

Our ability to discern multiple, simultaneous latent processes during the exertion of control is limited by rudimentary combinations of manifest behavior. We hypothesized that EEG could provide unique evidence that control can simultaneously alter behavioral output (i.e. decision threshold) as well as sensory gain (i.e. drift rate). This study includes EEG data from 21 young adults who completed a Flankers task where the luminance of the stimuli varied trial-wise against a black background. Conflict was associated with lower drift and lower threshold, as well as increased frontal midline theta power. Controlling for these effects, lower drift rate and threshold were signaled at the single trial level by enhanced peri-response frontal midline theta. Increased luminance was associated with higher drift as well as increased alpha-beta power in visual cortex. Visual alpha power, in turn, was associated with greater drift and threshold, with an even greater power-parameter slope for brighter stimuli. While trials following errors were associated with higher threshold but unchanged drift rate, visual alpha-beta power was significantly enhanced following errors. This suggests adaptations to errors involved enhancement of attention that was masked in behavior. Future work will investigate the role of frontal control systems in this attentional enhancement as well as localize the visual attention effects using MEG source estimation.