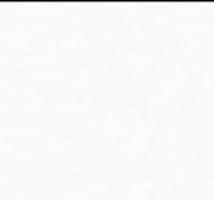
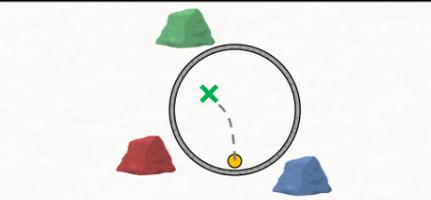
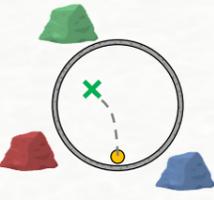
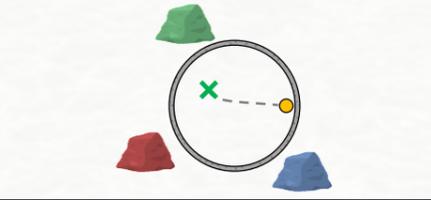
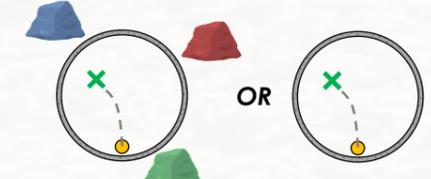


## Introduction

- A key component of our daily behaviour is knowing where things are in the world around. This requires a spatial representation of where an object is - this can be either allocentric (relative to other external objects, and independent to the self), or egocentric (relative to the self).
- This is typically examined empirically through tasks that involve learning a hidden location - allocentric and egocentric information can then be dissociated to identify differences in cue use (Kalová et al. 2005).
- Previous research from this lab (Baxter et al., in prep) suggests participants' ability to find a target location is similar when using allocentric or egocentric information in isolation. This may be due to interference from unreliable landmark cues in the egocentric condition.

## Method

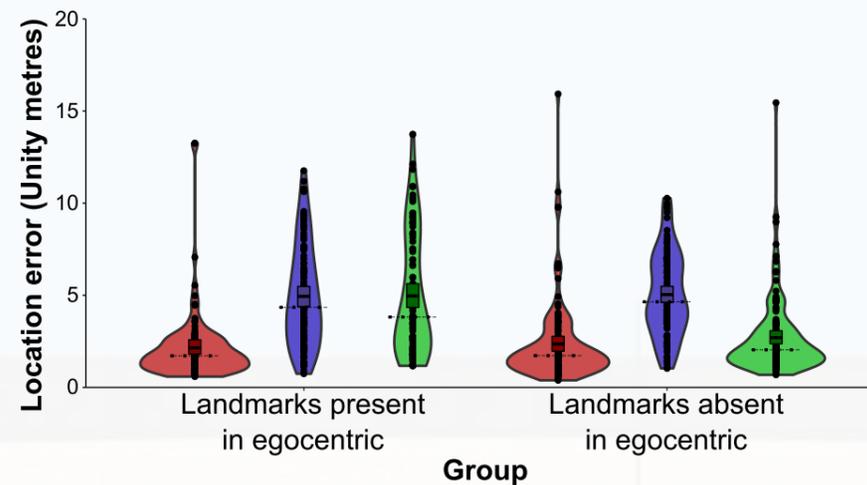
- This experiment was designed to examine participants' ability to use allocentric and egocentric information, as well as the interference from unreliable landmark cues when using egocentric information.
- Each trial comprised two stages - Training (navigating to a visible target) and Test (judging where the target location is).
- Across three conditions, participants learned three different hidden locations using either allocentric or egocentric cues in isolation, or in conjunction (control condition).

Condition	Training Phase	Test Phase
Control trials		
Allocentric trials		
Egocentric trials		

