

Mindfulness-based psychotherapies: a review of conceptual foundations, empirical evidence and practical considerations

Melbourne Academic Mindfulness Interest Group*

Objective: This paper, composed by an interest group of clinicians and researchers based in Melbourne, presents some background to the practice of mindfulness-based therapies as relevant to the general professional reader. We address the empirical evidence for these therapies, the principles through which they might operate, some practical questions facing those wishing to commence practice in this area or to refer patients into mindfulness-based therapies, and some considerations relevant to the conduct and interpretation of research into the therapeutic application of mindfulness.

Method: Databases (e.g. PsycINFO, MEDLINE) were searched for literature on the impact of mindfulness interventions, and the psychological and biological mechanisms that underpin the effects of mindfulness practice. This paper also draws upon the clinical experience of the author group.

Results: Mindfulness practice and principles have their origins in many contemplative and philosophical traditions but individuals can effectively adopt the training and practice of mindfulness in the absence of such traditions or vocabulary. A recent surge of interest regarding mindfulness in therapeutic techniques can be attributed to the publication of some well-designed empirical evaluations of mindfulness-based cognitive therapy. Arising from this as well as a broader history of clinical integration of mindfulness and Western psychotherapies, a growing number of clinicians have interest and enthusiasm to learn the techniques of mindfulness and to integrate them into their therapeutic work. This review highlights the importance of accurate professional awareness and understanding of mindfulness and its therapeutic applications.

Conclusions: The theoretical and empirical literatures on therapeutic applications of mindfulness are in states of significant growth and development. This group suggests, based on this review, that the combination of some well-developed conceptual models for the therapeutic action of mindfulness and a developing empirical base, justifies a degree of optimism that mindfulness-based approaches will become helpful strategies to offer in the care of patients with a wide range of mental and physical health problems.

Key words: cognitive therapy, depression, meditation, mindfulness, psychotherapy, stress.

Australian and New Zealand Journal of Psychiatry 2006; 40:285–294

*The Melbourne Academic Mindfulness Interest Group is a collaborative interest group comprising academic staff from Monash University and the University of Melbourne. Members who contributed to this paper are:

Nicholas B. Allen, Associate Professor/Principal Research Fellow (Correspondence); Richard Chambers, research student (Department of Psychology); Wendy Knight, Research Fellow

ORYGEN Research Centre, University of Melbourne, Locked Bag 10, Parkville, Victoria 3052, Australia. Email: nba@unimelb.edu.au

Grant Blashki, General Practitioner and Senior Research Fellow; Lisa Ciechomski, Research Fellow; Craig Hassed, Senior Lecturer

Department of General Practice, School of Primary Health Care, Monash University, Melbourne, Australia

Eleonora Gullone, Associate Professor; Catharine McNab, Research Fellow; Graham Meadows, Professor

School of Psychology, Psychiatry, and Psychological Medicine, Monash University, Melbourne, Australia

Received 20 April 2005; revised 5 October 2005; accepted 6 October 2005.

In the last decade there has been increased interest in 'mindfulness', with a growing number of clinicians demonstrating an enthusiasm to learn the techniques of mindfulness and to integrate them into their therapeutic work. The concept of mindfulness has its origins in many contemplative, cultural and philosophical traditions. Buddhism, for instance, contains extensive instructions on mindfulness principles and practice, but the training and practice of mindfulness can be effectively adopted by individuals in the absence of any particular philosophical, religious or cultural tradition or vocabulary [1]. The scientific community first became seriously interested in the clinical applications of meditative and contemplative practices in the 1970s, particularly after some of the pioneering work of Herbert Benson on the 'Relaxation Response' [2]. In the Australian context, in the 1970s Ainslie Meares was among the first to bring meditation to the attention of clinicians and psychotherapists, particularly for its applications in pain control, anxiety and cancer management. In more recent times, the work of Jon Kabat-Zinn has brought attention to the clinical and psychotherapeutic applications of mindfulness. Although it would seem that many of the principles and practices associated with mindfulness are widespread, belonging exclusively to no specific culture, historical period or tradition, given that recent developments have emphasized mindfulness-based approaches, this article will focus its attention on this tradition rather than trying to encompass, compare and contrast the many variations of meditative practices.

Mindfulness involves 'paying attention in a particular way: on purpose, in the present moment, and non-judgementally' [3, p.4]. It refers to the cultivation of conscious awareness and attention on a moment-to-moment basis. The quality of awareness sought by mindfulness practice includes openness or receptiveness, curiosity and a non-judgemental attitude. An emphasis is placed on seeing and accepting things as they are without trying to change them. Mindfulness is contrasted with habitual mental functioning, or 'being on automatic pilot'. Mindfulness is not primarily a goal-directed activity despite the fact that the practice does have its secondary effects. For example, although mindfulness may bring about relaxation, it is not primarily a 'relaxation exercise' in that bringing non-judgemental awareness to the state of body and mind is the practice without any expectation of results, no matter how desirable those results might be.

Mindfulness can be cultivated by a variety of techniques, all of which have a meditative component. As well as formal mindfulness meditation (normally a period of sitting or lying meditation), these techniques include mindfulness of movement (incorporating both yoga and 'mindful walking') and brief periods of 'mini-

meditation' throughout the day. They also incorporate the concept of everyday mindfulness (i.e. being aware and in the present moment as much as possible, even during such seemingly mundane tasks as brushing one's teeth).

