

Abstract Submitted
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ERP Energy and Cognitive Activity Correlates MICHAEL JAY SCHILLACI, Roberts Wesleyan College, JENNIFER M.C. VENDEMIA, University of South Carolina — We propose a novel analysis approach for high-density event related scalp potential (ERP) data where the integrated channel-power is used to attain an energy density functional state for channel-clusters of neurophysiological significance. The method is applied to data recorded during a two-stimulus, directed lie paradigm and shows that deceptive responses emit between 8% and 10% less power. A time course analysis of these cognitive activity measures over posterior and anterior regions of the cortex suggests that neocortical interactions, reflecting the differing workload demands during executive and semantic processes, take about 50% longer for the case of deception. These results suggest that the proposed method may provide a useful tool for the analysis of ERP correlates of high-order cognitive functioning. We also report on a possible equivalence between the energy functional distribution and near-infrared signatures that have been measured with other modalities.

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