

Reconstructing and deconstructing the self: cognitive mechanisms in meditation practice

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Scientific research highlights the central role of specific psychological processes, in particular those related to the self, in various forms of human suffering and flourishing. This view is shared by Buddhism and other contemplative and humanistic traditions, which have developed meditation practices to regulate these processes. Building on a previous paper in this journal, we propose a novel classification system that categorizes specific styles of meditation into attentional, constructive, and deconstructive families based on their primary cognitive mechanisms. We suggest that meta-awareness, perspective taking and cognitive reappraisal, and self-inquiry may be important mechanisms in specific families of meditation and that alterations in these processes may be used to target states of experiential fusion, maladaptive self-schema, and cognitive reification.

Cognitive mechanisms of meditation practice

Well-being is a complex phenomenon that is related to a variety of factors, including cultural differences, socioeconomic status, health, the quality of interpersonal relations, and specific psychological processes [1,2]. While mindfulness (see [Glossary](#)), compassion, and other forms of meditation are increasingly being studied as interventions to alleviate suffering and promote well-being [3–10], it is not yet clear how different styles of meditation affect specific cognitive processes, or how alterations in these processes might impact levels of well-being. Here, we address this question from the perspective of psychology and cognitive neuroscience to better understand how changes in well-being are mediated by alterations in distinct cognitive processes and in the structure and functioning of corresponding brain networks.

In a previous article in this journal, we proposed a preliminary framework to discuss commonly practiced

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Glossary

Attentional family: a class of meditation practices that strengthen the self-regulation of various attentional processes, especially the ability to initiate and sustain meta-awareness. Some forms of meditation in this family involve a narrowing of attentional scope, while others involve releasing attentional control and bringing awareness to whatever enters the field of consciousness.

Cognitive reification: the experience of thoughts, emotions, and perceptions as being accurate depictions of reality and, in particular, the implicit belief that the self and objects of consciousness are inherently enduring, unitary, and independent of their surrounding conditions and circumstances. In the Buddhist tradition, cognitive reification is a primary target in deconstructive styles of meditation.

Constructive family: a family of meditation practices that allow one to cultivate, nurture, or strengthen cognitive and affective patterns that foster well-being. Practices in this family may aim to promote healthy interpersonal dynamics, to strengthen a commitment to ethical values, or to nurture habits of perception that lead to enhanced well-being. Perspective taking and cognitive reappraisal are important mechanisms in this style of meditation.

Deconstructive family: a family of meditation practices that uses self-inquiry to foster insight into the processes of perception, emotion, and cognition. Deconstructive meditation practices may be oriented toward the objects of consciousness or toward consciousness itself.

Experiential fusion: an automatic process whereby one becomes absorbed in the contents of consciousness, leading to a diminished capacity to monitor and/or regulate psychological processes. In attentional styles of meditation, this process is systematically undermined through the cultivation of meta-awareness and the regulation of attention. Experiential fusion is also indirectly undermined in the constructive and deconstructive families.

Insight: a shift in consciousness that is often sudden and involves a feeling of knowing, understanding, or perceiving something that had previously eluded one's grasp. In deconstructive meditation practices, insight is often elicited through self-inquiry and pertains to specific self-related psychological processes that inform well-being.

Meta-awareness: heightened awareness of the processes of consciousness, including the processes of thinking, feeling, and perceiving. Along with the regulation of the scope and stability of attention, the cultivation of meta-awareness is an important objective in attentional styles of meditation practice. It is also strengthened indirectly in the constructive and deconstructive families.

Mindfulness: a term that is defined differently in Buddhist and contemporary contexts, but which often refers to a self-regulated attentional stance oriented toward present-moment experience that is characterized by curiosity, openness, and acceptance. In some traditional Buddhist contexts, mindfulness is equivalent to the psychological process that we refer to here as meta-awareness.

Perspective taking: the process of considering how one or another would think or feel in a particular situation.

Reappraisal: the process of changing how one thinks or feels about situations and events in such a way that one's response to them is altered.

Self-inquiry: the investigation of the dynamics and nature of conscious experience, particularly in relation to thoughts, feelings, and perceptions that pertain to one's sense of self. Self-inquiry may be an important mechanism in deconstructive meditations due to its role in facilitating insight.

Self-schema: mental representations of the self that synthesize information from sensory, affective and/or cognitive domains. Constructive styles of meditation often involve developing and/or strengthening adaptive self-schema.

forms of mindfulness meditation [11]. Recent theoretical models have advanced our understanding further by attempting to identify potential cognitive and neural mechanisms in different forms of meditation and to classify different forms of contemplative practice [12–17]. While some models have proposed specific cognitive and biological processes that inform the practice of mindfulness meditation [18–20], theoretical accounts of other families of meditation are lacking, especially models that identify important mechanisms in other styles of practice. Thus, while these pioneering efforts provide crucial insights for the scientific study of meditation, rigorous efforts to examine the psychological processes involved in different families of meditation are needed to understand the precise manner in which they might impact various aspects of well-being.

