



Metacognitive accuracy of visual working memory is differentially impacted by encoding and retention durations

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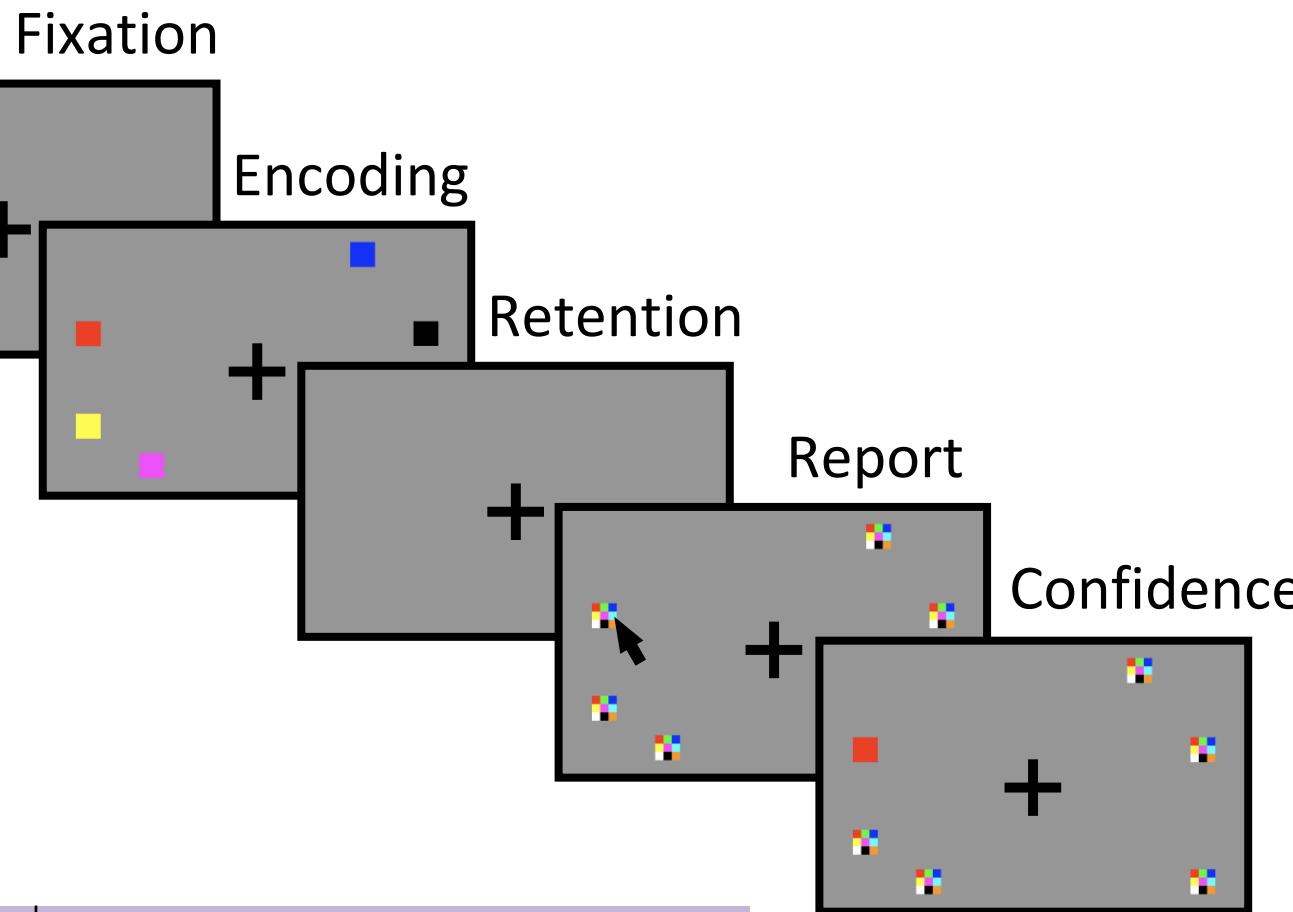
Introduction

- Subjective metacognitive memory judgements do not always correspond with objective memory accuracy
- Poor metacognitive accuracy (e.g., high confidence in inaccurate memories) can have consequences for later decisions and behaviours
- What factors affect the correspondence between our objective and subjective memory quality (metacognitive accuracy)?

