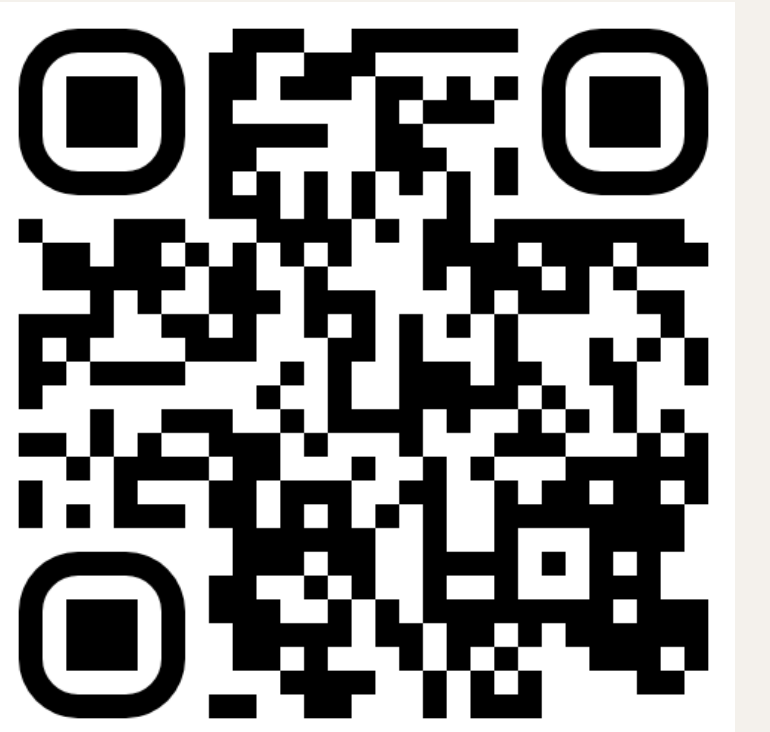


Can students effectively apply encoding techniques to support learning in person and online?



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Introduction

Drawing a sketch, as a study technique, improves memory of to-be-remembered information.¹

- One account for this benefit is that drawing requires that you **conceptualize, elaborate upon, and create your own personal representation** of the referent.
- **Common coding theory** suggests that performing and observing an action leads to similar motor activation because the latter activates mirror neurons, contributing to learning.²

Students find that online settings are less personal and convey less social presence.³

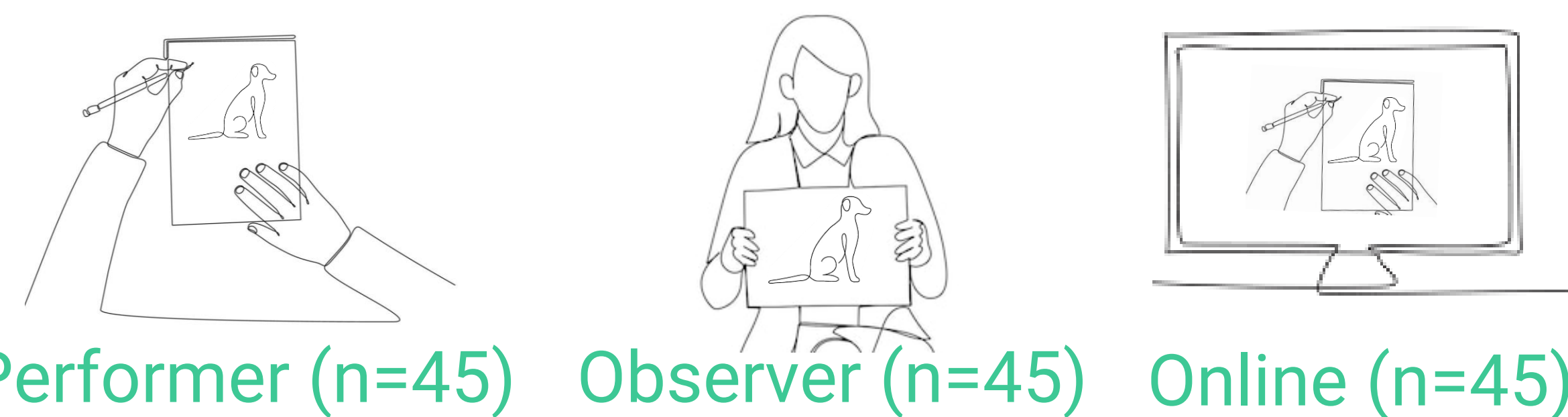
- Memory may be negatively affected when learning occurs online via virtual platforms

