

UNIVERSITY OF PITTSBURGH  
DEPARTMENT OF PSYCHOLOGY

Component Processes in Memory Retrieval: Succeeding and  
Orienting

**Mark Wheeler, Ph.D.**

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**Martin Colloquium Center  
4127 Sennott Square**

In goal-directed behavior, the successful retrieval of a memory requires the coordination of component cognitive and neural processes. Among these are the ability to identify when retrieved information matches expectations, and the ability to orient attentional resources in favor a specific information format. An aim of my research program has been to understand how component processes interact to influence memory performance, and to develop methods for studying the neural bases of these interactions. Retrieval success is typically studied in the context of old/new recognition memory. Past fMRI findings indicate that successful retrieval is correlated with activity in a set of parietal and frontal regions. While the frontal lobes have long been implicated in accurate retrieval, the finding of a robust parietal involvement was surprising. The functions of “retrieval success” regions were investigated in a series of memory and perceptual recognition studies that suggest that parietal areas are more involved in driving or signaling successful retrieval, perhaps through an integrative mechanism, while frontal areas are more involved in retrieval effort and performance monitoring. Retrieval orientation was studied using a memory task switching paradigm and ERP in younger adults, with episodic old/new and semantic living/nonliving tasks. Within this context, orientation effects were inferred by categorizing new items in the episodic task according to whether the previous trial was the episodic (stay) or the semantic (switch) task. Orientation effects were observed in left parietal electrodes that are commonly implicated in retrieval success effects related to recollection. A switch vs. stay difference in the left parietal P600 component suggests that maintaining a task set facilitates the ability to recollect details, a finding that was paralleled by a behavioral facilitation on stay (vs. switch) trials. The P600 effect was not observed in older adults, who showed no behavioral facilitation in accuracy on stay trials. Overall, the data indicate that the parietal lobes play an important role in supporting successful memory performance by mediating aspects of retrieval decisions and retrieval orientation.

Reception to follow in Room 4125 Sennott Square