How will changing the memory duration affect metacognitive accuracy in visual working memory (VWM)?

Methods

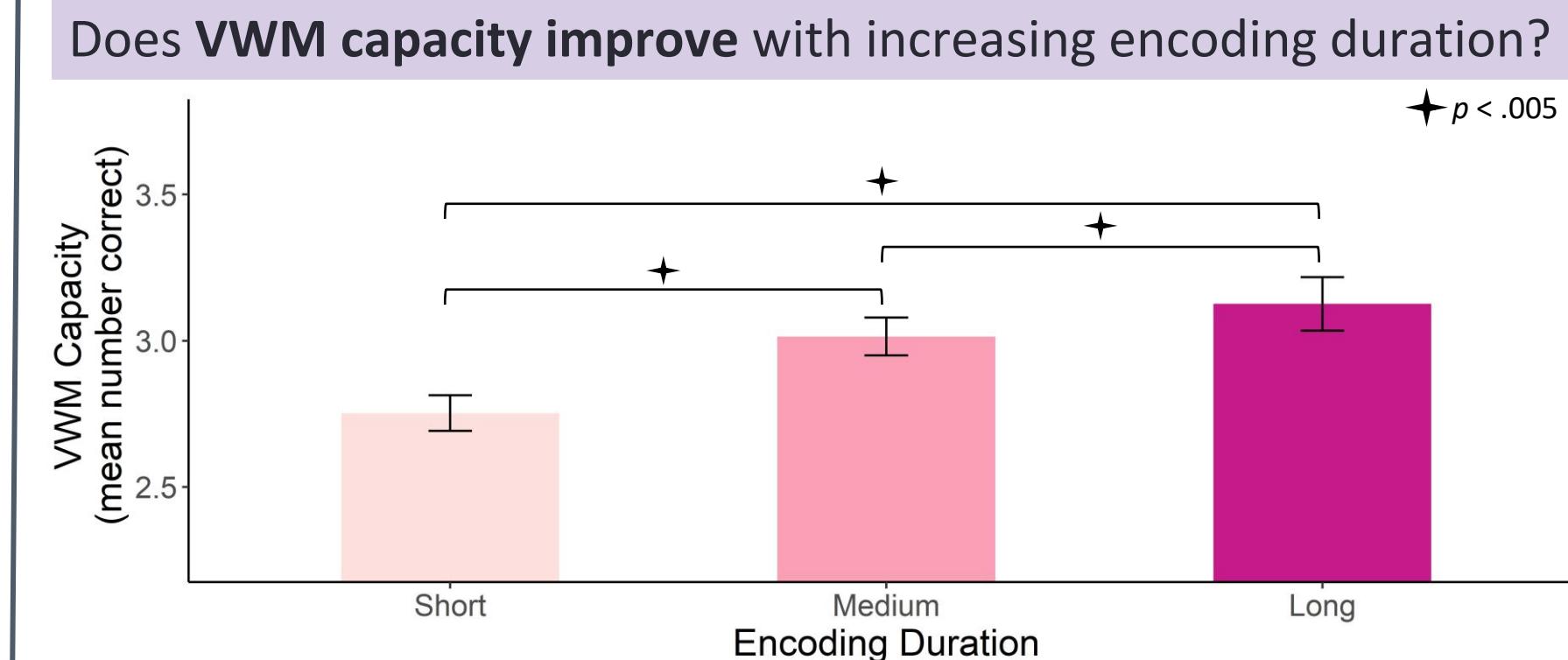
Colour Whole Report Task



Condition	Encoding Duration	Retention Interval (Expt. 1)	Retention Interval (Expt. 2)
Short	100ms	900ms	900ms
Medium	500ms	500ms	900ms
Long	1000ms	0ms	900ms

