



What Mindfulness, and for Whom? And Why Might it Work?

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Abstract

This comment on “Mindfulness for global public health: Critical analysis and agenda” by Doug Oman focuses on the difficulties associated with the current use and understanding of the term mindfulness. In particular, I argue that the current lack of agreement on what mindfulness practice is, or, perhaps more realistically, what mindfulness practices are, and how their effects can be explained might jeopardize such an integration process in the long run. In the literature, one can find widely differing conceptions of what constitutes a mindfulness practice. Moreover, there is clear evidence that different mindfulness practices can yield quite different effects. This holds for the comparison of “mindfulness packages” but also for comparisons of single components of these packages, and for incremental combinations of components. There is also strong evidence that mindfulness practices do not work equally well for different purposes and different people. These differential effects need to be elaborated and explained. Unfortunately, theoretical models for mindfulness practices are also still quite heterogeneous. As a first step, researchers and practitioners could be very specific about what they mean by mindfulness practice or even use alternative terms for different practices. Moreover, they could stay open to alternative forms of meditation and put as much theory as possible into their research to eventually find out when, how, and why specific mindfulness practices (and packages thereof) work and for whom.

Keywords Mindfulness · Public health · Theoretical models · Mechanisms

Given the evidence of thousands of studies on the effects of mindfulness meditation, there can be little to no doubt that this practice has many beneficial effects. Thus, Oman’s (2023) suggestion to integrate mindfulness approaches into public health efforts can be seen as a logical consequence of the empirical findings. Oman reviewed the literature on potential relationships between mindfulness and public health and arrived at 14 dimensions of potential tension or alignment. These dimensions can be used to guide further research and to adapt mindfulness interventions to essential aspects of public health. I find this project very laudable.

An important point that has to be considered when integrating mindfulness practices into the public health system is ethics (Stanley et al., 2018). One can, for instance, use meditation-induced concentration to more effectively kill enemies (Victoria, 2020) or make elite military cohorts more effective (Zanesco et al., 2019). Moreover, mindfulness

practices can be seen as a means to normalize social injustice (Purser, 2019). Therefore, integrating mindfulness practices into the public health system should be accompanied by ethical and moral considerations. However, and this is the main point of my commentary, my impression is that the theoretical (and also the empirical) foundation for such an endeavor concerning mindfulness is still not very strong and has to be improved considerably before one proceeds.

In the section “What is Mindfulness? Emic and Etic Views,” Oman acknowledged (a) that researchers differ strongly in what they call “mindfulness” and what they see as the core components of mindfulness interventions; (b) that, as of yet, there is little explanation of how the beneficial effects of these interventions are created; and (c) that the measurements of mindfulness (as a trait or state) are of widely disputed validity. This unsatisfactory state of affairs has already been expressed repeatedly, as, for instance, Krägeloh et al. (2019) did in their review of the characteristics of mindfulness-based intervention (MBI) research: “More sophisticated theoretical understanding of the benefits of mindfulness can only be developed with better consensus on suitable definitions. This

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includes distinctions between mindfulness as a state, trait, skill, or practice” (p. 21). Moreover, there are vast discrepancies in what researchers mean when they talk about trait mindfulness, as exemplified in widely differing conceptions and factor structures (e.g., Bergomi et al. 2013; van Dam et al., 2018). These different factors might just measure general mental health and well-being (Rosch, 2015, p. 285), but nonetheless one might eventually arrive at an agreement on the components of an overarching construct (Wilkinson et al., 2023).

In this paper, I am not concerned about mindfulness as a state, trait, or skill because these might best be seen as a result of mindfulness practice (and possibly a number of other practices). My main argument is that the lack of agreement on what mindfulness *practice* is, or perhaps more realistically, what mindfulness *practices* are, and a good explanation of how and why they work, might make a successful integration of mindfulness into public health difficult.

What is Mindfulness Practice?

