

## Operationalizing Mindfulness Without Unnecessary Attachments

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**There are scientific advantages to defining mindfulness in terms of the psychological processes involved. Doing so, however, necessarily uncouples mindfulness from any given technology, including meditation. Defining mindfulness in terms of the self-regulation of attention and a posture of acceptance seems progressive, but there are underlying philosophical attachments in the proposed definition that might limit its applicability if they are treated too rigidly.**

**Key words:** mindfulness, meditation, acceptance, defusion. [*Clin Psychol Sci Prac* 11: 249–254, 2004]

**E**mpirical clinical psychology has learned the hard way that an excessive technological focus combined with a purely outcome-based research program can produce misleading findings and thus a less progressive science. A recent object lesson of this kind are the flaws in our understanding of cognitive therapy that were revealed by belated component (e.g., Jacobson et al., 1996) and process analyses (e.g., Ilardi & Craighead, 1994; Morgenstern & Longabaugh, 2000). As mindfulness and acceptance-based procedures come to the fore, it is important not to repeat this mistake.

Ideally, new techniques are fairly direct extensions of theoretical principles derived from sound basic research. In such situations the expected processes are specified *a priori* and thus can be examined from the very beginning. This allows the field to determine whether new techniques change the targeted processes, whether better outcomes are produced by the techniques, and whether the better outcomes produced are based on the desired changes in targeted processes (Follette, 1995). All three sources of information are critical to the progress of psychology as a scientific and applied discipline.

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Unfortunately the world is often not ideal. Sometimes an adequate basic science does not exist from which to derive specific target processes, or such data exist but applied researchers are unaware of them. In these conditions, technological innovation is often based on clinical intuition, accidental variation, or mere common sense. Mindfulness research presents an extreme variant of this situation because techniques are being evaluated that originated before modern science itself even existed.

In these situations, one of three things has happened: outcome research has proceeded without a serious concern for an analysis of the functional processes of change, a wide variety of possible processes are examined empirically in the hopes that these data will guide a theoretical understanding, or researchers have attempted to generate theories in flight and test them with process data as the research program unfolds.

The “outcomes only” solution is the least desirable. The danger of package proliferation and scientific incoherence that is implicit in an outcomes-only approach threatens to overwhelm otherwise positive movements in empirically clinical science, such as the development of empirically supported treatments (ESTs; Chambless et al., 1996) or practice guidelines (Hayes, Follette, Dawes, & Grady, 1995). In that context, it is to the credit of mindfulness and acceptance researchers that they have been seeking another path early in the development of this research program.

Arguments can be made for either of the other two approaches (process data, then theory; theory, then process data). Ultimately, the data will decide in either case, but when a field is having a difficult time knowing where to begin, intelligent efforts to develop working models first can be helpful in spurring empirical work. The target article is a good beginning. We will focus our comments on two aspects of this approach: (a) the implications of any functional theoretical analysis for an attachment to specific technology, and (b) the adequacy of the specific theory proposed as an umbrella for research in the area.

### LETTING GO OF THE ATTACHMENT TO MEDITATION

Mindfulness has been cast both as a technological method and as a psychological process, which has created a good deal of confusion (Hayes & Wilson, 2003). The present target article attempts to specify

a way to approach mindfulness at the level of the psychological processes involved. That is a very good idea, scientifically speaking. It should be noted, however, that this could lead to a considerable expansion of what are considered mindfulness methods.

Due to its history, mindfulness as a process is often linked to the practice of mindfulness meditation (e.g., Kabat-Zinn, 1994). If mindfulness is an operationally defined functional process, however, then any technique that produces this process must be considered a mindfulness technique. The role of meditation or any other technological component becomes an entirely empirical matter. It could be necessary or unnecessary—the data will have to decide.

