

Investigating Cognitive Offloading of Screenshots

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Introduction

The photo impairment effect is the finding that memory for photographed information is worse than for information that is just viewed. Recent research has extended this finding to include screenshotting on a phone or computer (Lurie et al., *in press*). One potential explanation for the impairment is cognitive offloading, in which people rely on devices to “remember” information for them (Henkel, 2014; Lurie & Westerman, 2021; Lurie et al., *in press*).

Cognitive offloading has been associated with benefits on other cognitive tasks such as tests of source memory, presumably due to reduced cognitive load during study (Storm & Stone, 2014). Therefore, Experiment 1 explored whether participants would be able to accurately distinguish which image they previously saw and whether they screenshotted or viewed that image. An offloading account would predict that the deficits in item memory would be offset by gains in source memory.

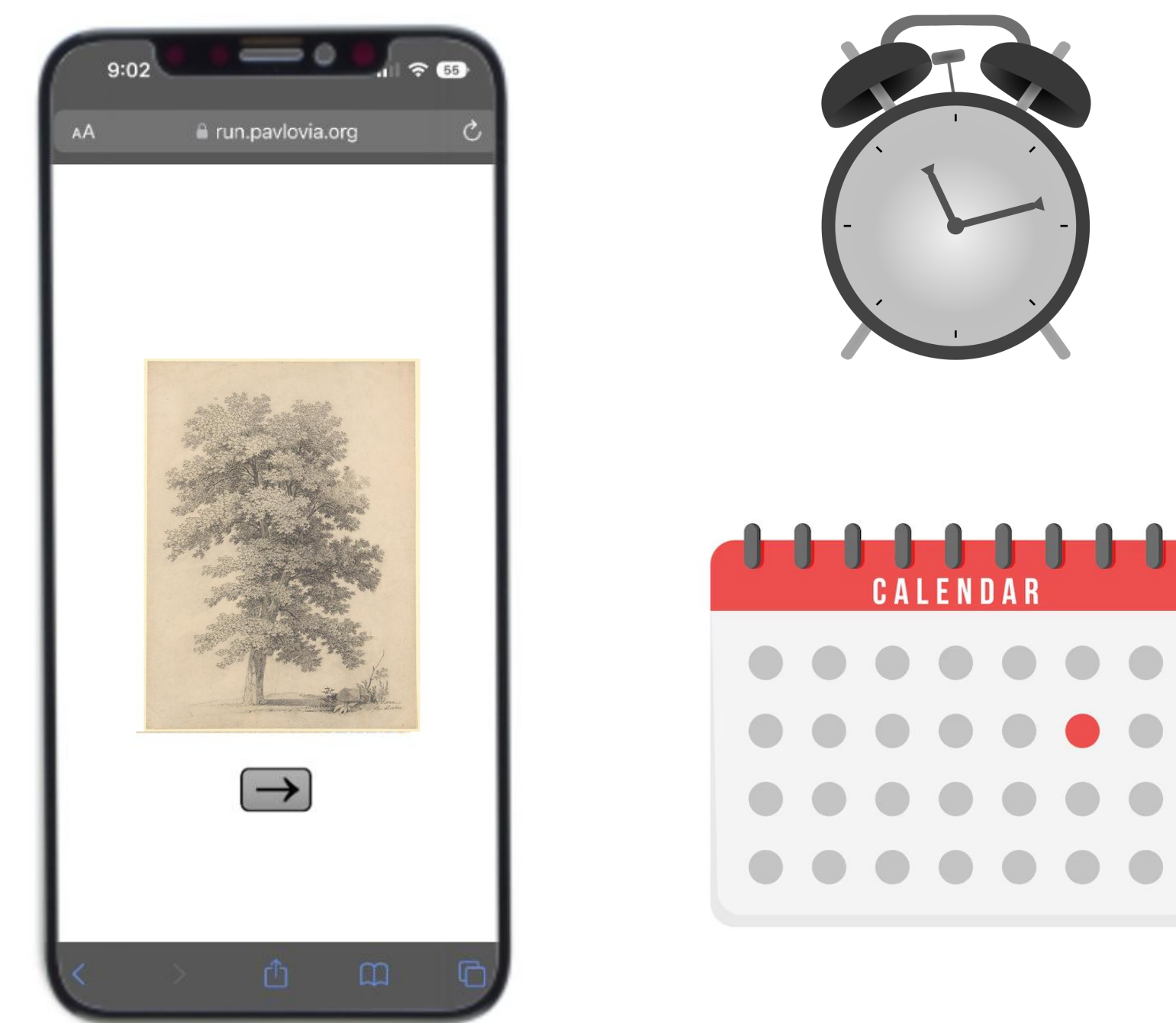
Experiment 2 tested whether the impairment effect would be larger under conditions that encourage cognitive offloading. Cognitive offloading should be more likely when participants are aware of an upcoming memory test, believe their offloaded items are available for review, and believe that there will be a delay before being tested.

