

Mindfulness Introduction: From Mind Full to Mindful

Abstract This chapter aims to clarify what mindfulness meditation is, and to introduce the emerging field of Mindfulness Neuroscience, which can help individuals better understand the brain mechanisms underlying mindfulness and other mental states. This chapter will also point out the methodological challenges in the mindfulness field and the possible solutions to these challenges.

Keywords Mindfulness meditation · Mindfulness neuroscience · Integrative Body-Mind training (IBMT)[®] · Mind-fulness · Mindlessness · Longitudinal studies · Cross-sectional studies · Methodological challenges

Meditation is a form of mental training and encompasses a family of complex practices such as mindfulness meditation, yoga, Tai Chi, and Qigong. Of these practices, mindfulness meditation has received the most attention in psychology and neuroscience research over the past two decades (Tang et al. 2015). Many people use the term “mindfulness,” but they often refer to completely different things. Therefore, it may mislead one’s fundamental understanding of the concept and consequently, one’s practice. In this chapter, I will introduce three states of mind—mind-fulness, mindlessness, and mindfulness—as examples to clarify the term “mindfulness” and to help the readers grasp the essence of mindfulness more easily. In reality, *mindfulness is NOT a concept; instead, it is a direct experience prior to one’s conceptualization* per se. Without any personal experience of mindfulness,

one can only get the partial reflection of that experience, perhaps like a blind man touching only parts of an elephant. However, an experienced teacher or coach can bridge an individual with real mindfulness state and further help the individual stabilize this experience in the brain and body. In one form of mindfulness meditation practice, *Integrative Body-Mind Training (IBMT)*®, we often use this coach-facilitating technique to help novices (Tang et al. 2015; Tang 2009; Tang and Tang 2015b).

ARE YOU MIND-FULL OR MINDFUL?

Nowadays, within the overloaded world of information, we are always “online.” In other words, we are all *mind-full*: our mind continuously collects endless information consciously or/and unconsciously. We do not have more space or capacity to reorganize and digest this accumulated information, because each moment our mind is thinking or wandering, and receiving or processing information restlessly. *Mind-less* state refers to an automatic and habitual response to external stimuli without conscious awareness involvement, and mind-less state and behavior often happen when our mind is not well-trained. Moreover, mind-full and mind-less states are out of our mind control and running automatically. From the neuroscience perspective, mind-full and mindless states occupy too much of the energy and resources of our brain, which are mainly supported by the default mode network in the midline areas of our brain. In this situation, the mind is not sharp enough to best contribute to our work and life achievements (Tang and Tang 2015a, b).

What is mindfulness? There are many definitions of mindfulness. For example, mindfulness refers to *non-judgmental attention to the present moment* (Kabat-Zinn 1990); another example, “*When we are mindful, we are open to surprise, oriented in the present moment, sensitive to context, and above all, liberated from the tyranny of old mindsets*” (Langer 2014). However, the definition of mindfulness is still in debate because mindfulness itself lies beyond these descriptions. As I pointed out earlier, *mindfulness is NOT a concept; instead, it is a direct experience prior to one’s conceptualization* per se. A simple analogy would be: no matter how much you know about an apple, only after you have eaten an apple would you know what it tastes like. Compared to mind-fullness or mindlessness, mindfulness is a direct and present experience that is different from the other two states (Tang et al. 2015). From an experiential perspective, mindfulness is described as: “*When you first become aware of something, there is a fleeting instant of pure awareness just before you conceptualize the*

thing, before you identify it. That flowing, soft-focused moment of awareness is mindfulness” (Gunaratana 2011). A qualified teacher or coach can help you experience mindfulness state directly (also known as “experiential insight”) and then stabilize it. This experience can facilitate your practice significantly. Compared to mind-full and mindless states, mindfulness is a subtle and deep process that can reorganize the overloaded information in an efficient way and thus release your occupied brain resources for attention, self-control, and optimal performance in daily life (Tang and Posner 2013a, 2013b; Tang 2017; Tang et al. 2017a, b).

THE CLARIFICATION OF MINDFULNESS

One recent perspective divides mindfulness meditation or intervention into: (1) mindfulness-based stress reduction (MBSR) and related group-based mindfulness interventions such as mindfulness-based cognitive therapy (MBCT); and (2) mindfulness-related interventions, such as acceptance and commitment therapy (ACT), dialectical behavior therapy (DBT), cognitive behavioral stress management, and IBMT (Creswell 2017).

However, the confusion is that the phrase “related group-based mindfulness interventions” and the term “mindfulness-related interventions” seem to be the same. Even if the author suggests the difference resides in the “group-based” aspect, many other interventions, including MBSR and MBCT, are also group-based. Furthermore, interventions in the first group are defined as training that foster mindfulness, whereas interventions in the second group are characterized as training that incorporates mindfulness as one component of the program. In reality, this is far from accurate, since MBSR and MBCT also involve multiple components, including mindfulness (Kabat-Zinn 1990; Davidson and Kabat-Zinn 2004; Segal et al. 2002). Therefore, after careful examination of the distinctions made by the author, the major difference between groups one and two seems to be that the former has the term “mindfulness” in the name of the intervention, and hence are categorized as mindfulness-based interventions, but the latter does not. To provide a more thorough understanding, below I outline some of the similarities and differences in these interventions as discussed by leading researchers in the field (Kabat-Zinn 1990; Davidson and Kabat-Zinn 2004; Smith 2004; Segal et al. 2002; Linehan 2014; Tang et al. 2015; Hayes et al. 2016; Tang 2017; Tang et al. 2017c).

