Comparisons with Similar Faces Induce Lasting Distortions in Face Memories

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A. Similarity-induced memory bias (SIMB)

Visual working memory (VWM) representations get distorted when compared with similar perceptual inputs (Fukuda et al., 2020; Saito et al., 2020).

Research Question
Does SIMB occur with face memories, irrespective of how they enter VWM?

B. Continuous Face Stimuli (Face wheel)

Similar   Target   Similar

Dissimilar
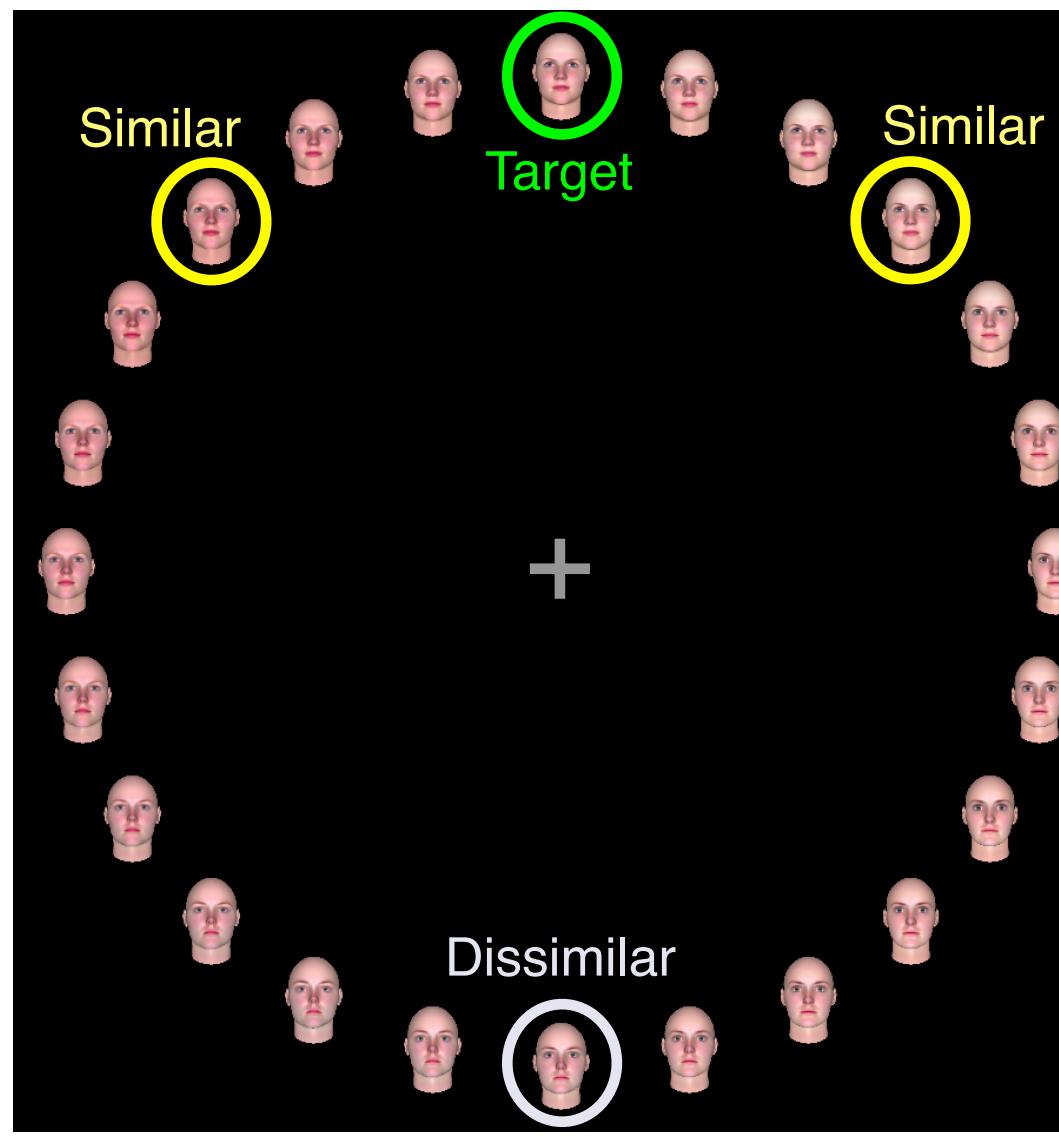
8 separate face wheels were created for 4 races (African, East Asian, European, and South Asian) and 2 genders (male and female) using FaceGen modeller (Singular Inversions, 2021)

C. Experiment 1: Encoded through Perception

Face Recall task: "*Remember and recall a face!*"

Remember   *Recall*   *Adjust + Confidence*

Baseline

Comparison
"More Similar?"

