

## Background

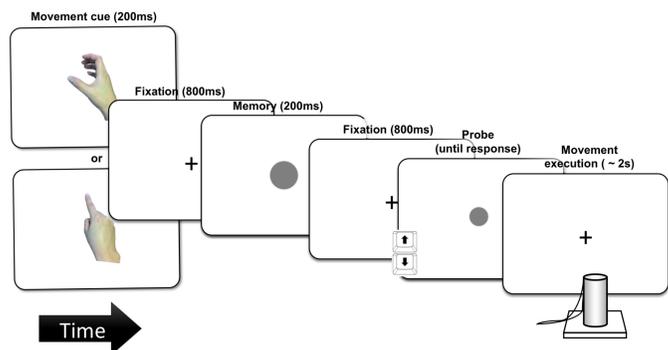
- It has been suggested that planning an action selectively weights action-relevant information during the encoding and maintenance of items in visual working memory<sup>1,2,3</sup>
- Previous study showed that people were more accurate in remembering objects' sizes while planning a grasping movement compared to planning a pointing movement<sup>1</sup>

## Questions

- Would planning a grasping or pointing movement systematically bias size representation in visual working memory?
- If so, does planning a grasping or pointing movement influence during maintenance of memory items as well as during the encoding?

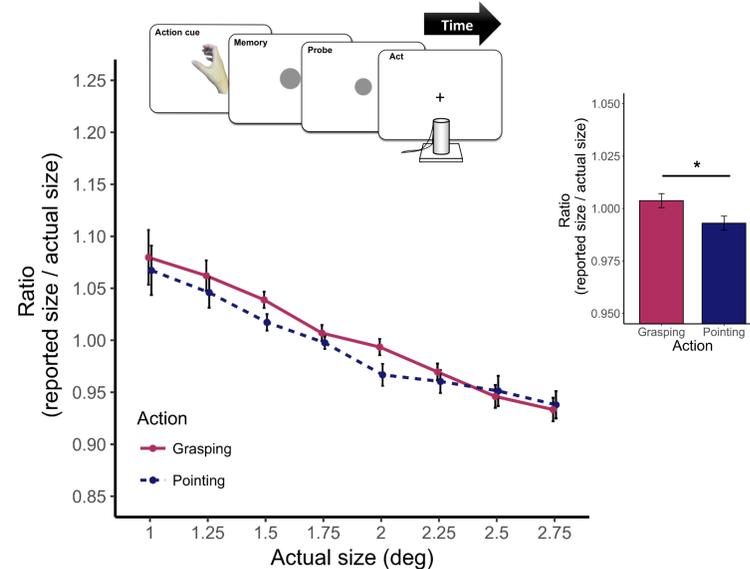
## Experiment

- 24 participants for each experiment
- Participants were asked to plan for either a grasping or pointing movement based on the movement cue while remembering the size of a memory item

