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ABSTRACT BOOK

Event-related brain oscillations associated with color-word interference

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Stroop color-word test requires subjects to read (semantic processing) a color word printed in a different ink color. The interference between word meaning and ink color slows down the reactions to incongruent stimuli. EEG was recorded from 23 subjects during a computerized version of Stroop test. The longer reaction time for incongruent condition was replicated. N4 potential was found to be more negative for incongruent condition, which is also in line with the previous findings. The wavelet transforms of the averaged ERP and the single trials were computed to investigate the amplitudes of the evoked (phase-locked) and total (phase-locked + non-phase-locked) oscillatory responses. Evoked delta (250-600 ms) was larger in response to congruent trial ($p<0.01$), which can be interpreted as somewhat coherent with our earlier studies on oddball experiments. Since the delta response has been related with stimulus evaluation and decision making, a larger delta response for congruent condition which involves a relatively simpler decision process was predicted. The total theta activity (300-700 ms) was significantly increased incongruent trials ($p=0.05$), and this effect was more prominent over fronto-central region ($p<0.05$). The late timing and frontal scalp distribution of theta suggest that it could be related to resolution of the conflict in response production stage, due to color-word interference. The evoked alpha response (100-200 ms) in incongruent trials was higher with trend level significance, and this finding leads to the reconsideration of the assumption based on the time-domain analyses that the processes dealing with the color-word interference start around 450 ms. Finally, the results on time-frequency plane, allowed further characterization of the cognitive processes during resolution of Stroop interference.

EVENT ABSTRACT

« Back to Event

Event-related brain oscillations associated with color-word interference

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