MBSR was described as a “*program that focuses on learning how to mindfully attend to body sensations through the use of body scans, gentle*

stretching, and yoga mindfulness exercises, along with discussions and practices geared toward applying mindful awareness to daily life experiences, including dealing with stress” (Creswell 2017). These descriptions clearly indicate that MBSR has multiple components including mindfulness, yoga exercise, body stretching, group discussion, and other components in the program, just like the second group of mindfulness-related interventions mentioned earlier. Therefore, it does not make sense to characterize only MBSR or MBCT as mindfulness interventions, but exclude other mindfulness interventions that do not have the term “mindfulness” in their names. Consistent with MBSR developer Kabat-Zinn’s clarification in his book and later articles, there is no pure mindfulness program, and mindfulness intervention such as MBSR incorporates other techniques (Kabat-Zinn 1990; Davidson et al. 2003; Davidson and Kabat-Zinn 2004). Smith (2004) also pointed out that “MBSR system is an amalgam of mindfulness meditation, concentrative meditation, passive breathing exercises, yoga stretching, and other components.” Therefore, mindfulness intervention or training works through an integration of several techniques and components rather than a single technique-mindfulness.

In the same vein, MBCT developers described the training as a program that draws from cognitive behavior therapy (CBT) and traditional mindfulness practices such as MBSR. By definition, MBCT is a psychological intervention for individuals at risk of depressive relapse (Segal et al. 2002). Clearly, MBCT also incorporates other trainings such as CBT and MBSR into its program, and it does not make sense to suggest MBCT is a mindfulness intervention, but other similar programs (e.g., ACT, DBT, IBMT) without the term “mindfulness” are not. This clarification is crucial, since a misunderstanding of what mindfulness interventions are will mislead the research community and general public on mindfulness and its application, and may create confusion or even bias for people who are interested in research and applied work in this field.

Therefore, the name of a mindfulness meditation or intervention with or without the term “mindfulness” should not define the nature of the program. Instead, the exact components and instructions of mindfulness practice are the key to define the program. Moreover, we need to understand that mindfulness methods always include several components and there is no pure “mindfulness” with only a mindfulness component (Davidson and Kabat-Zinn 2004; Smith 2004; Tang et al. 2007; Tang and Tang 2015a, b; Tang 2017; Tang et al. 2017c).

MINDFULNESS NEUROSCIENCE

Several years ago, I, along with my colleague Michael Posner, proposed an emerging new field—Mindfulness Neuroscience—in a special issue of the journal *Social Cognitive and Affective Neuroscience (SCAN)*. Mindfulness Neuroscience aims to investigate the underlying mechanisms of different mindfulness practices, different stages and different states of practice, as well as different effects of practice over an individual’s lifespan. Mindfulness Neuroscience integrates theories and methods from Eastern contemplative traditions, Western psychology and neuroscience, and makes use of brain imaging techniques, physiological measures, behavioral tests, and genetic methods. In Chap. 2, I will discuss brain mechanisms in detail (Tang and Posner 2013a, b).

METHODOLOGICAL CHALLENGES IN THE MINDFULNESS FIELD

To move mindfulness research and application forward, current methodological challenges in the field of mindfulness should be considered (Davidson 2010). Although the number of published articles on mindfulness research has increased significantly, as shown in several meta-analyses by different groups, the methodological quality of many studies is still relatively low. Few are actively controlled longitudinal studies, which compare data from one or more groups at several time points and include an active control condition and random assignment to conditions. In addition, sample sizes are usually small. Most studies were cross-sectional;—they compared data from a group of meditators with data from a waitlist control group of non-meditators matched on various dimensions at one time point. Although a number of cross-sectional studies suggested positive changes associated with meditation, this design precludes causal attribution: it is possible that there are pre-existing differences in the brains of meditators, which might be linked to their interest in meditation, motivation, expectancy, personality, and other factors (Tang et al. 2015).

It is important to control for confounding variables that may influence the outcomes of meditation, so more recent studies have been developed that include active interventions in control groups such as relaxation training, stress management education, or a health enhancement program; these interventions can control for confounding factors such as social interaction with the group and teachers, and the amount of home exercise,

physical exercise, and psychoeducation. These studies are therefore better able to extract and delineate the meditation-specific effects. For instance, as shown in recent studies by University of Wisconsin, there are no differences in longitudinal randomized trials comparing MBSR versus an active control—health enhancement program (MacCoon et al. 2012, 2014; Rosenkranz et al. 2013).

As is typical for a young research field, many mindfulness experiments are not yet based on elaborate theories in a rigorous design, and conclusions are often drawn from post hoc interpretations. But I believe that future research must use more longitudinal, randomized, and actively controlled research designs with larger sample sizes to advance the understanding of the mechanisms of mindfulness meditation. Therefore, in this book, I will only include actively controlled longitudinal studies to support our discussion and conclusions. In the next chapter, we will explore the brain mechanisms of mindfulness meditation together.

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