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NEURAL CORRELATES OF AUTOBIOGRAPHICAL MEMORY: A META-ANALYSIS USING ACTIVATION LIKELIHOOD ESTIMATION ON MEMORY CONSTRUCTION AND ELABORATION, AND PRELIMINARY INSIGHTS FROM ELECTROPHYSIOLOGICAL DATA

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Background: The process of retrieving autobiographical memories (AMs) is complex and involves strategic memory search, known as AM construction, followed by the reliving of specific memory details, known as AM elaboration. We conducted an ALE meta-analysis of functional neuroimaging (fMRI) studies, which revealed both common (i.e. the left hippocampus and the posterior cingulate cortex) and distinct correlates for AM construction (i.e. the ventromedial prefrontal cortex, the left angular gyrus, the right hippocampus, and the precuneus) and AM elaboration (i.e. the right inferior frontal gyrus).

Aims: Starting from this functional evidence, we examined the electrophysiological correlates of AM construction and elaboration, which have received little attention in previous literature.

Method: To address this, electroencephalographic (EEG) data was collected from participants with varying AM capacities (from average performance to individuals with 'highly superior autobiographical memory') who were instructed to retrieve recent and remote AMs.

Preliminary results: Our preliminary analysis, conducted on 12 participants with average AM capacity using wavelet transform, showed a specific variation of signal energy in the theta (4-8 Hz) band as a function of time for accessing and constructing remote versus recent AMs. A significant increase in the theta band was found in the fronto-parietal regions between 250 and 500 ms after starting the construction of remote as compared to recent AMs.

Conclusions: The increase in theta power may be linked to increased attentional effort when recalling more distant memories. These findings help to explain the electrophysiological correlates that underpin the access and construction of AMs, supporting existing fMRI data.

Keywords: Autobiographical memory, Construction, Elaboration, fMRI, EEG

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