BRIEF SUMMARY

Wagner, A. D., Koutstaal, W., & Schacter, D. L. (1999). When encoding yields remembering: Insights from event-related neuroimaging. *Philosophical Transactions of the Royal Society of London, B, 354,* 1307–1324.

To understand human memory, it is important to determine why some experiences are remembered whereas others are forgotten. Until recently insights into the neural bases of human memory encoding, the processes by which information is transformed into an enduring memory trace, have primarily been derived from neuropsychological studies of humans with select brain lesions. The advent of functional neuroimaging methods, such as positron emission tomography (PET) and functional magnetic resonance imaging (fMRI), has provided a new opportunity to gain additional understanding of how the brain supports memory formation. Importantly, the recent development of event-related fMRI methods now allows for examination of trial-by-trial differences in neural activity during encoding and of the consequences of these differences for later remembering. In this review, we consider the contributions of PET and fMRI studies to the understanding of memory encoding, placing a particular emphasis on recent event-related fMRI studies of the Dm effect: that is, differences in neural activity during encoding that are related to differences in subsequent memory. We then turn our attention to the rich literature on the Dm effect that has emerged from studies using event-related potentials (ERPs). It is hoped that the integration of findings from ERP studies, which offer higher temporal resolution, with those from event-related fMRI studies, which offer higher spatial resolution, will shed new light on when and why encoding yields subsequent remembering.

KEYWORDS: subsequent memory effect, episodic encoding, episodic memory, event-related potentials, fMRI, PET
