessness") but also include a focus on action in valued directions, which is clearly contrary to nonstriving. Linehan (1993a) openly acknowledges the acceptance-and-change dialectic, encouraging clients to find the synthesis between these two apparently paradoxical tensions. As mindfulness becomes a more common element in psychotherapy approaches, more attention is needed to determine the optimal ways of developing a collaborative relationship with clients that incorporates the nonstriving aspect of mindfulness (or alters it somewhat to fit the context of psychotherapy).

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