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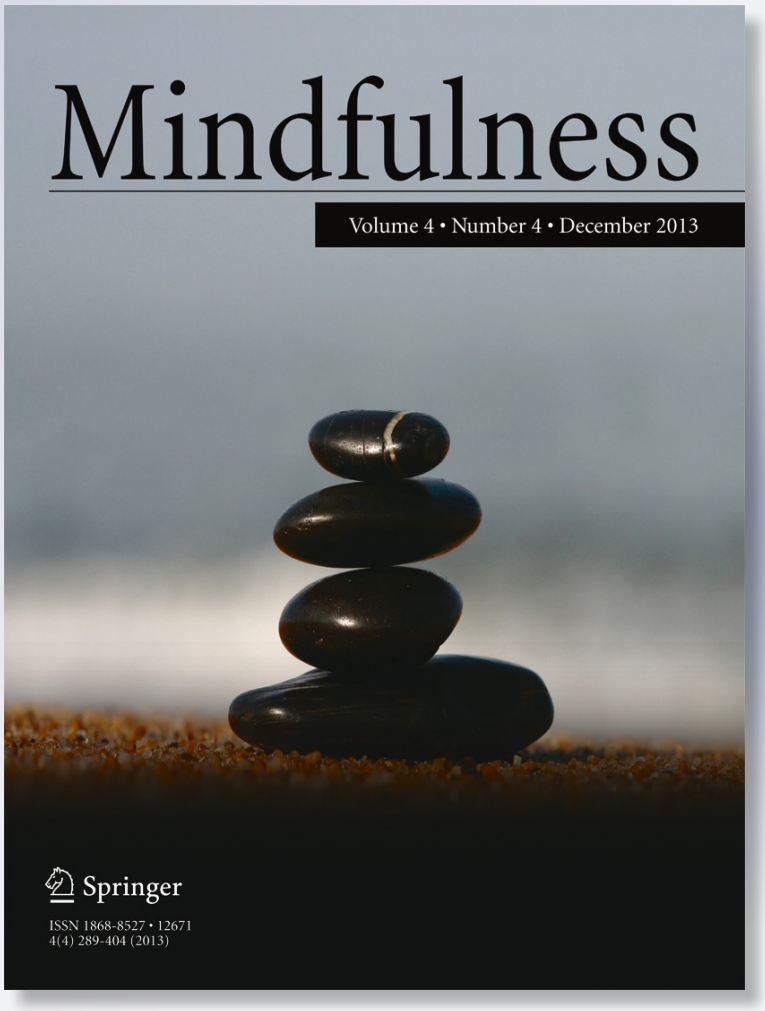

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MINDFULNESS IN PRACTICE

The MBSR Body Scan in Clinical Practice

Samuel J. Dreeben · Michelle H. Mamberg · Paul Salmon

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> If one thing, O monks, is developed and cultivated, the body is calmed, the mind is calmed, discursive thoughts are quieted, and all wholesome states that partake of supreme knowledge reach fullness of development. What is that one thing? It is mindfulness directed to the body…
> Anguttara Nikaya 2010, p. 9

Introduction

The body scan is a somatically oriented, attention-focusing practice first introduced into clinical practice as part of the Mindfulness-Based Stress Reduction (MBSR) program. Developed by Jon Kabat-Zinn, the MBSR program brings together a range of techniques and practices unified by a common theme — that of cultivating mindfulness. Mindfulness is defined predominantly as moment-by-moment attention focused in the present, in a nonjudgmental manner (Kabat-Zinn 1990). Described as a "clinic, in the form of an 8-week course" (Kabat-Zinn 2003, p. 149), MBSR has been adapted for various clinical populations, including individuals with eating disorders (Kristeller and Hallett 1999) anxiety (Kabat-Zinn et al. 1992), cancer (Speca, Carlson, Goodey & Angen, 2000; Lengacher et al. 2009), chronic pain (Kabat-Zinn, Lipworth, & Burney, 1985) and fibromyalgia (Sephton et al. 2007). MBSR was also the inspiration for a well-validated clinical intervention for depression: Mindfulness-Based Cognitive Therapy (MBCT), developed by Segal, Williams, and Teasdale (2013).

