# Selecting and prioritising contents in working and long-term memory guides recall and perception

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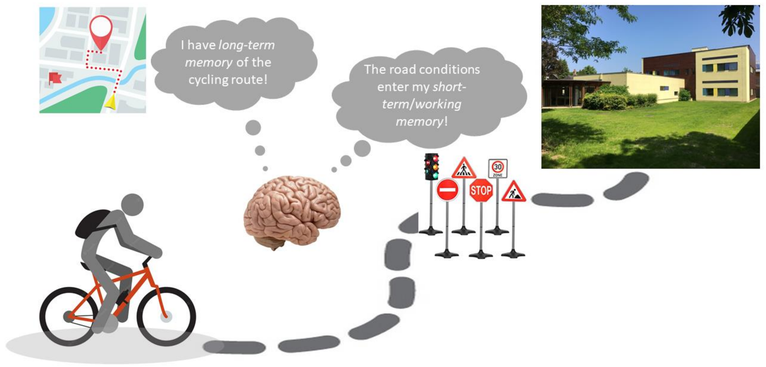
## Introduction

**Me cycling to work: How memories of different timescales guide my behaviour?**

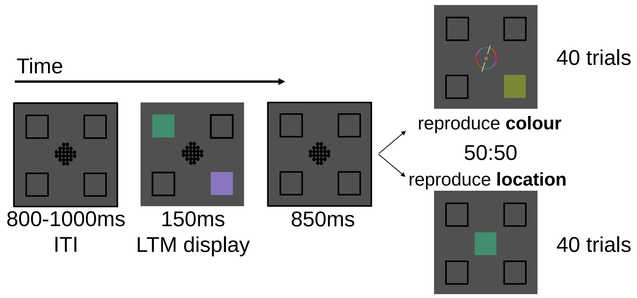



❖ **In everyday life, our brain takes advantage of both working memory (WM) and long-term memory (LTM) to guide perception and performance. However, we have little understanding of how selection and prioritisation of WM and LTM contents together guides our behaviour.**

## Research Questions and Methods

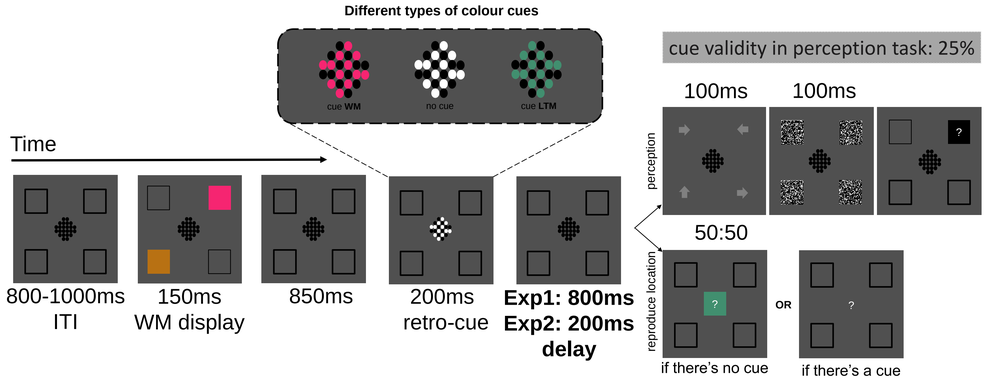
- **Can selection and prioritisation of both WM and LTM contents guide recall and perception?**
- **How might WM and LTM work differently when guiding recall and perception?**