Over the last 25 years, mindfulness training has been incorporated into hospital clinics and community settings offering pain management and stress reduction programmes (e.g. Mindfulness-Based Stress Reduction or MBSR: [4]). It is a central component of dialectical behaviour therapy (DBT), applied in the treatment of borderline personality disorder [5], and of acceptance and commitment therapy (ACT), an intervention with broad applications ranging from formal psychiatric disorders to 'low life satisfaction' [6]. Other documented applications of mindfulness training include reductions in levels of anxiety [7] and of disordered eating [8].

A recent surge of interest regarding mindfulness in therapeutic techniques can be attributed to the publication of some well-designed empirical evaluations (e.g. [9,10]). of mindfulness-based cognitive therapy (MBCT), a group-based intervention designed to prevent depressive relapse [11]. Despite these promising developments there is a risk that mindfulness-based techniques might be misunderstood or inappropriately applied. Indeed, Kabat-Zinn [12, p.145] warns against mindfulness being 'seized upon as the next promising cognitive behavioural technique or exercise'.

This paper presents some background to the practice of mindfulness-based therapies as relevant to the general professional reader. We will address the empirical evidence for these therapies, the principles through which they might operate, some practical issues facing those wishing to commence practice in this area or to refer patients into mindfulness-based therapies and some considerations relevant to the conduct and interpretation of research into the therapeutic application of mindfulness. A review of these issues seems a timely contribution to the development of a properly informed professional awareness and understanding of mindfulness and its therapeutic applications.

The research agenda regarding mindfulness practice

Below we review three aspects of academic and research activity relating to mindfulness. The first is literature addressing the effectiveness of mindfulness interventions. The second is the literature on the psychological and biological mechanisms that might underpin the changes observed as a result of mindfulness practice. The third is on the potential adverse consequences of these approaches.

Outcome studies based on mindfulness interventions

There are at present few well-designed studies on the effectiveness of mindfulness interventions for mental health problems. Many studies in the area suffer from a lack of an adequate control group, small sample sizes, inadequate evaluation of the integrity of the treatment [13] and unmeasured compliance. Given this relative immaturity of the literature, attempting a fully systematic review is premature; however, given the positive findings thus far, there is room for cautious optimism. We will present an overview of the more important empirical findings to date.

Among the earliest empirical studies evaluating the efficacy of mindfulness are studies of interventions dealing with chronic pain. Several intervention studies have shown statistically significant improvement in ratings of pain and general psychological symptoms, gains also found to be maintained at follow-up evaluations [14–17].

The use of mindfulness in working with the psychological and physical correlates of some medical conditions has also been reported. Speca *et al.* [18] investigated the effects of MBSR in a group of cancer patients and found a significant reduction in mood disturbance and stress levels. Mills and Allen [19] investigated 'mindfulness of movement' in people with multiple sclerosis and concluded that training in mindfulness may offer people with MS a self-help method of symptom management that can minimize physical and psychological dysfunction. Reibel *et al.* [20] studied the effects of MBSR on a group of medical patients with varied diagnoses (both medical and psychological) and found significant improvements in both medical and psychological symptoms.

In addition to decreasing symptoms in clinical samples, mindfulness practice has been found to improve wellbeing in some community-based samples. For example, student populations who completed an MBSR programme reported significant improvements in psychological symptoms, empathy ratings and spiritual experiences compared with waiting list control groups, [21,22] and community volunteers who had been taught MBSR reported significant improvements in medical and psychological symptoms [23].

Mindfulness practice has been incorporated into interventions addressing a range of mental health conditions including anxiety and other internalizing disorders. One such study conducted by Kutz *et al.* [24] investigated the effect of MBSR on a group of people with long-term anxiety and obsessive neuroses, as well as personality disorders. They showed significant improvements in self-rated and therapist-rated symptoms. Kabat-Zinn *et al.* [7] utilized the MBSR programme based on mindfulness

meditation for patients with anxiety disorders and found a reduction in the levels of anxiety and panic during the course and over a 3-month follow-up period. In a 3-year follow-up study, it was found that the treatment gains had been maintained. The limitations of this study were that there was no randomly selected control group and the sample size was small ($n = 22$). In another pilot study, the effects of MBSR were examined for 18 women diagnosed with binge eating disorder; with statistically significant reduction in mean frequency of binge episodes from a mean of 4 per week to 1.6 per week [8].

More recently, the effects of an 8-week course in MBSR were examined for adults with a lifetime diagnosis of mood disorder [25]. There were significant reductions in ruminative tendencies, specifically in the areas of brooding and reflection, for the MBSR participants compared with a waiting list group.

Teasdale *et al.* [9], in a controlled study, evaluated the effect of MBCT in a group of recurrently depressed individuals in remission. The MBCT programme is designed to reduce depressive relapse rates, partly through training participants to disengage from dysphoria-activated negative rumination. The study took place over 60 weeks, with the first 8 weeks involving participation in the MBCT course. Forty per cent of the intent-to-treat MBCT group and 66% of the treatment as usual group experienced a relapse/recurrence over the 1-year follow-up, a 39% reduction and a medium effect size. For reasons which are still not entirely clear, these effects were restricted to participants with three previous depressive episodes (i.e. 105/137 of the intent-to-treat sample and 99/128 of the per-protocol sample). For participants with only two or fewer previous episodes, MBCT did not reduce relapse/recurrence. These findings have recently been confirmed by a replication study [10].

