

COMMENT

Defining Mindfulness by How Poorly I Think I Pay Attention During Everyday Awareness and Other Intractable Problems for Psychology's (Re)Invention of Mindfulness: Comment on Brown et al. (2011)

Paul Grossman

University Hospital Basel, Basel, Switzerland

The Buddhist construct of mindfulness is a central element of mindfulness-based interventions and derives from an age-old systematic phenomenological program to investigate subjective experience. Recent enthusiasm for “mindfulness” in psychology has resulted in proliferation of self-report inventories that purport to measure mindful awareness as a trait. This paper addresses a number of intractable issues regarding these scales, in general, and also specifically highlights vulnerabilities of the adult and adolescent forms of the Mindfulness Attention Awareness Scale. These problems include (a) lack of available external referents for determining the construct validity of these inventories, (b) inadequacy of content validity of measures, (c) lack of evidence that self-reports of mindfulness competencies correspond to actual behavior and evidence that they do not, (d) lack of convergent validity among different mindfulness scales, (e) inequivalence of semantic item interpretation among different groups, (f) response biases related to degree of experience with mindfulness practice, (g) conflation of perceived mindfulness competencies with valuations of importance or meaningfulness, and (h) inappropriateness of samples employed to validate questionnaires. Current self-report attempts to measure mindfulness may serve to denature, distort, and banalize the meaning of mindful awareness in psychological research and may adversely affect further development of mindfulness-based interventions. Opportunities to enrich positivist Western psychological paradigms with a detailed and complex Buddhist phenomenology of the mind are likely to require a depth of understanding of mindfulness that, in turn, depends upon direct and long-term experience with mindfulness practice. Psychologists should consider pursuing this avenue before attempting to characterize and quantify mindfulness.

Keywords: mindfulness, Mindful Attention Awareness Scale, validation

The kind of awareness involved in mindfulness differs profoundly from the kind of awareness at work in our usual mode of consciousness With the practice of mindfulness, awareness is applied at a special pitch The mind is trained to remain in the present, open, quiet and alert, contemplating the present moment. All judgments and interpretations have to be suspended, or if they occur, just registered and dropped. (Bodhi, 1984, pp. 75–76)

Mindfulness is the quality of mind that notices what is present without judgment, without interference. (Goldstein, 2002, p. 89)

Mindfulness is basically just a particular way of paying attention. It is a way of looking deeply into oneself in the spirit of self-inquiry and self-understanding. (Kabat-Zinn, 1990, p. 12)

[It is] open-hearted moment-to-moment, nonjudgmental awareness. (Kabat-Zinn, 2005, p. 24)

Mindfulness is the observing power of the mind, a power that varies with the maturity of the practitioner. (Rosenberg, in Kabat-Zinn, 2005, p. 109)

Through the process of mindfulness, we slowly become aware of what we really are down below the ego image. We wake up to what life really is. It is not just a parade of ups and downs That is an illusion. Life has a much deeper texture than that if we bother to look, and if we look in the right way . . . we cultivate this special way of seeing life. We train ourselves to see reality exactly as it is, and we call this special mode of perception “mindfulness.” This process of mindfulness is really quite different from what we usually do. (Gunnaratana, 2001, p. 32)

I forget a person's name almost as soon as I've been told it for the first time.

I drive places on “automatic pilot” and then wonder why I went there.

I break or spill things because of carelessness, not paying attention, or thinking of something else.

I find myself preoccupied with the future or the past.

I snack without being aware that I'm eating.

—Items from the Mindfulness Attention Awareness Scale (Brown & Ryan, 2003)

Paul Grossman, Department of Psychosomatic Medicine, Division of Internal Medicine, University Hospital Basel, Basel, Switzerland.

Correspondence concerning this article should be addressed to Paul Grossman, Department of Psychosomatic Medicine, Division of Internal Medicine, University Hospital Basel, Hebelstrasse 2, CH-3041 Basel, Switzerland. E-mail: grossmanp@uhbs.ch

The first six quotations, above, refer to Buddhist and mindfulness-based intervention (MBI) definitions of mindfulness from highly experienced and renowned mindfulness meditation teachers. They reflect a definition of mindfulness as deliberate, open-minded awareness of moment-to-moment perceptible experience that ordinarily requires gradual refinement by means of systematic practice; is characterized by a nondiscursive, nonanalytic investigation of ongoing experience; is fundamentally sustained by such attitudes as kindness, tolerance, patience, and courage; and is markedly different from everyday modes of awareness. Mindfulness, within this Buddhist perspective, is an active, investigative practice or process that inherently involves cognitive, attitudinal, affective, and even social and ethical dimensions (Grossman, 2010).