Experiment 2: Intentional Encoding

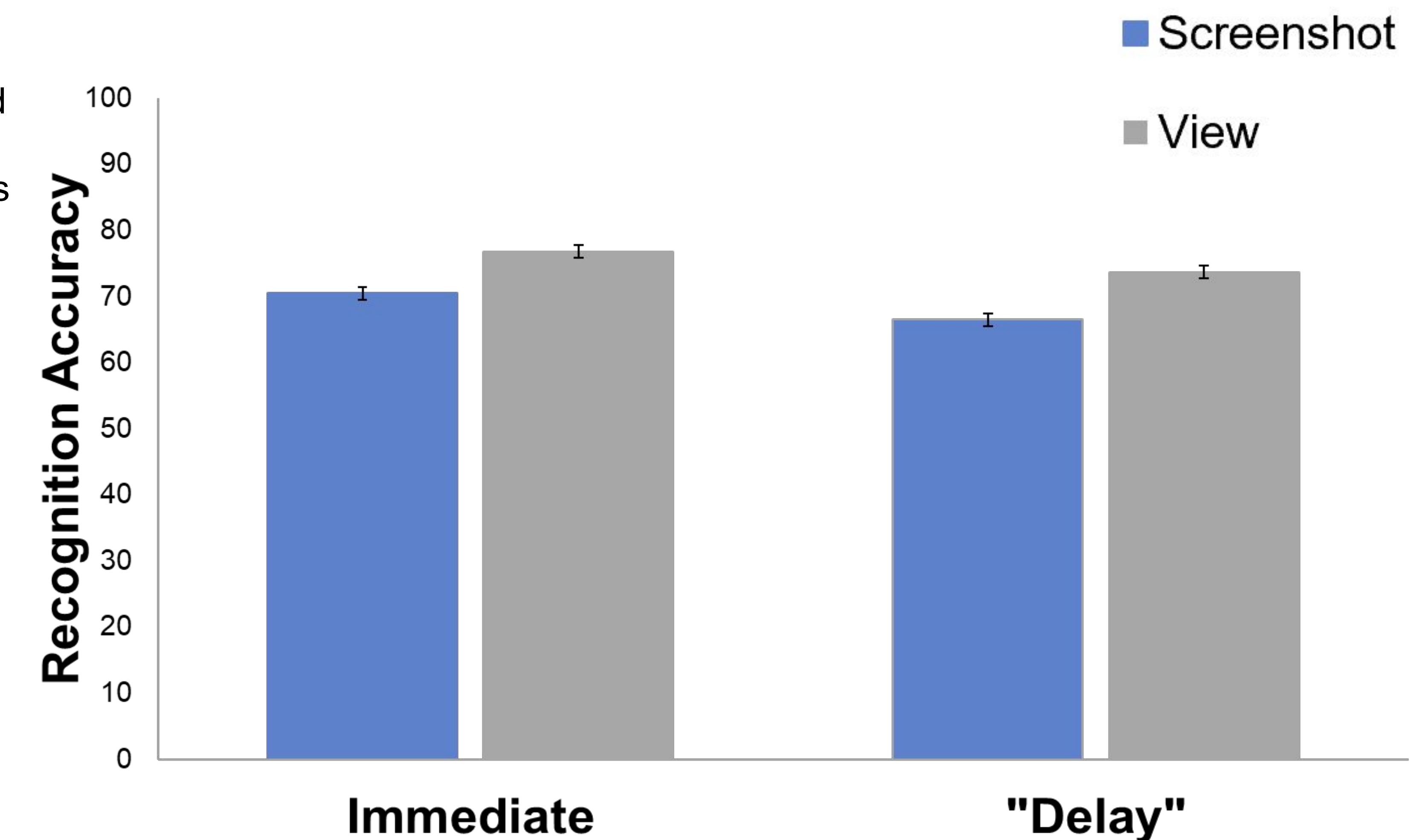
Method

Participants viewed and screenshotted art in intermixed trials during intentional encoding, with the false belief that they would be able to review their screenshots before test.

Half were led to believe that the test would take place in a second session a month later, though the test was always immediate. An offloading account would predict a larger deficit when the test was expected to be delayed.



