How are attended and unattended items in short-term memory represented? An fMRI/EEG/TMS study

Nathan S. Rose, Joshua J. LaRocque, Adam C. Riggall, Olivia Gosseries, & Bradley R. Postle

University of Wisconsin-Madison

**Design**

**Phase 1**

- Target
- Delay
- Probe

**Phase 2**

- Attended Memory Item (AMI)
- Unattended Memory Item (UMI)

N = 6 subjects, 24 sessions, 3600 trials

**Phase 2 EEG MVPA**

**Phase 2 TMS-EEG**

**Conclusions**

General MVPA Methods: leave one run (fMRI) or one trial (EEG) out, k-fold cross-validation with L2 regularized logistic regression.

Sliding window: Classify face, motion, or word on each TR using top 2000 voxels showing main effect of stimulus category.

Whole Brain Searchlight: Classify presence or absence of each category on one post-sample delay-period TR with a 3 mm sphere.

**TMS-EEG Methods:** 90–115 V/m (55–65% of stimulator output); 60 channel cap; TMS compatible amplifier with sample-hold circuit 2 s to 2 ms ((Nexstim, Helsinki, Finland).

EEG Processing: filtered 1-100 Hz, ICA; Morlet wavelet (2-50 Hz) with fixed, Hanning-tapered window (0.5 s), smoothed (2.5 s).

TMS Target Localizer

E.g., Word vs. Not > 90% & Face vs. Motion < 60%

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