Western academic psychology has recently embraced aspects of the Buddhist construct of mindfulness, especially over the last 5–6 years, and a number of psychologists have attempted to operationalize and measure mindfulness via self-report assessment. Usually, there is an explicit or implicit claim that such operationalizations and definitions closely conform to Buddhist and MBI constructs. In this commentary, I address a few key questions: Are the developers of these self-report scales actually inventing their own definitions and at the same time draping them in the orange robes of Buddhism by citing partial and incomplete definitions of Buddhist scholars? Is this process already leading to a denaturing and decontextualization of the original Buddhist construct of mindfulness in Western thought? What is the empirical basis for the putative measurements of mindfulness?

These issues may be of importance for the majority of recently developed mindfulness inventories. By way of example, the last five statements at the start of this article are all from the adult Mindfulness Attention and Awareness Scale (MAAS; currently the most popular scale supposedly measuring mindfulness: over 350 citations, Web of Science); four of the five items are also included in the adolescent version. All seem to reflect self-attributions of inattentiveness during everyday modes of awareness. Even when one considers endorsement of the low end (*almost never*) of the 6-point scale of the above-cited MAAS inventory items, a careful reading of the above passages should reveal that the MAAS taps qualities of experience not synonymous with, even quite different from, the original Buddhist and MBI characterizations of mindfulness quoted above (the latter two are so similar that they will be referred to interchangeably; Kabat-Zinn, 2005). As mentioned, these deviations from the original construct of mindfulness are not merely the case for the MAAS but are also true for other popular self-report questionnaires that purport to measure mindfulness (e.g., Baer, Smith, & Allen, 2004; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). In general, these and other scales rely on self-reports made during ordinary states of awareness by individuals who have not necessarily acquired any form of mindfulness training, who are not performing a deliberate act of paying attention in a nonanalytical manner, and who may be involved in a very different kind of paying attention, marked by high levels of judgmentalness and low levels of patience, tolerance, or kindness.

Near-Enemies and Mindfulness

In the fifth century A.D., the Buddhist scholar Buddhaghosa (Nanamoli, 1975) introduced the unique concept of “near-

enemies,” which may be illustrative and of meaning here. Far-enemies, according to Buddhaghosa, are characteristics we usually conceive of as opposites, such as love and hate, kindness and cruelty. Near-enemies, on the other hand, are qualities that may outwardly or superficially appear very similar, although these qualities actually profoundly differ from each other. One of the pairs of near-enemies Buddhaghosa mentioned is compassion and pity. At first glance, they may masquerade as each other, but upon closer examination, it becomes apparent that they are, indeed, very different. Compassion may be defined as a feeling of deep sympathy and sorrow for another who is stricken by misfortune, accompanied by a strong desire to alleviate the suffering; compassion is always manifested by turning toward the suffering person. Pity, on the other hand, is a feeling sorry for someone without experiencing real empathy and is often coupled with a sense of relief, fear, distancing and/or ambivalence, often more out of self-concern than genuine caring for the other: We see an alcoholic begging and may feel a sense of pity colored more by disdain than connectedness.

Equanimity and indifference are other examples of near-enemies. Equanimity reflects a mental stability or composure, especially in the face of serious adversity. On the surface, it may look like indifference but is in no way a manifestation of the insensibility, aloofness, and lack of concern and feeling that are essential to indifference.

I argue that Western psychologists’ definitions and operationalizations of mindfulness may, in fact, be near-enemies of the original Buddhist construct. At very first glance, these operationalizations may resemble that of the MBI definition, but, in reality, we may be talking about two profoundly different things. The Buddhist construct is the result of a 2,500-year development of a phenomenological approach oriented toward a gradual understanding of direct experience. The other, Western-psychologist-defined versions are less-than-10-year-old attempts to objectify and quantify mindfulness by employing operationalizations that can be understood by and generally have been validated with people untrained in mindfulness practices. The dangers of distortion and reification would seem apparent.

