

DIFFERENT BRAIN RESPONSES WITH MATCHED PERFORMANCES BETWEEN MILD COGNITIVE IMPAIRMENT AND NORMAL OLDER ADULTS DURING EPISODIC RETRIEVAL: AN ERP STUDY

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Introduction: Mild Cognitive Impairment (MCI) is a transitional stage from normal aging to dementia. The objective of this study was to determine whether a source retrieval ERP is an effective neural marker for differentiating MCI from normal older adults while their behavioral performances were matched which may have implications for identifying seniors at risk for cognitive decline.

Methods: A source memory task was conducted on 16 aMCI and 15 healthy older adults. Event-Related Potentials (ERPs) were recorded during retrieval phase. Memory performances were matched between the two groups by manipulating the number of items presented for each study session.

Results: The behavioral results showed that both source memory and item memory performances were perfectly matched between aMCI group under easy condition and healthy elderly group under hard condition. While under such case, the ERP results showed remarkable differences between the two groups. First, the right-lateralized positive-going old-new effects significantly decreased for aMCI group compared to control group, especially on the parietal sites. Second, the negative left-lateralized old new effect extended to the posterior sites of right hemisphere only in aMCI group but not in control group.

Conclusions: The results showed that source retrieval ERP is an effective neural marker for differentiating MCI from normal older adults even when they have matched task performances. The results also suggested that MCI brain may involve more regions to compensate their reduced efficiency of dedicated circuits so that they could behave like normal older adults.