Deficits in Recognition Accuracy did not Depend on Anticipated Test Delay

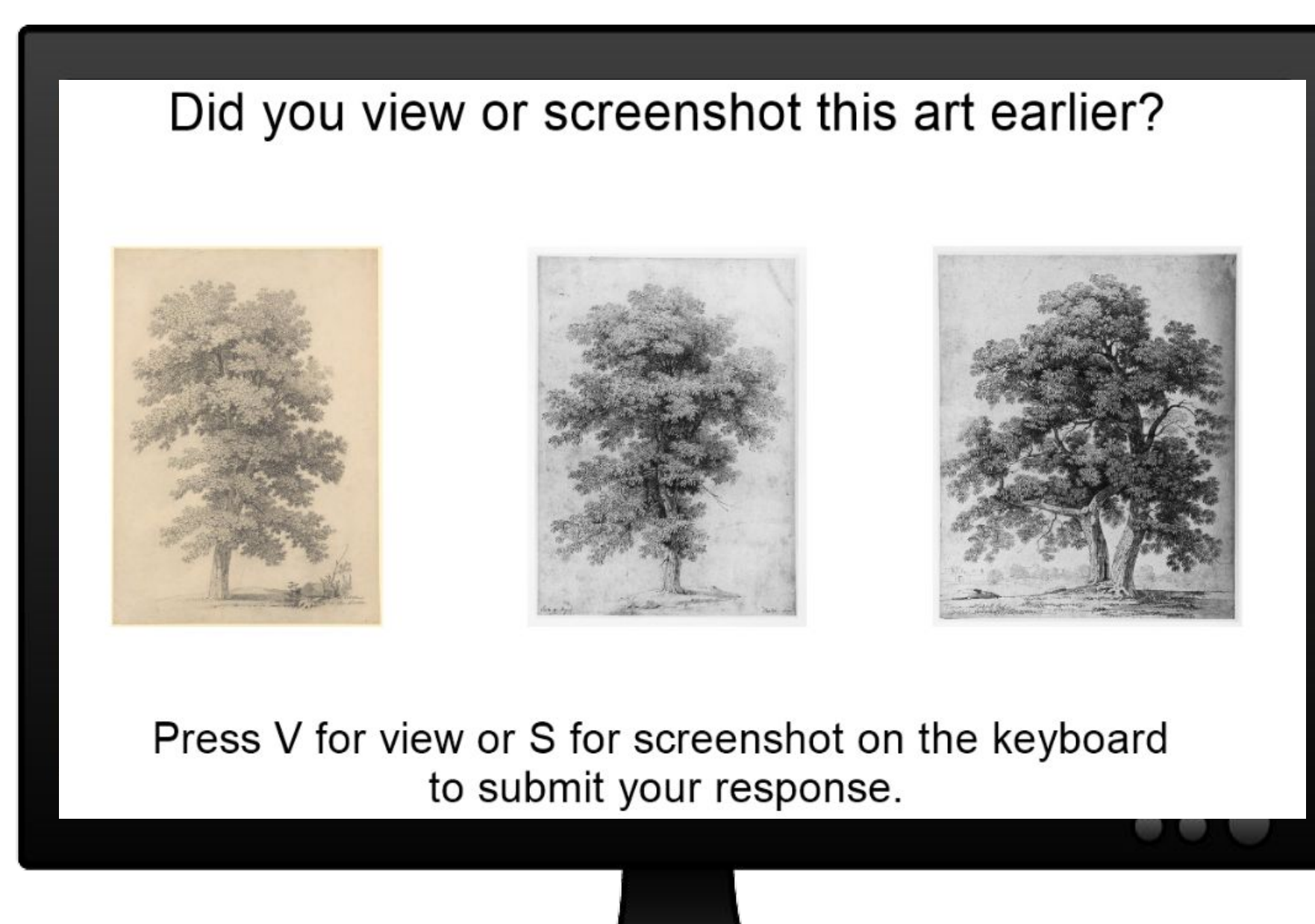


