

## **ATTENDING MINDFULLY: A PSYCHOPHYSIOLOGY STUDY OF SENSORY PROCESSING IN MEDITATORS**

Veena Kumari<sup>1,2</sup>, Umisha Tailor<sup>2,3</sup>, Anam Saifullah<sup>1,2</sup>, Elena Antonova<sup>1,2</sup>,  
Meenakshi Shulka<sup>4</sup>, Vishnukant Tripathi<sup>5</sup> & Rakesh Pandey<sup>5</sup>

<sup>1</sup>Department of Life Sciences, College of Health, Medicine and Life Sciences, Brunel University London, UK; <sup>2</sup>Centre for Cognitive and Clinical Neuroscience, College of Health, Medicine and Life Sciences, Brunel University London, UK; <sup>3</sup>Department of Psychology, University of Manchester, UK; <sup>4</sup>Department of Psychology, University of Allahabad, India; <sup>5</sup>Department of Psychology, Faculty of Social Sciences, Banaras Hindu University, India

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**Background:** There is growing evidence of beneficial effects of regular meditation on sensory processing and emotion regulation. Startle modulation paradigms, namely habituation and prepulse inhibition (PPI), can offer further insight into the brain's early information processing mechanisms that might be impacted by regular meditation practice. Startle habituation refers to decreasing response to a repeatedly presented stimulus. PPI refers to a reduction in amplitude of the startle response when the startling stimulus ("pulse") is preceded briefly (30-150 ms) by a weaker subthreshold stimulus ("prepulse"). It provides an operational measure of sensorimotor gating and has been found to be reduced in association with many psychopathologies, particularly schizophrenia.

**Aims:** Our main aims were to examine startle habituation and PPI in regular meditators, relative to non-meditators, and examine the relationship of habituation and PPI with emotion regulation, within and across these two groups

**Methods:** Two independent samples (London, UK; Varanasi, India) involving regular meditators and non-meditators were assessed on habituation and PPI of the acoustic startle response, along with established measures of emotion regulation.

**Results:** In both samples, non-meditators had a higher level of emotion regulation difficulties and a lower level of trait mindfulness, compared to regular meditators. There was no significant difference, on average, between the meditator and non-meditator groups in habituation or PPI in either the UK or India sample. However, in the UK sample, there was significantly more PPI in meditators who self-reported being able to enter and sustain a non-dual awareness during their meditation practice relative to those who could not. In the India sample, greater startle habituation correlated with a longer meditation practice (i.e., total practice hours, the number of years practiced) in line with our previous finding in a UK sample of experienced meditators. There were small associations between startle habituation or PPI and some measures of emotion regulation.

**Conclusions:** Taken together, our findings suggest that subjective quality as well as quantity-related differences in meditation experience are likely to be associated with different early sensory information processing characteristics in meditators.

**Keywords:** Prepulse inhibition, Habituation, Startle reflex, Meditation, Non-dual awareness

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**E-mail contact:** [veena.kumari@brunel.ac.uk](mailto:veena.kumari@brunel.ac.uk)