

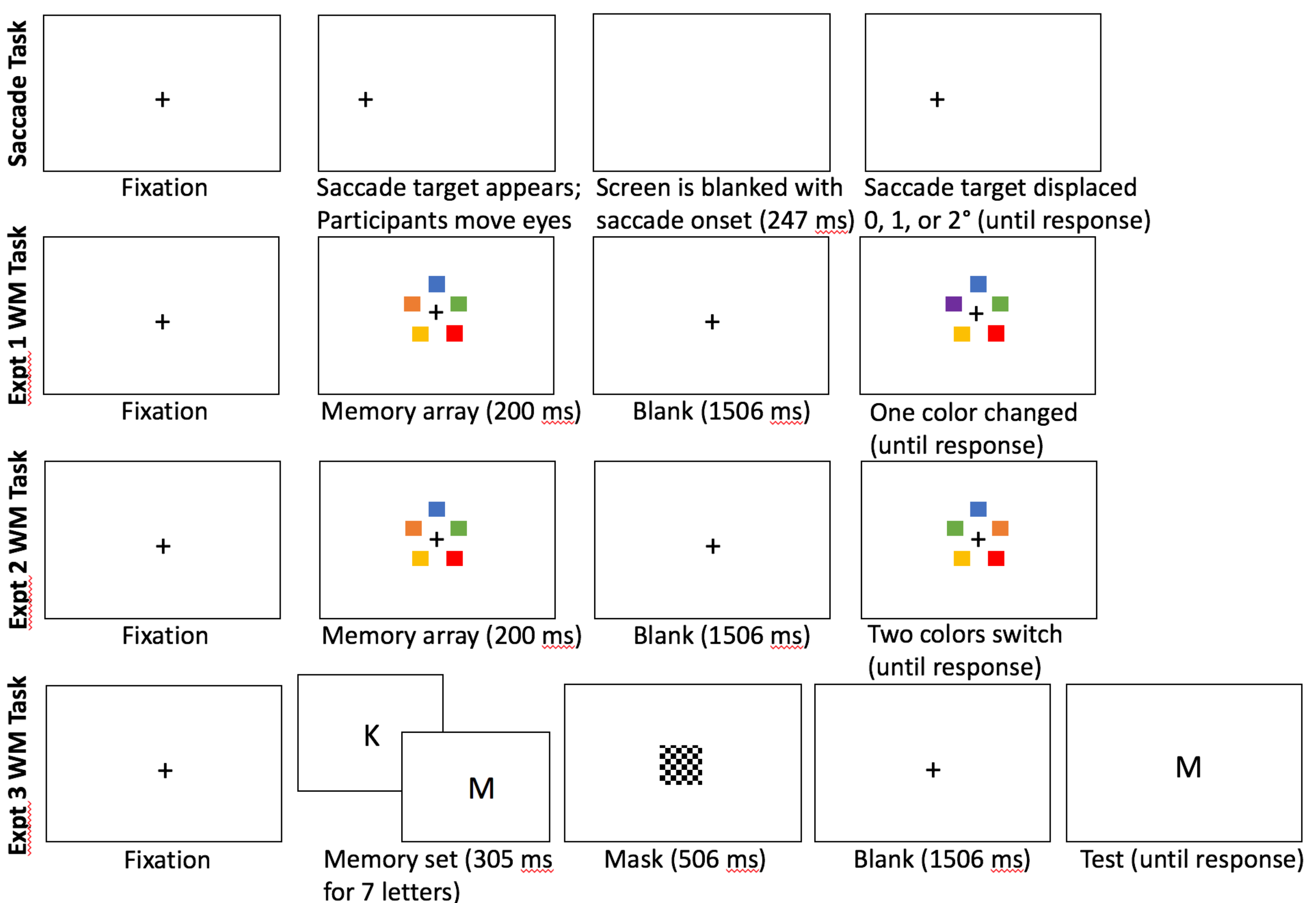
I Visual Working Memory Supports Perceptual Stability Across Saccadic Eye Movements