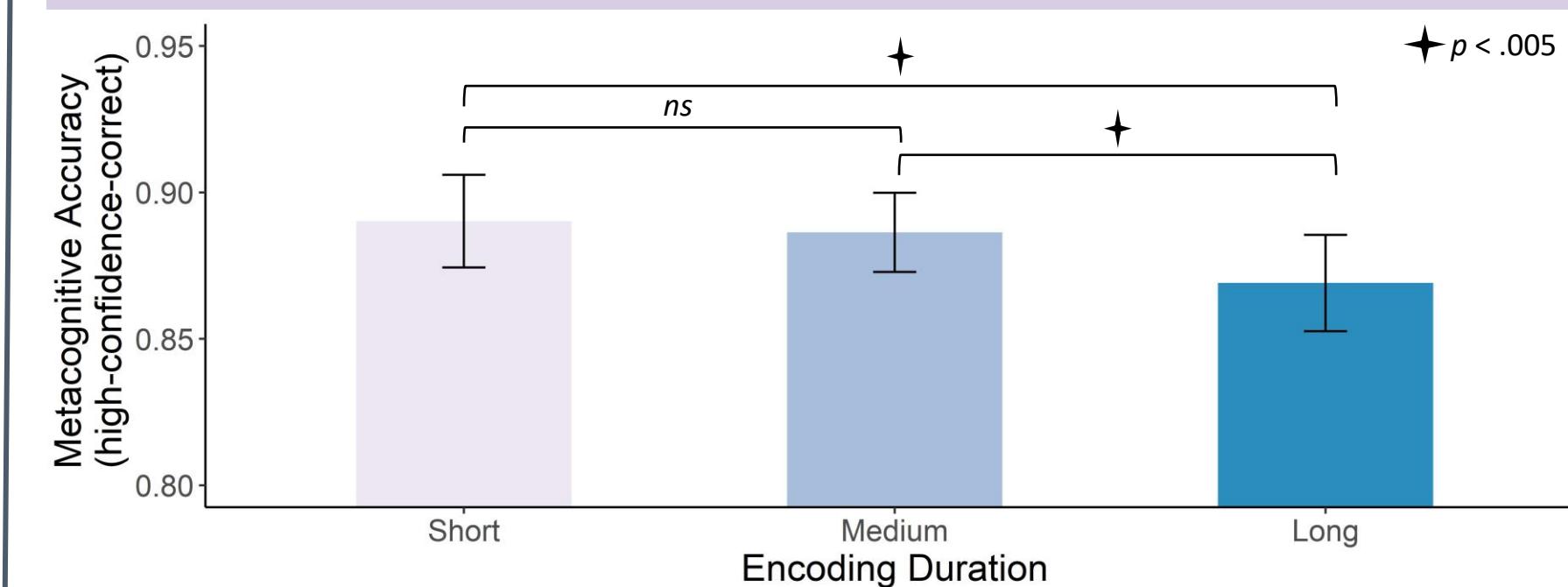
1. High confidence
2. Low confidence
3. Guessing

Experiment 1: How does increasing encoding duration affect metacognitive accuracy? (n = 40)