Perceptual Comparison

3000ms   2000ms   Until response   Until response
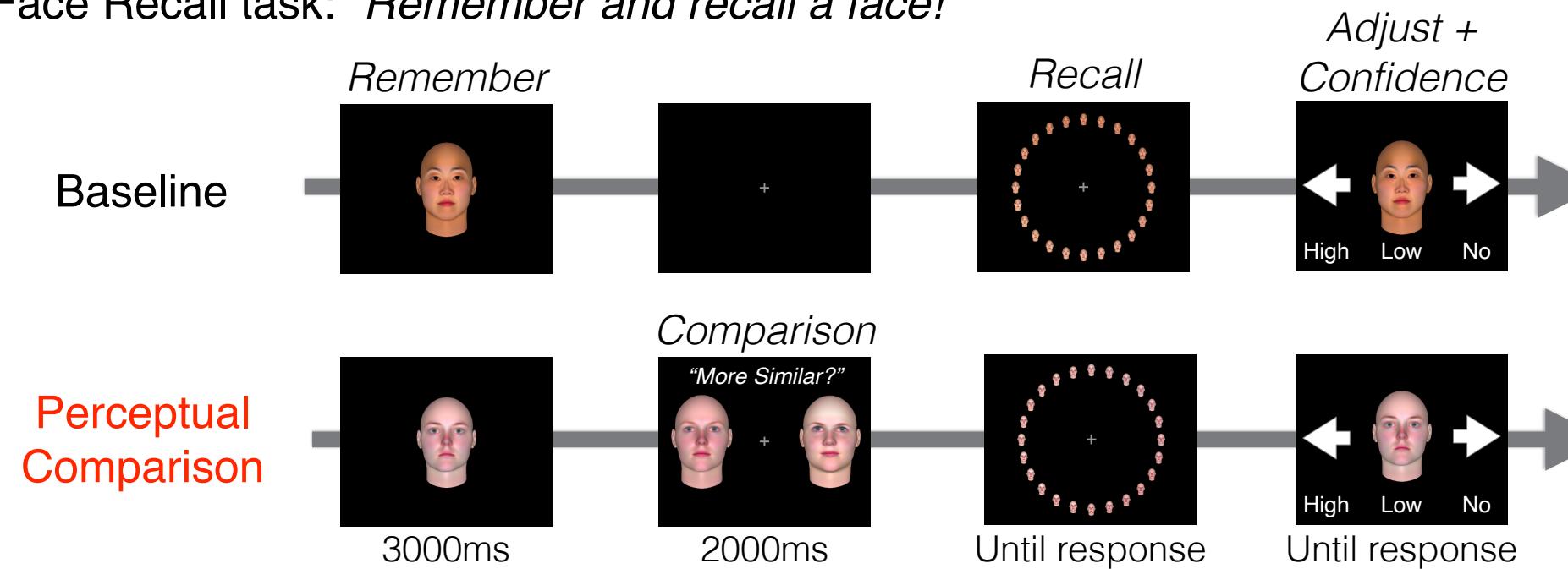
D. SIMB for perceptually-encoded face memories?

