EEG measures of neural processing speed reflect human visual encoding time

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Presentation Abstract Summary A method of estimating and verifying individuals' visual encoding time is proposed using traditional EEG measures before decision processing of visual information. Hierarchical Bayesian inference was used to jointly obtain posterior distributions of drift-diffusion model parameters as well as the effect of traditional and single-trial ERP measures on these parameters in a single-step. The possibility of using single-trial N200 and traditional N1 ERP latencies as estimates of human visual encoding time is explored in the framework of a neurocognitive theory of visual encoding, rapid decision-making, and motor preparation. Using data from two experiments, posterior distributions of linear-effect parameters suggest that EEG responses to the onset of visual stimuli reflect stimulus encoding times in low visual noise conditions. However the ability of these neural signals to track visual encoding time is dependent upon the quality of the external signal itself.

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