

Individual differences in working memory reactivation of long-term memories predict protection against anticipated interference

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Background

Humans are exposed to distractors while carrying out daily tasks.

Perceptual distractors are shown to be detrimental to working memory (WM).

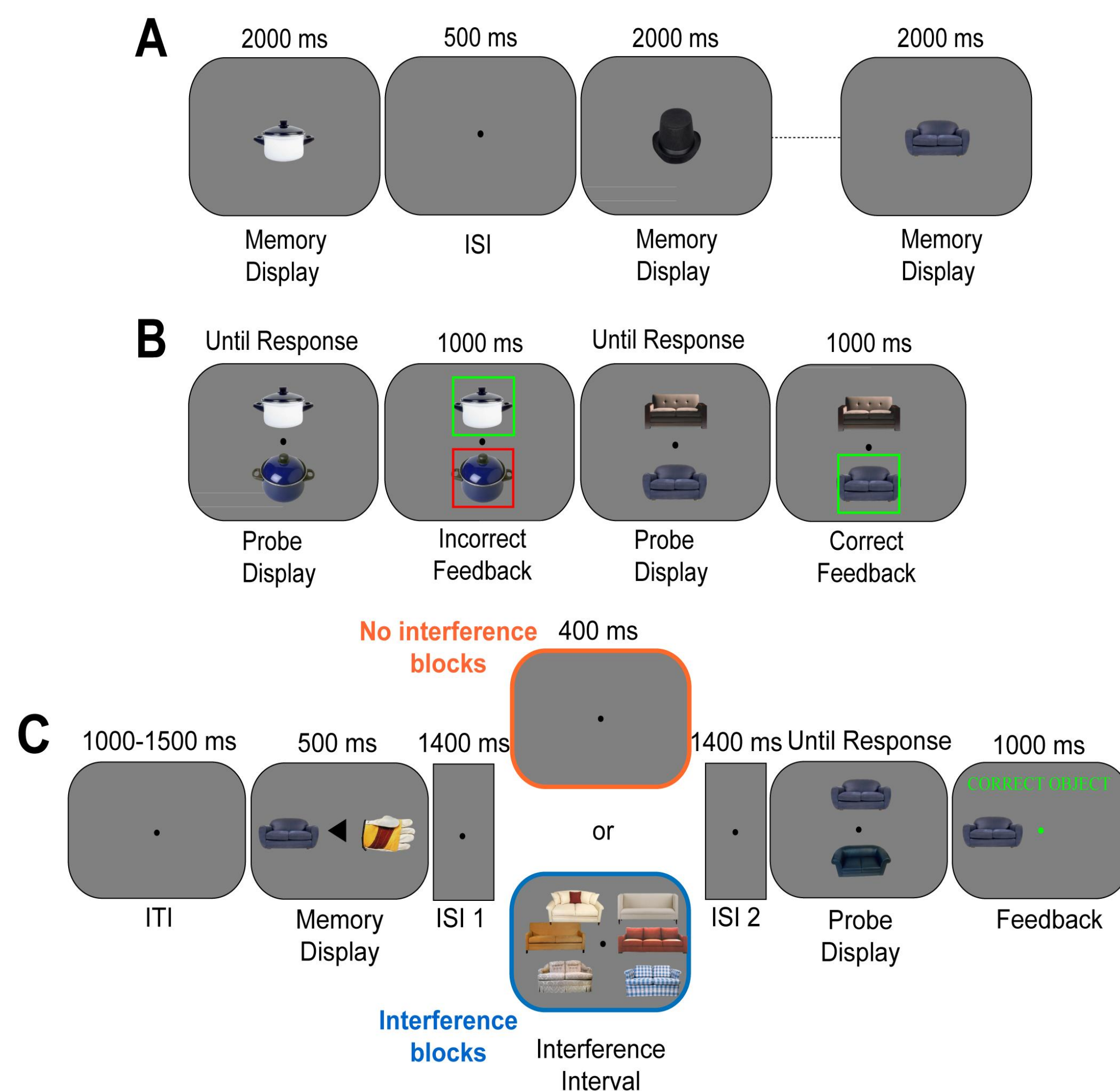
(van Moorselaar et al. 2015; Blalock, 2013; Bennett & Cortese, 1996; Magnussen & Greenlee, 1992; Magnussen et al., 1991)

Although to a smaller degree, long-term memory (LTM) retrieval has been also shown to be affected by interference.