In summary, it seems that mindfulness may be a valid treatment option for conditions such as anxiety, stress, chronic pain, and eating and affective disorders as well as being an adjunctive treatment for other physical health conditions and behaviour change interventions. There is presently little indication for its use in psychosis. Thus, meditative interventions may be relatively contraindicated or at least require caution in this setting as will be discussed later.

Mechanisms that underpin the effects of mindfulness practice

In contemporary research and psychological theory, understanding the psychological and biological mechanisms by which mindfulness interventions achieve their effects is more conceptually challenging than reporting

on empirical studies of their efficacy. Indeed, for many established techniques within medicine and psychiatry, a comprehensive understanding of relevant mechanisms is yet to be achieved. Nevertheless, the developing body of literature exploring potential mechanisms is important to review as it provides a basis for prioritizing the exploration of the further application of these techniques, as well as highlighting important gaps in our current understanding.

Psychological mechanisms

The statement that mindfulness involves ‘paying attention in a particular way: on purpose, in the present moment, and non-judgementally’ ([3], p.4) is frequently quoted in the literature. It concisely summarizes some of the key psychological processes proposed to underlie the therapeutic actions of mindfulness, and so we will use this statement as a framework for exploring these mechanisms.

Paying attention in a particular way. Paying attention in a particular way first requires being aware of the way in which attention is being paid, that is, monitoring the focus of attention. Within cognitive psychology the process of the monitoring of thought processes, which includes monitoring the focus of attention, is termed ‘metacognition’. This monitoring is a necessary condition for active direction of attention, but may also have benefits of its own. Metacognitive processes permit the development of a ‘decentering’ from thought, such that thoughts are understood as transient mental events rather than necessarily direct representations of reality, leading to a form of metacognitive insight [26–29].

Paying attention on purpose and in the present moment. This form of attention includes purposive direction of attention to present moment experience. Practising the habit of maintaining a present-moment attentional stance may enhance awareness of diversions from this stance. Rumination or imagery relating to past and future may be identified more promptly and reliably, potentially with a resulting increased sense of mastery over attentional processes. Mindfulness may provide benefits not only by encouraging the bringing of attention back to the present moment, but also by allowing the present moment experience to fill the ‘attentional workspace’ so that the tendency for attention to wander from the present moment is reduced.

Mindfulness interventions do recognize that cognitive processing of past and future experiences has important functions. However, the worries and concerns that are

common features of neurotic states are rarely of long-term utility and usually maintain or intensify psychopathology. Training in mindfulness emphasizes a reduction in rumination as a problem-solving technique, initiating a shift away from goal-based processing [26,30] and inhibiting unnecessarily elaborative processing [26].

Paying attention in the present moment encompasses being able to maintain that focus, whatever may arise. This includes paying attention to negative affect, physical sensations, or distressing thoughts and images when these emerge. This stands in contrast to experiential avoidance of, or distraction from, distressing experience. Such avoidance or distraction, when related to a transient stressor may be an appropriate and effective response, but is a maladaptive response to more prolonged pain or severe distress. Consistent with this, evidence suggests that attempts to control cognition and affect, such as thought suppression and avoidant coping, generally predict poorer long-term outcome (see [31] for a brief review). This reduction in avoidance of, and reactivity to, ‘negative’ affect and cognition allows for exposure to, and acceptance of, these experiences [7,14,29,30,32–35]. The term ‘acceptance’ here should not to be equated with ‘resignation’, but rather a reduction in the degree to which the experience is evaluated and suppressed [36]. This desensitization mechanism decreases negative affect and may improve psychological health [22,37].

Paying attention non-judgementally. A proposed mechanism involved in the benefits of mindfulness practice is the erosion of the use of literal, evaluative language [38,39]. Being judgemental of one’s experiences is seen as having a tendency to amplify their effects. Rather than evaluating our cognitive and emotional experiences, mindfulness teaches us to simply notice them. Through reducing habitual tendencies to dichotomously categorize experience, mindfulness is seen as enhancing the available range and adaptability of cognitive and behavioural actions [39]. This enhanced ‘cognitive flexibility’ [40] increases openness to experience, and reduces the tendency to label some experiences as ‘the enemy’. This non-judgemental philosophy assists people with their difficulties in the practice.

Differences between cognitive therapy and mindfulness-based approaches. Although some mindfulness-based interventions operate in a similar manner to traditional cognitive-behavioural approaches, by focusing on decentering from thought (‘thought does not equal reality’), differences emerge when we consider responses to specific cognitions. Mindfulness-based approaches generally do not encourage the disputation of ‘dysfunctional’ cognition. As such, mindfulness

approaches aim to change cognitive processes, rather than content [36]. Although there are increasing suggestions that changing cognitive processes, rather than content, is also the critical factor responsible for the gains seen in cognitive therapy [41], at present, the approaches somewhat diverge over this point.