These are not trivial concerns, because of their impact upon the very meaning of mindfulness in the psychological literature and, in turn, the development of mindfulness-based interventions and related research. Given the current reliance on questionnaire data and *not* direct behavioral investigation in much of modern psychological research (Baumeister, Vohs, & Funder, 2007), a clear danger is that mindfulness will become known and understood by way of questionnaire definitions, and will be presumed by many to reflect its original Buddhist meaning. This may also result in lost opportunities for a serious integration of the very distinct, contrasting Buddhist and Western psychological paradigms and traditions (Grossman, 2010).

Specific Concerns

1. One essential aspect to consider is that there is a lack of clear external referents, or gold-standard measures, with which to define a mindful person. Therefore, no possibility currently exists to assess whether these questionnaire measures accurately reflect mindfulness or something else.

Brown and Ryan (2003) and Brown, West, Loverich, and Biegel (2011) did cite studies showing associations between MAAS scores and brain activity or other psychological measures. However, none of those measures provide a clear and specific marker of mindfulness: For example, no evidence exists indicating that the variations in amygdala or prefrontal activity, of which the studies mention, specifically relate to mindfulness. Such relations seem, in fact, quite aspecific, as do the MAAS's associations with psychological traits. Proof of concurrent validity, reasonable factor structure, and good internal consistency is laudable, as these are criteria for adequate scale construction. However, fulfillment of these criteria does not directly address what is being measured. With other traits such as depression, clear and objective external criteria are employed in validating instruments. With mindfulness there are none.

2. Although many aspects of construct validity have been carefully explored by developers of these self-report questionnaires, too little concern has been given to the central aspect of content validity (i.e., the extent to which a measure represents all essential aspects of a given construct). For example, content validity is deficient when a health-related quality of life scale assesses physical impairment but does not include psychosocial domains.

Definitions of mindfulness from Buddhism and MBIs emphasize certain qualities not well represented, for example, in the MAAS quantification of mindfulness. These include (a) a deliberate intention to pay attention to momentary experience; (b) a clear focus on aspects of active investigation of moment-to-moment experience; (c) continuity of a precise moment-to-moment awareness of immediate experience; (d) the assumptions of necessity of mindfulness training and its very gradual acquisition; (e) a marked distinction from normal, everyday modes of consciousness; and (f) an inherent interdependency, or melding, of mindfulness with attitudes of openness, acceptance, kindness, curiosity, and patience. In addition, mindfulness directly implies cultivation of such qualities as energy, tranquillity, and equanimity (e.g., Nanamoli & Bodhi, 2001, note 560). Regarding such interdependencies, Christopher and Gilbert wrote, "Western psychology mandates that constructs must be explicated and operationalized to be accurately assessed. However, most Buddhist traditions dictate that mindfulness cannot be easily extracted and analyzed in isolation from inherently interrelated concepts" (2007, p. 1), a view almost universally shared by adepts and scholars (e.g., Bodhi, 1984; Gunaratana, 2001; Rosenberg, 2004). Thus, merely extracting aspects of experienced inattention (Brown & Ryan, 2003) that might be involved in mindfulness and then defining them as mindfulness would not seem to represent an adequate approach to characterizing MBI mindfulness.

3. The often substantial divergence in operationalization of perceived mindfulness between different scales purporting to measure mindful awareness belies any true consensus, even among psychologists, about what mindfulness is. The MAAS obviously measures propensity to experience lapses of attention (Carriere, Cheyne, & Smilek, 2008; Cheyne, Carriere, & Smilek, 2006). Another popular scale (Buchheld, Grossman, & Walach, 2001), developed with the guidance of eight mindfulness meditation teachers, appears to measure self-attributions of nonjudgmental attitudes, openness to experience, process-oriented understanding, and attention to the present moment without personal identification. It correlates poorly with the MAAS ($r = .3$; Baer et al., 2004).

A third frequently employed scale (Baer et al., 2006) has five subscales, integrating some items from the two previously mentioned inventories, but also includes one subscale—completely unrelated to other questionnaires—that reflects how well respondents believe they can express themselves in words. The earlier subscales of the Kentucky Mindfulness Inventory (also incorporated in the more recent Baer et al. scale) correlated 0.02–0.6 with the MAAS (Baer et al., 2004). Many of the MAAS items have been borrowed in the 2006 inventory, where they contribute to a new subscale termed Acting With Awareness. It is interesting that this subscale correlated only between .15 and .34 with the other four subscales of the more recent inventory (Baer et al., 2006).

Thus, each group of authors refers to their own scale and subscales as measuring "mindfulness." Though these constructs show some modest overlap (intercorrelations typically .3–.6), the various inventories are obviously not all that similar, so many respondents may score high in mindfulness on one scale and low on another. In referring to the MAAS, one group of investigators termed it a general measure of mindfulness (Brown et al., 2011), another a measure of a specific component of mindfulness (Baer et al., 2006), and yet others a measure of "experienced lapses of attention" (Carriere et al., 2008; Cheyne et al., 2006). In fact, Cheyne et al. provided correlations between the MAAS and attentional cognitive failures higher than the MAAS shows with other mindfulness measures. In sum, the convergent validity of the MAAS with other putative mindfulness measures is poor: Shared variance between the MAAS and other measures is typically less than 25% and sometimes less than 10%.

Baer et al. (2006) attempted to address this general problem of poor intercorrelations by deriving five "facets," based upon items from five different mindfulness scales typically showing relatively low intercorrelations. In pursuing this strategy, Baer et al. did implicitly acknowledge the complexities of defining mindfulness. However, this approach may ignore the inherent interdependency and possible synergism among the various factors merging into mindfulness (Buddhadasa, 1988). Assessing extent of mindfulness would appear difficult when individuals score high on some facets and low on others (as can be expected, given the modest intercorrelations of subscales). Summary scores will also then prove problematic.

4. Another important question to consider (e.g., with the MAAS) is whether people are able accurately to rate their own level of what is suggested as being directly measured (i.e., lapses of attention). Recent research indicates not (e.g., Smallwood, McSpadden, & Schooler, 2007). Thus, self-ratings of attentional lapses may not be primarily based upon actual frequency of such lapses but, perhaps, are more influenced by psychological characteristics that affect one's subjective experience of attention lapses (e.g., neuroticism, depression, self-esteem). This may account for the frequent associations found between the MAAS and measures of psychopathology.

Self-report of putative mindfulness, particularly with respect to groups undergoing MBI or other mindfulness practice experience, may also be importantly biased by respondents' own desires for gains in performance after expending substantial time and effort in courses and home practice. For example, respondents experienced in MBI or other mindfulness practice may be well aware of the "correct" response to most items of the MAAS and may be more likely than others to endorse statements indicating the experience

of fewer lapses of attention. Would one base a grading system on evaluations of how well students believe they have mastered the material rather than an actual test of performance? This argument points to a serious vulnerability of self-ratings of mindfulness, in general.

5. It seems likely that self-ratings of level of mindfulness will be conflated with valuations regarding the personal meaningfulness of item characteristics. Certainly, experience with mindfulness practice may alter values in the direction that items associated with mindfulness experience gain meaning and importance. Perceptions of mastery of mindfulness might then become confounded with aspirations. Van Dam, Earleywine, and Danoff-Burg (2009) provided indirect evidence of such conflation with item response theory analyses.

6. Validity of self-report scales requires that items be understood in the same way across populations that are compared (or over time within a population). However, this is unlikely to be the case for self-report scales purporting to measure mindfulness (see Grossman, 2008; Grossman & Van Dam, in press): Mindfulness scores in experienced mindfulness meditators and nonmeditators may often partially derive from very different understandings of individual items. For example, items referring to “paying attention to bodily sensations during everyday activities” are likely to be interpreted very differently by those with and without mindfulness experience: An experienced meditator is likely to understand the item in terms of purposeful, curious, and nonjudgmental moment-to-moment investigation of bodily sensations, whereas for someone with no experience in mindfulness the same item is likely to connote the experience of physical symptoms that intrude, often undesirably, upon conscious awareness. In fact, even understandings of common mindfulness inventory phrases, such as “being aware” or “paying attention,” may be subject to very different semantic interpretations, depending upon whether respondents are experienced or inexperienced in mindfulness practice. As one famous meditation teacher wrote, in reference to mindfulness training (Khema, 1989, p. 1), “The difference between the trained and untrained mind is the understood experience.”