Experiment 1: Source Memory

Study Phase



Test Phase

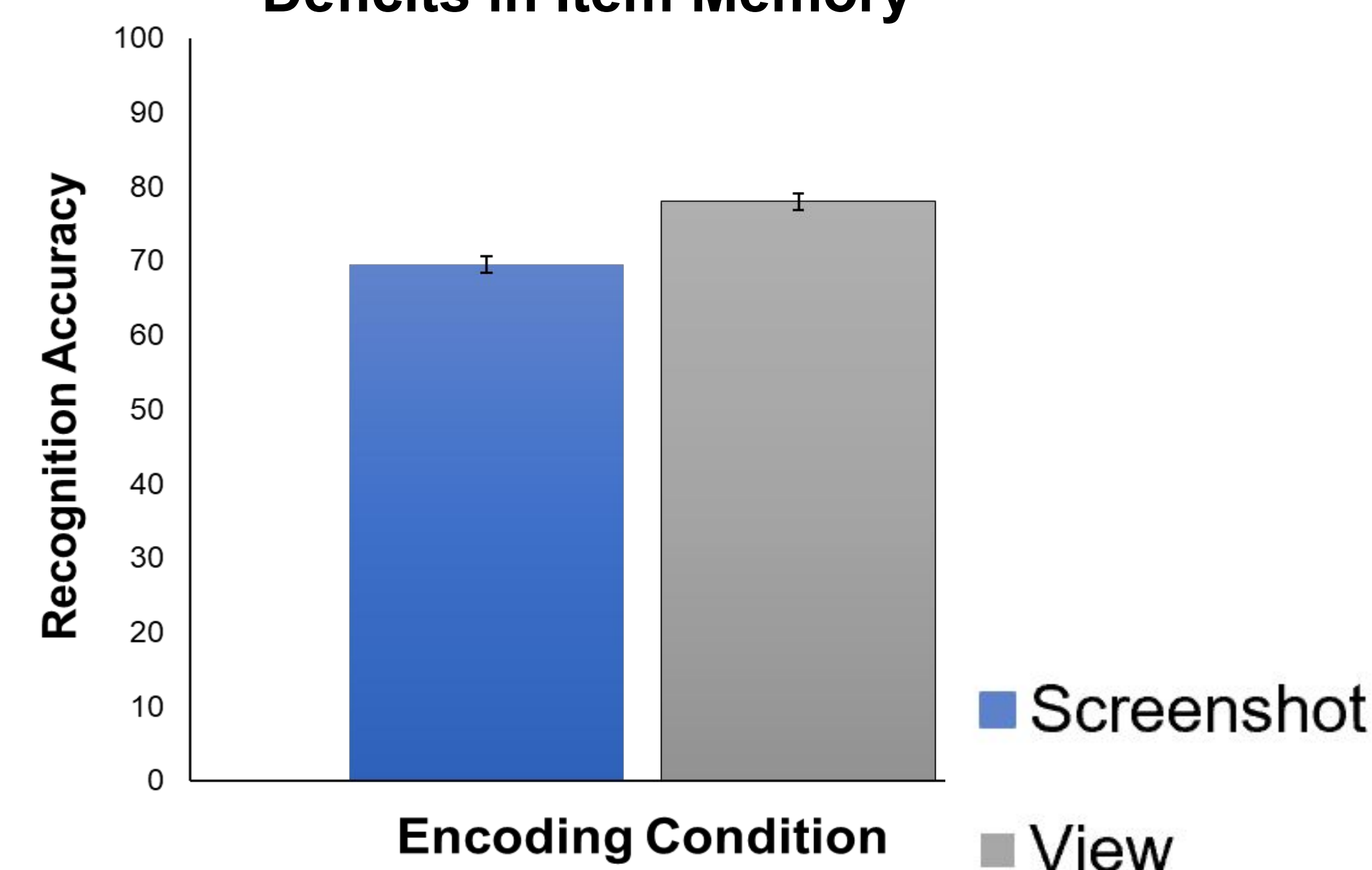


Method

