

## **Attending mindfully: A psychophysiology study of sensory processing in meditators**

### **ABSTRACT:**

#### **Background**

Startle modulation paradigms, namely habituation and prepulse inhibition (PPI), offer insight into the brain's early information processing mechanisms. Habituation refers to decreasing response to a repeatedly-presented (non-consequential) startle stimulus. PPI refers to response reduction when a startling stimulus "pulse" is preceded briefly (30-150 ms) by a weaker stimulus "prepulse", and indexes sensorimotor gating.

#### **Aims**

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 groups.

#### **Method**

Two independent samples (UK, 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 more emotion regulation difficulties and lower mindfulness, compared to meditators but there was no significant difference, on average, between the meditators and non-meditators in habituation or PPI. However, in the UK sample, there was more PPI in meditators who reported being able to experience non-dual awareness during their practice relative to those who could not. In the India sample, greater habituation correlated with a longer meditation practice (i.e., total practice hours/years practiced). There were small associations between habituation or PPI and some emotion regulation measures.

#### **Conclusions**

Taken together, our findings suggest that subjective quality as well as quantity-related differences in meditation experience are associated with differential early sensory information processing characteristics in meditators.

#### **Keywords**

Habituation, Prepulse inhibition, Startle reflex, Meditation, Non-dual awareness, Emotion regulation

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### **Published Work:**

Antonova, E., Schlosser, K., Pandey, R., & Kumari, V. (2021). Coping with COVID-19: Mindfulness-Based Approaches for Mitigating Mental Health Crisis. *Frontiers in Psychiatry*, 12. <https://doi.org/10.3389/fpsy.2021.563417>

Kumari V, Antonova E, Mahmood S, Shukla M, Saifullah A, Pandey R (2023). Dispositional mindfulness, alexithymia and sensory processing: emerging insights from habituation of the acoustic startle reflex response. *International Journal of Psychophysiology*, 184, 20–27. <https://doi.org/10.1016/j.ijpsycho.2022.12.002>

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