In this article, we expand our original framework to accommodate a broader range of traditional and contemporary meditation practices, grouping them into attentional, constructive, and deconstructive families. According to this model, the primary cognitive mechanisms in these three families are: (i) attention regulation and meta-awareness; (ii) perspective taking and reappraisal; and (iii) self-inquiry, respectively. To illustrate the role of these processes in different forms of meditation, we discuss how experiential fusion, maladaptive self-schema, and cognitive reification are differentially targeted by these processes in the context of Buddhist meditation, integrating the perspectives of other contemplative, philosophical, and clinical perspectives when relevant. The mechanisms and targets we propose are drawn from cognitive science and clinical psychology. Although these psychological processes are theoretically complex, as are the meditation practices that target them, we propose this novel framework as a first step in identifying specific cognitive mechanisms to aid in the scientific study of different families of meditation and the impact of these practices on well-being.

The attentional family: meta-awareness and experiential fusion

The group of meditative practices that we refer to here as the ‘attentional family’ trains a variety of processes related to the regulation of attention. These include the capacities to manipulate the orientation and aperture of attention, to monitor, detect, and disengage from distractors, and to reorient attention toward a chosen object [20–23]. We propose that a shared characteristic of all meditation practices in this family is the systematic training of the capacity to intentionally initiate, direct, and/or sustain these attentional processes while strengthening the capacity to be aware of the processes of thinking, feeling, and perceiving (Box 1 and Table 1).

In scientific literature, the term ‘meta-awareness’ has been used to describe the cognitive function of being aware of the processes of consciousness [24]. In the absence of meta-awareness, we become experientially ‘fused’ with what we experience. We may be aware of the objects of attention, yet unaware of the processes of thinking, feeling, and perceiving. This state of experiential fusion has been referred to using a variety of terms in the study of metacognition, including ‘cognitive fusion’ and ‘object mode’ [25,26].

Box 1. Forms of attentional meditation

In both traditional and clinical contexts, the capacity to sustain a heightened awareness of thoughts, behaviors, emotions, and perceptions is thought to be a central feature of mindfulness meditation [18,20,28,96–98]. Although there is considerable discussion concerning the exact nature of mindfulness practice and its relation to the construct of mindfulness in traditional Buddhist frameworks [28,99–102], there is general agreement that the cognitive process that we refer to here as meta-awareness has a central role across a broad spectrum of meditation practices. Following our prior categorization [11], here we propose two main categories of attentional meditation, along with two new subcategories that allow for a more nuanced discussion of different styles of practice in this family.

Focused-attention practices involve a narrowing of attentional scope and the cultivation of one-pointed concentration on a single object [11,48]. The presence of meta-awareness distinguishes the attentional stability achieved through this form of meditation from other forms of absorption, such as the stable attentiveness that occurs when one is engaged in an engrossing conversation or playing an interesting game. Open-monitoring (OM) practices similarly involve the cultivation of meta-awareness, but they do not involve selecting a specific object to orient one’s attention. Rather, attentional scope is expanded to incorporate the flow of perceptions, thoughts, emotional content, and/or subjective awareness. OM meditation can be further divided into ‘object-oriented OM’, which involves directing one’s attention to whatever thoughts, percepts, and sensations enter the field of awareness, and ‘awareness-oriented OM’, referring to the sustained recognition of the knowing quality of awareness itself. Both forms of OM meditation are similar in many ways to practices discussed below in the context of the deconstructive family. What distinguishes them from deconstructive forms of meditation is that their primary objective is the stabilization of meta-awareness in relation to a particular attentional configuration. As we see below, in the deconstructive family, a similar configuration of attention may be used, but for different purposes (such as the cultivation of insight into the nature of sensory experience).

To illustrate the difference between meta-awareness and experiential fusion, let us consider an example. Imagine that you are watching an enthralling movie. In one moment, you might be experientially fused with the movie, to the point when you are no longer consciously aware that you are sitting in a movie theater. In the next moment, you might suddenly become aware of your surroundings and the fact that you are viewing images on a screen. In both moments, you may be attentive to the movie, but only in the second moment are you also aware of the process of watching the movie.

In this example, paying attention to the images and sounds that constitute the movie is a form of awareness. If someone tapped you on the shoulder and asked you what just happened in the movie, you could answer. However, if you were asked whether you were conscious of sitting in a movie theater in the moment before being asked, you would probably answer no. The awareness that you were watching a movie, in this case, would only be retrospective. Across a range of traditional and contemporary contemplative traditions, the absence of meta-awareness is viewed as an impediment to various forms of self-monitoring, self-regulation, and self-inquiry [27–29].

Experiential fusion and the training of attention

The inability to regulate attentional processes has been linked to attention-deficit hyperactivity disorder (ADHD) [30], addiction [31], and other forms of psychopathology [32,33], as well as to abnormalities in brain structure and

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