Similar face
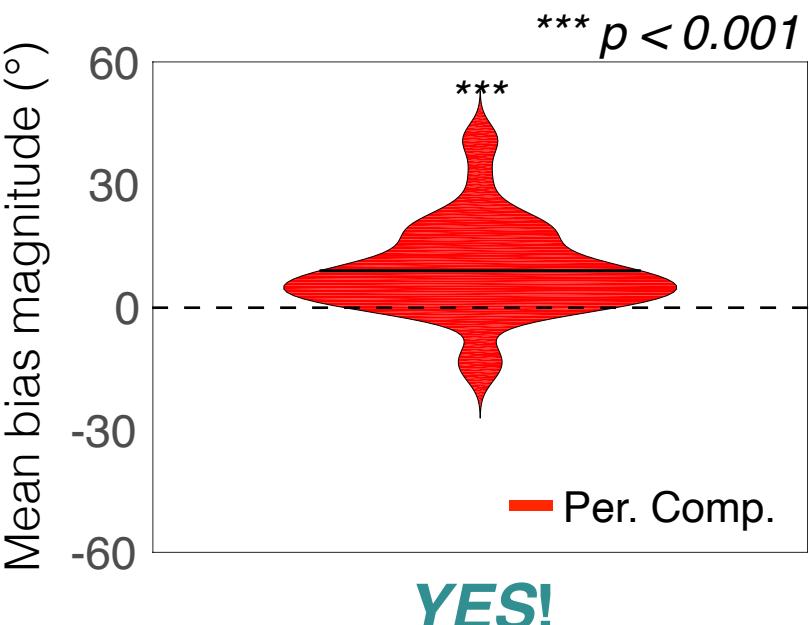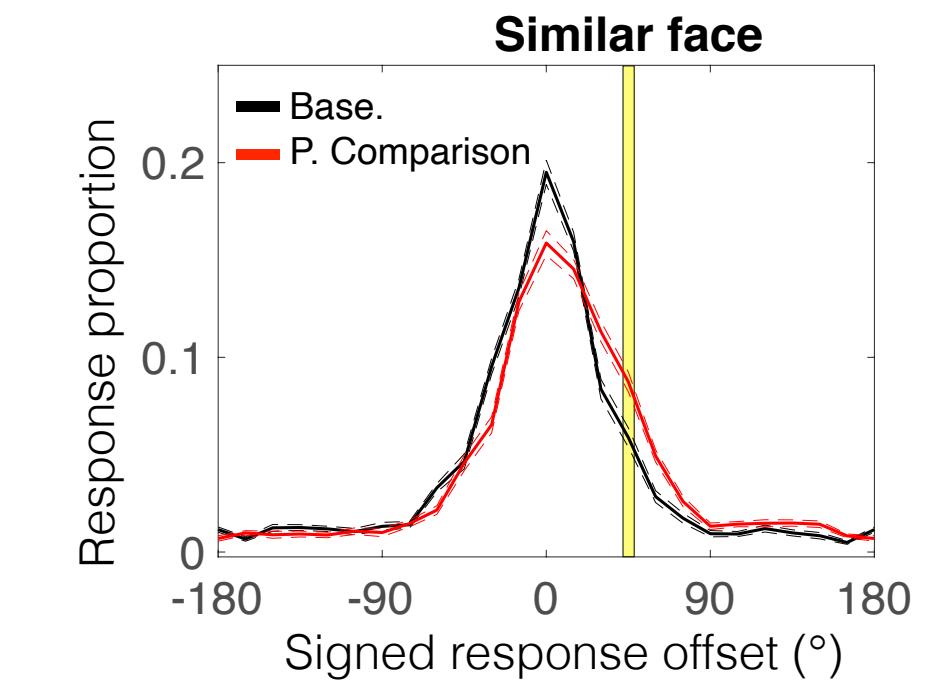
*** $p < 0.001$

YES!

E. Experiments 2A & 2B: Retrieved from VLTM

Profile Encoding Task: "*Remember the name and major of a face!*"

Recall   *Feedback*   *Recall*   *Feedback*   *Recall*   *Feedback*

Jake Luke   Jake Luke Jake   Jake Luke
Math Music   Music

Until resp.   1000ms   Exp 2B: Incremental encoding
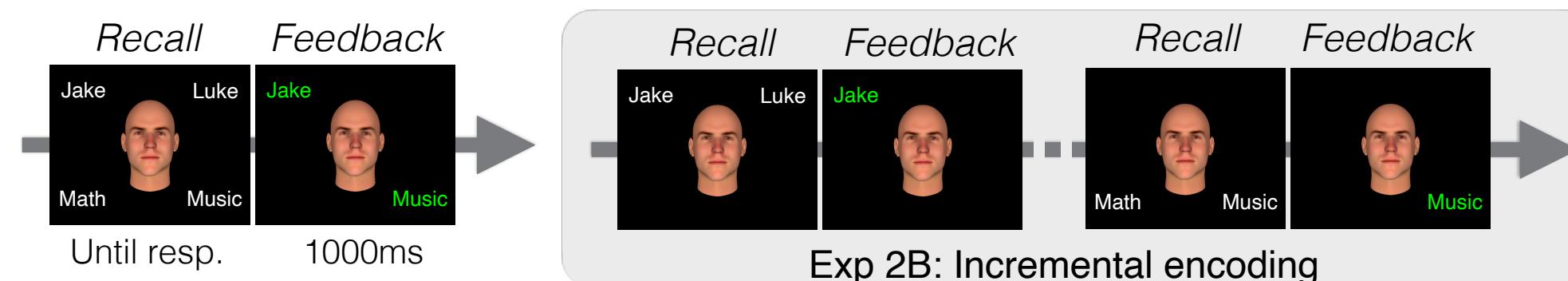
Retrieval Practice Task: "*Retrieve the cued face and recall it!*"

Cue + Conf.   *Comp.*   *Recall*   *Adj. + Conf.*

Remember Face?   More Similar?
Music
High Low No   High Low No

Until resp.   Until resp.   Until resp.   Until resp.