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The MBSR program typically consists of an introductory informational meeting followed by eight, 2½-h group meetings with an all-day retreat on the weekend of the sixth week (Kabat-Zinn 1990). Participants are expected to commit to 45 min of home practice, 6 days of the week for the entire 8-week program. As the first formal home practice, the body scan is frequently participants' initial encounter with mindfulness. Though the body scan serves as a foundation for all subsequent practices in the MBSR program, it has received remarkably little individualized attention. This relative lack of theoretical exploration may be an artifact of what McCown, Reibel and Micozzi (2010) note as a tendency of MBSR scholars to favor sitting meditation over other forms of practice. Whatever the reason, little has been written on the body scan in terms of its background, unique clinical contributions, and prospects for expanded clinical use. In this article we consider each of these facets in turn, with the intention of locating the body scan in the broader spectrum of clinical psychology practice.

Body Scan

In practice, participants begin the body scan by sitting or lying in a comfortable position. The instructor (live in class, then on audio recording at home) slowly guides the participants' attention through the various regions of the body. Kabat-Zinn has described the practice of the body scan as a "sweeping" (Kabat-Zinn 1982, p. 36) or a "zone purification" of the body (Kabat-Zinn 1990, p. 87). Kabat-Zinn's meditation teacher, a chemist by training, used the metaphor of a circular furnace slowly scanning a bar of metal, temporarily melting each segment while pushing impurities to the end of the bar. The body scan practice has elsewhere been described as an "affectionate, openhearted [and] interested" attention to the body that can be practiced at various speeds and levels of precision (Kabat-Zinn 2005, p. 250).

According to Drummond (2006), Kabat-Zinn's body scan was originally based on U Ba Khin's sweeping practice and

Hatha Yoga meditation. S.N. Goenka, a Burmese-trained Vipassana teacher, was U Ba Khin's long-time student and primary lineage holder (Srinivasan 1996). Goenka (cited in Hart 1987) has indicated that his teachings are based in the *Satipatthana sutta*'s observation of bodily sensations (Drummond 2006). The body scan may have been influenced in much the same way. Kabat-Zinn (2003) has pointed to the *Satipatthana sutta* (in addition to the *Anapanasati sutta*) as constituting the core teachings of mindfulness, with mindfulness of the body being the first of the four foundations of mindfulness. Relatedly, current Vipassana teachers (e.g., at the Insight Meditation Society and Spirit Rock) discuss both *suttas* when leading a similar type of scanning practice to stabilize attention and shift focus from being lost in thought during insight meditation.

As individuals begin body scan practice, they are often confronted with thoughts about success and failure or pleasure and discomfort (Segal, Williams, & Teasdale, 2013). These cognitions may relate to sleepiness, physical discomfort, attentional lapses, or emotional unease. Segal, Williams, and Teasdale (2013) encourage instructors to use these experiences as teaching moments, accentuating the participant's attention to these thoughts and feelings. By gradually shifting the intention of the practice from performance to simple attention, the practitioner may begin to cultivate a more detailed awareness of emotional, cognitive, and physical experience.

In traditional Buddhist practices, once attention is stably focused on bodily processes such as physical sensations or the flow of breathing, the practitioner can begin to notice the transitory nature of experience as well as the mind's tendency to judge each sensation (Sayadaw 1994). Experiencing periods of uninterrupted sensory awareness can highlight the extent to which the mind engages in automatic evaluative thought. Having noticed the mind's tendency to judge, one can in turn notice the attachment to or rejection of specific bodily sensations, becoming increasingly aware of the mind as intermediary interpreter.