A Prominent Buddhist View

Even within Buddhism, there are different conceptions of what mindfulness (*sati* in Pali) is (e.g., Gethin, 2011; Sharf, 2014; Shonin et al., 2015). However, most Buddhist scholars would probably agree that the *satipatthana sutta* (sutta about the four foundations of mindfulness from the Pali canon) should be considered an authoritative description of traditional mindfulness. In short, following Anālayo’s (2003) well-known exposition of the satipatthana sutta, practice of mindfulness consists of contemplating body, feeling tone, mind, and mental objects (the four satipatthanas) in a specific way that is characterized by diligence and clearly knowing. Note that in Buddhism, mindfulness is not practiced in isolation but is embedded in the so-called noble eight-fold path that also contains concentration, as well as effort (preventing the arising of unwholesome states, and generating wholesome states) in the “meditation part” proper. Moreover, it contains right speech, right action, and right livelihood in the “conduct part,” and right view and right intention in the “wisdom part” (see Gethin, 1998, for an excellent introduction). There are diverging opinions about what the actual practice should look like, especially about how prominent the mindfulness and concentration (or calming) parts should be (e.g., Brahm, 2014; Gombrich, 2006; Griffiths, 1981; Mahasi, 1973). Yet, to achieve the final goal of Buddhist

practice, liberation or enlightenment, the full path is recommended (Gethin, 2001).

It should be quite obvious that what runs under the name of mindfulness practice in the West does not conform to this Buddhist practice. This need not necessarily be problematic. After all, if a given practice is beneficial, why not use it? What then is mindfulness practice in the West?

Western Views

The most prominent mindfulness practice in the West is certainly Kabat-Zinn’s Mindfulness-Based Stress Reduction (MBSR) training (Kabat-Zinn, 1990). Although MBSR is often treated as just mindfulness, it may actually be seen as a “complex intervention” (Petticrew, 2011) and, as Rosch (2015), p. 283 described it, as a “cornucopia of potentially beneficial practices, each of which has possible applications in research and therapy.” So, if one finds that MBSR has positive effects, these might be due to, for instance, mindfully eating a raisin, group discussions and exercises, mindful speaking and listening, mindfulness of daily activities, focusing on one’s breath (several ways), or the practices of open awareness, body scan, yoga postures, walking meditation, and loving-kindness meditation (for an overview of the practices used in MBSR, see Santorelli et al., 2017).

Meanwhile, there exist many MBIs that combine mindfulness practices with psychotherapy. Many of these MBIs are strongly related to MBSR (e.g., Mindfulness-Based Relationship Enhancement, Carson et al., 2004; or Mindfulness-Based Cognitive Therapy [MBCT], Segal et al., 2013), whereas others (e.g., Acceptance and Commitment Therapy [ACT], Hayes et al., 2012; or Dialectical Behavior Therapy [DBT], Linehan, 1993) are sometimes referred to as mindfulness-informed interventions that place less emphasis on formal meditation practice (Shapiro et al., 2018).

Owing to their explicit combination with therapeutic processes, MBIs differ from MBSR, but nonetheless all these approaches fall under “mindfulness meditation” in the literature. And the term has spread far beyond. It has been used for concentrative meditation (Zeidan et al., 2010), Tibetan Buddhist practices (Ortner et al., 2007), different forms of Vipassana and Zen meditation (Bowen et al., 2006; Ivanovski & Malhi, 2007), for simply attending to the breath (Zeidan et al., 2011), and even for mantra meditation (Tanner et al., 2009).

From this indiscriminate use of the term, one could get the impression that mindfulness is just a synonym for meditation and that MBSR, Zen, and mantra meditation, to name just a few approaches, all yield comparable results. Is that really so? And if a given approach, such as MBSR or Zen, works, do all components included in that approach contribute equally, and are all of them necessary?

Do All Mindfulness Practices Yield Comparable Effects?

“Mindfulness Packages” Compared

In early studies on the effects of meditation for nonclinical populations, researchers did not differentiate much between different forms of meditation (they were not yet generally conceived of as “mindfulness”), but a meta-analysis (Sedlmeier et al., 2012) showed that techniques termed “Buddhist meditation” differed in their effects from mantra meditation (mostly Transcendental Meditation). A direct comparison was only possible for a selection of dependent measures. For some of these, effect sizes were larger for Buddhist meditation (e.g., negative personality traits and self-concept) and for some, mantra meditation yielded stronger effects (e.g., neuroticism and trait anxiety). A subset of the studies allowed a comparison between MBSR and other Buddhist approaches, which yielded stronger effects of MBSR for well-being, negative emotions, and trait anxiety but not for trait mindfulness (Eberth & Sedlmeier, 2012). A later meta-analysis allowed for a more fine-grained comparison of “mindfulness approaches” (Sedlmeier et al., 2018). In this analysis, studies that examined the effects of Vipassana yielded markedly higher combined effects than those that examined MBSR, with compassion meditation, mixed approaches, approaches with a strong body component, MBIs, and concentrative approaches showing effects in between (in that order).