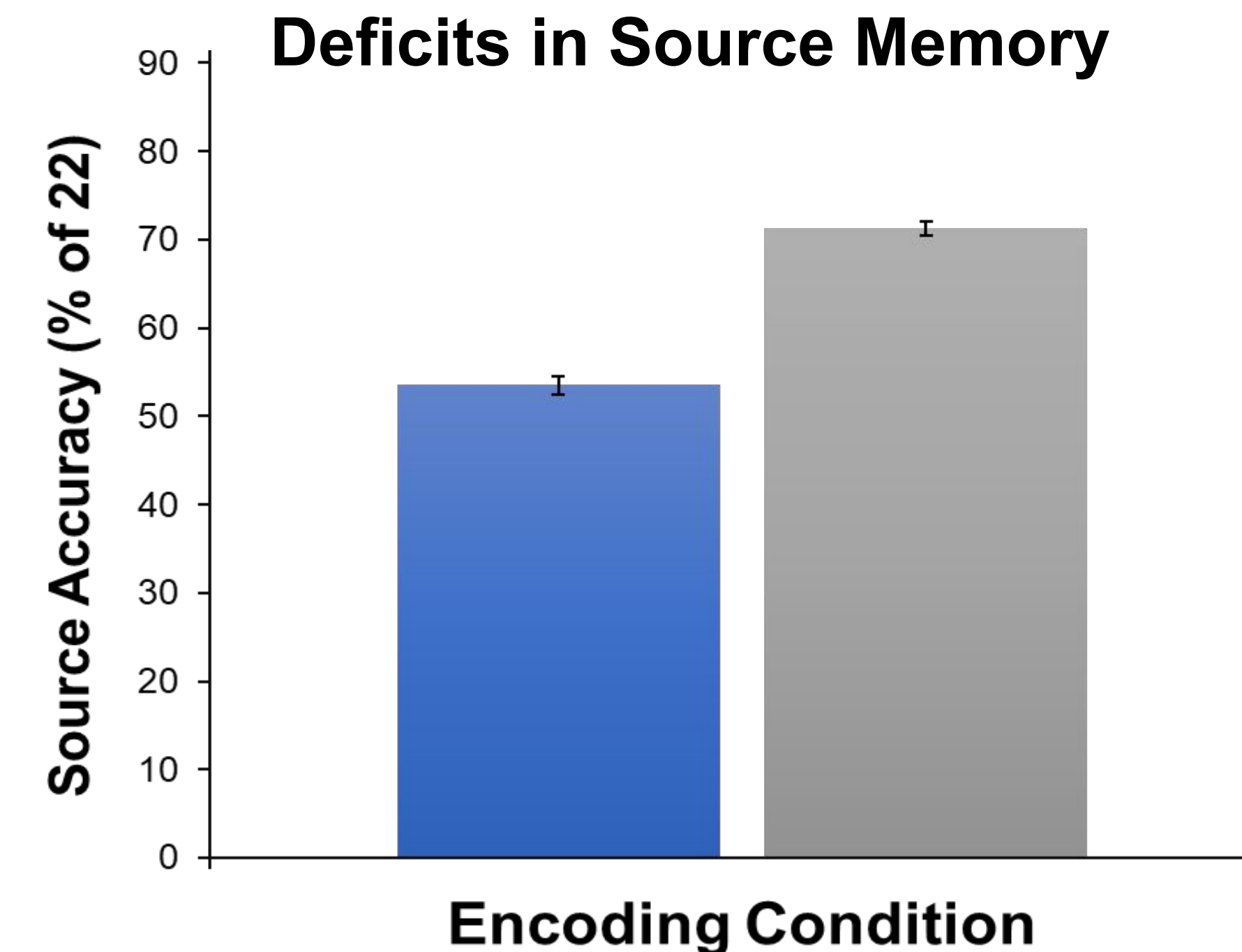
Participants viewed and screenshotted art in intermixed trials during incidental encoding.

