Repulsion of hippocampal representations is time-locked to resolution of memory interference

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INTRODUCTION
• Overlap among hippocampal representations can create memory interference.
• Similarity between memories can trigger repulsion of hippocampal activity patterns.
• Repulsion has specifically been observed in CA23/Dentate Gyrus (CA23DG) regions.
• Repulsion of hippocampal representations is thought to protect against memory interference.
• Current Study: Does repulsion of overlapping CA23DG representations predict the resolution of memory interference?

TASK DESIGN AND BEHAVIORAL RESULTS

MEASURING NEURAL SIMILARITY

Scene pair difference scores varied by ROI

Scene pair difference scores varied by ROI

Repulsion in CA23DG occurred only at Inflection Point

CONCLUSIONS
• Hippocampus exaggerates differences between similar memories (repulsion effect).
• CA23DG repulsion was time-locked to specific point in learning when interference between memories was resolved.
• Overlap in CA23DG triggered repulsion, and CA1 showed opposite effect.
• CA23DG, but not CA1, discriminated target vs. competitor associations.
• Critically, our findings revealed multiple dissociations between CA23DG and CA1 in memory interference resolution.

REFERENCES:

REGIONS OF INTERESTS

CA23DG
CA1
PPA
EVC

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