Aims

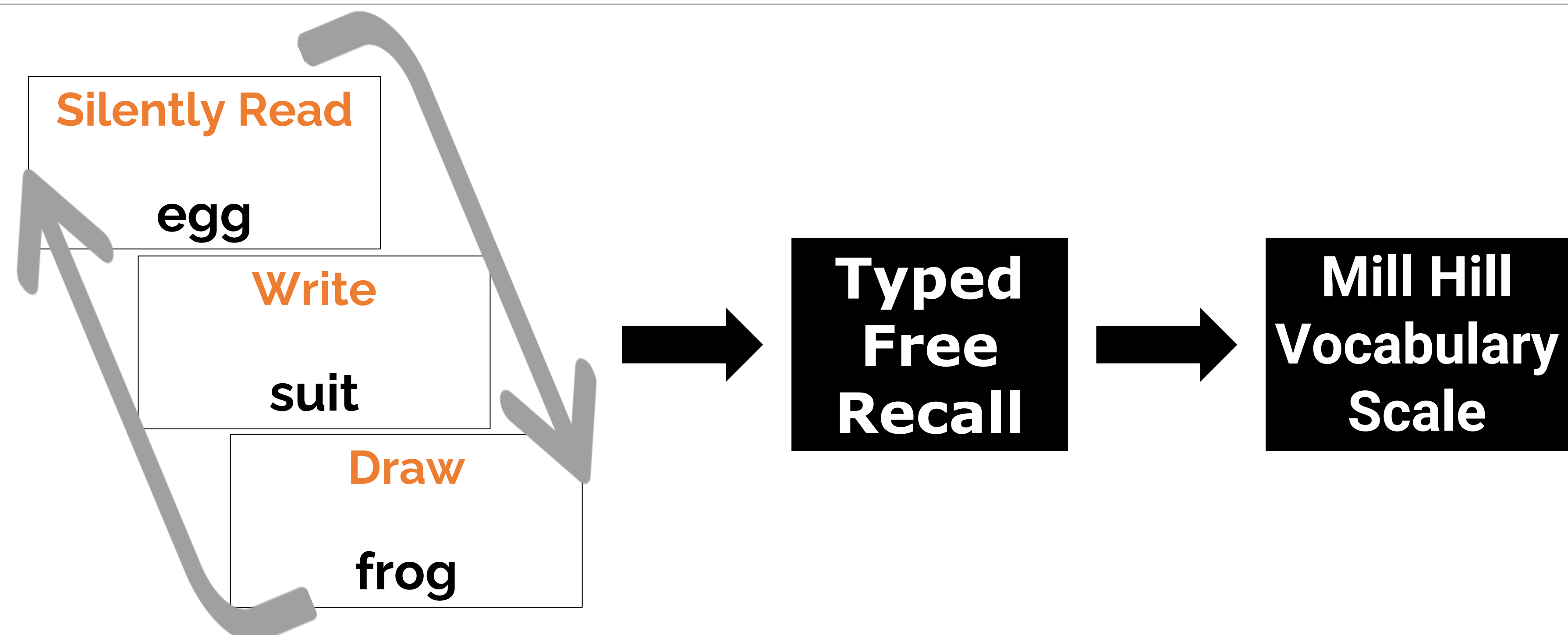
- Are there mnemonic benefits from observing someone else draw?
- If personal relevance plays a role, then performing a drawing oneself should benefit memory more than observing another.
- Is memory impacted when learning occurs via observation vs. in-person or online?

