

No. 1 Danni CHEN (MPhil/Y1)

Share Neural Response Underlying Suppression of Unwanted Memory

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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with electroencephalography (EEGs) to investigate the shared neural responses during memory suppression (Lin et al., unpublished). We conducted an item-level inter-subject correlation (ISC) analysis on thirteen participants following Zhu et al. (2019). We first computed cross-covariance between all subjects with preprocessed EEG data and extracted the top three maximally correlated components. ISC was measured as the sum of the averaged correlation coefficients between the subject and the remaining subjects over the first three components. Finally, an item-level ISC (12 items in both no-think and think conditions respectively) was computed by averaging ISC across participants. We found that (1) ISC of no-think items was significantly higher than that of think items. (2) ISC was positively correlated with all three indexes of memory accuracy, including identification, gist, and detail. At the same time, such a correlation was absent within no-think items. (3) Stimulus in the second half of the task evoked higher ISC than that in the first half, but only for the think condition. The current results revealed the shared neural responses underlying the suppression of unwanted memory. No-think condition evoked higher item-level ISCs than think condition. However, unlike previous studies linking ISC with memory representations, the ISC in the no-think could be an indicator of successful suppression of unwanted memory.