Intimate knowledge of bodily experience, without judging or reactivity, is further assumed by Buddhist psychology to lead to an acceptance of impermanence — the body will fall ill, decay and die. As a consequence, the meditator's identification of self with body may be reduced with practice. This cognitive shift of dis-identification, we argue, is an integral aspect of the body scan as practiced in MBSR. McCown, Reibel, and Micozzi (2010) explain that this dis-identification also extends to separating present moment experience from stories or opinions about the experience. Through separating stories about the present moment from the experience of "present-moment happening," MBSR participants cultivate the ability to be flexible and to maintain perspective as they perceive their inner experience and the world around them. Kabat-Zinn (2005) similarly points out that the body scan's embodiment of two ways of representing meditation — as a technique (which implies a goal) and as a way of being — can contribute to reducing the mind's tendency to fall into dualistic thinking.

The popular caricature that Buddhist psychology rejects the body in favor of enlightenment is directly contradicted by the body scan. The practice makes clear that the body can be and is used as a vehicle to stabilize the mind and as a way to eliminate *Dukkha*, or suffering. Olendzki (2010) illustrates this process when he writes:

> The reason [mindfulness of the body] is effective is that the mind can be aware of only one thing at a time … over time, as the practice of mindfulness of the body develops, one can actually have multiple consecutive moments of sense awareness uninterrupted by 'thinking about' what one is sensing. To those who habitually think too much, this is experienced as blissful relief. (p. 89)

The body scan, in effect, provides the pedagogical basis of all the practices introduced later within both the MBSR and MBCT programs. By providing participants an opportunity to experience the automaticity of judgmental and narrative thinking, the impermanence of thoughts, and the flexibility of attention, it provides a thorough introduction to mindfulness in practice. If participants experience even a moment of "blissful" sensing without thinking, they may be more prepared and motivated to begin meditation and yoga practice. In addition, the inquiry which follows each MBSR practice in class entails just these skills of directing attention nonjudgmentally. As they learn this first practice in the MBSR course, participants develop an attitude of exploration, which serves as a shared foundation for teachers and students in future inquiry discussions. Finally, having been introduced to kind, patient attention to the body early in the course sequence, participants are better equipped to attend nonjudgmentally to their direct experience as they begin the more physically engaged mindfulness practices.

Somatic Attention in Clinical Practice

Just as various lineages employ scanning practices, many clinical interventions use some form of explicitly attending to the body. In reviewing these stand-alone clinical practices, we may begin to consider ways in which the body scan might fit into the canon of Western somatic psychotherapy techniques.

The body scan is markedly less action-based and goal-oriented than the most widely known Western-based somatic practices. For instance, in Progressive Muscle Relaxation (PMR), the therapist instructs the patient to notice sensations involved in tensing and relaxing specific muscle groups, sequentially, with the purpose of training the patient to bring the relaxation response more fully under conscious

control (Jacobson 1938). PMR shares with the body scan a progression of attention through different regions of the body. It also shares with the body scan a de-emphasis on labeling emotional reactions. However, unlike the body scan in which attention is continually re-directed to the body, PMR requires that participants should "let the power go off" in all the muscle regions until thinking has ended (McGuigan and Lehrer 2007, p. 75). More importantly, PMR differs from the body scan in that muscles are actively engaged and released rather than simply observed. This important difference means that PMR is more focused on the participant's *doing* — cognitively and physiologically — rather than *being*. In contrast, the body scan directs awareness to the noticing of how one is in the moment, rather than aiming to accomplish any task, however subtle. Lastly, PMR has the declared goal of achieving relaxation or reduced anxiety as its end, whereas the body scan is based in the non-striving attitude characteristic of mindfulness practice.

Schulz's Autogenic Training (AT) also shares the body scan's focus on the body. However, it is based heavily on imagery and aims to alter body sensations (Linden 2007). For instance, a person practicing AT may aim to lower her heart rate (HR) or warm her arms. Again, an important difference between the body scan and other Western somatic therapies lies in the difference between *doing* in order to achieve something, rather than simply *noticing* one's current state of being.

