Prefrontal engagement during source memory retrieval depends on the prior encoding task

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Abstract
Prefrontal cortex is strongly engaged by some, but not all episodic memory tests. Prior work has shown that source recognition tests – those that require memory for conjunctions of studied attributes – yield deficient performance in patients with prefrontal damage, and greater prefrontal activity in healthy subjects, as compared to simple recognition tests. Here, we tested the hypothesis that there is no intrinsic relationship between prefrontal cortex and source memory, but that prefrontal cortex is engaged by the demand to retrieve weakly-encoded relationships. Subjects attempted to remember object/color conjunctions after an encoding task that focused on object identity alone, and an integrative encoding task that encouraged attention to object/color relationships. After the integrative encoding task, the late prefrontal brain electrical activity that typically occurs in source memory tests was eliminated. Earlier brain electrical activity related to successful recognition of the objects was unaffected by the nature of prior encoding.

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