Empirical data on psychological factors of mindfulness. The proposed mechanisms for clinical action of mindfulness-based approaches have so far received only limited experimental study. In a study on MBCT and autobiographical memory, participants completing an MBCT course demonstrated a reduction in overgeneral autobiographical memory [42]. This refers to a style of thinking about one's own life that tends towards overgeneralized judgements (i.e. my childhood was terrible/wonderful), rather than more detailed and nuanced recollections (i.e. during my childhood I did not get on well with my father, but I had excellent friends). Furthermore, overgeneralized autobiographical memory is believed to be a trait-like characteristic of depressed individuals that contributes to vulnerability to depressed states. It may be that mindfulness training is able to help participants to be more aware of all the aspects of their personal recollections, rather than simply giving attention to the most emotionally salient ones, resulting in a lower likelihood of focusing on perceptions of personal failure and hopelessness that often lead to depression. In a recently completed study of the effects of participation in a 10-day mindfulness retreat on cognitive functioning and affective symptoms, those completing the retreat showed significant decreases in depressive symptoms. Increases in self-rated mindful awareness, sustained attention and working memory were greater for participants of the retreat when compared with a control group [(Chambers R, Allen NB, Lo B. The effects of mindfulness [vipassana] meditation on executive function, metacognitive processing, and affect: Manuscript in preparation available from the authors)]. Further, it appeared that improvements in working memory mediated the impact of the intervention on mindful awareness. These findings offer preliminary support for the role of a range of cognitive changes, most specifically improvements in metacognitive awareness and executive cognitive functions, in the effects of mindfulness on health and wellbeing.

Biological mechanisms

In terms of establishing an understanding of mindfulness, it is important to see if psychological changes also correlate with physiological and biochemical ones.

Although current evidence is still limited, some interesting correlations are being found. Davidson *et al.* [37] carried out a randomized controlled study with novice meditators who completed the 8-week MBSR course. The MBSR group demonstrated an increase in left-side activation of the anterior cortex and an increase in antibody titre at 4- and 8-week assessments post-vaccination compared with the control group. Left-side activation in the anterior cortical region is observed during certain forms of positive emotional expression and is generally underactive in depressed persons [43,44]. These findings suggest that MBCT may influence depression-related physiology in vulnerable individuals. In a further demonstration of this possibility, a recent study comparing Buddhist monks, who were highly experienced meditation practitioners, with non-meditator controls found that while engaging in a form of compassion meditation, the experienced practitioners produced much greater sustained electroencephalographic (EEG) gamma-band oscillations and phase-synchrony [45]. Such changes in the EEG suggest that the neural activity of the experienced practitioners is unusually coordinated during this meditative state.

Potential adverse consequences of meditative practices

In meditation-based therapies, as with any therapeutic technique, significant benefit may not reasonably be expected without some potential cost and/or risk to the patient. Because the literature on the adverse consequences of mindfulness is currently very limited, the discussion will be broadened to include studies on other forms of meditation which may be of relevance to mindfulness.

Time investment and associated opportunity costs

One manifest requirement of meditation is the allocation of time to practice. Programmes differ in the recommended time for practice. The minimum commitment needed to attain specific benefits are generally unknown; however, the suggestion to take up a practice of around 45 minutes a day is not uncommon. This otherwise substantial time onus of meditation practice is arguably mitigated by the facts that it can be practised outside therapeutic sessions and the daily commitment is not added to by the further time or financial burden of travel. Also, some have reported that the direct time costs of meditation practice are compensated for by such benefits as improved efficiency [46,47] and sleep quality [48–50].

Exacerbation of psychiatric symptoms

Some case reports and a small amount of empirical data are available on possible negative consequences of meditation generally, though little specifically in the therapeutic context. Much of the literature examining adverse consequences is related to transcendental meditation (TM), a form of meditation in which attention is focused upon a mantra (a mentally repeated word or phrase), with other experiences such as distracting thoughts and uncomfortable emotions dealt with in a way that has some similarities to mindfulness practice. Transcendental meditation and mindfulness diverge in that the latter uses 'one-pointed awareness' as a precursor to an attentive awareness of all experience [51]. Nevertheless, TM and mindfulness practice have in common at least the use of regular periods of sitting and introspection, so findings on adverse events emerging from TM may in many ways be informative.

Many side-effects have been observed in longer-term (e.g. 10 days) retreats and these are not formally recommended for 'novice' patients within current mindfulness-based approaches, so the applicability of these reports to current mindfulness practice is limited. Nevertheless, they may form a part of therapist training, and patients may independently seek out these forms of experience after their introduction to mindfulness therapy. A further and major limitation of this literature is that it mostly comprises case reports or small series studies.

French *et al.* [52] reported an instance of 'altered reality testing', in which involvement in TM prompted grandiosity, unusual behaviour, euphoria and intense dysphoria. Kennedy [53] reported two cases of meditators experiencing depersonalization. Others [54–56] have discussed cases of psychosis following intensive meditation training in people with a history of psychosis or schizotypal personality disorder. Chan-Ob and Boonyanaruthee [57] and Sethi and Bhargava [58] have also described isolated accounts of patients who developed psychotic features after intensive meditation practice, some with no identifiable history of mental illness. Finally, consistent with the euphoria reported in French *et al.* [52], Yorston [59] reported a case of mania precipitated by meditation. Thus, current acute psychosis and a pre-existing history of psychosis might be a contraindication for retreats or intensive meditation training. However, the ascertainment of the specific risk posed for such individuals requires empirical investigation before firm conclusions can be drawn. Moreover, although the possibility that mindfulness-based approaches may have utility in management of selected patients with psychotic problems cannot be discounted, it should also be used with caution and close supervision.