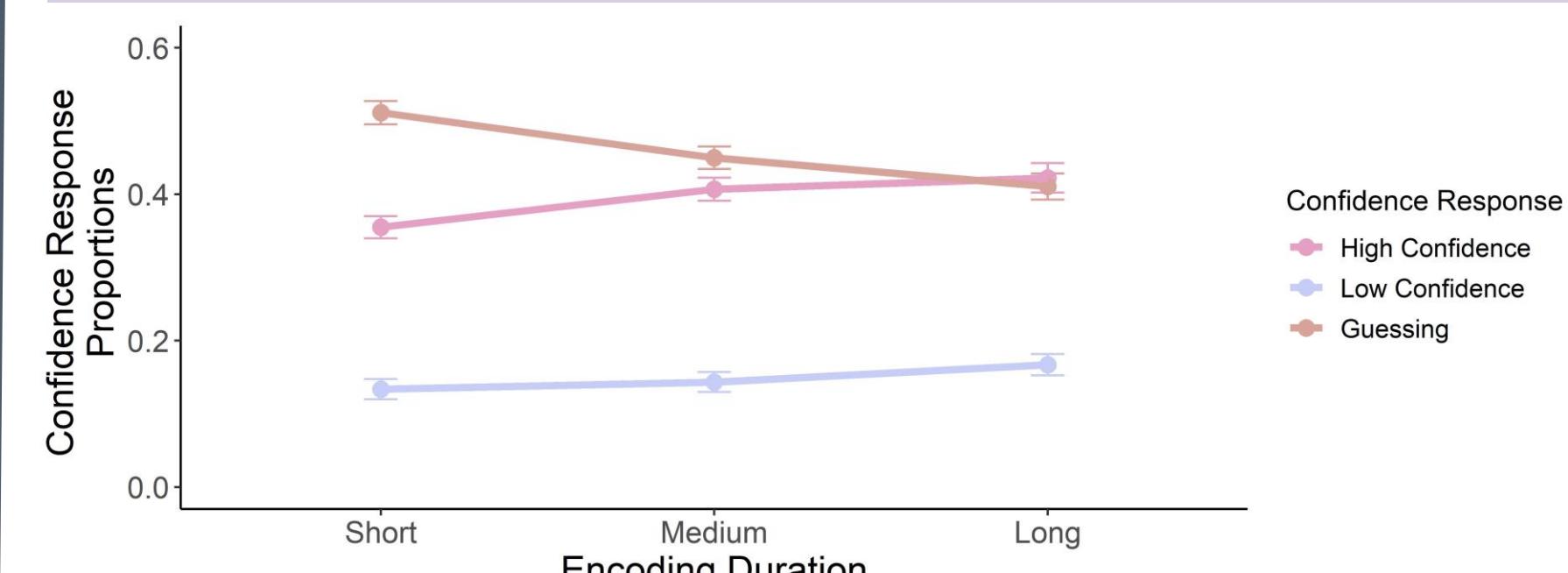
Yes, VWM capacity improves with increasing encoding duration.

Does metacognitive accuracy improve with increasing encoding duration?



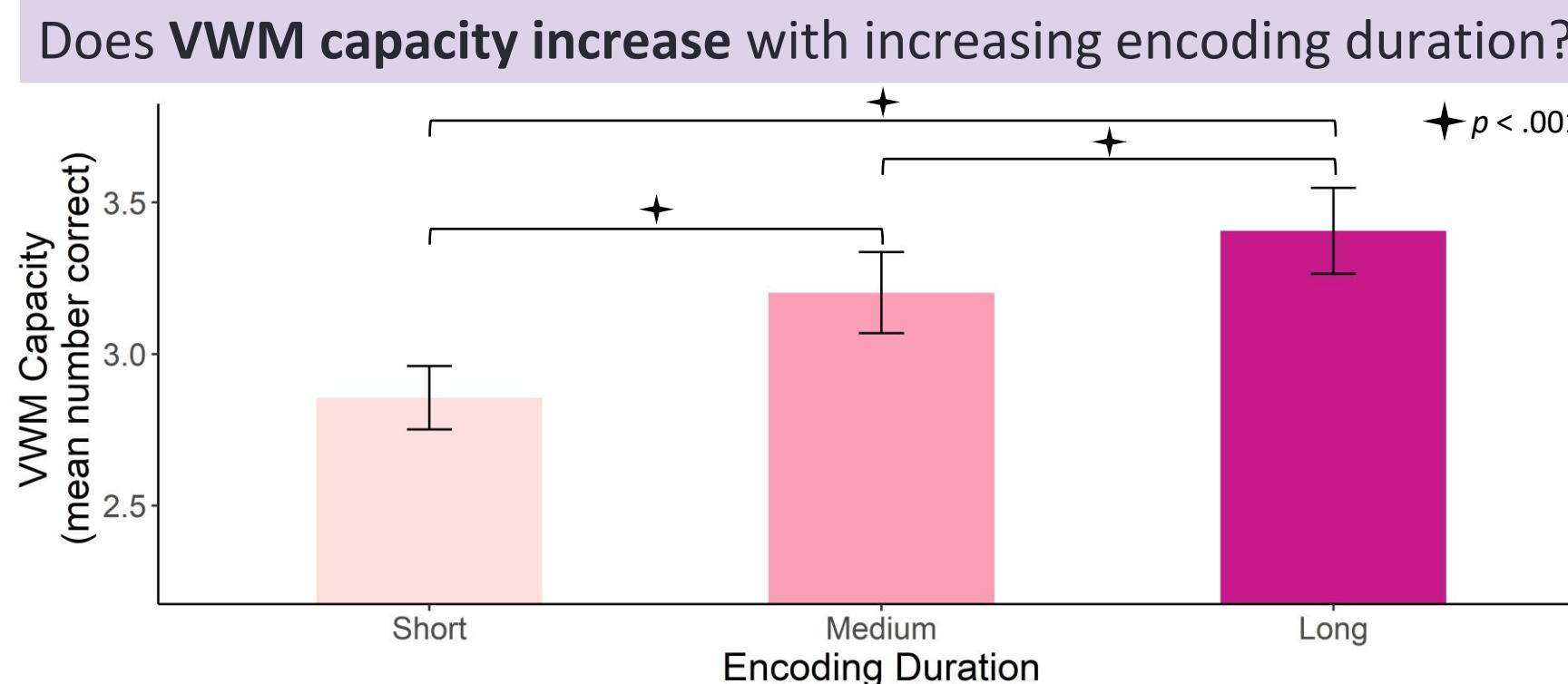
No, metacognitive accuracy decreases with increasing encoding duration (>500ms).

