

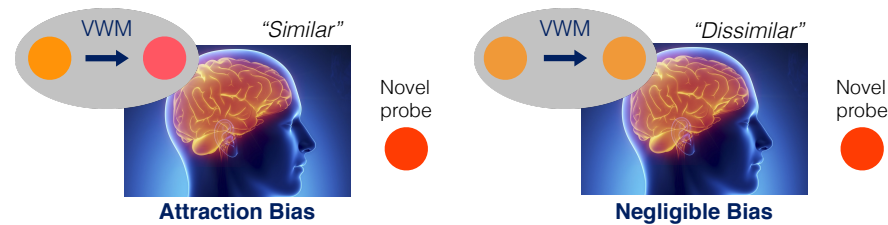
Perceptual Comparisons Induce Various Forms of Memory Updating

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BACKGROUND

Recent work shows that visual working memory (VWM) representations can be distorted after perceptual comparisons with novel visual inputs that are perceived as similar.*

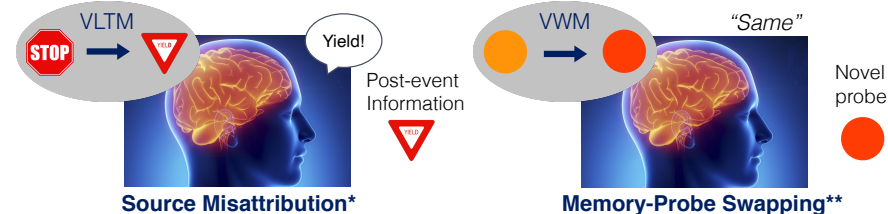


These findings suggest that endorsing similarity between VWM representations and novel inputs triggers **integration** between the two representations.

*See Working Memory Content is Distorted by its Use in Perceptual Comparisons (Fukuda et al., 2020)

RESEARCH QUESTION

What other forms of **memory updating** can be explained by using visual memories in perceptual comparisons?

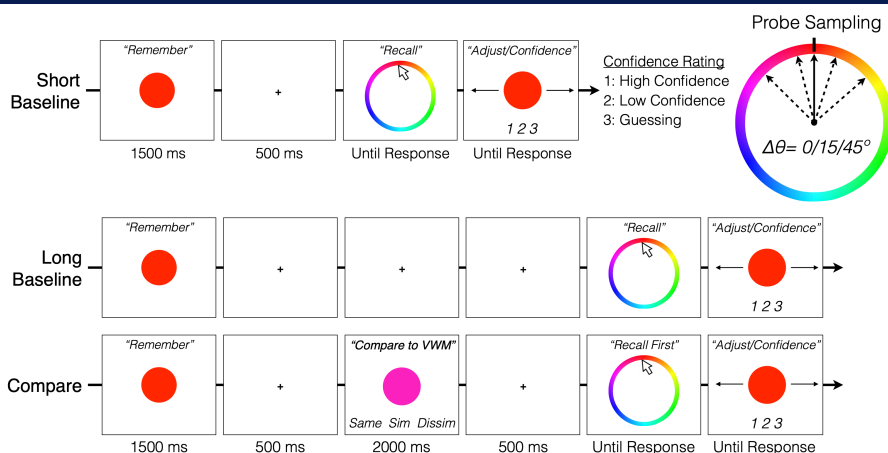


Perceiving **shared identity** or **"sameness"** between memories and novel inputs triggers **swapping** between memories and novel items.