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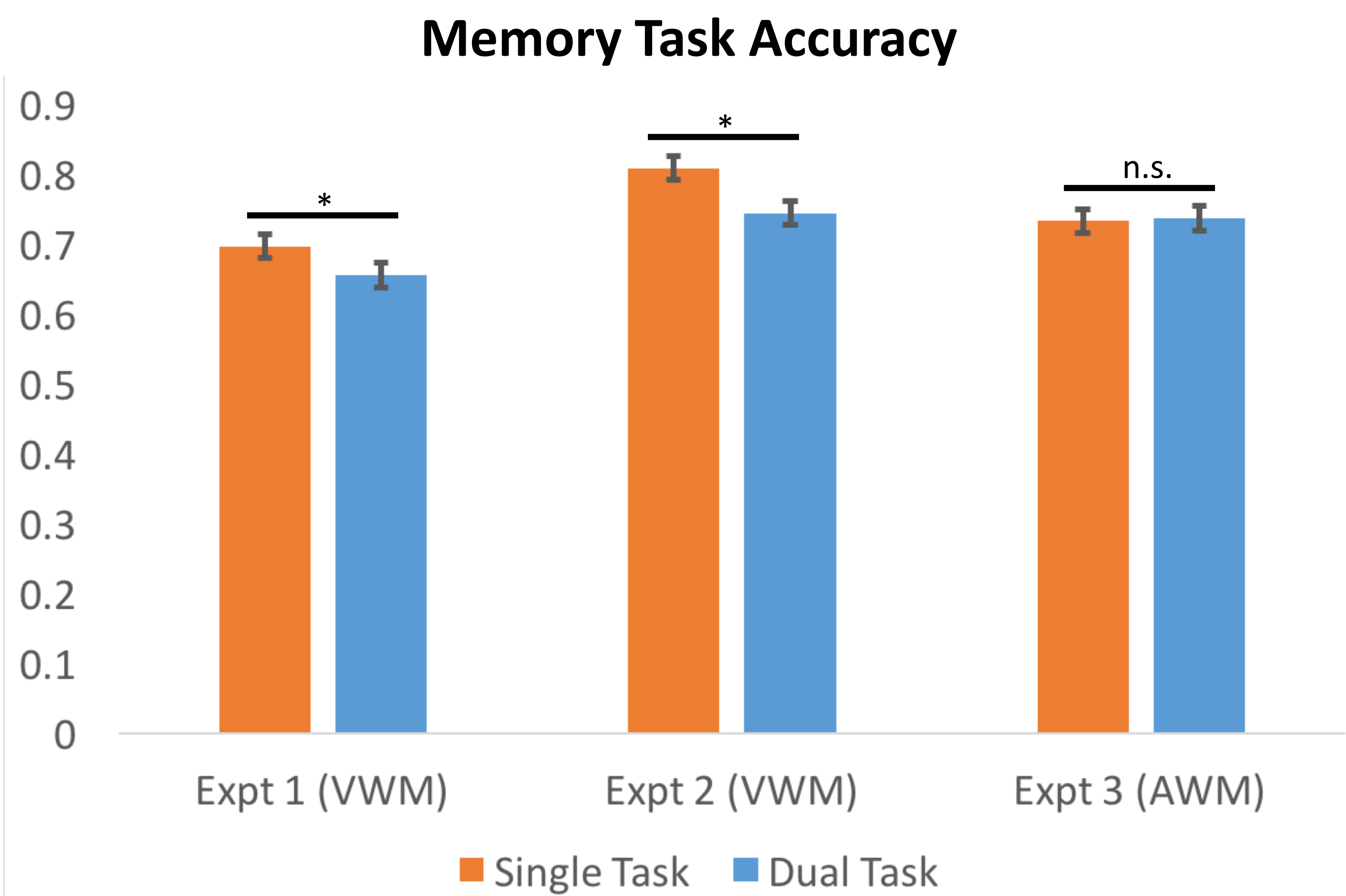
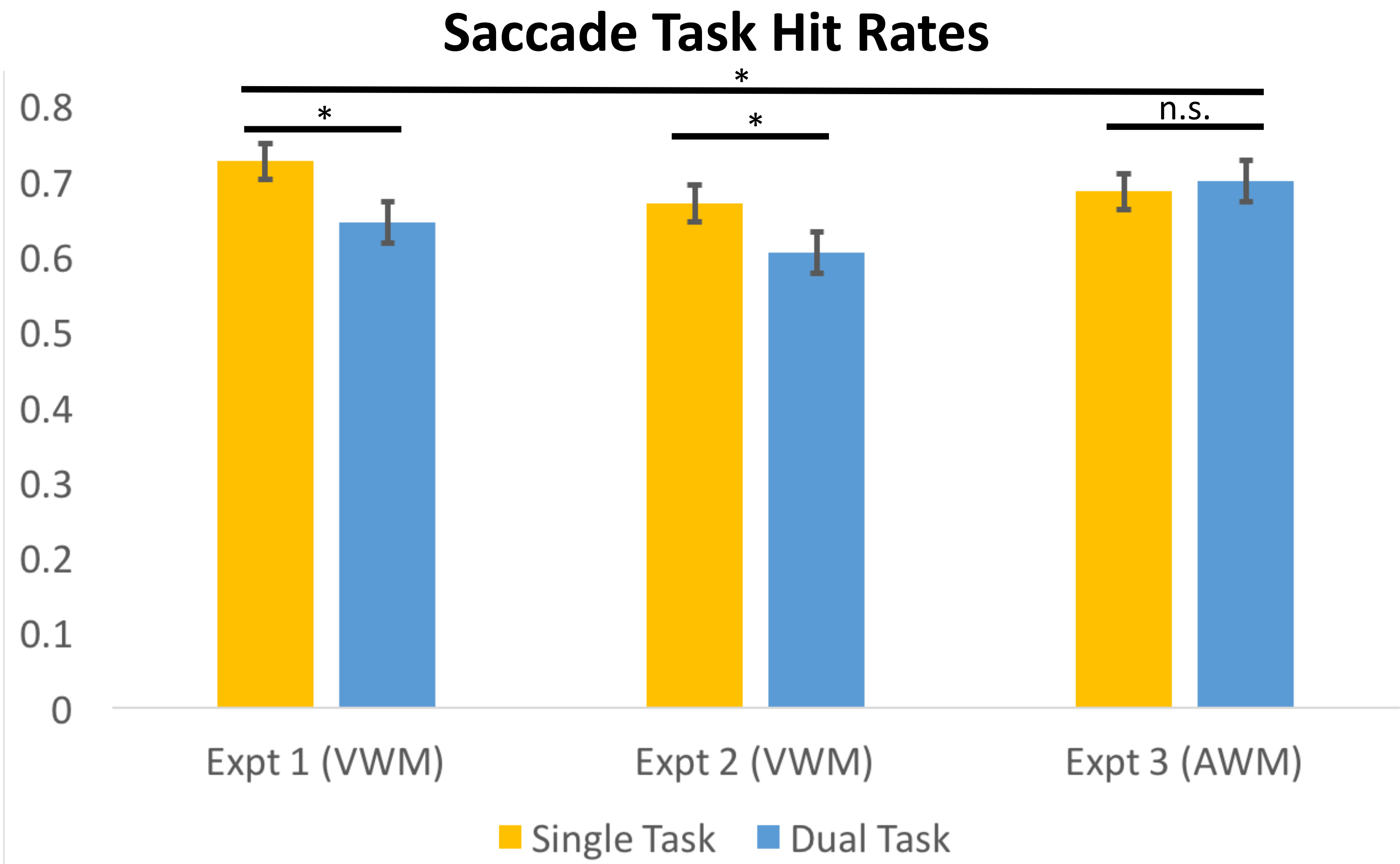
Introduction