What drives the decrease in metacognitive accuracy?



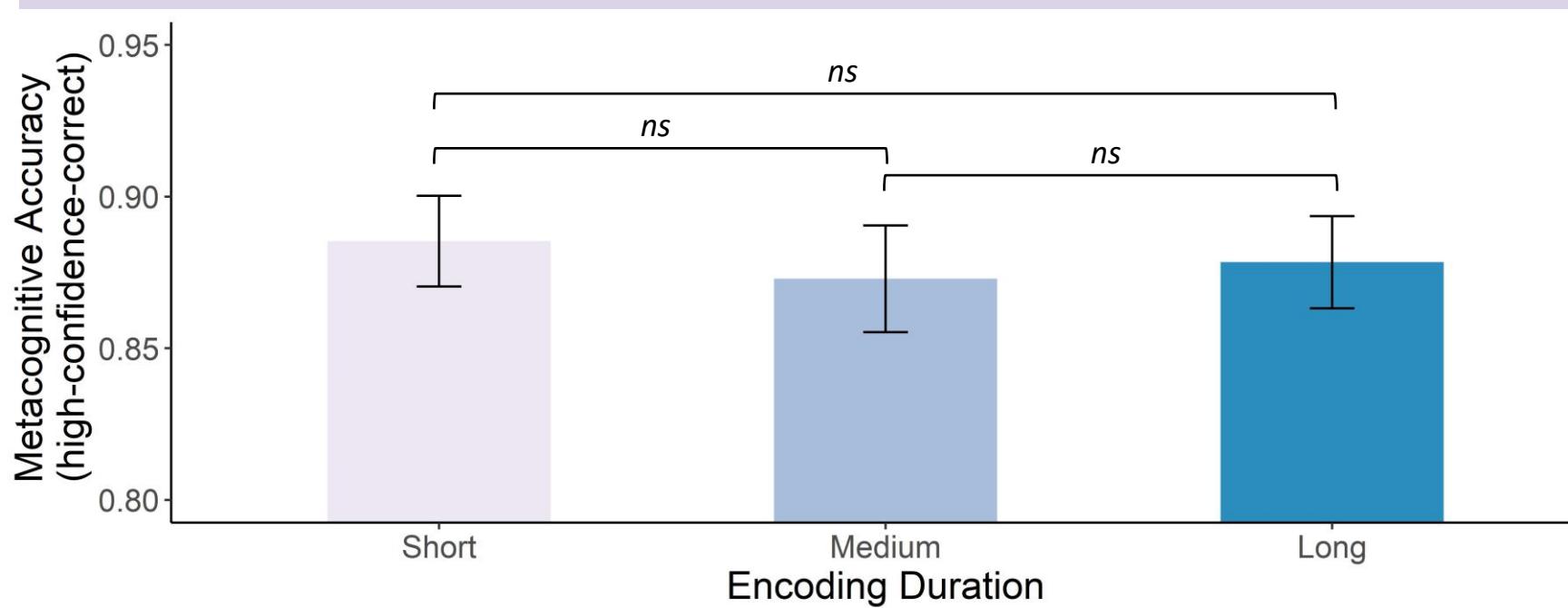
Participants increased the total proportion of high confidence responses and decreased the proportion of guessing responses.

