

Isolating perceptual and post-perceptual activity thanks to iconic memory and a partial report paradigm

Saturday, September 13, 2025 11:00 AM (10 minutes)

The electrophysiological distinction between proper neural correlates of visual consciousness and post-perceptual processes remains a debated topic, with many questions about the timing and location of the respective neural mechanisms still open. To shed light on this matter, we employed a partial report paradigm: this allowed us to keep activity associated with stimulus perception identical across reporting conditions while modulating only the processes linked to reporting.

Data were collected from 23 participants while recording EEG. Stimuli were composed of six letters, symmetrically and circularly spread around a fixation cross, and lasted 100 ms. After the stimulus, an acoustic tone indicated to participants which side of the stimulus (left or right) to report. An experimenter then wrote down the reported answer.

ERP analyses revealed differences between the “Report Right” and “Report Left” conditions, particularly between 850 ms to 1100 ms and involving right and left parieto-occipital positivity. Moreover, this parieto-occipital positivity, peaking at 1060 ms, is negatively correlated with accuracy and positively correlated with the number of intrusion errors.

The absence of early electrophysiological differences between the two reporting conditions, alongside the presence of later modulations, confirms –following the iconic memory framework –that the conscious content is identical between the two conditions, with EEG differences related only to post-perceptual processes. Specifically, correlations suggest that these processes might represent filtering of the uncued side, with higher amplitudes corresponding to a higher risk of intrusion from uncued letters, resulting in an overall lower accuracy.

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