At test, participants were asked to select which art they saw before, and then answered a follow-up question regarding source memory.

Deficits in Item Memory



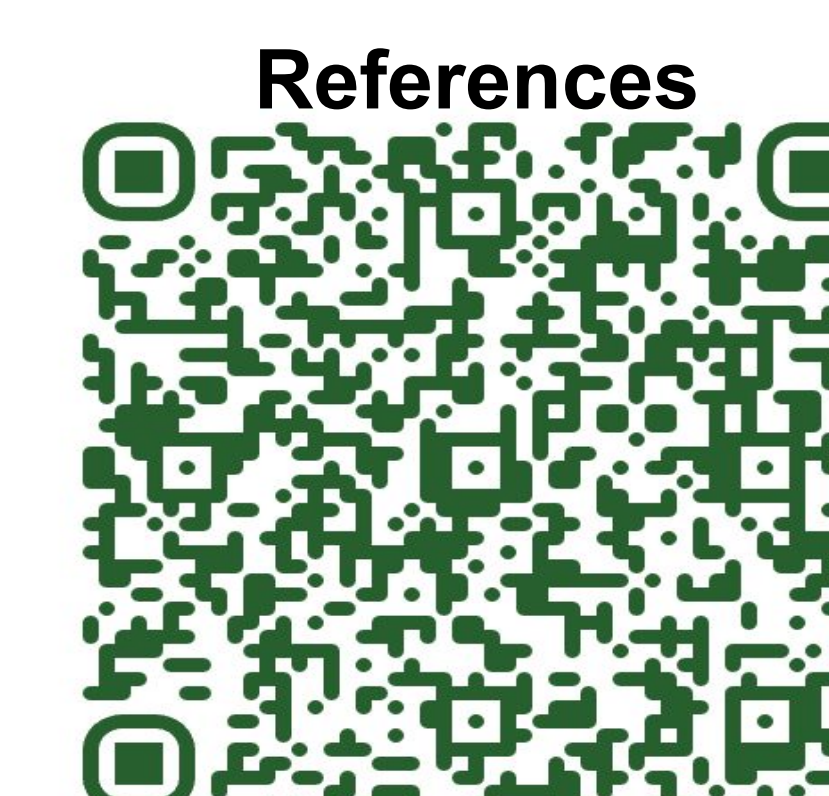
Deficits in Source Memory



Conclusion

The results are inconsistent with a cognitive offloading account. In Experiment 1, participants demonstrated no benefits to source memory as would be expected by offloading. The results of Experiment 2 showed a somewhat weakened photo-taking impairment effect, presumably because participants were anticipating a memory test. Notably, the magnitude of this impairment did not depend on the perceived delay before the memory test.

Our results suggest that offloading may not be the primary mechanism for the photo-taking-impairment effect. Further research should investigate alternate explanations, such as the idea that taking screenshots causes participants to disengage from the experience.



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