There are many procedures already being studied that may be “mindfulness techniques” that do not rely on meditation per se. For example, Dialectical Behavior Therapy (DBT) trains mindfulness in the sense of training “psychological and behavioral versions of meditation skills usually taught in Eastern spiritual practices” that are focused on “observing, describing, participating, taking a nonjudgmental stance, focusing on one thing in the moment, being effective” (Linehan, 1993, p. 114). Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) takes much the same approach, using acceptance, cognitive defusion, and attention to present experience from the point of view of “self-as-context.” Wells (2002) attempts to use guided attention to see thoughts as thoughts and not as literal events and thus to foster a kind of mindfulness that will “decouple the influence of maladaptive metacognitive beliefs on on-line processing” (p. 96). Borkovec and his colleagues (e.g., Borkovec & Sharpless, in press) promote contact with the present moment, emotional deepening, and similar methods that seem to overlap somewhat with the concept of mindfulness. None of these methods is currently based on meditation practice in the same way as is Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2002).

Empirically, there are data suggesting that some of these nonmeditative methods are mindfulness techniques. For example, Baer (2003) has developed a mindfulness measure based on the DBT conception, with subscales focused on observing, describing, acting with awareness, and accepting without judgment. The last three components correlate (Baer, 2003) with the

Acceptance and Action Questionnaire (Hayes et al., in press) which measures processes known to underlie the impact of ACT.

If Bishop et al.’s definition of mindfulness is correct, than any method that increases attention to the present moment and an attitude of acceptance is a mindfulness method. It is not entirely clear whether Bishop et al. would embrace this scientifically progressive implication of their operational definition, but they do not formally reject the idea. The article is slightly confused on this point. In some areas of the article, key processes are explained but are then linked to meditation per se. For example, the article speaks of the value of sustained attention to current experience, but then amplifies this point, stating that “sustained attention on the breath thus keeps attention anchored” and that “skills in switching allow the student to bring attention back to the breath.” This may be so, but there may be myriad other means of establishing sustained attention to current experience.

There is no wiggle room on this issue. If mindfulness is a psychological mode or process, then techniques that are effective in producing that mode or process are mindfulness techniques. New techniques can always emerge that are as effective, or even more so than existing techniques. If mindfulness meditation practice *is* mindfulness, then the present exercise is empty.

The technique–process relation is bi-directional, however. If meditation ultimately is shown empirically to be the most effective mindfulness technique, then any package or approach targeting mindfulness will have to include meditation.

#### **ADEQUACY OF THE BISHOP ET AL. DEFINITION**

The definitions of mindfulness in the literature have not been well suited to scientific analysis. Part of the problem may lie in the spiritual and religious foundations of the concept (Baer, 2003), or its emergence in pre-scientific times. Kabat-Zinn’s definition (2003, p. 145) is “paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment.” This is fine as a start, but it has to be admitted that this definition relies on many terms that are more linked to lay psychology than to psychology as a discipline. The Bishop et al. definition is an advance.

The definition has difficulties, however. The link to basic science is somewhat underdeveloped and there are implicit philosophical and metatheoretical attachments that might limit its applicability. In empirical clinical psychology, mindfulness-based clinical procedures have emerged under both cognitive and behavioral labels. The Bishop et al. definition is situated firmly in the former camp. From a cognitive point of view, psychological processes refer to mental mechanisms that operate on contextual events but can be understood independently of them. From a behavioral point of view, psychological acts are acts of the whole organism, interacting in and with a context considered both historically and situationally. This difference leads to fundamentally different ideas about what psychological processes even are.

Attention provides a good example. Bishop et al. treat attention as a mental faculty that is involved in the processing of information and that is controlled by the individual as an agent. Thus, it operates on events (“information”) but it is defined independently from them. This is one approach, but it is deeply linked to a particular philosophy of science. A behaviorally oriented researcher could not work comfortably under such an umbrella because the behavioral unit of analysis is always an interactive whole involving both the organism and its context. Attention, from a behavioral point of view, is a way of speaking about patterns of stimulus control. Attention viewed in that way is not a mental process that can be allocated in large amount or small amounts, or directed toward one event or another. Attention is not something the person has. Instead attention is a quality of a situated action. When we speak, as Bishop et al. do, of “attention to the present moment” and “an attitude of acceptance” we are speaking of functions of events for individuals given their history and the current context.

The basic theory of language and cognition that underlies ACT, Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001), provides a contextually focused explanation for why normal verbal/cognitive processes undermine “attention to the present moment” and “an attitude of acceptance.” We will examine this explanation briefly and link some of its elements to meditation and then to mindfulness as a process.