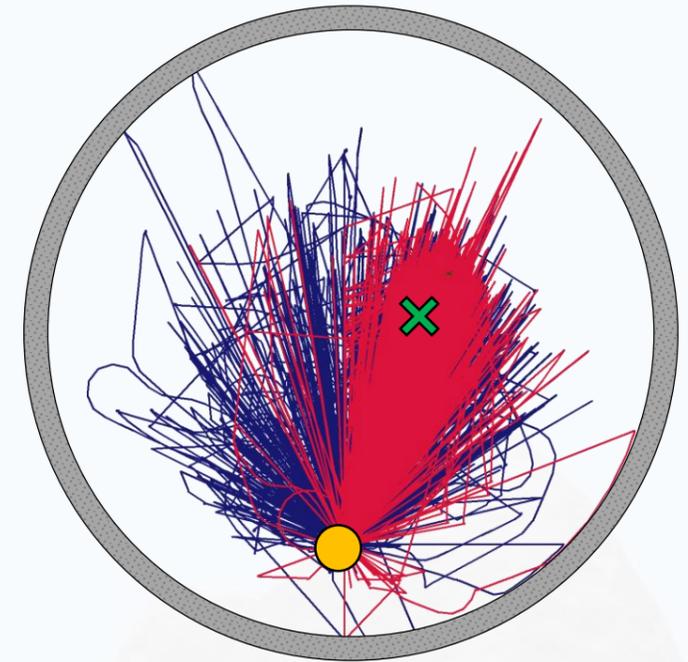
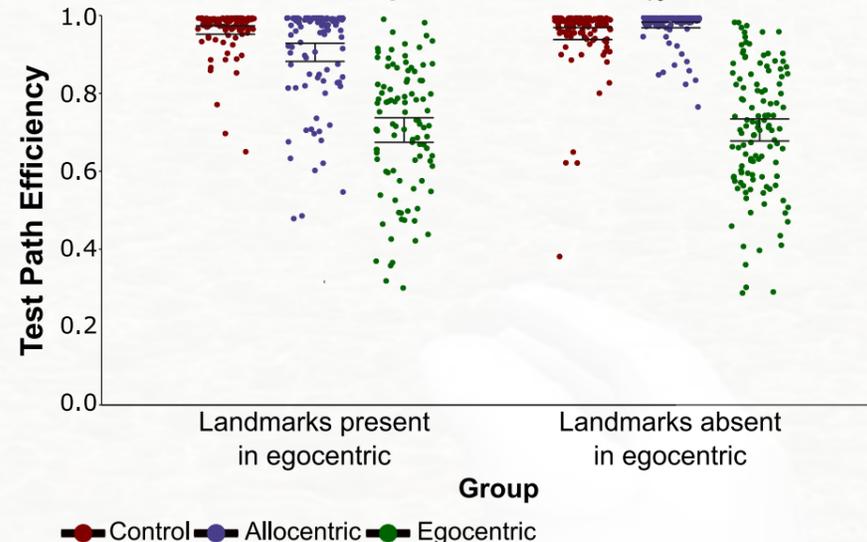
## Results

### Location error

- Main effect of trial condition**,  $F_{(1.91, 413.56)} = 132.9$ ,  $p < .001$ ,  $\eta_p^2 = .38$ ,  $BF_{10} = 3.169 \times 10^{37}$
- Main effect of group**,  $F_{(1, 217)} = 5.97$ ,  $p = .015$ ,  $\eta_p^2 = .027$ ,  $BF_{10} = 2.14$
- Interaction effect**,  $F_{(1.91, 413.56)} = 34.27$ ,  $p < .001$ ,  $\eta_p^2 = .14$ ,  $BF_{10} = 3.229 \times 10^{49}$
- Group comparison for egocentric trials**,  $BF_{10} = 3.02 \times 10^6$



- ### Path efficiency
- Main effect of trial condition**,  $F_{(1.5, 323.4)} = 364$ ,  $p < .001$ ,  $\eta_p^2 = .63$ ,  $BF_{10} = 1.19 \times 10^{100}$
  - Bayesian evidence for no group difference**,  $F_{(1, 215)} = 3.92$ ,  $p = .049$ ,  $\eta_p^2 = .018$ ,  $BF_{10} = 0.26$
  - Interaction effect**,  $F_{(1.5, 323.4)} = 8.59$ ,  $p < .001$ ,  $\eta_p^2 = .038$ ,  $BF_{10} = 147$
  - Group comparison for egocentric trials**,  $BF_{10} = 2.9 \times 10^5$



**Figure 1.** Participants' paths in egocentric test phases. Paths from the Landmark Present group are in blue. Paths from the Landmark Absent group are in red.

## Discussion

- Participants identified the target location less accurately and took less efficient paths when unreliable landmarks were present in egocentric trials. This provides evidence that the presence of unreliable landmarks interfere with the use of egocentric navigational information.
- These data provides further evidence of the importance of visual information in navigational behaviour, and highlight the role of boundary information in navigation .