7. The latter issues also have implications for selection of appropriate populations with which to validate a putative measure of mindfulness. The MAAS and most other scales were validated with convenience samples of students and general population, groups who typically had very little or no experience with the Buddhist or MBI practice of mindfulness. As previously illustrated (Grossman, 2008), using samples untrained in mindfulness to validate a mindfulness measure is not a wise practice, as it is likely to impair external validity. Baer et al. (2008) provided further evidence by reporting inconsistent factor patterns and correlations between meditators and nonmeditators in their own Five Facets of Mindfulness Scale.

Brown et al. (2011) attempted to address this issue by citing studies in which MBI enhanced MAAS scores from preintervention or in which meditation experience was positively related to meditation experience. However, their review was highly selective, with biases going ignored (see above). Their initial study (Brown & Ryan, 2003), as well as a number of other reports (e.g., Pradhan et al., 2007; Witek-Janusek et al., 2008), failed to show effects of MBI on MAAS scores. Brown et al. (2011) also failed to mention that other investigations found no association between MAAS score and mindfulness meditation experience, although

they referred to these publications in regard to other findings (e.g., MacKillop & Anderson, 2007). Indeed, Christopher and Gilbert (2007) reported that the MAAS scores of Thai Buddhist monks with 15 years of meditation experience did not differ from those of a normative convenience sample with no mindfulness meditation experience.

8. A unique vulnerability of the MAAS lies in the fact that all questions are formulated in the negative, requiring reverse poling of every item. With each version of the MAAS, the conceptual low end of the scale (in the direction of *almost never*) is used as evidence of mindfulness. Thus, “almost never forgetting a person’s name as soon as I’ve been told it for the first time” or “almost never snacking without being aware that I’m eating” is taken to index high levels of mindfulness. This seems a distortion of the MBI construct of mindfulness.

Brown et al. (2011) failed adequately to address the point raised by Reise and Waller (2009) that a disposition

may be a unipolar trait (relevant only in one direction) and that variation at the low end of the scale is less informative in both a substantive as well as a psychometric sense. For example, the low end of depression is not happiness but rather the lack of depression; . . . the low end of physical problems is not athleticism but rather an absence of mobility concerns. (p. 31)

The latter example may provide a particularly appropriate analogy to the case in point. A recent item response theory analysis of the MAAS also suggests that the latent trait of the scale is perceived general inattention, a far cry from mindfulness (Van Dam, Earleywine, & Borders, 2010).

Brown and Ryan (2003) attempted to counter this argument by presenting subsample correlations between the MAAS and items derived from the MAAS positively reformulated. They reported a correlation of .7, which they interpreted as evidence that their “mindfulness” is not a unipolar phenomenon. In fact, $r = .7$ in a test-retest correlation accounts for less than half of the variance. However, there is an additional problem with their calculations and interpretation: For some reason, two items (13.3%) were included in the reformulated inventory in their original, unchanged (negative) formulation, and it is likely that almost all respondents provided the same scores for these items each time. This means about 13% of the variance could be accounted for by these two questions, and the true amount of shared variance between the remaining positively and negatively stated items was, in fact, 30–36%. This level of association seems insufficient to support their assertions.

Brown and Ryan (2003) also justified the reverse poling of items because it enhances correlations with a number of different measures of psychological functioning, in comparison to the alternate, positively formulated form. However, this provides no evidence that the MAAS is a measure of anything other than how poorly one thinks one pays attention during everyday life and certainly no proof that it reflects the Buddhist construct of mindfulness. They additionally justified their reverse-scoring form by claiming that statements reflecting mindlessness are more accessible to people untrained in mindfulness. But is mindfulness the absence of mindlessness? Brown and Ryan, further, seem to suggest that relatively unfamiliar traits should be tested solely by way of negative formulations and then reverse scored. In fact, this is not the typically chosen strategy with which to measure unfamiliar

traits in the general population. Consequently, I find no convincing arguments to support the contention that absence of a trait necessarily implies or translates into that trait's opposite.

9. Because the original Buddhist perspective on mindfulness emphasizes the gradual development of mindfulness under a regimen of active mental training, there would appear to be little justification for believing that it is sensible to measure mindfulness in adolescents, unless we are straying very far from the original meaning of the term. Additionally, if children and adults understand items equivalently, one might assume that there would be notable differences between norm values of adolescent and adult samples. However, my own analyses of the 2003 and current studies indicate few such differences: Adults reported being significantly worse at remembering people's names first time around, more occupied with past and future, more on automatic pilot, but less likely to listen to something with one ear while doing something else at the same time ($ps < .007$).

