**ACTION INTENTION STRENGTHENS VISUAL WORKING MEMORY REPRESENTATIONS**

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**INTRODUCTION**
Planning an action while monitoring a visual stimulus enhances memory performance for that stimulus on its future trials. This suggests that visual working memory (VWM) representations are strengthened when coupled with an action plan. It follows that when we should observe strongest attentional biases in a visual perception task when a memory representation is the target of an action plan compared to when it is not. In Experiment 1, we found evidence in support of this prediction. In Experiment 2, we further investigate the results of Experiment 1 only on whether participants learn to advance how to act on the memorized stimulus.

**EXPERIMENT 1**

**METHODS (N=52)**

- **Apparatus**: Touch screen and eye-tracking device (Eyelink 1000 Times, 100Hz sampling rate).

- **Task**: Each participant took part in two blocked conditions, called action and control conditions, respectively. At the beginning of each trial, participants monitored a geometric shape. If in a subsequent trial the items shown matched the ones held in memory (match trial), participants were prompted to decide whether the items were present or absent; in a non-match trial, participants were asked to decide whether the items were present or absent. The memorized shape was always present, and it either matched the target (congruent) or did not (incongruent).

**RESULTS**

1. Saccade latencies towards the target vary as a function of the action-VWM link
2. Participants tend to first look more often at the memorized shape if it is the direct target of an action, indicating stronger pre-selection attentional biases in the action-condition
3. When a HWM representation is the target of an action-plan, participants find it more difficult to damage from the memorized shape

**CONCLUSIONS**

- *VWM representations that are the target of an action plan induce stronger attentional biases in a subsequent visual selection task compared to VWM representations that are dissociated from the action plan.*
- Knowing to not know in advance how to act on a memorized stimulus leads to a strengthening of VWM representations.
- Both early pre-selection and later post-selection enhancements likely contributed to the observed attentional biases.

**REFERENCES**