

The neural architecture of interpersonal cultural conflicts

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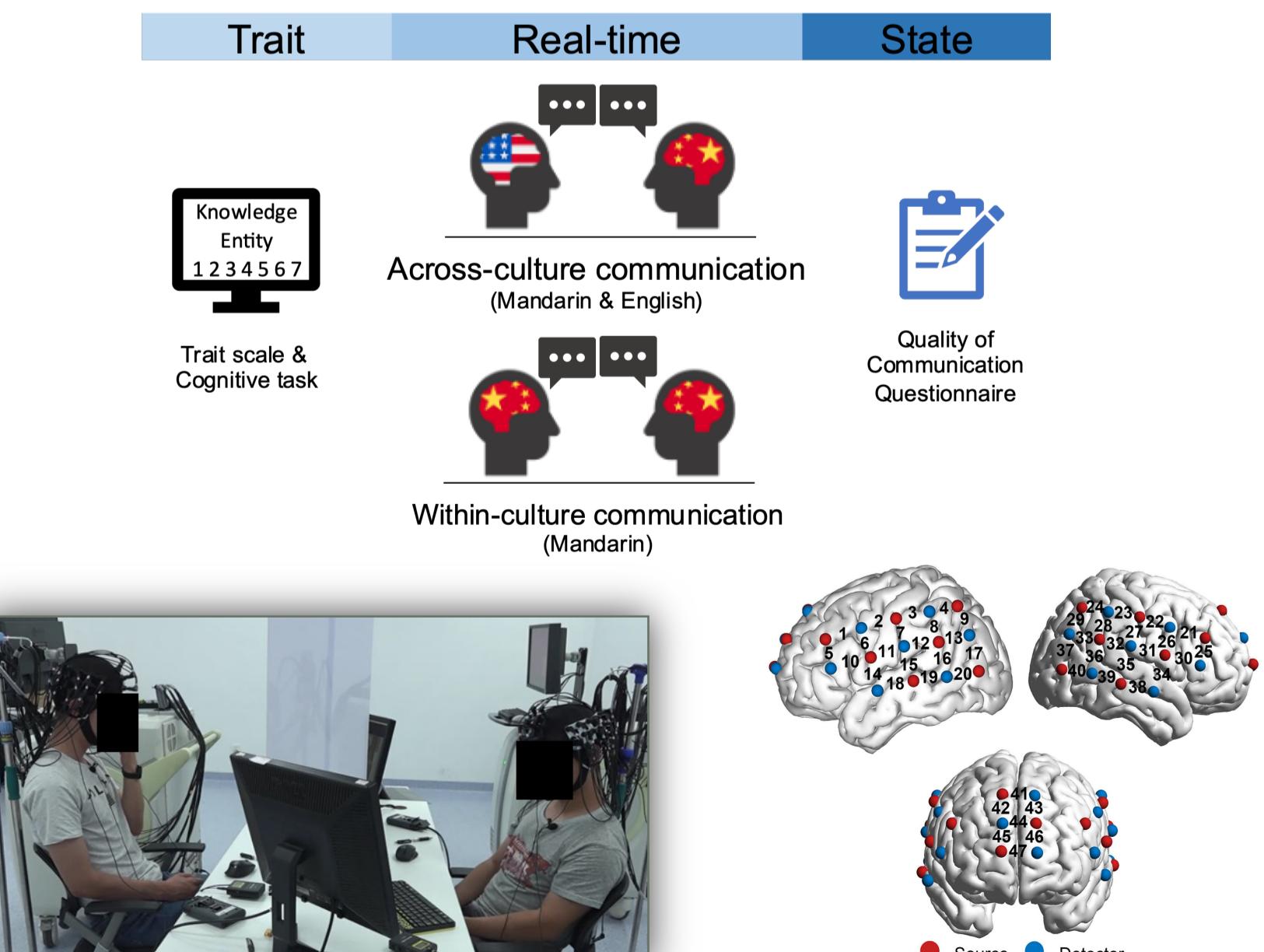
Introduction

- Effective interpersonal communication relies on the cognitive processing of interlocutors to construct **hierarchical shared representations** across various cognitive levels.
- Individuals with distinct cultural backgrounds reveal differences in cognitive processes across various domains.
- These cultural differences might impede the construction of shared representations during intercultural encounters, resulting in cultural conflicts.

