The right memory at the wrong time: A neural signature of prior-list intrusions in free recall

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Introduction

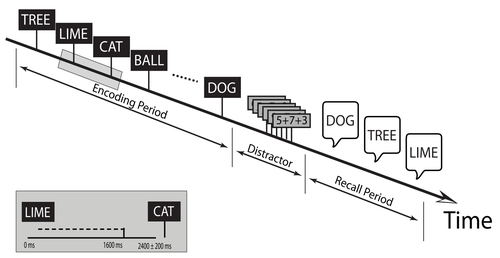
Studies of the subsequent memory effect (SME) consider memory of an item in its correct list

In the free recall paradigm, participants sometimes remember an item in a later (incorrect) recall period

Here we examine the neural correlates of these `intrusions' from prior lists (PLIs)

Methods

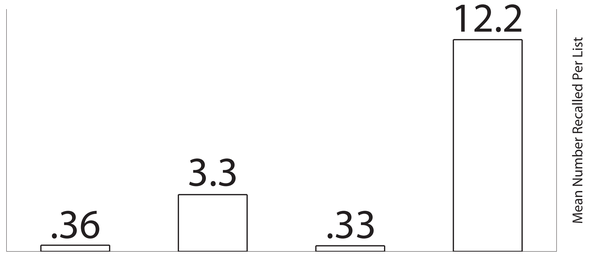
53 participants
1-6 sessions
8-20 lists per session
15-20 items per list



223 hippocampal electrodes
1365 temporal (non-hippocampal) electrodes

Behavioral Results

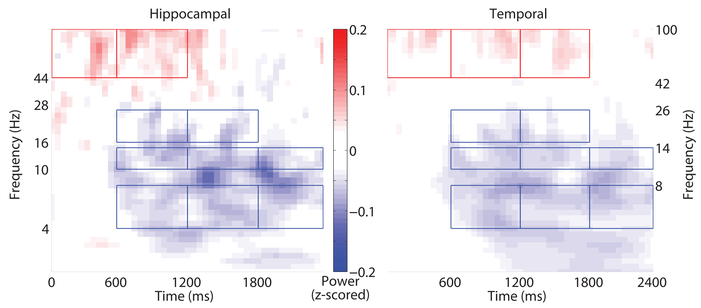
P(PLI) = 0.04
P(PLI|correct) = 0.11
P(correct|PLI) = 0.51



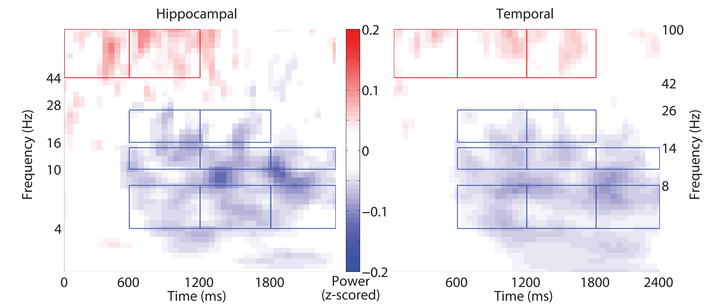
Condition Number	I	II	III	IV
Recalled in correct list?	Yes	Yes	No	No
Recalled in later list?	Yes	No	Yes	No

Electrocorticogram Oscillatory Power Results

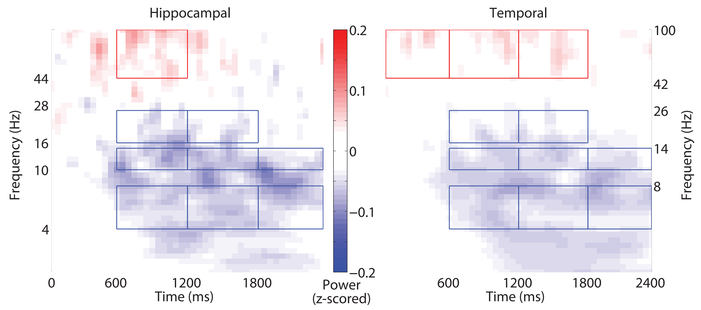
I, II - III, IV: Classic SME



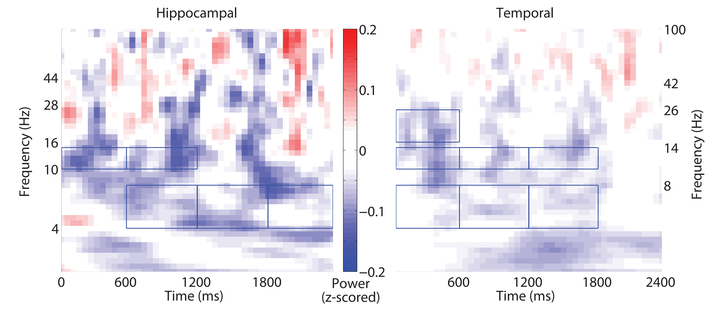
II - IV: SME without later recall



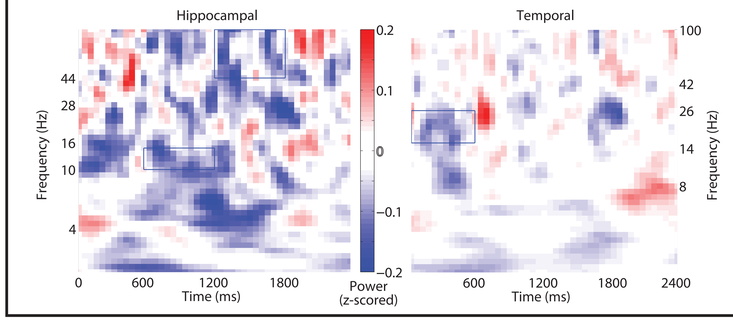
I, II, III - IV: SME irrespective of list



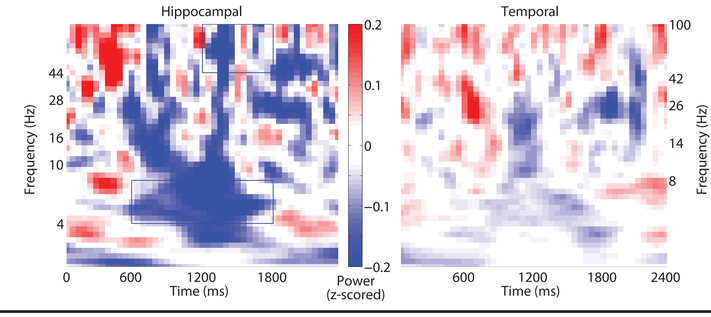
I, III - II, IV: SME for PLIs



I - II: SME for PLIs, if recalled correct



I - III: PLI from encoding or retrieval



Summary / Conclusions

For both hippocampal and temporal (non-hippocampal) electrodes:

- During the stimulus presentation period, decrease in theta power is associated with encoding for memories recalled both at the right and the wrong times

- Early increase in high gamma is associated with correct recall only