

Meditation-induced neuroplasticity of the embodied-self and its role in social processing

ABSTRACT:

Background

Conceptualizations of “sense of self” distinguish between the “narrative self” (personal identity with temporal extension) and the “embodied self” (momentary awareness rooted in bodily and multisensory processes endowed with a sense of agency, ownership and 1st person perspective-1PP). Currently, there is no consensus if a state of consciousness devoid of a sense of self is possible at all, let alone its potential benefits, which are the aims of this study.

In a series of pilot studies employing an innovative magnetoencephalography (MEG) neurophenomenological (NP) setup, we were able to provide a proof-of-concept that long-term meditators can volitionally evoke in the lab a total self-boundary (SB) dissolution.

Aims

- a) Investigating the malleability of the embodied-self and its sub-components.
- b) Studying the relationship between embodied-self flexibility and social-processing abilities.

Method

46 trained meditators, in a state and trait double MEG - NP session.

Results

SB dissolution reduces beta band (peak 27 Hz), source localized to the bilateral TPJ, while SB enhancement of SB results in a similar, but more moderate, reduction. SB dissolution states were phenomenologically characterized by changes in six experiential features (location, agency, 1PP, attention, body sensations, affective valence), and their interaction with meditative technique. Employing NP, the contrast between ‘full SB dissolvers’ and the others yielded a strong trend for beta reduction for the ‘full dissolvers’.

Conclusions

We replicate and extend previous results, demonstrating malleable SB flexibility in meditators, enhancing our understanding of the underlying mechanisms related with volitional manipulation of embodied self.

Keywords

Self-boundaries, Meditation, Neuro-phenomenology, Magnetoencephalography

Published Work:

David, A., Rubinsten, O., & Berkovich-Ohana, A. (in press). Math anxiety, self-centeredness, and dispositional mindfulness. *Journal of Educational Psychology*.

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Nave, O., Trautwein, F.-M., Ataria, Y., Dor-Ziderman, Y., Schweitzer, Y., Fulder, S., & Berkovich-Ohana, A. (2021). Self-boundary dissolution in meditation: A phenomenological investigation. *Brain Research*, *11*(6), 819. doi: 10.3390/brainsci11060819

Berkovich-Ohana, A., Dor-Ziderman, Y., Trautwein, F.-M., Schweitzer, Y., Nave, O., Fulder, S., & Ataria, Y. (2020). The hitchhiker's guide to neurophenomenology - The case of studying self-boundaries with meditators. *Frontiers in Psychology*, *11*:1680. doi: 10.3389/fpsyg.2020.01680

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