

SPATIOTEMPORAL CORRELATES OF RECOLLECTION- AND FAMILIARITY-BASED RECOGNITION MEMORY FOR FACES

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Behavioral data implicate two processes in recognition memory -- recollection and familiarity. Functional MRI and event-related potential (ERP) evidence suggests that the neural correlates of recollection and familiarity are spatially and temporally dissociable, although the relation between these fMRI and ERP effects remains unclear. Using anatomically-constrained magnetoencephalography (aMEG) at encoding and retrieval, we sought to delineate the spatiotemporal dynamics supporting recollection and familiarity. Faces were intentionally encoded during performance of a target detection task. A subsequent recognition memory test included studied faces, faces that were morphs between a studied face and an unstudied face, and unstudied faces. At test, subjects responded "remember", "know", or "new". MEG data were submitted to source localization, using each subject's cortical surface reconstructed from high-resolution MRI. Analyses of the retrieval data revealed multiple generators contributing to MEG differences between Hits and Misses, including (a) early (250ms) and late (700ms) left parietal sources, (b) a left frontopolar source (750 ms), and (c) a sustained (300-1500ms) right dorsolateral frontal source. Subsequent analyses, comparing recollection-based ("remember") and familiarity-based ("know") Hits, revealed differential correlates of these two recognition states. This pattern, which converges with the results from a companion fMRI study conducted using the same paradigm, provides clear evidence of spatiotemporal dissociations between recollection and familiarity.

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