(Atkins & Reuter-Lorenz, 2008; Hupbach et al., 2007; Moscovitch, 1994)

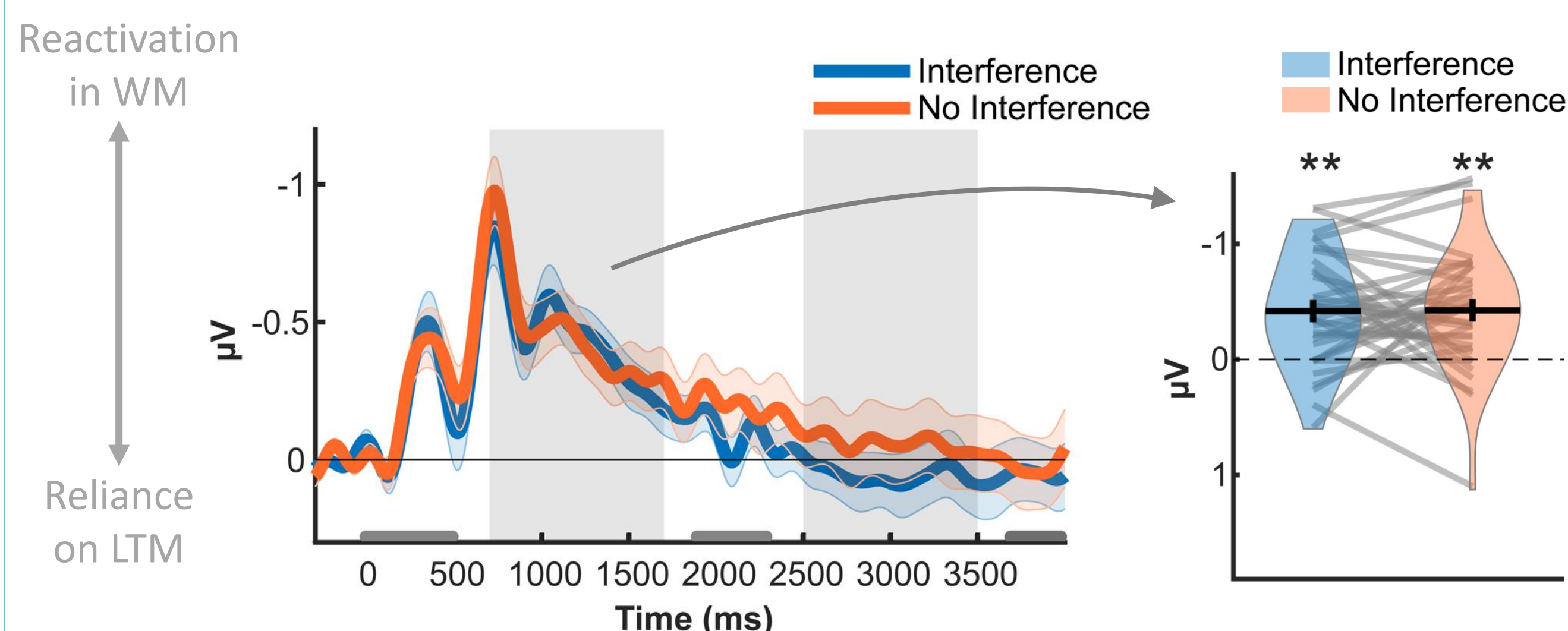
Which memory is used when preparing for anticipated interference?

Procedure



Results

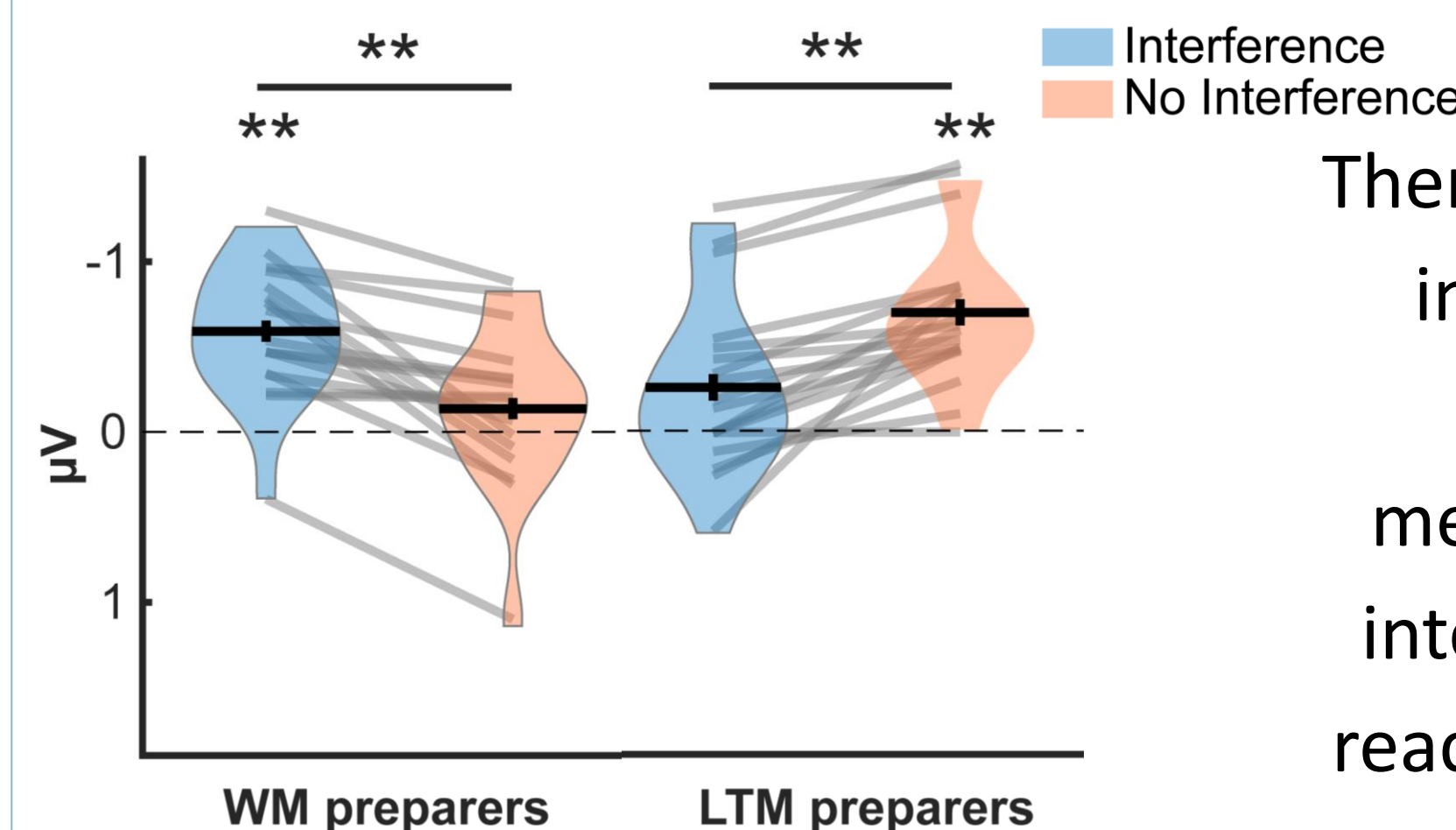
Contralateral Delay Activity (CDA)



Individuals reactivate memories in WM in preparation for anticipated interference

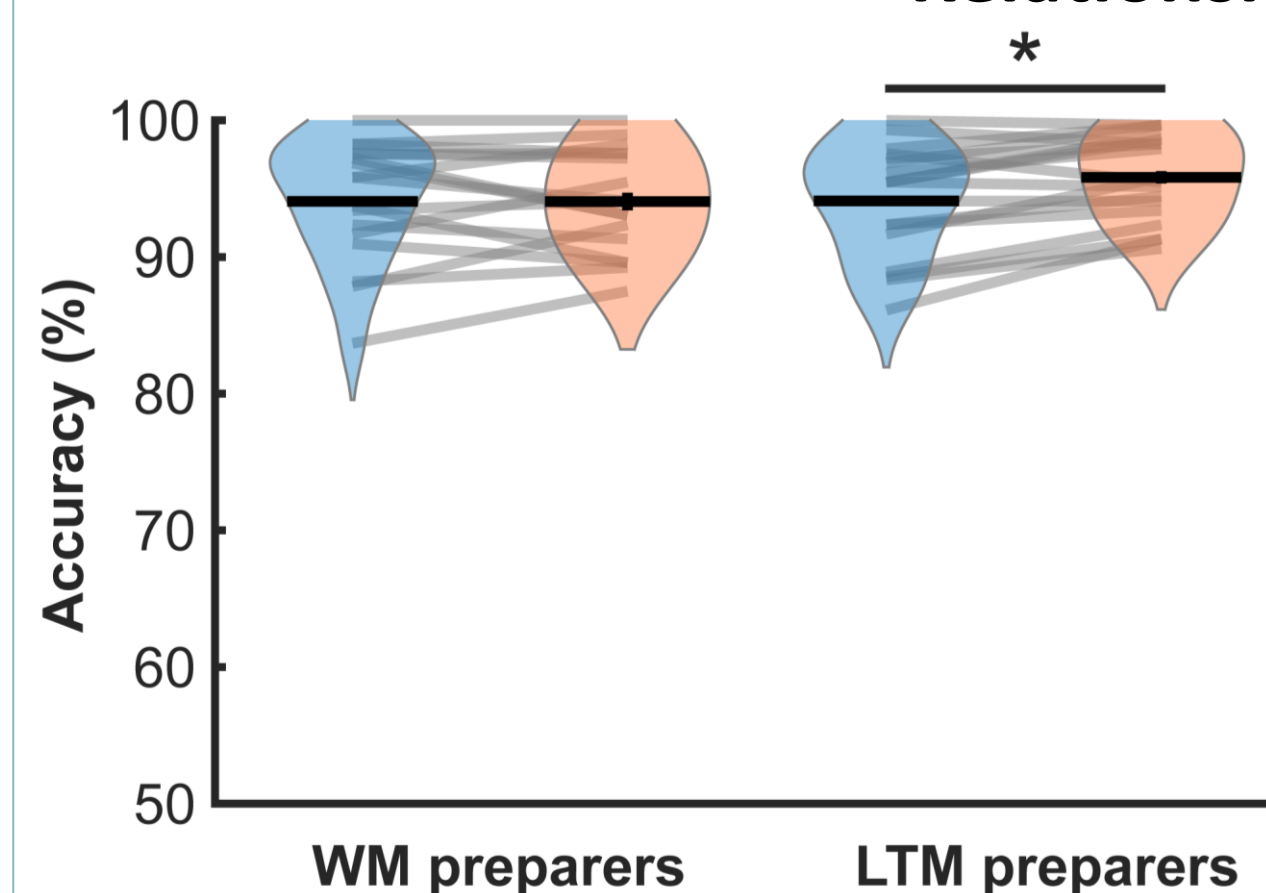
Results

CDA – Individual differences



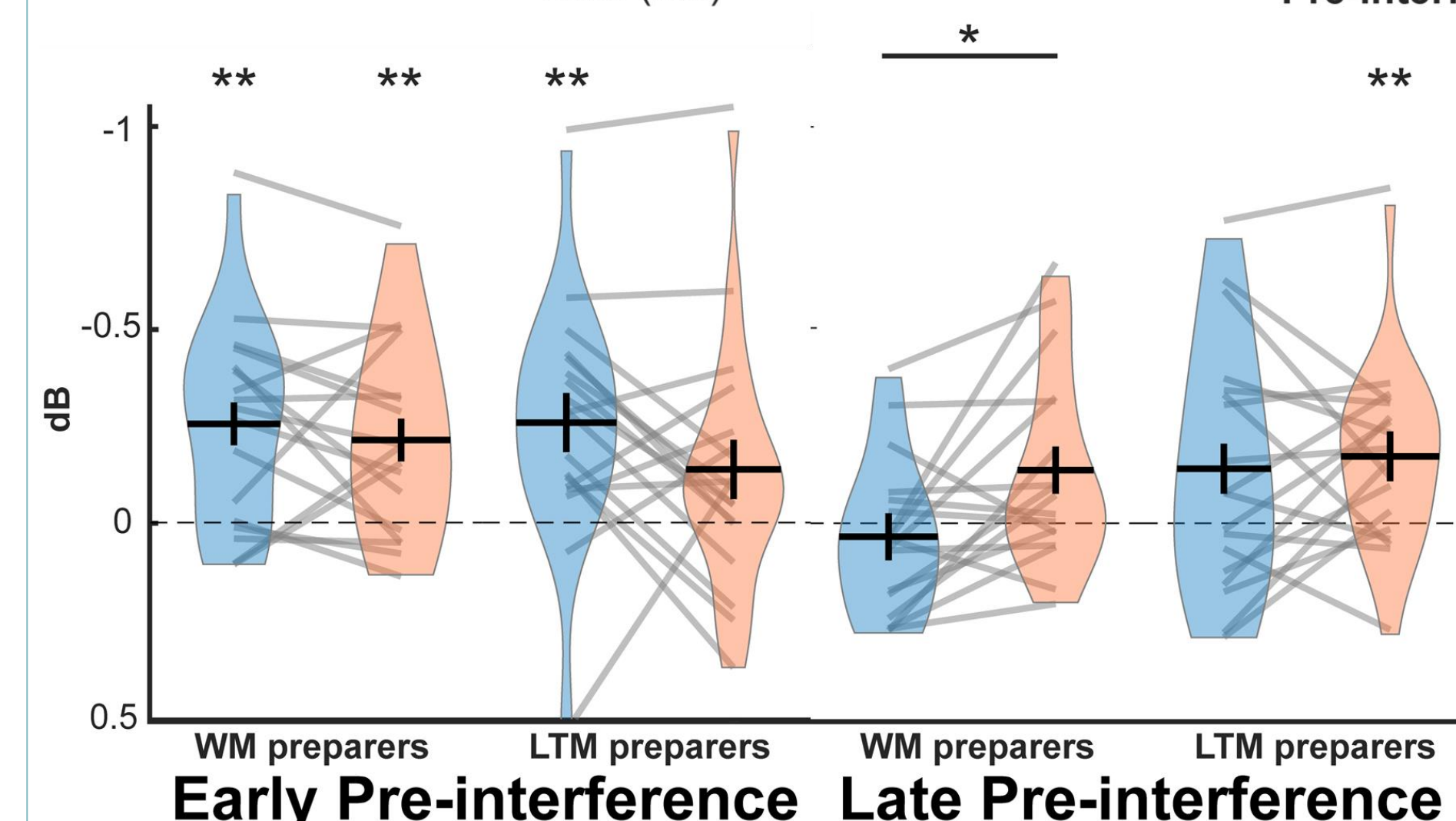
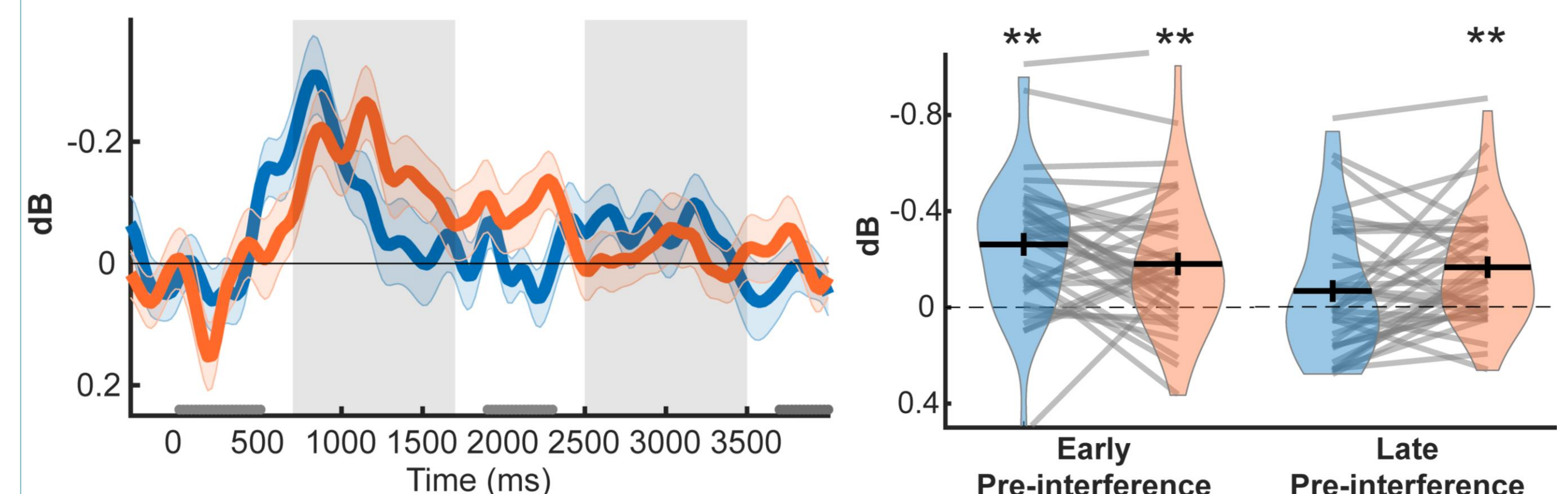
There are individual differences in preparation. Half of the participants reactivate memories when anticipating interference while the others reactivate them in the absence of interference

Relationship to behavior



Preparing against interference via WM protects memories against interference compared to preparing using LTM.

Contralateral alpha band (8-12 Hz) power



WM preparers stop attending the memory location in anticipation of interference, presumably to protect information in WM against interference

Conclusion

- There are individual differences in memory reactivation when anticipating interference
- Preparing for interference using WM protects memories
- Individuals stop attending memorized locations in WM in anticipation of interference

Acknowledgement

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