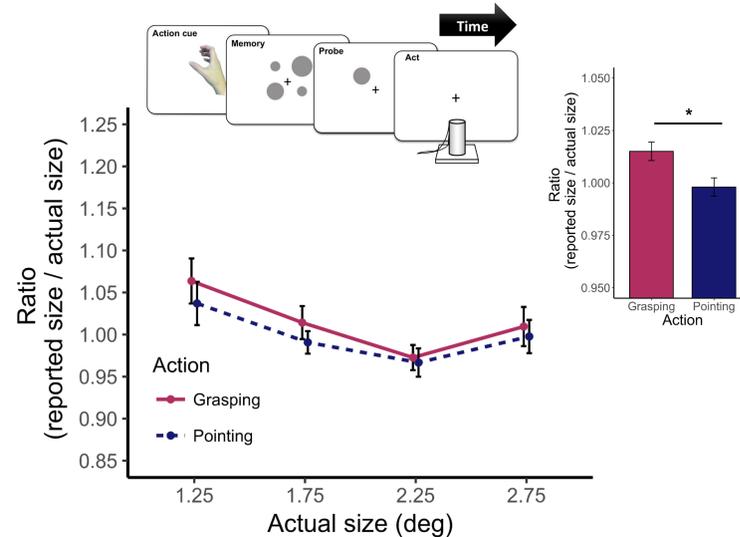


## Effect of action-planning during encoding of memory items

### Number of memory items: 1



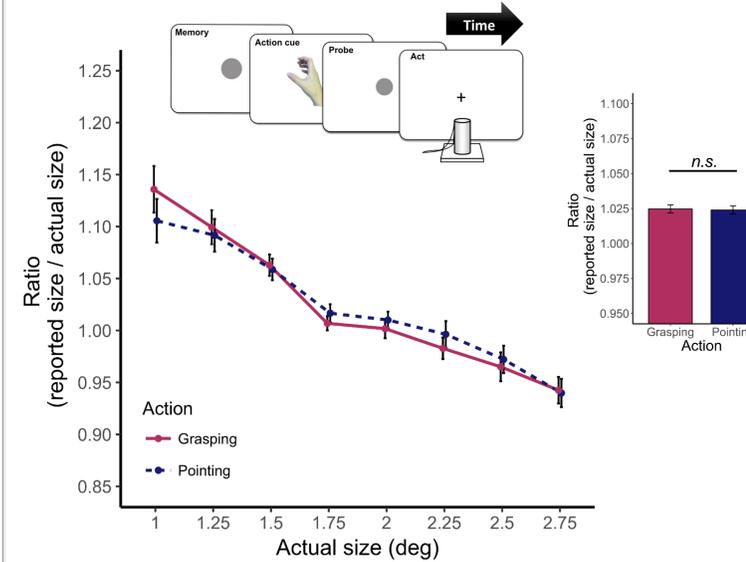
### Number of memory items: 4



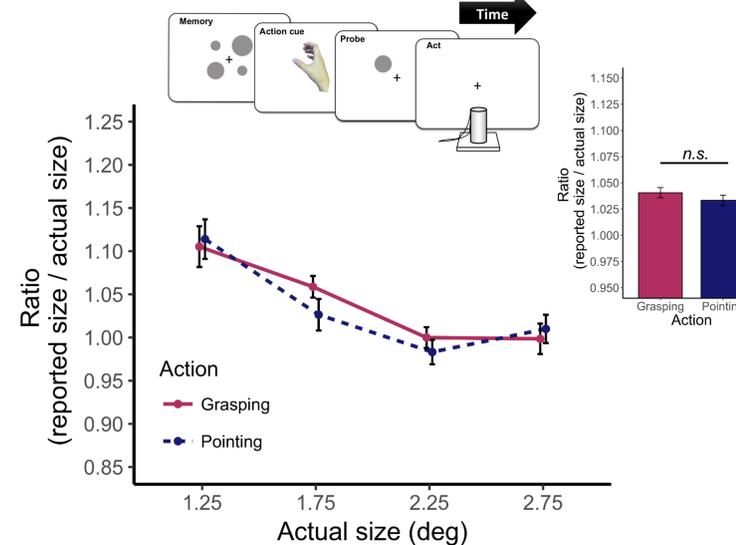
- The estimated size of the memory item was bigger when a grasping movement had been planned compared to a pointing movement

## No effect of action-planning during maintenance of memory items

### Number of memory items: 1



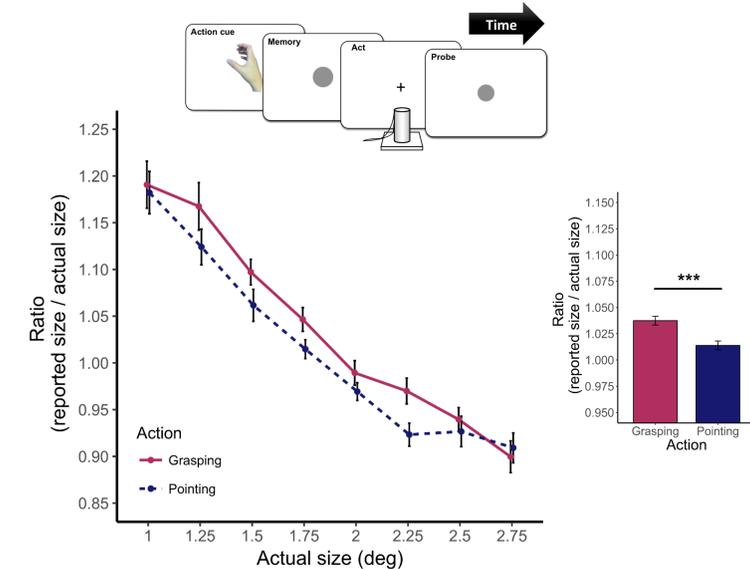
### Number of memory items: 4



- No effect of action-planning on the estimated size of the already-encoded memory item

## Altered size representation persists after the action

### Number of memory items: 1



- Again, the estimated size of the memory item was bigger when a grasping movement had been planned compared to a pointing movement

## Summary

- The estimated size of a memory item was consistently bigger when participants were planning a grasping compared to a pointing hand movement
- No effect of planned action when the memory item preceded the movement cue suggesting that the planned action most likely modulates perceptual encoding of the memory item, not maintenance of the item in memory
- The altered size persisted even when it was no longer necessary to remember the planned action

References  
 1. Heuer, A., & Schubö, A. (2016). Selective weighting of action-related feature dimensions in visual working memory. *Psychonomic Bulletin & Review*, 1-6.  
 2. Symes, E., Tucker, M., Ellis, R., Vainio, L., & Otoboni, G. (2008). Grasp preparation improves change detection for congruent objects. *Journal of Experimental Psychology: Human Perception and Performance*, 34(4), 854.  
 3. Wykowska, A., Schubö, A., & Hommel, B. (2009). How you move is what you see: Action planning biases selection in visual search. *Journal of Experimental Psychology: Human Perception and Performance*, 35(6), 1755-1769.