Other adverse affects that have been documented relate to increases in negative affect or negative thinking as opposed to psychotic episodes. Regarding affective and anxiety symptoms, Lazarus [60] and Otis [61] reported instances of suicidal attempts, exacerbation of depressive affect and a sense of ineptitude after training in TM. Epstein and Lieff [62] and Walsh [63] have discussed the possibility of meditation prompting anxiety and obsessive rumination, particularly over internal experience and existential questions. In an empirical study, Shapiro [64] explored the experience of 27 long-term meditators, and although more positive than negative effects were reported, 62.9% of the participants reported adverse effects during and after meditation, with 7.4% experiencing what were described as 'profound' adverse effects. These included relaxation-induced anxiety and panic, paradoxical increases in tension, less motivation in life, boredom, pain, impaired reality testing, confusion and disorientation, feeling 'spaced out', depression, increased negativity, becoming more judgemental and feeling addicted to meditation. Considering that mindfulness aims to increase awareness of internal states, many of these observations are not surprising. Some of these experiences may perhaps be regarded as essential components of the meditation experience, in that it is the process of observing both positive and negative experience in a non-judgemental manner that is a core aspect of mindfulness practice. However, it would be expected that such experiences are short-term and only a transient part of the process of practice. The skill of the instructor in dealing with such eventualities may be important in determining whether they become valuable learning opportunities or, alternately, adverse events.

Traditional accounts of adverse consequences

Not surprisingly, given thousands of years of meditation practice, there are accounts of adverse effects associated with mindfulness practice in historical writings. Such writings recognize that adverse events may be provoked by excessively intensive meditation, particularly without proper or adequate preparation. Symptoms cited include quickened pulse, pain around the heart and back, and a general feeling of nervousness, restlessness, and irritability, visions, ringing in the ears, seemingly "out-of-body" experiences, and/or insomnia. Also observed in association with meditation retreats may be the emergence of deep-seated feelings that may be painful to confront. Treatment for such problems that is traditionally recommended might include rest and quiet, a break from meditation practice, walks and specific dietary advice [65].

Issues for the practitioner

For practitioners newly engaging with mindfulness-based therapeutic practices, some personal and practical questions present themselves. In this section we pose some of these questions and offer, for consideration, some of the views held by experts in the field, the long history of traditional teaching, and ongoing observational experience of applying mindfulness-based therapies in modern contexts. Unfortunately, as yet there is little quantitative evidence from well-performed research in this field and so answers to these questions are far from definitive. As such, we offer these issues primarily as points of discussion that should receive some attention in future studies of the professional application of mindfulness.

Is mindfulness compatible with pharmacotherapy?

Unfortunately, there is little solid research to answer this question. In some cases mindfulness may be a valid alternative to pharmacotherapy for selected and motivated individuals with conditions such as mild to moderate anxiety or depression and who are resistant to the notion of taking medication. More often mindfulness is seen as being adjunctive. Whether pharmacotherapy, like sedatives or antidepressants, help or hinder mindfulness therapy, and in what cases it is most suitable as an adjunctive or alternative, are questions which need to be explored by future research.

Does a practitioner need to personally practice mindfulness as a prerequisite for teaching it to others?

It has been a tradition for teachers of meditative practices to be experienced practitioners themselves. Indeed, mindfulness programmes have also followed this tradition (e.g. MBSR: [4]; MBCT: [11]). Consequently, teachers will not normally credential practitioners unless they have had extensive training. The rationale is that practitioner commitment and example is vital to patient participation, and also that a person is unlikely to properly understand or teach the practice without having substantially experienced it themselves. The teacher of mindfulness may be 'teaching without words' by their modelling of mindfulness as they run the group. We should note that there are differing views on this matter and alternative schools of thought (e.g. that advocated in ACT: [6] and DBT: [5]) hold that teachers of mindfulness do not need to be practitioners personally if they can gain sufficient

experience to understand the process during a course, and therefore do not need to continue to practice after that point. Mindfulness from this perspective has a coherent theoretical model and the ideas are as easily conveyed to the 'student' by a practitioner who practises little or not at all.

What level of proficiency does a practitioner need to gain before teaching it professionally?

This question is related to the first. Many therapists learning mindfulness for use in clinical practice will be doing so based on many years and even decades of personal practice and reflection. Others will be coming to mindfulness for the first time and, like patients, will have an enormously variable rate of progress and connection with the practices. Current programmes for training mindfulness teachers vary widely in their training requirements. Consistent with comments above, neither ACT nor DBT require specific periods of mindfulness practice before therapists utilize mindfulness principles with patients. On the other hand, accreditation as an MBSR teacher requires at least one 5-day or 10-day silent residential retreat, as well as 24 days of MBSR-accredited courses, also including periods of time in silent retreat [66]. Mindfulness-based cognitive therapy training to date has involved a 7-day residential retreat. Video-taping therapeutic sessions for fidelity-checking and supervision has been regularly used in techniques such as MBCT and provides a way of assessing the therapist in action as a response to some of these challenges.