Similarly, hypnotherapeutic inductions frequently move attention through the body as a means of shifting an individual into a hypnotic state. Again, this differs from the body scan in its goal-directedness and use of non-body imagery. However, the body scan's traditional use of the present participle and slow speech patterns is quite similar to hypnotic inductions. Notice the language in this segment of a hypnosis induction: "The muscles around the right elbow and forearm becoming loose and comfortable. And all the muscles in the hand letting go, letting go…. Completely letting go" (Karlin 2007, p. 137). As discussed in our close examination of Kabat-Zinn's "languaging" (Mamberg, Dreeben, & Salmon, 2012), similar phrasing is a core part of the body scan. In both cases, language is used to encourage a particular type of experiential focus; however, the body scan does not elicit striving toward a particular state.

A related — but somewhat distinct — clinical approach derives from humanistic psychotherapy, in which a number of therapeutic modalities have incorporated elements of somatic awareness. Gendlin (1981) developed Focusing based on developing clients' perceptions of the felt sense of an emotion in their bodies. In this technique, an individual first notices the physical sensation of an emotion, and then gives a "handle" to the emotion by labeling it with a word. This differs from the body scan in both the use of labels and the attention directed at a felt emotion, rather than sequential regions of the body. Gestalt therapy also uses attention to somatic sensations as a central feature of therapy; for instance emphasizing awareness of gestures, breathing, voice, and facial expressions (Perls 1973). Much like the body scan, the use of non-evaluative, sustained attention to the body in Focusing and Gestalt Therapy may function to reduce reactivity to negative physical states and shift focus to present moment experience.

Charlotte Selver, the founder of Sensory Awareness in the U.S., influenced a wide range of psychological practitioners, including Fritz Perls, Erich Fromm, and Alan Watts. Her therapy focused specifically on the body, often in conjunction with movement, touch, or other sense perceptions such as noticing the effects of gravity. Her instruction, like the body scan, encouraged directing awareness through the body, cultivating a familiarity with the entirety of the body (Littlewood and Roche 2004). Selver's work in Sensory Awareness has found its way into mindfulness practice via teachers such as Ruth Denison (Boucher 2005).

Compared to western somatic practices such as PMR and AT, the body scan is markedly less action-based and less goal-oriented. PMR and AT both involve active manipulation of inner states, such as tensing and releasing muscles to attain relaxation. These techniques intentionally bring about changes in state, rather than foster experience of the body as it is. By emphasizing attending to the body and its functions without the practitioner having to do anything, the body scan fosters a distinction between awareness and bodily reactions, as well as acceptance of the body as it is. It also encourages adaptive attitudes with which to approach the body (e.g., curiosity or kindness).

In sum, the body scan shares certain features with other somatic therapies incorporated in western psychotherapy, while contributing a distinct quality. The MBSR body scan remains unique due to its focus on non-striving awareness without doing, and its roots in Buddhist psychology.

MBSR Body Scan as Yoga

The body scan is normally conducted lying supine on a floor or mat, comparable to the *Savasana* pose in Yoga. *Savasana* is treated in yogic texts as a particularly challenging pose. This is because of the demands it places on steady, inwardly focused attention, which in part is attained by taking physical activity out of the equation: very little conscious control is needed to maintain the posture, in contrast to the mental challenges involved, not the least of which is staying awake. Seen from this perspective, the body scan is intimately tied to Yoga, by virtue of establishing a vantage point from which to observe internal sensations. However, there are differences between these two practices, as well. In Yoga, *savasana* serves as a vehicle for stabilizing attention that is *not* necessarily somatically focused, but rather puts one in

touch with a state of being that transcends the physical world (Iyengar 1966). In a way, *savasana* presages death, quite literally — it is translated as the corpse pose — and implicitly fits in a much different framework than that of the body scan, which is undertaken within the context of the assertion "…as long as you are breathing, there is more right with you than there is wrong" (Kabat-Zinn 1990, p.2). In effect, the body scan brings the practitioner into intimate connection with sensations of being *alive*. Here is one point where the effects of the body scan and the yoga *asana* appear to diverge.

In both the body scan and *savasana*, the body makes more complete contact with the physical world — in the form of a mat or floor — than in any other posture. When standing, for example, our point of contact is through the soles of the feet, resulting in a certain precarious postural state that requires minute, non-conscious moment-by-moment skeletal and muscular adjustment needed to sustain what from a distance appears to be a static pose.