**I. LEARNING**



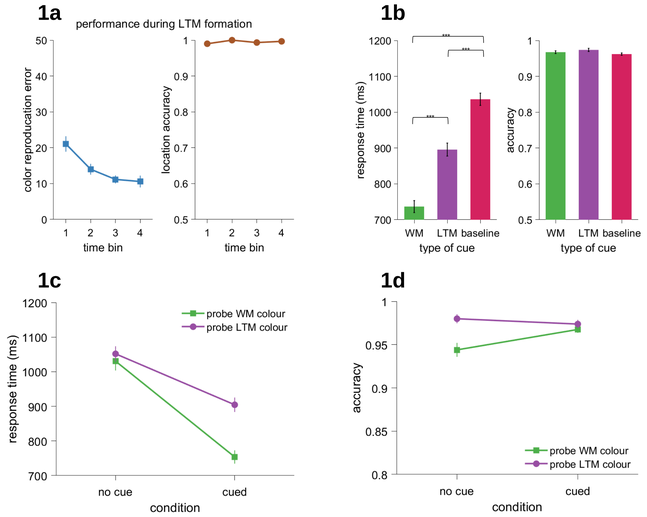

**II. INTERLUDE** (5 mins)

**III. TESTING** (48 trials/block * 10 blocks)

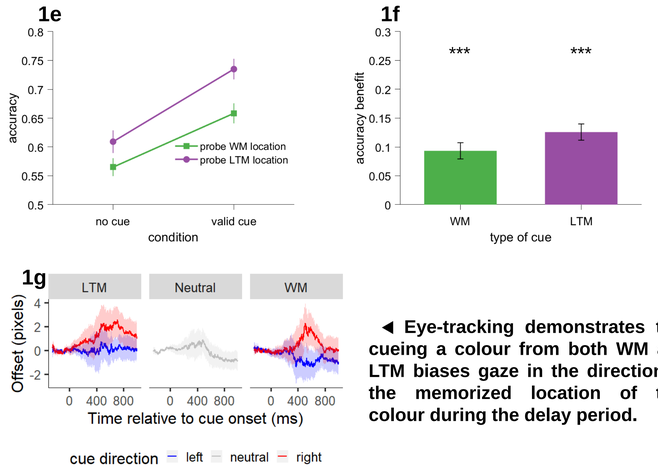



## Experiment 1 Results (800 ms delay, *N* = 30)

**Selection of WM and LTM contents facilitates memory recall**



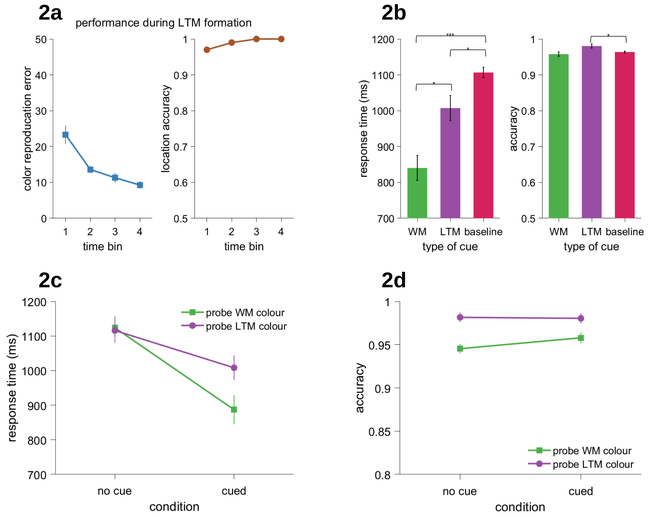

**Selection of WM and LTM contents guides perception**



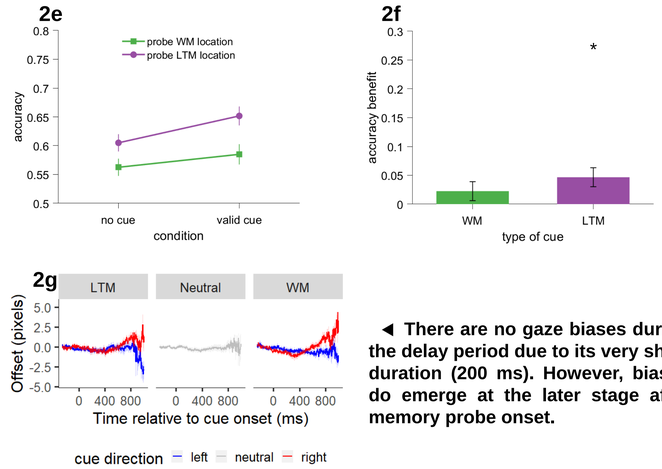

◀ **Eye-tracking demonstrates that cueing a colour from both WM and LTM biases gaze in the direction of the memorized location of that colour during the delay period.**

## Experiment 2 Results (200 ms delay, *N* = 30)

**Selection of WM and LTM contents facilitates memory recall**




**Selection of LTM contents guides perception**




◀ **There are no gaze biases during the delay period due to its very short duration (200 ms). However, biases do emerge at the later stage after memory probe onset.**

## Conclusions and Discussion

❖ **Selection and prioritisation of contents from both WM and LTM can improve memory recall performance.**
❖ **WM and LTM cues can enhance perceptual sensitivity when the probed location in the perception task is matched with the currently prioritised location in WM or LTM.**
❖ **It takes time to select and prioritise contents in memorised visual space before they can effectively guide subsequent perception.**

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