Does a practitioner need to adopt a 'philosophy' in order to use mindfulness professionally?

New teachers and students of mindfulness often raise the question as to what extent they need to adopt a philosophy or way of life. As mindfulness is most commonly associated with Buddhism, many people from non-Buddhist backgrounds have concerns as to the religious, philosophical or cultural congruence of taking up or teaching the practice. However, it is noteworthy that the threads of mindfulness are woven into many Eastern and Western cultural and philosophical traditions and thus are not restricted to a Buddhist philosophy. Many teachers of mindfulness in clinical settings do not come from Buddhist backgrounds and find that it is best taught to the general public in a pragmatic and non-religious way. This approach has been seen as crucial to the integration of mindfulness into health-related undergraduate core-curricula with culturally and philosophically diverse

audiences [67]. Each patient needs to explore religious and philosophical questions if they arise in a way that is congruent with their own views and background.

Is mindfulness best taught in a group setting or as individual therapy?

Most psychiatrists and many other mental health clinicians will be most accustomed to implementing therapy on an individual basis. Mindfulness has traditionally been taught in groups but often with individual follow-up. Group delivery is potentially a more cost-effective approach than individual instruction alone. As in other group therapy techniques, group delivery of mindfulness techniques provides the participants with advantages such as learning from others' insights, increased motivation to practise through peer support, and assistance with the isolation common with many illnesses. However, for the practitioner, this possibility makes therapy training more complex in that two skill-sets may have to be learned, mindfulness therapy and the relevant group work skills. The prospective mindfulness teacher may learn much on both counts by modelling the teacher's way of running the group. Some relevant background in group work may assist the development of the relevant skills. However, given the emphasis on the modelling of mindfulness and acceptance in the group, it is also true that previously learned group-work skills are likely to require modification, and indeed some unlearning may be necessary for the mindfulness model of practice.

Conclusions and future directions

Mindfulness practice that encourages a present-moment focus and non-judgemental awareness of experience is attracting greater prominence and research activity in the management of the psychological aspects of a range of mental and physical health disorders. As such, it potentially adds an important technique and dimension to available psychotherapies. Although some patients will not be attracted to the nature and requirements of these techniques, it seems also likely that, for others, mindfulness-based therapies may be more engaging and acceptable than conventional psychotherapeutic techniques or pharmacological treatments. However, we emphasize that mindfulness should not be considered a panacea [30]. It requires sustained effort, can have associated discomfort, and is not without potential for adverse consequences. The authors suggest that its application, particularly for those with a history of severe mental illness (e.g. psychosis), should be grounded in

relevant theory to assist in the identification of those who may benefit and should be increasingly supported by empirical evidence as this becomes available (e.g. [11]). A promising start has already been made regarding the development of such an empirical evidence base, but more work is needed and important questions of clinical relevance require examination. Given the current state of empirical knowledge in the area, we recommend that mindfulness interventions be provided by adequately trained and experienced practitioners who are able to impart careful instruction, training and follow-up while being cognizant of possible adverse reactions.

Our review highlights that the theoretical and empirical literatures on therapeutic applications of mindfulness are in states of significant growth. We have aimed to provide the reader with some of the background needed to appraise further developments as they unfold. Given a combination of well-developed conceptual models for the therapeutic action of mindfulness and a developing empirical base, we propose with a degree of cautious optimism, that mindfulness-based approaches have the potential to become promising strategies for the care of patients who have a wide range of mental and physical health problems.

References

1. Kabat-Zinn J. *Indra's net at work: the mainstreaming of Dharma practice in society*. York Beach, ME: Samuel Weiser, 2000.
2. Benson H. *The relaxation response*. New York: William Morrow, 1975.
3. Kabat-Zinn J. *Wherever you go, there you are: mindfulness meditation in everyday life*. New York: Hyperion, 1994.
4. Kabat-Zinn J, University of Massachusetts Medical Center/ Worcester; Stress Reduction Clinic. *Full catastrophe living: using the wisdom of your body and mind to face stress, pain, and illness*. New York: Delta, 1990.
5. Linehan MM. *Cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford, 1993.
6. Hayes SC, Strosahl KD, Wilson KG. *Acceptance and commitment therapy: an experiential approach to behavior change*. New York: Guilford, 1999.
7. Kabat-Zinn J, Massion AO, Kristeller J *et al*. Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *American Journal of Psychiatry* 1992; 149:936–943.
8. Kristeller JL, Hallett CB. An exploratory study of a meditation-based intervention for binge eating disorder. *Journal of Health Psychology* 1999; 4:357–363.
9. Teasdale JD, Segal ZV, Williams JMG, Ridgeway VA, Soulsby JM, Lau MA. Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology* 2000; 68:615–623.
10. Ma SH, Teasdale JD. Mindfulness-based cognitive therapy for depression: replication and exploration of differential relapse prevention effects. *Journal of Consulting and Clinical Psychology* 2004; 72:31–40.
11. Segal ZV, Williams JMG, Teasdale J. *Mindfulness-based cognitive therapy for depression: a new approach to preventing relapse*. New York: Guilford, 2002.