Novice yoga practitioners begin developing awareness of movement by observing the body during gross physical motion. Over time, they become increasingly attuned to more subtle postural shifts and their resulting sensations. As a natural lead-in to yoga practice and the MBSR program, the body scan helps cultivate awareness of the wealth of distinct somatic sensations. This is in contrast to the common experience of only noticing physical reactively when something unusual happens, typically negative. Once the practitioner has learned to develop this sensitivity, instructions such as "pivot on your right hip" begin to make sense, because of acquired sensitivity to subtle proprioceptive and kinesthetic feedback generated by movement.

So, in one sense, although yoga is formally introduced in session 3 of MBSR, in reality it begins with the body scan in session 1, due to the close physical correspondence with *savasana*. One could go further, and say that simply the act of moving into and out of the body scan comprises a fairly complex series of movements that are closely associated with yoga. Getting down on the floor is in fact a highly complex sequence of actions, beginning with establishing the intention to move and culminating the moment one finishes making contact with the floor and is able to completely let go and release any sense of effortful action. (Returning to an upright position is the reverse of this, and likewise requires enactment of a very different — and highly complex —sequence of movements resulting in assumption of a seated or standing position.) Mindful Yoga is full of instances where apparently simple movements are enacted with careful attention; in fact, it is the quality of attention, rather than the movement itself, that is paramount. In MBSR, these sequences provide an opportunity for careful attention to one's automatic judgments about bodily movements, limitations and sensations. The body scan provides practice with this attentional style well before mindful movement is introduced. It highlights *embodied* awareness, inherently based on sensation; it is not merely a mental exercise that uses the body as an object.

Clinical Research

In this section, we summarize the existing research on the body scan which falls into four general categories: (1) physiological effects, (2) intervention applications, (3) correlations between body scan practice time and psychometric variables, and (4) clinical case studies.

Physiological Effects of the Body Scan

Ditto, Eclache, and Goldman (2006) compared the physiological effects of body scan meditation, PMR, an audio recording control group, and a quiet sitting control group. They found that over a 20-min recording period and following 4 weeks of daily practice, the body scan group had a significantly greater increase in Respiratory Sinus Arrhythmia (RSA), a measure of parasympathetic activity reflecting heart and breathing rate synchrony, than PMR, the audio recording, or sitting groups.

In a study of MBSR for women with fibromyalgia, participants listened to a 20-min body scan before and after the 8-week program, while HR, skin conductance level (SCL) and peripheral (finger tip) temperature (PT) were measured (Lush et al. 2009). Mean SCL was significantly lower during the post-program body scan. Additionally, following MBSR, SCL had significantly lower initial values and declined more rapidly during the recording, suggesting lower sympathetic activation and reduction during the body scan. Although other factors in MBSR may have contributed to this pattern, the body scan likely contributed to the observed practice-specific effects.

Body Scan as Clinical Intervention

Although the body scan is a facet of many mindfulness-based clinical interventions (e.g., MBSR, MBCT, Mindfulness-Based Eating Awareness Training [Kristeller and Hallett 1999], Mindfulness-Based Relationship Enhancement [Carson et al. 2004], Mindfulness-Based Art Therapy [Monti et al. 2006], Mindfulness-Based Mind Fitness Training [Jha et al. 2010], Mindfulness-Based Relapse Prevention [Bowen, Chawla, & Marlatt, 2011]), it has received little attention as a stand-alone or complementary treatment. One notable exception is a series of studies by Ussher, Cropley and colleagues comparing the effects of the body scan to various smoking cessation techniques. A pair of studies found that a modified version of the MBSR body scan was as effective at reducing withdrawal symptoms and desire to smoke as isometric exercise (Ussher,

Cropley, Playle, Mohidin & West, 2009; Ussher, Doshi, Sampuran & West, 2006). Cropley, Ussher, and Charitou (2007) also examined the effects of a modified body scan on withdrawal symptoms and cravings in overnight abstinent smokers. Compared to an educational audio recording control group, participants who listened to the body scan reported reduced irritability, restlessness, and tension, as well as a diminished desire to smoke. There were again no significant differences between the two conditions, while both proved to be more effective than an educational audio recording. Although these studies tested a briefer body scan as a stand-alone intervention for a very specific application (smoking cessation), they suggest that the body scan may have value as an independent clinical resource.

