

Swick, D., Senkfor, A.J., & Van Petten, C. (in press). Source memory retrieval is affected by aging and prefrontal lesions : Behavioral and ERP evidence. *Brain Research*.

Abstract

Age-related deficits in source memory have been attributed to alterations in prefrontal cortex (PFC) function, but little is known about the neural basis of such changes. The present study examined the time course of item and source memory retrieval by recording event-related potentials (ERPs) in patients with focal lesions in lateral PFC and in healthy older and young controls. Both normal aging and PFC lesions were associated with decrements in item and source memory. However, older controls showed a decrease in item hit rate with no change in false alarms, whereas patients showed the opposite pattern. Furthermore, ERPs revealed notable differences between the groups. The early positive-going old/new effect was prominent in the young but reduced in patients and older adults, who did not differ from each other. In contrast, older adults displayed a prominent left frontal negativity (600-1200 ms) not observed in the young. This left frontal effect was substantially smaller and delayed in the patients. The current results provide novel insights into the effects of aging on source memory, and the role of the lateral PFC in these processes. Older controls appeared to adopt alternate memory strategies and to recruit compensatory mechanisms in left PFC to support task performance. In contrast, the lateral frontal patients were unable to use these mechanisms, thus exhibiting difficulties with strategic memory and monitoring processes.