The number of studies that examined the effects of mindfulness meditation in clinical populations is so large that there now exist several meta-syntheses (summaries of meta-analyses). Here, I report the relevant comparisons of two recent ones (for more details on summary effects for clinical and nonclinical populations, see “Chapters 6 and 7” in Sedlmeier, 2022). Rose et al. (2020) differentiated between three kinds of meditation: mindfulness, focused attention, and yoga. In an analysis of 28 meta-analyses, they found quite different results: the strongest effects for yoga, followed by focused attention, and the smallest effects for mindfulness (in a more restricted sense). The meta-synthesis by Goldberg et al. (2022) included 44 meta-analyses. These authors found, for instance, that MBCT had stronger effects than MBSR when meditators were compared against conventional controls. This difference in the effects of MBCT and MBSR was even more pronounced (although overall effects were generally smaller) when the interventions were compared against active control groups (in this case, the effect for MBSR was basically nonexistent).

One has to be cautious when interpreting these differential results because studies that differ in the “mindfulness

package” used may also differ in many other respects. But overall, there are strong indications that the various “mindfulness packages” differ in their effects.

Components of MBIs

The content of these mindfulness packages varies, even if different packages use the same term, as is, for instance, the case with Vipassana (Anālayo, 2012). Therefore, it might be more informative to check if individual components differ in their effects. If one looks at what changes in brain processes are brought about by different meditation techniques—all of which have been termed “mindfulness” in the literature—in long-term meditators, one can find quite different effects. Fox et al. (2016) compared responses made during functional magnetic resonance imaging (fMRI) of four different groups of experienced meditators who practiced mainly focused attention (FA), open monitoring (OM), loving kindness, and mantra meditation and found quite different activation patterns. However, differences in fMRI studies seem to be much less pronounced in novice as compared to expert meditators (Falcone & Jerram, 2018).

OM Versus FA The difference between OM and FA meditation, popularized by Lutz et al. (2008), can be seen as roughly corresponding to the last two limbs in the Buddhist noble eightfold path: right mindfulness and right concentration. Several studies found differential effects for experienced (but not novice) meditators. OM practice was found to be superior to FA practice for sustained attention with unexpected (but not expected) stimuli (Valentine & Sweet, 1999), for tolerating pain (Perlman et al., 2010), and for a creativity task (Colzato et al., 2012). In a study that included only novice meditators, no differential effects on attentional processes were found (Ainsworth et al., 2013). However, even in a single session, differential effects for OM and FA practice can be detected: Subjective time passed more quickly for participants who practiced FA compared to OM (Sedlmeier et al., 2020). Thus, it seems that differential effects of these two categories of practices depend on the length of practice and on the specific dependent measure examined. Interestingly, effects also seem to depend on the tradition in which OM and FA are practiced. Amihai and Kozhevnikov (2014) compared experienced meditators with a Theravada and a Vajrayana background. Both groups were very experienced in both OM and FA meditation. However, contrary to expectations, the greatest differences in several measures, both neurophysiological and cognitive, were those between the two traditions and not between OM and FA. Thus, it seems that these two categories, as currently used in the literature, may be too general (see Matko & Sedlmeier, 2019, for an alternative categorization).

MBSR Components As mentioned above, MBSR consists of many different components. Do they all work equally well? Sauer-Zavala et al. (2013) compared mindful yoga, an FA practice, and body scan and found superior effects for mindful yoga in psychological well-being, and smaller effects for body scan in emotion regulation. May et al. (2014) did not find strong differences when contrasting the effects of breath awareness (FA) and loving-kindness meditation, possibly due to low statistical power. In a study that compared mindfulness meditation (close to the traditional satipatthana approach—see Sedlmeier et al., 2023) and loving kindness, Fredrickson et al. (2017) found a stronger within-person dose–response relation for loving-kindness meditation, for the effect on positive emotions. In contrast to the Sauer-Zavala et al. (2013) study, Kropp and Sedlmeier (2019) found superior effects of body scan as compared to breath awareness and loving kindness, for trait mindfulness, self-rated attention, self-compassion, emotion regulation, and life satisfaction.

Incremental Combinations of Components Hunt et al. (2018) examined differential effects on heart rate variability (an indicator of the ability to relax) for mindfulness training and meditation alone (no movement), yoga alone (no explicit mindfulness training), and a combined condition. Only the yoga and combined groups showed significant differences from a control group at rest, whereas only the mindfulness training group, which had a moderate resting baseline heart rate variability, did not exhibit a decrease in this measure during a cognitive challenge. Matko et al. (2021a) compared the effects of mantra meditation alone (MA), MA combined with ethics education (not part of most Western mindfulness programs), MA combined with yoga, and a combination of all three components. They found the largest increases in well-being for combinations that included ethics education, and a tendency for the combined treatment to decrease stress. A superiority of combined effects was also found in a meta-synthesis that examined the effects of different components of yoga (Matko et al., 2021b).