Practice Time and Psychometric Variables

One of the most consistent findings in the MBSR literature is a preference for the body scan, as measured by practice time, compared to other core practices. In the study of Shapiro, Brown & Biegel (2007), student therapists in an 8-week MBSR program reported spending more time practicing the body scan (on a minutes/week basis) than they did sitting meditation or hatha yoga. In a pre-deployment military sample of Mindfulness-based Mind Fitness Training, the body scan and breath awareness were reported as the most frequently used practices (Jha et al. 2010). Tacon, Caldera, and Ronaghan (2004) reported that women with breast cancer participating in an MBSR program preferred both somatic practices: yoga (50.6 %), and body scan (42 %), followed by sitting meditation (7.4 %). At a 3-month follow-up, yoga remained the top preference (50 %), followed by the body scan (29.2 %), and sitting meditation (20.8 %). Finally, Carmody and Baer (2008) found that participants in a mixed MBSR group practiced the body scan 31–35 min/day, as compared to 16–20 min/day for both yoga and meditation.

In addition to tracking body scan practice time, Carmody and Baer (2008) also correlated these values with pre-/post-changes in psychometric measures. Body scan practice time was positively and significantly correlated with decreased interpersonal sensitivity and anxiety, and increased well-being, non-reactivity to inner experience, and observing skills. Lengacher et al. (2009) similarly correlated practice time with pre-/post-changes in an abbreviated MBSR program for breast cancer survivors. In this study, body scan practice time was correlated with significant improvements in trait anxiety, depression, perceived stress, emotional well-being, and aggregate mental health. Although it is unclear what mediating factors may be at work, or precisely what these outcome measures communicate, these studies collectively suggest that body scan practice is positively correlated with mental health.

In the papers reviewed thus far, the body scan is used as an indicator of patient engagement and as an outcome measure, with little attention paid to the activities (cognitive, affective and interpersonal) employed during the body scan itself. We turn now to clinical self-reports describing the effectiveness of the body scan.

Clinical Reports and First-Person Studies

There are several reports of participants' experiences with the body scan (Ott 2002; Finucane and Mercer 2006; Williams, Duggan, Crane & Fennell, 2006; Smith, Graham, & Senthinathan, 2007). These papers include accounts of people who reported the body scan being useful for distress tolerance and stress reduction, as well as coping with chronic pain, generalized anxiety disorder, depression, and epigastric disturbances.

The many narratives provided by Finucane and Mercer (2006) provide a particular wealth of first-person accounts about the body scan from MBCT participants. One of their participants describes the personal benefit of their body scan practice by contrasting it with PMR, stating:

> …when you are doing (progressive muscle) relaxation you are sort of concentrating just on muscles or different parts of your body but it's outside your body but I felt the [body scan] meditation was going inside the body … as if I've got into the root, is probably the best way to describe it. And I can get right to the nucleus of it and I can feel it. (p. 7)

As experienced MBSR instructors know, not every encounter with the body scan is positive. For instance, a woman with a history of childhood sexual abuse found that the body scan made her aware of "horrible feelings through my body that I had never felt before" (Finucane and Mercer 2006, p. 7). This is not unlike an MBSR participant described in *Full Catastrophe Living*, whose memories of childhood sexual abuse and guilt over her father's death surfaced as a result of sensations she experienced during the body scan (Kabat-Zinn 1990, p. 79–80). However, she persevered with the body scan and found that her physical and emotional pain decreased substantially. To further emphasize the variety of possible experiences, Finucane and Mercer describe another participant with a history of childhood sexual trauma who had a very positive experience with the body scan, and continued to practice it several times a week even at 3 months follow-up. Such reports are a reminder that the body scan itself is a neutral stimulus to which practitioners bring their own reactions, whether positive or negative. They also reinforce the importance of understanding a client's history and relationship to their body before embarking on this intervention.