Experiment 2: Can we disentangle the effects of encoding and retention duration? (n = 40)



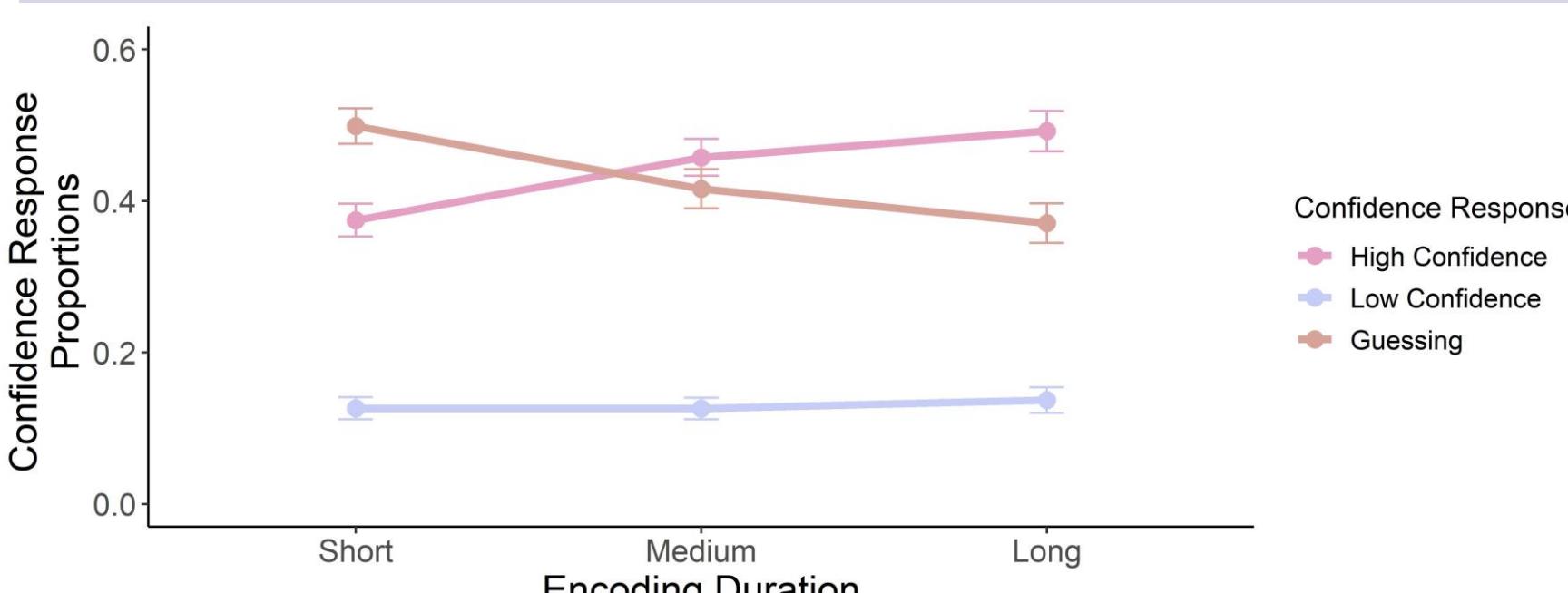
Yes, VWM capacity increases with increase in encoding duration.

Does metacognitive accuracy improve with increasing encoding duration but retention interval set at 900ms?



No, metacognitive accuracy did not change with increasing encoding duration and constant retention interval.

Why is there no change in metacognitive accuracy?



Participants again increased the total proportion of high confidence responses and decreased the proportion of guessing.

Discussion

- Changing the memory duration differentially affected VWM capacity and metacognitive accuracy

Memory Duration = Encoding Duration + Retention Interval

- VWM capacity improved when there was an increase in encoding duration
- Metacognitive accuracy (high-confident-correct) was preserved when the retention interval was held constant
- But increasing encoding duration and decreasing the retention interval is detrimental for metacognitive accuracy

Future Directions

- Can we directly manipulate the correspondence between subjective and objective memory quality?
 - It may be possible to improve this through active training with feedback (Tozios & Fukuda, in prep)
- Is there a certain constant retention interval duration that is optimal for increasing or decreasing metacognitive accuracy?

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