Do Mindfulness Practices Work Equally Well for Different Purposes and Different People?

Reducing Anxiety Versus Alleviating Depression

Many studies in the clinical context have examined the effects of mindfulness practices on reducing anxiety and depression. Do these practices work equally well in both cases? The answer is clearly “no.” Meta-analyses that summarized the effects of mindfulness meditation on anxiety found quite modest and partly even negative effects when compared to an active control condition such as behavioral

intervention or relaxation training (de Abreu Costa et al., 2019; Montero-Marin et al. 2019; Singh & Gorey, 2018). In contrast, the use of mindfulness practices for alleviating depression is a success story. Several meta-analyses reported quite substantial effects even when MBIs were compared with active control conditions (Lenz et al., 2016; Reangsing et al., 2021; Wang et al., 2018; Zou et al., 2018).

Specific Groups of People

It seems that age interacts with the effects found in mindfulness practices. Several meta-analyses detected relatively small effects for children and youths in schools (Odgers et al., 2020; Zenner et al., 2014), but also outside the school context (Zoogman et al., 2015). This age effect becomes especially evident when compared with the effects of mindfulness practices for adults in the same context (i.e., teachers; Klingbeil & Renshaw, 2018; Zarate et al., 2019). The results for the latter meta-analyses do not differ from those generally found with groups of adults.

A similar picture emerges for studies with older adults (60 and above). Two meta-analyses found relatively low summary effects for that age group (Chan et al., 2019; Weber et al., 2020). The results in these studies indicate that meditation including movements (e.g., qigong) might be more beneficial for older persons than meditation alone (Chan et al., 2019) or movement alone (Weber et al., 2020). There is also some indication that people living in highly demanding settings, such as family caregivers of persons with dementia, might not profit so much from mindfulness practices (Liu et al., 2017).

Does Personality Play a Role?

Some studies have indicated that the effect of mindfulness practices depends on personality. For instance, de Vibe et al. (2015) found an increased effect on mental distress and subjective well-being for students with higher neuroticism scores, and students with higher conscientiousness scores exhibited a stronger decrease in study stress. Also, trait mindfulness facets seem to have some predictive power (Gawrysiak et al., 2017). And in a study by Noone and Hogan (2018), higher need for cognition yielded higher effects on critical thinking skills. Moreover, personality seems to influence preferences for specific meditation techniques (Tang & Braver, 2020).

Additionally, practitioners’ levels of empathy, narcissism, and psychopathology seem to make a difference. There are some indications that especially for practitioners low on empathy and/or high on narcissism, mindfulness practice might be prone to showing unintended effects, such as even increasing narcissistic tendencies and boosting self-enhancement (Chen & Jordan, 2020; Gebauer et al., 2018;

Ridderinkhof et al., 2017; Vonk & Visser, 2021; Winning & Boag, 2015). A recent meta-analysis found that a higher baseline level of psychopathology or depression was associated with a deterioration in outcomes after meditation, whereas higher scores on motivation and interpersonal variables yielded comparatively more positive meditation outcomes (Buric et al., 2022). However, such effects might not be specific to mindfulness practice (see Dunning, 2011), and it is still unclear how general and long-lasting they are.

Because of the still relatively few studies that examined the impact of personality on the effects of mindfulness practices, strong conclusions are not yet possible, but it seems plausible to expect a substantial impact of personality factors on whether and how these practices work.

Why Should Mindfulness Practices Work?

The natural starting point for a theory of mindfulness practices might seem to be Buddhist teachings. However, Buddhist theory, even if largely stripped of religious and spiritual aspects (e.g., Grabovac et al., 2011; Lutz et al., 2007; Sedlmeier & Srinivas, 2016, 2021), is not about the effects of mindfulness practices in isolation but includes the whole context (e.g., all eight limbs of the noble eightfold path) necessary for attaining the final aim of meditation practice, *nibbana* (*nirvana*), variously translated as awakening, liberation, and enlightenment, among other terms. In contrast, in the West, most practitioners are not interested in *nibbana* but in many other often quite mundane goals (Sedlmeier & Theumer, 2020) that might be tentatively summarized as *well-being*. Nonetheless, elements of Buddhist theory might be useful as a basis for explaining the effects of mindfulness practices (e.g., Sedlmeier, 2022, Chapter 9).