Neuroimaging

Finally, some neuropsychological studies are beginning to focus on body scanning, as well. Goenka's adaptation of U Ba Khin's *body sweeping* practice has been employed in neuroimaging studies showing structural changes in practitioners. A study by Holzel et al. (2008) reported higher concentrations of gray matter in the left inferior temporal gyrus, right anterior insula, and right hippocampus in long-term meditators compared to non-meditating controls. In a study with the same participants, the left inferior temporal gyrus was also significantly more activated during body-focused meditation; additionally, the concentration of gray matter in this region was also correlated with amount of practice time (Holzel et al. 2007). Greater concentration of gray matter in the right anterior insula corroborates a similar finding with insight meditation practitioners (Lazar et al. 2005). The right anterior insula is generally considered to be related to interoception and awareness of bodily feelings (Holzel et al. 2008). Thus, while research on the body scan is in its infancy, it shows promise both as a clinical practice alone as well as an integral element of MBSR.

Clinical Application

The body scan has been widely practiced within the context of MBSR and other mindfulness-based interventions for over 30 years now. It is our opinion that it is clinically useful and needs to be researched as a unique clinical practice if we are to deconstruct the effective components of MBSR and related mindfulness-based interventions. To inform research and clinical use of the body scan, we propose the following applications of the body scan in traditional clinical settings:

(1) To help explicitly establish the connection between physical sensations and emotional labels. Most patients can say very little about what is going on internally, and in general have minimal sensitivity to inner states. The body scan provides a means of establishing a deeper sensitivity to sensations, as well as a vocabulary for conveying physiological experiences, that may previously have been missing or absent.

(2) In psychotherapy, to aid in identifying somatic correlates of cognitive activity and coming to understand that modifying either one may potentially impact the other.

(3) Re-directing attention away from stressful "time travel" cognitions to "here and now" sensations. Such re-directing may be particularly helpful with patients who dissociate or ruminate excessively.

(4) To encourage noting and appreciating affective states (Davidson 2010) using non-reactive language that is descriptive rather than diagnostic. For example, rather than saying "I'm depressed," clients with mood disorders may benefit from explicit re-framing and encouragement to state experiential correlates such as "my breath feels heavy and labored." Further, the body scan helps the practitioner move past static characterizations of the self ("*I'm* depressed"), in favor of more momentary sensations of the breath or body.

(5) Keeping in mind that many MBSR participants (and psychotherapy clients more generally) have physical problems, the body scan can be a tool for positive re-framing by bringing attention to the fact that whatever difficulties may be going on in one's body, there is much that is working properly.

(6) Avoidance is a common obstacle to therapeutic progress — avoidance of thoughts, avoidance of feelings, not being willing to make contact with experiences that are, or have been, prematurely labeled as aversive. Some people are so entrained into avoidance — perhaps habitually so — that clinicians need to employ a very gradual, gentle means of guiding them into making contact with the object of aversion. The reason for using the body scan to initiate this process is that much of avoidance involves cognitive activity, and by initially focusing on somatic sensations the therapist can establish a sort of phenomenological "beach head" from which further contact with correlated cognitive events could be initiated. If clients are avoidant or fearful of emotional experience, it may also provide an opportunity to experience emotions as somatic events, independent of evaluative cognitions.

Introduced early, and practiced throughout the MBSR curriculum, the body scan encourages awareness and acceptance of inner states, whether positive, negative or neutral. It is a unique practice, differing from most somatic-based clinical techniques because of its consistent emphasis on awareness in the present, rather than on future (or even immediate) change. Although largely overlooked in research, it has been a central feature of mindfulness-based practices for many years. The time has arrived for researchers and clinicians to consider seriously the unique contribution of the body scan in both MBSR and clinical practice.

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