12. Kabat-Zinn J. Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice* 2003; 10:144–156.
13. Baer RA. Mindfulness training as a clinical intervention: a conceptual and empirical review. *Clinical Psychology: Science and Practice* 2003; 10:125–143.
14. Kabat-Zinn J. An out-patient program in Behavioral Medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *Journal of General Hospital Psychiatry* 1982; 4:33–47.
15. Kabat-Zinn J, Lipworth L, Burney R. The clinical use of mindfulness meditation for the self-regulation of chronic pain. *Journal of Behavioral Medicine* 1985; 8:163–190.
16. Kabat-Zinn J, Lipworth L, Burney R, Sellers W. Four-year follow-up of a meditation-based program for the self-regulation of chronic pain: treatment outcomes and compliance. *Clinical Journal of Pain* 1987; 2:159–173.
17. Randolph PD, Caldera YM, Tacone AM, Greak BL. The long-term combined effects of medical treatment and a mindfulness-based behavioral program for the multidisciplinary management of chronic pain in West Texas. *Pain Digest* 1999; 9:103–112.
18. Speca M, Carlson LE, Goodey E, Angen M. A randomized, wait-list controlled clinical trial: the effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosomatic Medicine* 2000; 62:613–622.
19. Mills N, Allen J. Mindfulness of movement as a coping strategy in multiple sclerosis: a pilot study. *General Hospital Psychiatry* 2000; 22:425–431.
20. Reibel DK, Greeson JM, Brainard GC, Rosenzweig S. Mindfulness-based stress reduction and health-related quality of life in a heterogeneous patient population. *General Hospital Psychiatry* 2001; 23:183–192.
21. Astin JA. Stress reduction through mindfulness meditation. Effects on psychological symptomatology, sense of control, and spiritual experiences. *Psychotherapy and Psychosomatics* 1997; 66:97–106.
22. Shapiro SL, Schwartz GE, Bonner G. Effects of mindfulness-based stress reduction on medical and premedical students. *Journal of Behavioral Medicine* 1998; 21:581–599.
23. Williams KA, Kolar MM, Reger BE, Pearson JC. Evaluation of a wellness-based mindfulness stress reduction intervention: a controlled trial. *American Journal of Health Promotion* 2001; 15:422–432.
24. Kutz I, Borysenko JZ, Benson H. Meditation and psychotherapy: a rationale for the integration of dynamic psychotherapy, the relaxation response, and mindfulness meditation. *American Journal of Psychiatry* 1985; 142:1–8.
25. Ramel W, Goldin PR, Carmona PE, McQuaid JR. The effects of mindfulness meditation on cognitive processes and affect in patients with past depression. *Cognitive Therapy and Research* 2004; 28:433–455.
26. Bishop SR, Lau M, Shapiro S *et al*. Mindfulness: a proposed operational definition. *Clinical Psychology: Science Practice* 2004; 11:230–241.
27. Mason O, Hargreaves I. A qualitative study of mindfulness-based cognitive therapy for depression. *Psychology and Psychotherapy* 2001; 74:197–212.
28. Teasdale JD. Metacognition, mindfulness and the modification of mood disorders. *Clinical Psychology and Psychotherapy* 1999; 6:146–155.
29. Teasdale JD, Segal Z, Williams JMG. How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behaviour Research and Therapy* 1995; 33:25–39.
30. Teasdale JD, Segal ZV, Williams JMG. Mindfulness training and problem formulation. *Clinical Psychology: Science and Practice* 2003; 10:157–160.
31. Wilson KG, Murrell AR. Values work in acceptance and commitment therapy: setting a course for behavioral treatment. In: Hayes SC, Follette VM, Linehan MM, eds. *Mindfulness and acceptance: expanding the cognitive-behavioral tradition*. New York: Guilford, 2004:120–151.
32. Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological wellbeing. *Journal of Personality and Social Psychology* 2003; 84:822–848.
33. Hayes SC. Content, contexts and the types of psychological acceptance. In: Hayes SC, Jacobson NS, Follette VM, Dougher MJ, eds. *Acceptance and change: content and context in psychotherapy*. Reno, NV: Context Press, 1994:13–32.
34. Roemer L, Orsillo SM. Expanding our conceptualization of and treatment for generalized anxiety disorder: integrating mindfulness/acceptance-based approaches with existing cognitive-behavioral models. *Clinical Psychology: Science and Practice* 2002; 9:54–68.
35. Teasdale JD. Emotional processing, three modes of mind and the prevention of relapse in depression. *Behaviour Research and Therapy* 1999; 37:S53–S77.
36. Orsillo SM, Roemer L, Lerner JB, Tull MT. Acceptance, mindfulness, and cognitive-behavioral therapy: comparisons, contrasts, and application to anxiety. In: Hayes SC, Follette VM, Linehan MM, eds. *Mindfulness and acceptance: expanding the cognitive-behavioral tradition*. New York: Guilford, 2004:66–95.
37. Davidson RJ, Kabat-Zinn J, Schumacher J *et al*. Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine* 2003; 65:564–570.
38. Hayes SC, Shenk C. Operationalizing mindfulness without unnecessary attachments. *Clinical Psychology: Science Practice* 2004; 11:249–254.
39. Hayes SC, Wilson KG. Mindfulness: method and process. *Clinical Psychology: Science and Practice* 2003; 10:161–165.
40. Roemer L, Orsillo SM. Mindfulness: a promising intervention strategy in need of further study. *Clinical Psychology: Science and Practice* 2003; 10:172–178.
41. Teasdale JD, Scott J, Moore RG, Hayhurst H, Pope M, Paykel ES. How does cognitive therapy prevent relapse in residual depression? Evidence from a controlled trial. *Journal of Consulting and Clinical Psychology* 2001; 69:347–357.
42. Williams JMG, Teasdale JD, Segal ZV, Soulsby J. Mindfulness-based cognitive therapy reduces overgeneral autobiographical memory in formerly depressed patients. *Journal of Abnormal Psychology* 2000; 109:150–155.
43. Davidson H, Cave KR, Sellner D. Differences in visual attention and task interference between males and females reflect differences in brain laterality. *Neuropsychologia* 2000; 38:508–519.
44. Davidson RJ, Ekman P, Saron CD, Senulis JA, Friesen, WV. Approach/withdrawal and cerebral asymmetry: emotional expression and brain physiology: international. *Journal of Personality and Social Psychology* 1990; 58:330–341.
45. Lutz A, Greischar LL, Rawlings NB, Ricard M, Davidson RJ. Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *Proceedings of the National Academy of Sciences* 2004; 101:16369–16373.
46. Carrington P, Collings GH Jr, Benson H *et al*. The use of meditation and relaxation techniques for the management of stress in a working population. *Journal of Occupational Medicine* 1980; 22:221–231.
47. Fiebert MS, Mead TM. Meditation and academic performance. *Perceptual and Motor Skills* 1981; 53:447–450.
48. Cohen L, Warneke C, Fouladi RT, Rodriguez MA, Chaoul-Reich A. Psychological adjustment and sleep quality in a randomized trial of the effects of a Tibetan yoga intervention in patients with lymphoma. *Cancer* 2004; 100:2253–2260.
49. Gross CR, Kreitzer MJ, Russas V, Treesak C, Frazier PA, Hertz MI. Mindfulness meditation to reduce symptoms after organ transplant: a pilot study. *Advances in Mind-Body Medicine* 2004; 20:20–29.
50. Mason LI, Alexander CN, Travis FT *et al*. Electrophysiological correlates of higher states of consciousness during sleep in long-