Learning performance:
Profile encoding Accuracy ≥ 95%
Comparison Accuracy ≥ 95%
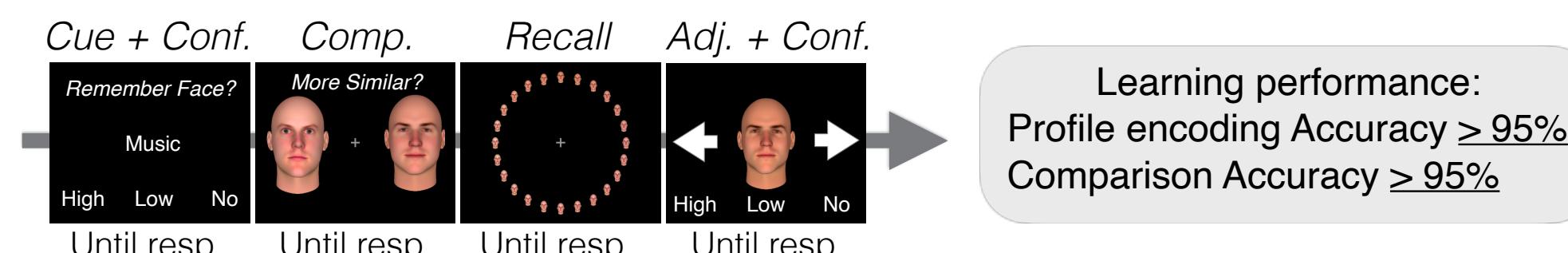
Final Recall Task: "*Retrieve the cued face and recall it!*"

(*prac'd*)   (*unprac'd*)

Cue + Conf.   *Recall*   *Adj. + Conf.*   *Cue + Conf.*   *Recall*   *Adj. + Conf.*

Remember Face?   Remember Face?
Music   Jake
High Low No   High Low No   High Low No   High Low No

Until resp.   Until resp.   Until resp.   Until resp.   Until resp.   Until resp.
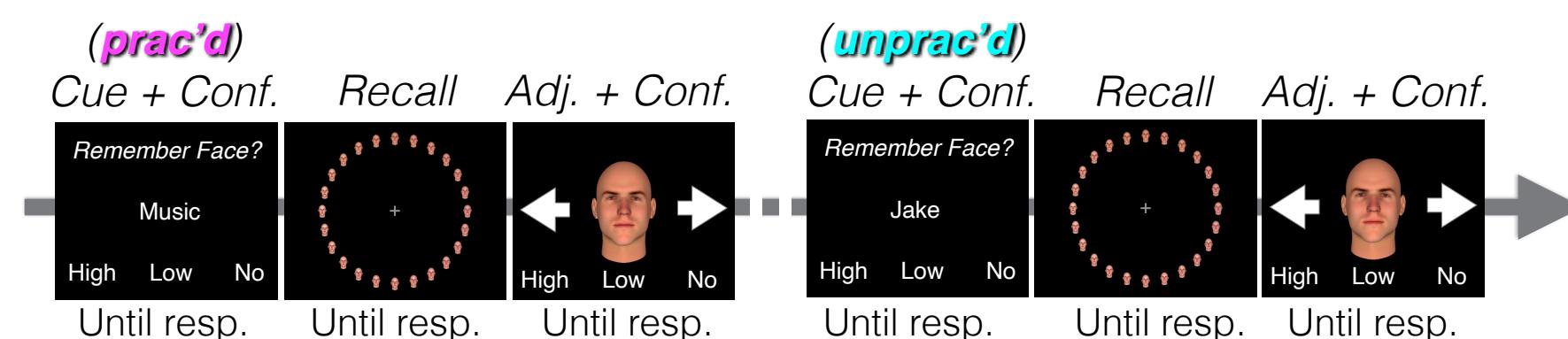
F. SIMB for retrieved face memories?

Exp 2A. Simultaneous encoding

*** *** ***

Ret. Prac.   Final (*Prac'd*)   Final (*Unprac'd*)

YES!

