



Shared Neural Responses Underlying Suppression of Unwanted Memory

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Introduction

People could choose suppression to deal with unwanted memory. However, it remains unclear regarding the underlying neural mechanisms of memory suppression. Recently, increasing evidence suggests the relationship between increased shared stimulus-evoked neural responses and similar memory representations across participants (Cohen and Parra, 2016; Chen et al., 2017). **Here we ask, will shared neural responses decrease when individuals successfully suppress unwanted memories?** Therefore, we adopted an **emotional think/no-think paradigm (eTNT)** with **electroencephalography (EEGs)** to investigate the shared neural responses during memory suppression (Lin et al., *unpublished*).

Methods

Emotional think /no-think paradigm (eTNT)

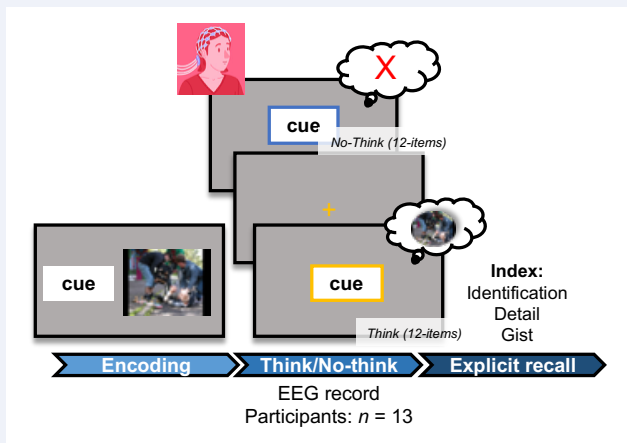


Fig 1. Experiment Procedure

Item-level inter-subject correlation (ISC)

- (1) Calculate cross-covariance between all subjects with preprocessed EEG data.
- (2) Extracted the top three maximally correlated components.
- (3) ISC was measured as the sum of the averaged correlation coefficients between the subject and the remaining subjects over the first three components.
- (4) An item-level ISC was computed by averaging ISC across participants.

Results

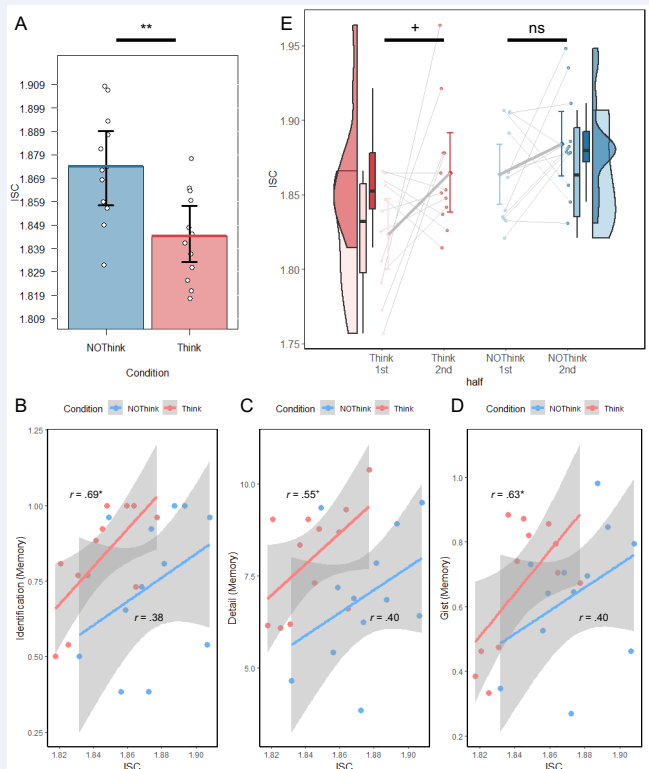


Fig 2. (A) Difference between think and no-think conditions. (B-D) Correlation of ISC and identification, detail or gist. (E) Difference of ISC between think vs. no-think and first-half vs. second half.

Discussion

The current results revealed the shared neural responses underlying the suppression of unwanted memory. Interestingly, No-think condition evoked higher item-level ISCs than think condition. Unlike previous studies linking ISC with memory representations, the ISC in the no-think could be an indicator of successful suppression of unwanted memory.