- term practitioners of the transcendental meditation program. *Sleep: Journal of Sleep Research and Sleep Medicine* 1997; 20:102–110.
51. Kabat-Zinn J. Mindfulness meditation: health benefits of an ancient Buddhist practice. In: Goleman D, Gurin J, eds. *Mind/body medicine*. Yonkers, NY: Consumer Reports Books, 1993.
 52. French AP, Schmid AC, Ingalls E. Transcendental meditation, altered reality testing, and behavioral change: a case report. *Journal of Nervous and Mental Disease* 1975; 161:55–58.
 53. Kennedy RB. Self-induced depersonalization syndrome. *American Journal of Psychiatry* 1976; 133:1326–1328.
 54. Garcia Trujillo R, Monterrey AL, Gonzalez de Rivera JL. Meditation and psychosis [Spanish]. *Psiquis: Revista de Psiquiatria, Psicología y Psicopatología* 1992; 13:39–43.
 55. VanderKooi L. Buddhist teachers' experience with extreme mental states in western meditators. *Journal of Transpersonal Psychology* 1997; 29:31–46.
 56. Walsh R, Roche L. Precipitation of acute psychotic episodes by intensive meditation in individuals with a history of schizophrenia. *American Journal of Psychiatry* 1979; 136:1085–1086.
 57. Chan-Ob T, Boonyanaruthee V. Meditation in association with psychosis. *Journal of the Medical Association of Thailand* 1999; 82:925–930.
 58. Sethi S, Bhargava SC. Relationship of meditation and psychosis: case studies. *Australian and New Zealand Journal of Psychiatry* 2003; 37:382.
 59. Yorston GA. Mania precipitated by meditation: a case report and literature review. *Mental Health, Religion and Culture* 2001; 4:209–213.
 60. Lazarus AA. Psychiatric problems precipitated by Transcendental Meditation. *Psychological Reports* 1976; 39:601–602.
 61. Otis LS. The facts on transcendental meditation: III. If well-integrated but anxious, try TM. *Psychology Today* 1974; 7:45–46.
 62. Epstein MD, Lieff JD. Psychiatric complications of meditation practice. *Journal of Transpersonal Psychology* 1981; 13:137–147.
 63. Walsh R. Meditation research: the state of the art. In: Scotton BW, Chinen AB, Battista JR, eds. *Textbook of transpersonal psychiatry and psychology*. New York: Basic Books, 1996.
 64. Shapiro DH. Adverse effects of meditation: a preliminary investigation of long-term meditators. *International Journal of Psychosomatics* 1992; 39:62–67.
 65. Berzin A. Dealing with difficult experiences that arise in meditation and in retreat. In: *Berzin Archives, 2002*. Available from URL: http://www.berzinarchives.com/sutra/sutra_level_1/dealing_difficulties_meditation.html (accessed 3 October 2005).
 66. Centre for Mindfulness in Medicine, HealthCare and Society. *Professional education program*. Available from URL: <http://www.umassmed.edu/cfm/education/> (accessed 3 October 2005).
 67. Hased CS. Bringing holism into mainstream biomedical education. *Journal of Alternative and Complementary Medicine* 2004; 10:405–407.