Question: What is the cognitive hierarchical structure in interpersonal cultural conflicts?

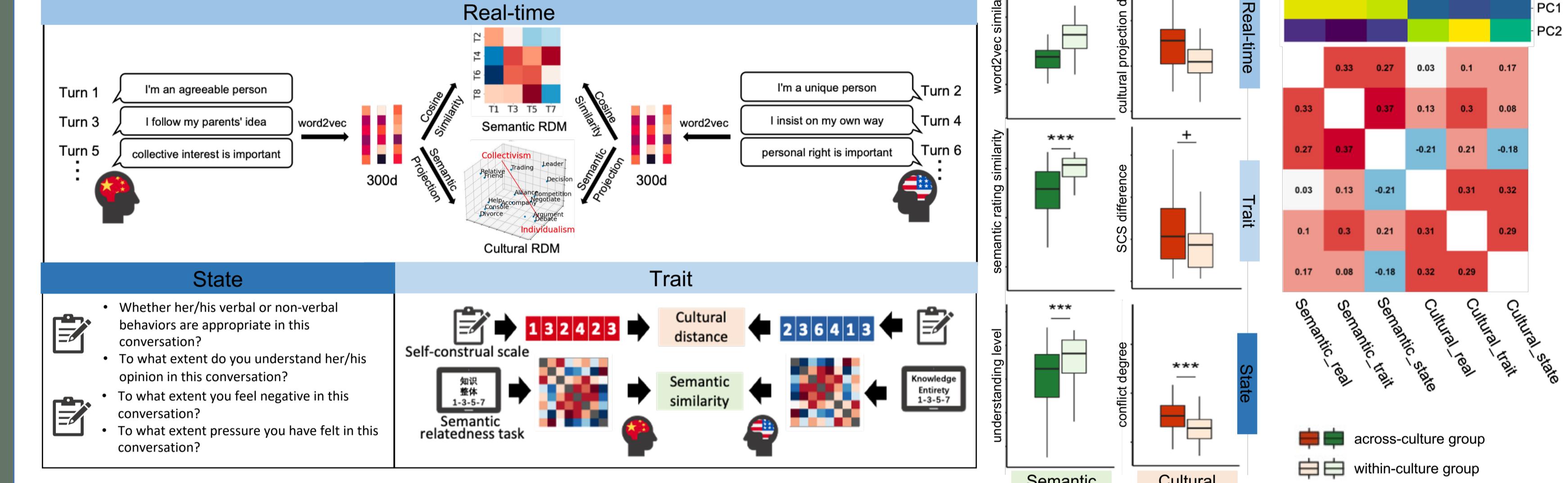
Methods

- Across-culture communication group:** 31 American-Chinese dyads
- Within-culture communication group:** 35 Chinese-Chinese dyads
- All participants had little intercultural experience
- fNIRS hyperscanning
- cultural topic discussion