Methods

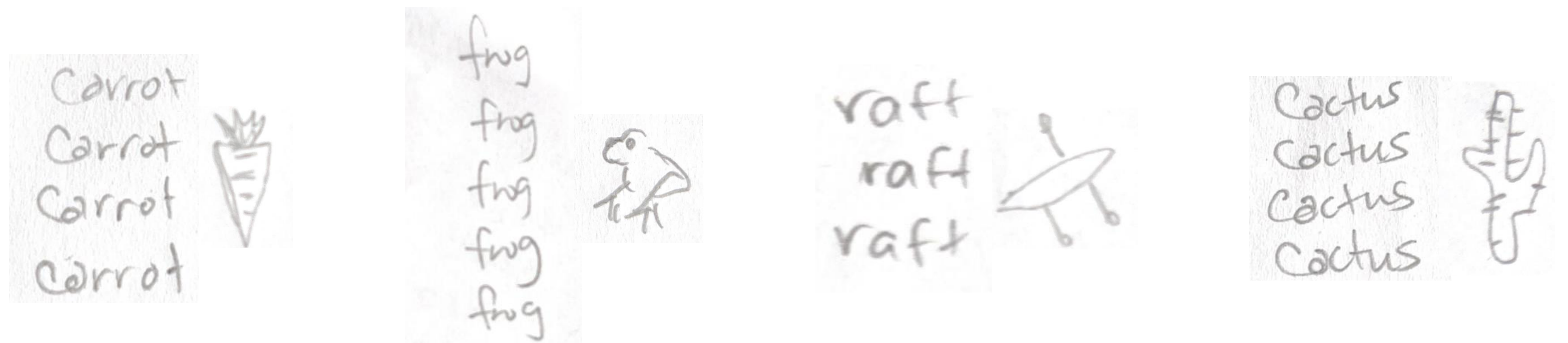
3 between x
3 within design



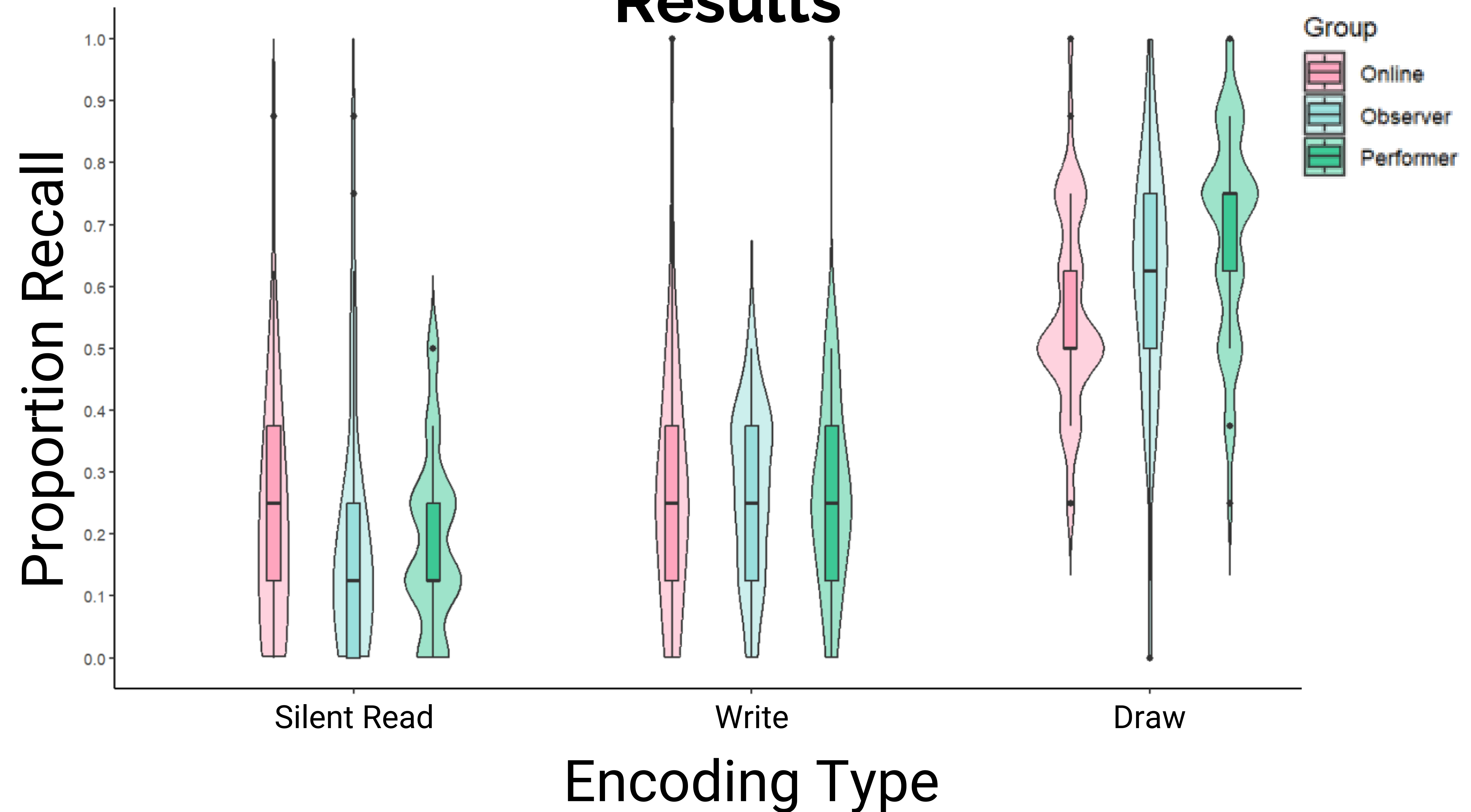
Encode: 24 words (prompt type randomly intermixed)



Samples of Write and Draw encoding trials



Results



GROUP: $p=.394, \eta^2 = .014$ | ENC: $p<.001, \eta^2 = .625$ | GROUP * ENC: $p <.05, \eta^2=.04$

Implications

- Generating a drawing or Observing someone else drawing is beneficial to memory, in line with past research suggesting that mirror neuron activation (via observation) supports learning.
- Personal relevance contributes to the magnitude of the benefit because actually engaging in drawing improves memory significantly more relative to observing in person or online watching
- Drawing is still the most beneficial regardless of encoding context

1. Wammes, et al., 2016, *Q J Exp Psychol*. 2. Tye-Murray, 2013, *PBR*. 3. Bettinger, et al., 2017, *AER*.