Human language and cognition is relational: verbal events have meaning because they are related to something else. RFT explains why, but for purposes of the present argument we will examine this claim experientially. The simplest problem-solving task reveals the process. Consider the following problem. Suppose you have a screw in a board and needed to remove it. You are given only two tools to do so: a plastic toothbrush and a lighter. Solve the problem. Give yourself 30 s to work on it before going to the next sentence.

If nothing comes to mind, think of what plastic is made of. Give yourself another 15 s to work on it.

If nothing comes to mind still, think of what plastic is like when it very hot but not actually burning. Give yourself another 15 s to work on it.

Now think of what plastic is like when it is cool. Give yourself another 15 s to work on it. Time is up.

It is worth noting first that in fact none of the “events” being dealt with are present. There are no screws, toothbrushes, or lighters—there are only patterns of ink on paper. Nevertheless, these events are psychologically present because they are bidirectionally related to their written symbols—to the “words” on this page. The individuals reading these pages have a long history of learning to respond relationally to these symbols, and contextual cues were presented that were designed to augment their immediate relevance (readers were asked to solve a problem; that very task was presented as a means of understanding a larger point). Most verbally able humans presented with this task began to “picture” various actions and the effects they might produce; that is, they began to respond to the derived stimulus functions (perceptual, instrumental, etc.) of these patterns of ink based on the functions of the events related to them. Furthermore, they evaluated these derived effects relative to a specified goal: whether or not given actions would remove the screw. If the answer was “no,” most readers kept trying different solutions. In point of fact, just as no objects are present, so too no overt actions were taken, no consequences were produced, and no comparisons of outcomes occurred directly. Instead, as various solutions were covertly attempted, relations of time,

contingency, and comparison were applied to verbal (i.e., symbolic) stimuli with derived functions.

This is what RFT and ACT researchers call “cognitive fusion” and its excesses are what mindfulness helps rein in. This relational repertoire is extremely useful. It might even lead to removing a troublesome screw (presumably by melting the end of the toothbrush, inserting it into the screw head, and allowing it to cool into a kind of screwdriver). But this same repertoire tends to create a constant illusion of being somewhere else, some other time than now. The “mind,” that organized repertoire of verbal relations, creates an alternative universe of derived stimulus functions, never quite in the present because it is always “about” something. It rarely *is* what it is.

This relational repertoire is enormously flexible in every area but one: responses that are outside of literal language. Humans have an extremely difficult time learning not to engage in or rely upon verbal analysis, for example. Presented with the challenge “learn how to be in the present,” humans will drift off into a complex relational action (“in their head” we would say) that is in its essence the exact opposite of the challenge that was just presented. Thus, mindfulness, as defined by Bishop et al., is needed precisely because of the excesses of literal language.

Similarly, humans have a hard time accepting the present moment with openness and curiosity (Bishop et al.’s second component of their definition) since the present moment may contain events that are characteristically evaluated as undesirable. A primary benefit of language in an evolutionary sense is its contribution to problem solving, and typically the primary goal of problem solving is to produce desirable rather than undesirable events. Avoiding psychological pain is thus built into the normal functions of human language itself, even if that process itself causes harm.

Because human language and cognition is rigid and inflexible when what is needed is outside of this repertoire, special contexts need to be created to contact the costs of this repertoire and learn alternative behaviors that might be more effective. Meditation is one such context. The process of meditating temporarily puts the literal, temporal, and evaluative functions of language on extinction. What thought is *about* is no longer of primary concern, and the meditator learns—in a direct

and experiential way—that entering into that relational network literally interferes with open contact with the present moment. Instead, the process of thinking (and feeling, sensing, and so on) itself comes to the fore: Noticing *that* one is thinking *when* one is thinking is as much in the present moment as is noticing that one is breathing when one is breathing. This kind of contact is not at all like the more typical situation exemplified by the screw-out-of-the-board exercise, in which solutions depended on the content of thought itself.