10. Given the preceding points, it is unclear why Brown et al. (2011) insisted that the adult and adolescent forms of the MAAS measure mindfulness. Certainly mindfulness is currently a very popular topic, and a tool to assess it may seem desirable. Nevertheless, a very brief self-report scale intended meaningfully to quantify mindfulness seems to me, both as a psychologist and a longtime mindfulness meditator, an oxymoron. The Buddhist construct of mindfulness is undergirded by a rich and detailed phenomenological system. All mindfulness meditation teachers I know acknowledge the complexity and subtlety of mindfulness. Furthermore, over the millennia, there has evolved no consensus among expert meditation teachers in terms of assessment. Therefore, psychologists with more limited experience should, perhaps, delay this pursuit.

Just 10 years ago, the Buddhist construct of mindfulness was hardly a topic of mainstream scientific discourse. Today, insufficient care with a concept still so novel to most Western psychologists may act as a major impediment to acquiring an understanding of the Buddhist phenomenological approach (see Grossman, 2010). Denaturing, distortion, and banalization of the term *mindfulness* will deprive psychologists of possibilities to appreciate and, possibly, bridge fundamental differences in Buddhist and Western approaches to mind and body. Our apparent rush to measure and reify mindfulness—before attaining a certain depth of understanding—may prevent us from transcending worn and familiar views and concepts that only trivialize and limit what we think mindfulness is. The scientific method, with its iterative process of reevaluation and improvement, cannot correct such fundamental conceptual misunderstandings but may actually serve to fortify them.

Alternative Approaches to the Measurement of Mindfulness

A number of alternative approaches are available and sometimes already being carried out. The following may further our understanding of mindfulness and, at the same time, overcome many of the problems encountered with self-report questionnaires.

1. Renaming existing validated mindfulness questionnaires, in terms of clear description of the psychological characteristics they actually assess, might be a big step forward. Such descriptions would provide unambiguous caveats in publications that these

scales do not reflect direct measures of Buddhist or MBI conceptions of mindfulness. For example, “experienced lapses of attention” may provide a relatively clear-cut description of the overall MAAS inventory. Likewise, the five facets of mindfulness (Baer et al., 2006) could be listed as five self-attributed psychological qualities (e.g., not of mindfulness but of perceived ability to verbally express oneself or of experienced inattentiveness). Such self-attributes might then be explored in relation to actual mindfulness practice to discern how unambiguous parameters of mindfulness may be associated with them. Hence, a clear distinction would then be made between the characteristics measured and some direct aspects of mindfulness (e.g., type or amount of daily practice or years of experience). This is likely to afford a more differentiated insight into psychological mechanisms than is possible when different scales are labeled as “dispositional mindfulness” but actually reflect unique and describable psychological traits.

2. At this germinal phase of understanding of mindfulness, it might be better to limit use of the term *mindfulness research*—at least when “mindfulness” is intended within a Buddhist perspective—to those investigations that directly involve some aspect of mindfulness meditation experience. A careful examination might then proceed regarding the psychological and physiological changes associated with the practice and process of mindfulness that are specific or nonspecific to mindfulness. Such a strategy seems likelier to build sound bridges between Buddhist and Western psychologies than does employing a priori assumptions about the equivalence of mindfulness to particular psychological characteristics.

3. New self-report inventories could be developed to measure the extent to which respondents value specific behaviors (e.g., contemplative stillness, attending to sensory experience) or psychological attitudes (e.g., kindness or patience toward oneself and/or others) thought to be closely related to mindfulness. Although they would remain subject to certain response biases, such inventories might be able to depict the personal meaningfulness of attitudes and behaviors, without confounding valuation with perceptions of actual mastery.

4. Mindfulness, in classical Buddhist treatises, has been integrally related to qualities such as concentration, energy, joyfulness, calmness, equanimity, and sense of interest. Because of the inherent relationships of these dimensions to mindfulness, because they lend themselves to Western psychological interpretation, and because they also often reflect desired clinical outcomes, they might be focused upon as potentially fundamental consequences of enhanced mindfulness and, at the same time, as meaningful endpoints in MBI studies among varying populations (e.g., enhanced positive affect and reduced fatigue in patients with multiple sclerosis; Grossman et al., 2010). Assessing changes in these dimensions as possible results of mindfulness training might also serve as a direct test of underlying assumptions within Buddhist psychology. This approach could be used to investigate not only effects of mindfulness training upon MBI participants but also consequences upon others with whom MBI participants interact (e.g., Singh et al., 2004).