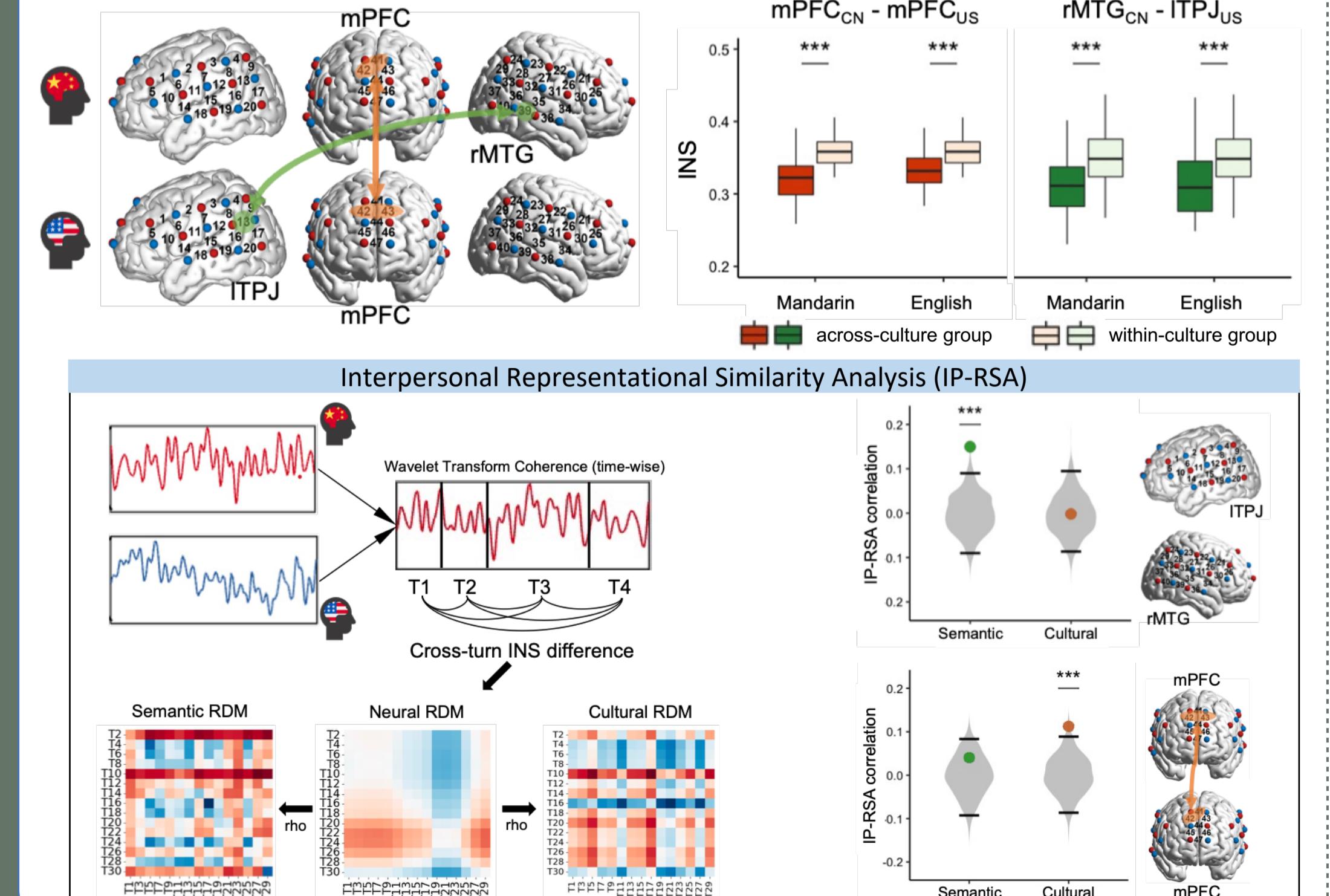


Results

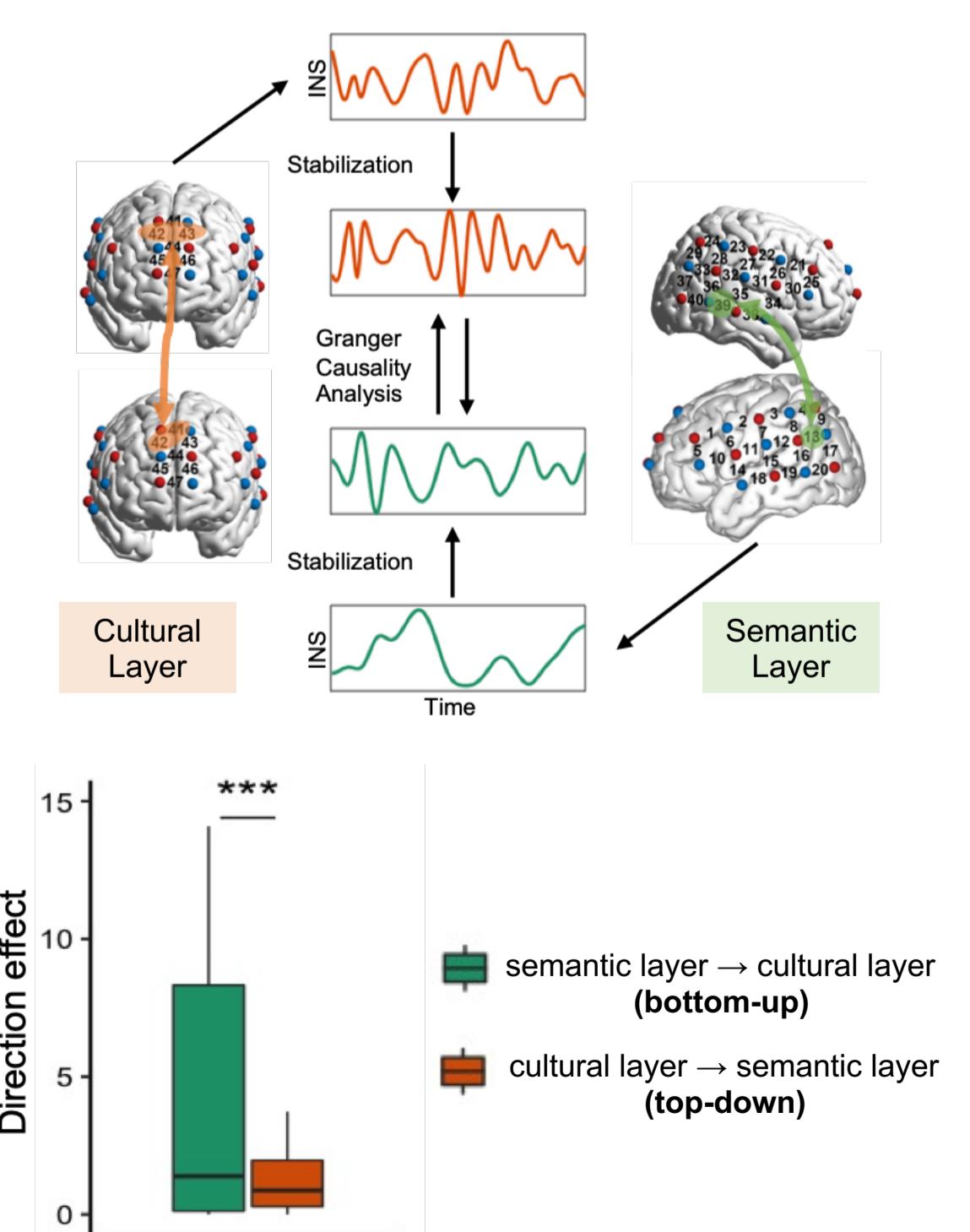
The hierarchical structure of interpersonal cultural conflict



The interpersonal neural synchronization(INS) basis of hierarchy



Information pathway of hierarchy



Conclusions

- A hierarchical structure was found during the interpersonal cultural conflicts, which occur on at least two layers: conflicts of cultural value representation and semantic representation.
- Decreased INS between $mPFC_{US}$ - $mPFC_{CN}$ represents conflicts at the cultural value layer, while decreased INS between $rMTG_{US}$ - $ITPJ_{CN}$ represents conflicts at the semantic layer."
- Conflicts at the semantic layer accumulate to the cultural value layer from a bottom-up pathway

References

- Ward, C., Bochner, S., & Furnham, A. (2020). *Psychology culture shock*. Routledge.
- Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and Brain Sciences*, 28(5), 675-691.
- Stephens, G. J., Silbert, L. J., & Hasson, U. (2010). Speaker-listener neural coupling underlies successful communication. *Proceedings of the national academy of sciences*, 107(32), 14425-14430.
- Jiang, J., Zheng, L., & Lu, C. (2021). A hierarchical model for interpersonal verbal communication. *Social Cognitive and Affective Neuroscience*, 16(1-2), 246-255.

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Conflict of interest

The authors declare no competing financial interests.

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