Targeted transcranial magnetic stimulation to improve hippocampal-dependent declarative memory abilities

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Project Aims

Test whether TMS can **improve or remediate memory abilities** in adults (young, older, & aMCI)

1) Measure changes in declarative memory performance after treatment with targeted TMS
2) Measure modulation of functional brain networks after treatment with targeted TMS

Approach

**Design**

Neurostimulation: retune target brain networks

- TMS: non-invasive stimulation of target brain region

Neuropsychology: measure cognitive benefits

- Standardized instruments to assess cognitive function (MoCA, MMSE, etc.)
- Laboratory tasks to assess cognitive abilities

**Background**

- Memory changes with age (healthy & pathological)
- Alzheimer’s disease (AD) degrades memory and may become epidemic in near future

**Purpose**

- Test method of non-invasive brain stimulation (NBS) — transcranial magnetic stimulation (TMS) — for enhancement or remediation of memory abilities

**Next Steps & Deliverables**

Current status

- UNMC IRB and ClinicalTrials.gov approved
- TMS, MRI, and neuropsych. protocols finalized
- Collecting preliminary data w/young adults

Next steps

- Enroll more younger adults, healthy older adults, and patients with aMCI
- Complete current study and report results

Deliverables

- Test memory enhancement effect for each group
- Measure brain network changes in each group

References


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