5. Greater emphasis, perhaps, should be placed on qualitative investigations (e.g., Mason & Hargreaves, 2001) and research employing interview methods (e.g., Teasdale et al., 2002). Although certainly more labor intensive for researchers and study

participants than completion of a 5-min self-report questionnaire, these methods are likely to afford greater insights into the psychological mechanisms and characteristics related to the practice of mindfulness. Such open-ended approaches may also result in the creation of novel, as yet unconsidered, categories of psychological effects associated with mindfulness and MBIs.

Conclusions

Time and effort are required to integrate our positivist psychological tradition with a Buddhist phenomenological orientation based upon thousands of years of systematic investigation of subjective experience. It seems likely that many Western psychologists may have little frame of reference and consequently may respond with a degree of incredulousness toward this introspective approach, especially given the claims that years are needed merely to begin to master it and that processes are cast together in fully unfamiliar ways (e.g., combining cognitive and ethical domains; Grossman, 2010). Still, these ideas need not be taken on faith, although neither can they be decided upon by rational thinking alone. Fundamental to the Buddhist approach is practical experience, and only the practice of mindfulness can put such notions to the test. A commitment to this practical experience may, in fact, be the real challenge and opportunity for psychologists. Perhaps, this is the only way we will learn to discern mindfulness from its near-enemies.