*See Reconstruction of automobile destruction: An example of the interaction between language and memory (Loftus & Palmer, 1974)

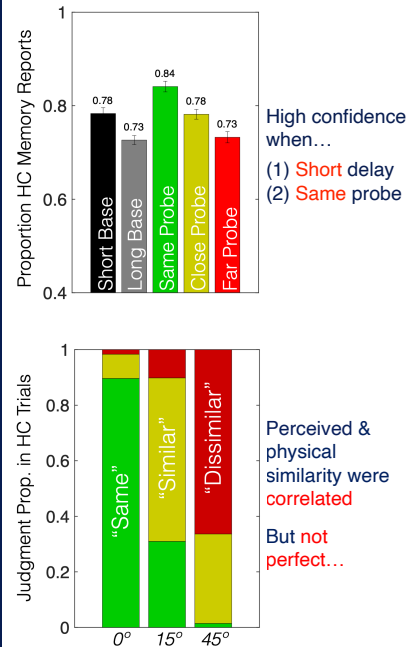
**See The precision of visual working memory is set by allocation of a shared resource (Bays, Catalao & Husain, 2009)

METHODS



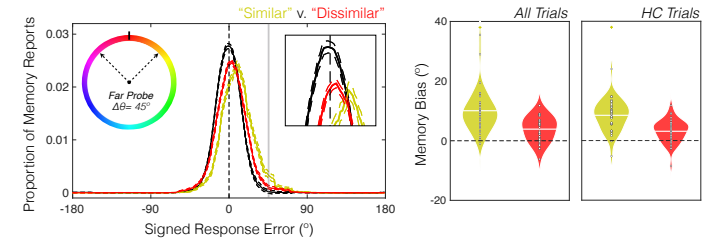
RESULTS

Perceived v. Physical Similarity



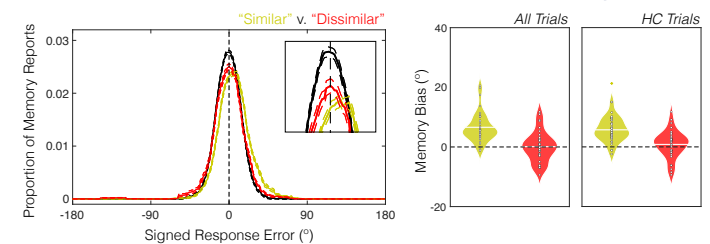
How is bias influenced by subjective judgement & physical distance?

Does perceived similarity induce an attraction bias?



Perceived **'similarity'** results in larger attraction bias than perceived **'dissimilarity'**, replicating our previous experiments.

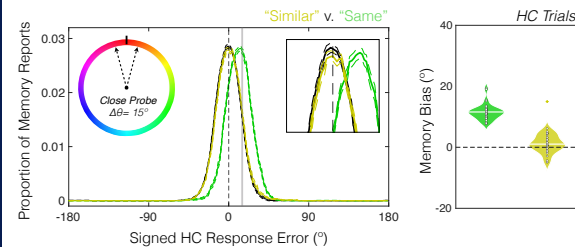
Is there a causal role of the comparison in memory bias?



Perceptual comparisons modulate memory biases **above and beyond** the effects of the physical similarity.

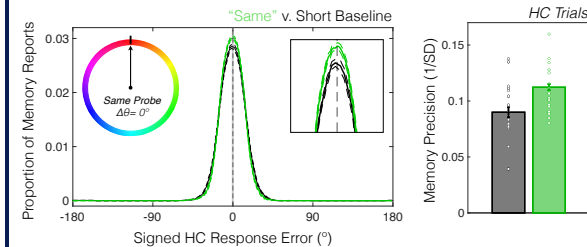
Does perceiving shared identity between memories & visual inputs induce memory change?

Effect of *mistakenly* perceiving shared identity?



Falsely perceiving shared identity resulted in larger distortions than perceiving similarity, may indicate **Memory-Probe Swapping**.

Effect of *correctly* perceiving shared identity?



Correctly perceiving shared identity **improved memory precision**, potentially via selection of the more precise representation.

DISCUSSION

- Perceptual comparisons play a **causal role in VWM distortion** & may induce **different types of distortion**
- When new inputs were perceived as similar, a bias was induced. However, when perceived as the same, the distortion was **much larger**, potentially reflecting memory-probe swapping
- Endorsing identical inputs as the "same" improved VWM precision, suggesting that memory outcomes **depend on judgment accuracy**