

Event-related delta, theta, alpha, and gamma correlates to auditory oddball processing...

Posted At : July 25, 2012 12:13 PM | Posted By : [Tim Brunson, PhD](#)

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Full title: Event-related delta, theta, alpha, and gamma correlates to auditory oddball processing during Vipassana meditation.

Long-term Vipassana meditators sat in meditation vs. a control (instructed mind wandering) states for 25 min, EEG was recorded and condition order counterbalanced. For the last four min, a three-stimulus auditory oddball series was presented during both meditation and control periods through headphones and no task imposed. Time-frequency analysis demonstrated that meditation relative to the control condition evinced decreased evoked delta (2-4 Hz) power to distracter stimuli concomitantly with a greater event-related reduction of late (500-900 ms) alpha-1 (8-10 Hz) activity, which indexed altered dynamics of attentional engagement to distracters. Additionally, standard stimuli were associated with increased early event-related alpha phase synchrony (intertrial coherence) and evoked theta (4-8 Hz) phase synchrony, suggesting enhanced processing of the habituated standard background stimuli. Lastly, during meditation there was a greater differential early-evoked gamma power to the different stimulus classes. Correlation analysis indicated that this effect stemmed from a meditation state-related increase in early distracter-evoked gamma power and phase synchrony specific to longer-term expert practitioners. The findings suggest that Vipassana meditation evokes a brain state of enhanced perceptual clarity and decreased automated reactivity.

Soc Cogn Affect Neurosci. 2012 May 29. Cahn BR, Delorme A, Polich J. Address correspondence to: B. Rael Cahn, M.D., Ph.D. University of California, Irvine Department of Psychiatry 101 The City Drive South, Rt 88 Rm 207 Orange, CA 92868 (714) 456-5770 rael.cahn@gmail.com.

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