- Saccadic suppression disrupts visual perception, but we typically perceive stability across eye movements
- Changes to a saccade target are detectable across an eye movement¹⁻³—where is saccade target information held?
- Visual Working Memory (VWM) is a good candidate
 - Supports gaze correction⁴
 - VWM features align with those of transsaccadic memory^{3,5,6}
- As of yet, no direct test of VWM's involvement in saccade target displacement detection
- If VWM maintains saccade target feature information across eye movements: VWM supports perceptual stability

Tasks



Results



Conclusions

- Saccade task and WM task performance significantly suffered under dual task conditions in Expts 1 & 2, but not in Expt 3
 - VWM involved in saccade target displacement detection
 - Evidence VWM supports transsaccadic memory for saccade target features
- Recent evidence suggests VWM automatically and obligatorily accepts information about saccade target^{7,8}
- Mechanism for establishing perceptual stability across saccades (see Saccade Target Object Theory⁹):
 1. VWM maintains information about saccade target
 2. Post-saccade view is compared to features in VWM
 3. Match = perceptual stability maintained
Mismatch = perceptual stability disrupted

Citations

1 Irwin, D.E., & Robinson, M.M. (2015). Detection of stimulus displacements across saccades is capacity-limited and biased in favor of the saccade target. *Frontiers in Systems Neuroscience*, 9, 161.

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8 Shao, N., et al. (2010). Saccades elicit obligatory allocation of visual working memory. *Memory & Cognition*, 38, 629-640.

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