Similarly, literal language is temporal and evaluative. A core function of language is to predict and evaluate outcomes (that was one point of the screw-in-the-board example). But as that repertoire is applied to private events, experiential avoidance is the natural result. We don’t want to be anxious or sad or uncomfortable and we take steps to avoid these outcomes. As we enter into this verbally purposive activity, the wide range of stimulus functions afforded by the present moment are ignored. A panic-disordered person in a mall does not notice the interesting people walking about; what is noticed are signs of impending anxiety. Meditation creates a context in which experiential avoidance directly interferes with the process of meditation itself. To buy into the idea that it is important not to think, feel, or remember certain things, it is necessary to take verbal evaluations literally, and taking “the mind” literally is precisely what meditation is *not*. In this regard, it may not be incidental that meditation practice itself sometimes produces minor distressing stimuli; one’s rear end may ache or one’s nose may itch – in a context in which avoidance of those events is counterproductive. Thus meditation provides a good deal of practice in acceptance.

Finally, mindfulness meditation in particular creates a context in which a much broader range of stimulus events are contacted psychologically. Meditators are asked to observe every experience that is present (and in some traditions to describe them). In some traditions meditators are asked to notice the distinction between being conscious and what one is conscious of. All of this seems likely to broaden the range of events available in a given situation to regulate behavior.

Contexts of literality, reason giving, and emotional control narrow the relevant stimulus functions in a situation largely to those that emerge from within

language itself. Meditation is a much different context that both broadens the range of events available to regulate behavior and undermines the power of particular events to occasion verbally based streams of behavior designed to understand, predict, evaluate, avoid, soothe, control, or otherwise create a situation other than the situation that is present.

From a behavioral point of view, what is critical is creating contexts in which new behaviors can be learned that are not normally fostered by the social/verbal contexts that surround day to day language and cognition. Meditation seems to be such a context, but if we understand the processes involved, radically different technological approaches might have much the same effect and therefore are mindfulness techniques in their own right. For example, ACT includes several dozen “cognitive defusion” techniques that are designed to undermine contexts of literality. An example is rapid repetition of a single word until all meaning is lost. There is some evidence that procedures of this kind can reduce the literal, evaluative effects of negative self-talk quite quickly (e.g., Masuda, Hayes, Sackett, & Twohig, 2004). There is also evidence that as this occurs, broader and more flexible forms of stimulus control emerge that will foster greater psychological flexibility in the form of greater persistence and change as is needed in a given situation (e.g., Gutiérrez, Luciano, Rodríguez, & Fink, in press; Hayes et al., 1999). This makes intellectual sense. As the stimulus control exerted by literal language weakens, other events are then more available to function as stimuli (they can be “attended to”), and the avoidant functions built into language have less free rein. Is defusion thereby a mindfulness technique? By the Bishop et al. definition, probably so.

Defusion does not deal with the concept of attention, but it gets at the same issue in a contextual behavioral way. There is nothing implicitly wrong with speaking about such effects in a relatively decontextualized way that is focused on supposed mental faculties (e.g., the person is learning to “regulate attention”), but doing so entails a certain philosophical and metatheoretical attachment. Alternative research traditions will view and indeed must view the processes differently. If mindfulness is to be a broadly useful concept, excessive attachment to an underlying philosophy of science probably is not helpful.

Mindfulness is a pre-scientific concept, and it is unlikely that any one definition will allow it to enter into scientific discourse unambiguously. As compared to others, Bishop et al.’s proposed definition seems to give less emphasis to a nonevaluative perspective, to context, to observing and describing, or to a basic perspective on language and cognition. None of that is necessarily a weakness, but it does suggest that multiple definitions and measures will continue. Perhaps in the long run it will be less important to define mindfulness per se than it will be to learn how to alter the many psychological processes that seem to be related and to determine their role in positive clinical change.

The reader immersed in the problem of the screw in the board was probably not mindful of the sounds or movement of the air in the room. There was probably little cost to that narrowing of stimulus control, but people who are suffering tend to experience situations (e.g., what do I do with the thought “I should kill myself”) in which a similar kind of narrowing of stimulus control can be harmful or even life threatening. Mindfulness methods hold out promise, but given our state of ignorance we should avoid attachments both to specific techniques and to the details of our early theories.

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Received December 5, 2003; accepted December 16, 2003.