References

- Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment, 11*, 191–206. doi:10.1177/1073191104268029
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27–45. doi:10.1177/1073191105283504
- Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., . . . Williams, J. M. G. (2008). Construct validity of the Five Facet Mindfulness Questionnaire in meditating and nonmeditating samples. *Assessment, 15*, 329–342. doi:10.1177/1073191107313003
- Baumeister, R., Vohs, K., & Funder, D. (2007). Psychology as the science of self-reports and finger movements: Whatever happened to actual behavior? *Perspectives on Psychological Science, 2*, 396–403. doi:10.1111/j.1745-6916.2007.00051.x
- Bodhi, B. (1984). *The noble eightfold path*. Kandy, Sri Lanka: Buddhist Publication Society.
- Brown, K. W., & Ryan, R. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822–848. doi:10.1037/0022-3514.84.4.822
- Brown, K. W., West, A. M., Loverich, T. M., & Biegel, G. M. (2011). Assessing adolescent mindfulness: Validation of an adapted Mindfulness Attention Awareness Scale in adolescent normative and psychiatric populations. *Psychological Assessment, 23*, 1023–1033. doi:10.1037/a0021338
- Buchheld, N., Grossman, P., & Walach, H. (2001). Measuring mindfulness in insight meditation (Vipassana) and meditation-based psychotherapy: The development of the Freiburg Mindfulness Inventory (FMI). *Journal for Meditation and Meditation Research, 1*, 11–34.
- Buddhadasa, B. (1988). *Mindfulness with breathing: A manual for serious beginners*. Boston, MA: Shambhala.
- Carriere, J. S. A., Cheyne, J. A., & Smilek, D. (2008). Everyday attention lapses and memory failures: The affective consequences of mindlessness. *Consciousness and Cognition, 17*, 835–847. doi:10.1016/j.concog.2007.04.008
- Cheyne, J. A., Carriere, J. S. A., & Smilek, D. (2006). Absent-mindedness: Lapses of conscious awareness and everyday cognitive failures. *Consciousness and Cognition, 15*, 578–592. doi:10.1016/j.concog.2005.11.009
- Christopher, M., & Gilbert, B. (2007). *Psychometric properties of the Kentucky Inventory of Mindfulness Skills (KIMS) and the Mindful Attention Awareness Scale (MAAS) among Thai Theravada Buddhist monks*. Retrieved from Pacific University Oregon website: <http://commons.pacificu.edu/sppfac/2/>
- Goldstein, J. (2002). *One Dharma: The emerging western Buddhism*. San Francisco, CA: Harper.
- Grossman, P. (2008). On measuring mindfulness in psychosomatic and psychological research. *Journal of Psychosomatic Research, 64*, 405–408. doi:10.1016/j.jpsychores.2008.02.001
- Grossman, P. (2010). Mindfulness for psychologists: Paying kind attention to the perceptible. *Mindfulness, 1*, 87–97. doi:10.1007/s12671-010-0012-7
- Grossman, P., & Van Dam, N. (in press). Mindfulness by any other name: Trials and tribulations of *Sati* in western psychology and science. *Contemporary Buddhism*.
- Grossman, P., Kappos, L., Gensicke, H., D'Souza, M., Mohr, D. C., Penner, I. K., & Steiner, C. (2010). MS quality of life, depression, and fatigue improve after mindfulness training: A randomized trial. *Neurology, 75*, 1141–1149. doi:10.1212/WNL.0b013e3181f4d80d
- Gunaratana, B. (2001). *Mindfulness in plain English*. Boston, MA: Wisdom.
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness*. New York, NY: Delta.
- Kabat-Zinn, J. (2005). *Coming to our senses: Healing ourselves and the world through mindfulness*. New York, NY: Hyperion.
- Khema, A. (1989). Supreme Efforts: III. Aware and Awake. Retrieved from http://www.vipassana.com/meditation/khema/hereandnow/awake_and_aware.php
- MacKillop, J., & Anderson, E. (2007). Further psychometric validation of the Mindful Attention Awareness Scale (MAAS). *Journal of Psychopathology and Behavioral Assessment, 29*, 289–293. doi:10.1007/s10862-007-9045-1
- Mason, O., & Hargreaves, I. (2001). A qualitative study of mindfulness-based cognitive therapy for depression. *British Journal of Medical Psychology, 74*, 197–212.
- Nanamoli, B. (1975). *B. Buddhaghosa's Path of purification*. Kandy, Sri Lanka: Buddhist Publication Society.
- Nanamoli, B., & Bodhi, B. (2001). *Middle length discourses of the Buddha* (2nd ed.). Boston, MA: Wisdom.
- Pradhan, E. K., Baumgarten, M., Langenberg, P., Handwerker, B., Gilpin, A., Magyari, T., . . . Berman, B. M. (2007). Effect of mindfulness-based stress reduction in rheumatoid arthritis patients. *Arthritis & Rheumatism, 57*, 1134–1142. doi:10.1002/art.23010
- Reise, S. P., & Waller, N. G. (2009). Item response theory and clinical measurement. *Annual Review of Clinical Psychology, 5*, 27–48. doi:10.1146/annurev.clinpsy.032408.153553
- Rosenberg, L. (2004). *Breath by breath: The liberating practice of insight meditation*. Boston, MA: Shambhala.
- Singh, N. N., Lancioni, G. E., Winton, A. S. W., Wahler, R. G., Singh, J., & Sage, M. (2004). Mindful caregiving increases happiness among individuals with profound multiple disabilities. *Research in Developmental Disabilities, 25*, 207–218. doi:10.1016/j.ridd.2003.05.001
- Smallwood, J., McSpadden, M., & Schooler, J. (2007). The lights are on but no one's home: Meta-awareness and the decoupling of attention when the mind wanders. *Psychonomic Bulletin & Review, 14*, 527–533.
- Teasdale, J. D., Moore, R. G., Hayhurst, H., Pope, M., Williams, S., & Segal, Z. V. (2002). Metacognitive awareness and prevention of relapse

- in depression: Empirical evidence. *Journal of Consulting and Clinical Psychology, 70*, 275–287. doi:10.1037/0022-006X.70.2.275
- Van Dam, N., Earleywine, M., & Borders, A. (2010). Measuring mindfulness? An item response theory analysis of the Mindful Attention Awareness Scale. *Personality and Individual Differences, 49*, 805–810. doi:10.1016/j.paid.2010.07.020
- Van Dam, N. T., Earleywine, M., & Danoff-Burg, S. (2009). Differential item function across meditators and nonmeditators on the Five Facet Mindfulness Questionnaire. *Personality and Individual Differences, 47*, 516–521. doi:10.1016/j.paid.2009.05.005
- Witek-Janusek, L., Albuquerque, K., Chroniak, K. R., Chroniak, C., Durazo-Arvizu, R., & Mathews, H. L. (2008). Effect of mindfulness based stress reduction on immune function, quality of life and coping in women newly diagnosed with early stage breast cancer. *Brain, Behavior, and Immunity, 22*, 969–981. doi:10.1016/j.bbi.2008.01.012

Received September 17, 2010

Revision received December 6, 2010

Accepted December 20, 2010 ■