Commentary:

Duality and Nonduality in Meditation Research

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Abstract:
The great variety of meditation techniques found in different contemplative traditions presents a challenge when attempting to create taxonomies based on the constructs of contemporary cognitive sciences. In the current issue of Consciousness and Cognition, Travis and Shear add ‘automatic self-transcending’ to the previously proposed categories of ‘focused attention’ and ‘open monitoring’, and suggest characteristic EEG bands as the defining criteria for each of the three categories. Accuracy of current taxonomies and potential limitations of EEG measurements as classifying criteria are discussed.

Cognitive and affective neuroscience studies of meditation have a potential to make important contributions to the understanding of the brain’s functioning and neural plasticity (Lutz et al., 2008; Lazar et al., 2005). Furthermore, extensive first-person reports of changes brought on by these practices, may, once verified, enhance our views of the nature and functions of consciousness.

The enormous variety of meditation techniques that have been developed over the centuries in the world’s contemplative traditions have presented an ongoing challenge to finding consistent and encompassing taxonomies. Only recently has this challenge emerged into full focus in the field of contemporary meditation research (Cahn and Polich, 2006; Lutz, Slagter et al., 2008). The current paper by Travis and Shear is an important contribution in this direction.

A recent effort by Lutz et al. (2008) to operationalize meditation techniques in terms of the deployment of attentional strategies has resulted in a categorization of meditation techniques as belonging to either a ‘focused attention’ or ‘open monitoring’ style. This appears to be accurate, as most meditation techniques rely, at least at some stage of practice, on either endogenous or exogenous attentional
systems, respectively (Austin, 2009). While this generalization covers a fairly large number of meditation techniques, especially within the Buddhist tradition, it surprisingly leaves out a very important, if not critical meditation style. Travis and Shear correctly point to this flaw and argue that Transcendental Meditation actually belongs to a new category, which they label ‘automatic self-transcending’. The term ‘transcendence’ has its inherent problems, and placing it in the context of cognitive psychology and neuroscience brings with it some unavoidable awkwardness. What the authors imply here is that something about the meditation techniques belonging to this category makes them auto-transcending, and leads to establishing of automaticity due to implicit learning.

Transcending the technique, in this sense, is common among experienced practitioners of other meditation styles as well, as the authors note in reference to QiGong (Qin et al., 2009), and the focused attention meditation in Tibetan Buddhist practitioners (Brefczinski-Lewis et al., 2007). Their claim in relation to TM is that developing a certain level of automaticity and ‘effortlessness’, happens relatively quickly because of the way in which the technique is set up, and that this is one of its chief differentiating features. Thus, in addition to differentiating meditations based on attentional strategy, this new category involves differences in working memory load.

However, what is at stake here is a more profound difference, one that cannot be adequately captured within a single-dimension characterization of attentional strategy. Both focused attention and open monitoring styles of meditation contain an essentially dualistic orientation of ‘subject-observing-object’. Yet, there is another group of meditations that do not employ this strategy, but instead rely on accessing a level of awareness that is inherently free from this dualistic subject-object construct. This non-conceptual awareness has sometimes been termed nondual awareness, open awareness or open presence (Kozhevnikov et al. 2009; Lutz et al., 2007). Recognizing it within one’s waking experience, and learning to abide in it, is known in the Tibetan Buddhist tradition of Dzogchen as “taking the goal of meditation as the path”. In other traditions, such as various branches of Yoga and Vedanta, and in some other sects of Tibetan Buddhism, this non-conceptual awareness is first isolated from experience, and later, with practice, established in daily life. With this approach, there may be, initially, various degrees of focused attention deployment, until one can access this nondual awareness. This initial stage is perhaps what has led some to classify TM as a focused attention style of meditation. Thus, in terms of the actual goal of meditation practice, the fundamental differentiating feature of a meditation technique is whether it remains within the dualistic subject-object cognitive structure, or whether it transcends this structure to reveal the underlying nondual awareness.
Some current research in cognitive neuroscience has attempted to differentiate attention from awareness (Brascamp et al., 2009; Koch and Tsuchiya, 2004). The problem is that nondual awareness is not a level of consciousness that is known about or has been operationalized in cognitive neuroscience. So, while operationalizing different meditation techniques in terms of already established constructs of cognitive science allows for experimental tractability, it also creates a problem of accuracy as to the intended goal of meditation. It also leads to confounding the neural correlates of the meditation techniques that are used to get to particular ‘states’ of consciousness, with the correlates of the ‘states’ themselves.

In order to solve this problem, both the taxonomy and the research of meditation need to be approached in a multi-dimensional fashion, where some of the dimensions could be: targeted states of consciousness; duality to nonduality scale; (which may or may not overlap with) stages of expertise; cognitive processes such as attentional strategies and working memory load; and objects of meditation.

Travis and Shear suggest that the differences between meditation styles should be evident as fairly simple distinctions in EEG signatures. There is elegance and parsimoniousness to this idea, but the reality may be more complicated. The EEG signatures of meditation tend to be fairly complex across all bands and differ, as well, with the degree of the subject’s proficiency (Cahn & Polich, 2006). Changes in the gamma band, which the authors use as one of the indicators of focused attention style, have been found in other styles of meditation as well (Cahn et al., 2010). It is also questionable whether compassion meditation (Lutz et al., 2004) which produced some of the largest changes in the gamma band found in meditation to date, belongs to the focused attention style, as the authors suggest. The non-referentiality of compassion makes it more akin to meditations in the nondual or ‘automatic self-transcending’ category. Most importantly, certain aspects of synchrony in the gamma range await further clarification due to artifacts from scalp muscles and eye movement (Yuval-Greenberg et al., 2008).

The two EEG signatures of meditation that at present appear to be most consistent are the increase in frontal midline theta, and the forward spread and increase in alpha. Whether they can be used as reliable indices for meditation categories requires further research. Finally, the lingering question is whether the changes in the EEG signal accurately reflect the subtle meditative states of consciousness or whether they reflect the overall levels of arousal in the brain and the specifics of various cognitive processes associated with the techniques of meditation.

Expanding the current taxonomy of meditation and defining the characteristic neurophysiological signatures of various meditation categories are important issues in meditation research. Travis and Shear’s paper makes a significant contribution to their clarification. Advancing the research of meditation will add to the scientific
understanding of brain functioning, and may help answer the larger social and psychological question about what it is to be an authentic, integrated and realized human being.

References:


