

Cued memory reactivation is more effective during slow wave sleep than sleep stage 2

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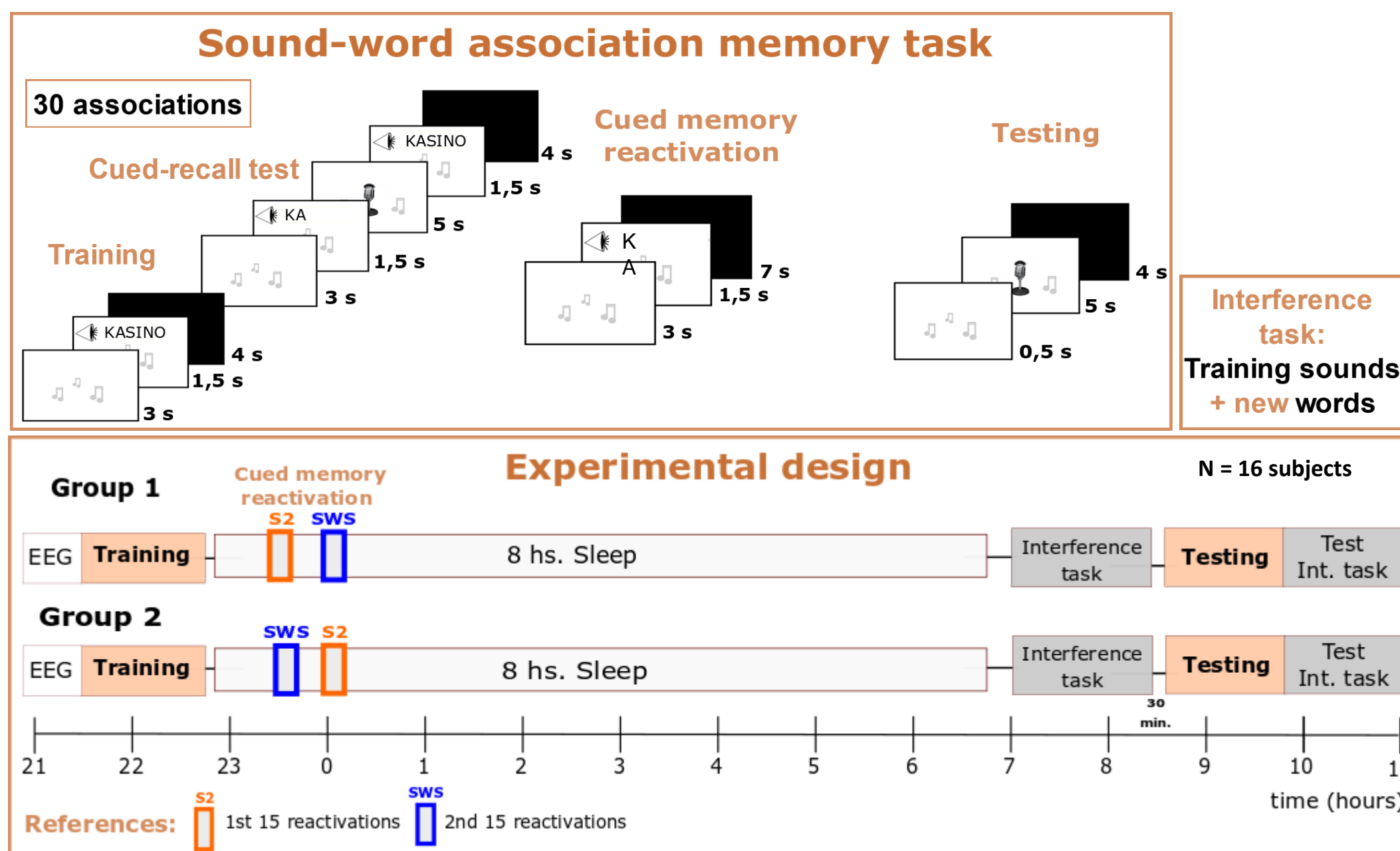
Introduction

- Sleep plays a central role in memory formation (1).
- Following learning, spontaneous memory reactivations occur during sleep (2).
- Cued memory reactivation was shown to stabilize memories and to enhance performance (3).
- Sleep is composed by different stages, still little is known about their role in cued memory reactivation.

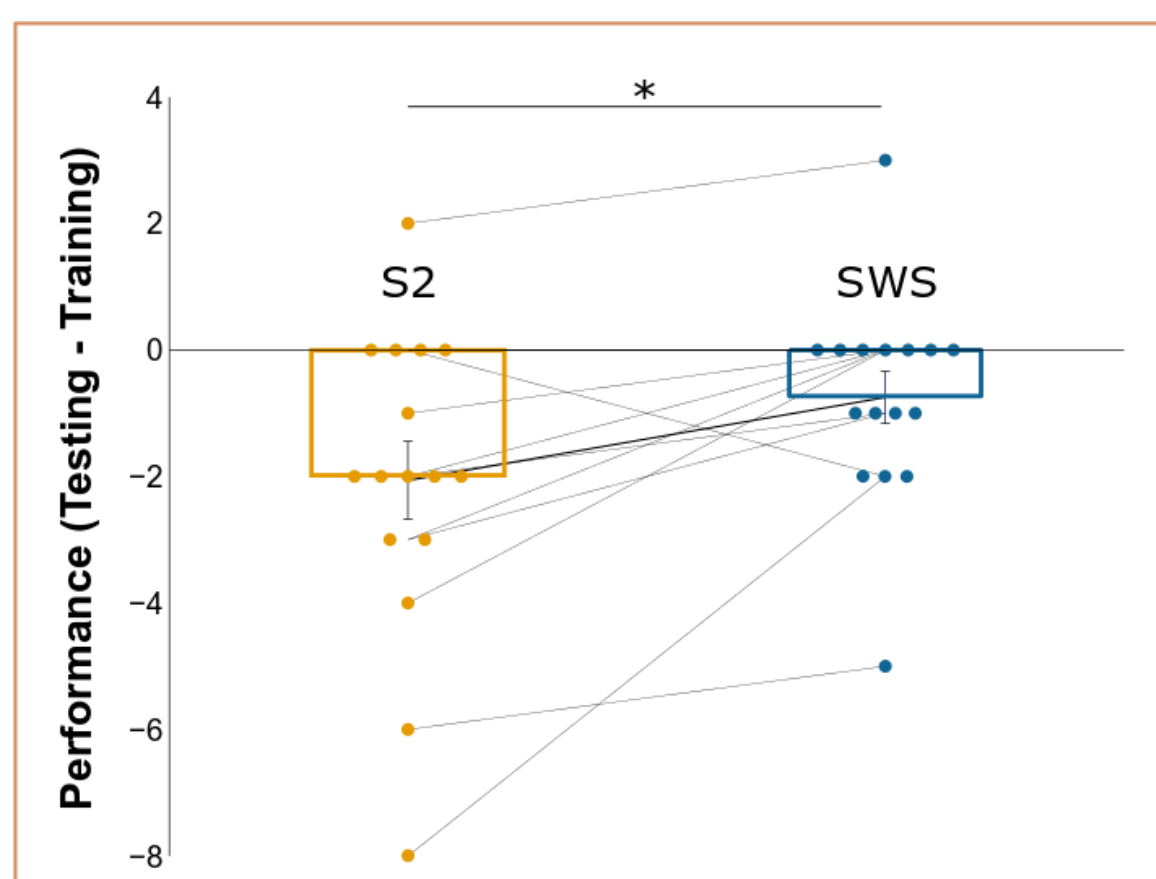


Main goal: Compare cued memory reactivation during Slow Wave Sleep (SWS) and sleep Stage 2 (S2).

Methods



Results



Behavioral results: The memory performance was significantly better ($p=0,019$) for those reminder cues presented during SWS than during S2.

Conclusions

These findings suggest that targeting memory reactivation with external reminder cues is more effective during SWS than S2, speaking for a functional role of SWS for the consolidation of declarative memories.

Future directions: EEG analyses (SO and Spindles)

References

(1) Diekelmann S, Born J (2010) The memory function of sleep. *Nat Rev Neurosci* 11:114–126.

(2) Wilson MA, McNaughton BL (1994) Reactivation of hippocampal ensemble memories during sleep. *Science* 265:676–679.

(3) Diekelmann S, Büchel C, Born J, Rasch B (2011) Labile or stable: opposing consequences for memory when reactivated during waking and sleep *Nat Neurosci* 14: 381- 386