Exp 2B. Incremental encoding

*** *** ***

Ret. Prac.   Final (*Prac'd*)   Final (*Unprac'd*)
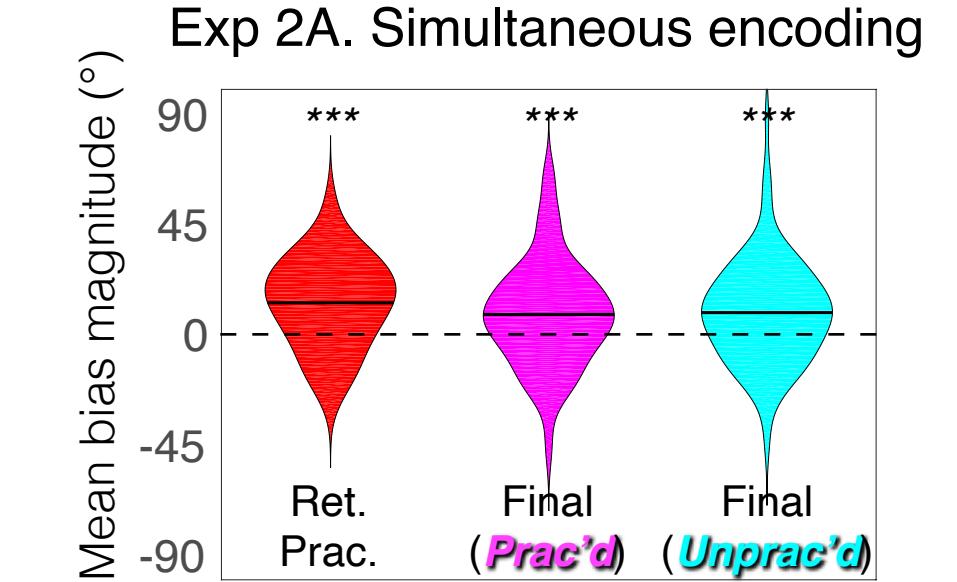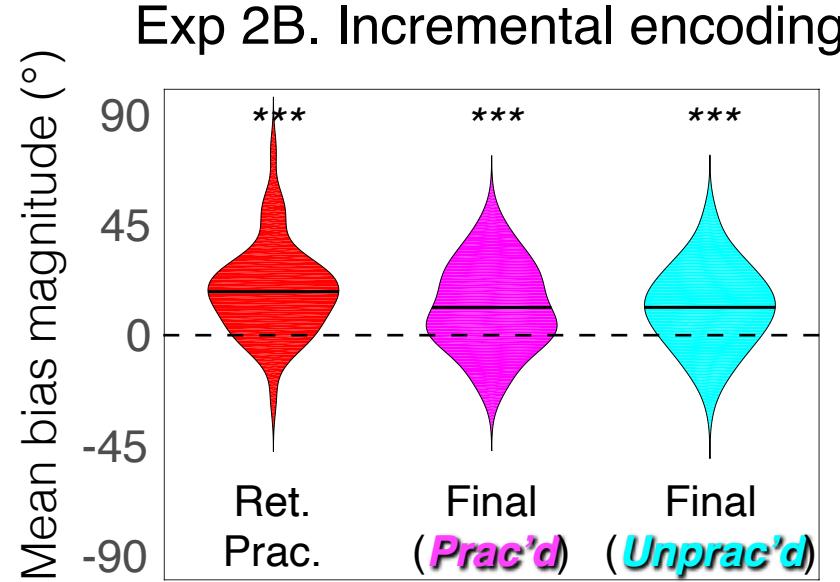
YES!

G. Discussion & Future directions

- Face VWMs were distorted towards a similar looking face when they were encoded perceptually and retrieved from VLTM.
- Once distorted, face VLTMs remained distorted across *time* and *retrieval contexts*.
- Do perceptual comparisons have to be *explicit* to induce SIMB?

H. References

Fukuda, K., Pereira, A. E., Saito, J. M., Tang, T., Tsubomi, H., & Bae, G.-Y. (2020). Working memory content is distorted by its use in perceptual comparisons. *PsyArxiv*. https://doi.org/10.31234/osf.io/96axn

Saito, J. M., Kolisnyk, M., & Fukuda, K. (2020). Perceptual comparisons modulate memory biases induced by overlapping visual input. *PsyArxiv*. https://doi.org/10.31234/osf.io/dqng3