Perceptual stability in real-world scenes
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Background
Changes that occur during eye movements frequently go undetected. In simple stimuli, sensitivity to saccade target movements increase when the target is briefly absent after the saccade.¹,²,³ This effect is interpreted that perceptual stability relies on post-saccadic information¹,²,³ and object correspondence.⁴,⁵,⁶ If the pre- and post-saccade views do not match, precise oculomotor data is accessed to detect the difference.³

We attempted to replicate this classic effect using scene stimuli, but found the opposite pattern of effects (Expt 1 and 2). Meanwhile, we were able to replicate the classic effect in simple stimuli (Expt 3).

Task
No post-saccade blank
Post-saccade blank (250ms)

“Did the scene move during your eye movement?”

Experiment 1 - 2° scene displacements

Experiment 2 - 2° and 4° scene displacements

Experiment 3 – 1 and 2° displacements

Conclusions
1. We did not replicate the classic effect of a post-saccade blank screen with scene stimuli, but did with simple stimuli.
2. Our results are consistent with accounts of limited-capacity VWM supporting displacement detection across eye movements: crowding at the saccade endpoint in scenes may lead to a poorer WM representation.
3. Our results are not consistent with the visual system relying on precise oculomotor information to identify transsaccadic displacements: participants were worse at detecting displacements with a post-saccade blank. A lack of post-saccade visual information should not impact the precision of oculomotor data.

References

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