Nothing speaks against explaining the working mechanisms and effects of mindfulness practice solely based on contemporary (Western) psychological theories and models. There have been several attempts, summarily termed “phenomenological models” by Lutz et al. (2019). Most of these frameworks make plausible assumptions about mindfulness practices and effects to be expected from these practices, but largely without postulating mechanisms that specifically explain these effects. Moreover, several of these frameworks do not differentiate between the effects of different forms of mindfulness practices, as, for instance, OM, FA, or loving-kindness meditation (e.g., Berkovich-Ohana & Glickson, 2014, 2017; Hölzel et al., 2011), although some other models refer to more specific or different categories of mindfulness practices (e.g., Brandmeyer & Delorme, 2021; Dahl et al., 2015; Lutz et al., 2008; Vago & Silversweig, 2012). There are also models that aim to integrate different practices into a cognitive model (e.g., Grossenbacher & Quaglia, 2017). Recently, explanatory models in different areas of

psychology but also in the area of meditation research have been developed that are based on the theory of predictive processing, that is, the assumption that biological systems tend to minimize the long-term average surprise, or in other words, tend to optimize their predictions (Friston, 2010). This theoretical framework has been applied for different forms of meditation, although, as yet, not in a uniform way (Laukkonen & Slagter, 2021; Lutz et al., 2019; Pagnoni, 2019). These latter models look very promising and might indeed be a sound basis for a general theory (or several more specific theories) of meditation.

Conclusion

Clearly, when considering the requirements for good psychological research, the concept of “mindfulness practice” is ill defined. This would not be a problem if all practices yielded identical results and could be explained by the same underlying mechanisms. However, there is strong empirical evidence that mindfulness packages differ in their results. Empirical results also indicate that extensively practicing different techniques subsumed under “mindfulness” yields a variety of outcomes. But also for beginning meditators, the evidence suggests (not yet conclusively) heterogeneous effects, which become most clear if combinations of techniques are compared to single techniques. In sum, it seems fair to say that different “mindfulness practices” do *not* yield comparable effects. Moreover, conventional mindfulness practices (MBSR and MBIs) do *not* seem to be the best option for all purposes, as, for instance, indicated by the large differences in effectiveness for treating anxiety versus depression and for different age groups.

There is some evidence that combined practices work better than single ones. This is plausible, and in the Buddhist context, there is a strong theoretical connection between the steps of the eightfold path, which might be seen as a prototypical combined practice (e.g., Gethin, 2001, 2011). However, such a theoretical grounding does not seem to exist for any of the conventional Western mindfulness packages. One could of course argue that if combined practices work, why bother about the mechanisms behind them? First, as outlined above, combined practices differ in their effects and do not always work satisfactorily. But more importantly, if we do not understand why a given (combined) mindfulness practice works, for whom, and in what context, we cannot make much progress and clients will get less help than they need or want.

There are quite a number of attempts to explain why mindfulness practices work. However, glancing through mindfulness research leaves one with the impression that still, many if not most empirical studies are not theoretically well founded and are mostly outcome oriented. In any case,

theories need to take into account that mindfulness practices are not uniform. Theories (and studies based on these theories) need to clarify what they mean by “mindfulness.” And if existing mindfulness packages do not work optimally, as, for instance, for people with anxiety or youngsters and elderly people, one might also want to consider alternatives (e.g., Bringmann et al., 2021; Singh et al., 2011, 2019), or optimize combinations of techniques. But even for that purpose, a sound theory is indispensable in the long run.

To be clear, I do not argue against integrating mindfulness into public health. Even if we researchers and practitioners do not have a clear understanding of when and why mindfulness practices work, applying them can nonetheless be expected to yield substantial benefits to society. But in the end, it should make a huge difference, if we are clear about what we mean when we say “mindfulness.” Only then will we be able to find out when, how, and why specific mindfulness practices (and packages thereof) work, and for whom. This could also mean that practitioners should not use established mindfulness programs just because they are fashionable, if there is evidence that they work suboptimally in a given area. Instead, they should be open to implementing alternative approaches to meditation. To better understand mindfulness practices, studies should generally be guided more by theory; and to advance our theoretical understanding, it might be advantageous to do research both in a top-down fashion, by elaborating on existing theoretical approaches, and in a bottom-up way, by exploring processes and effects connected with single techniques.

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