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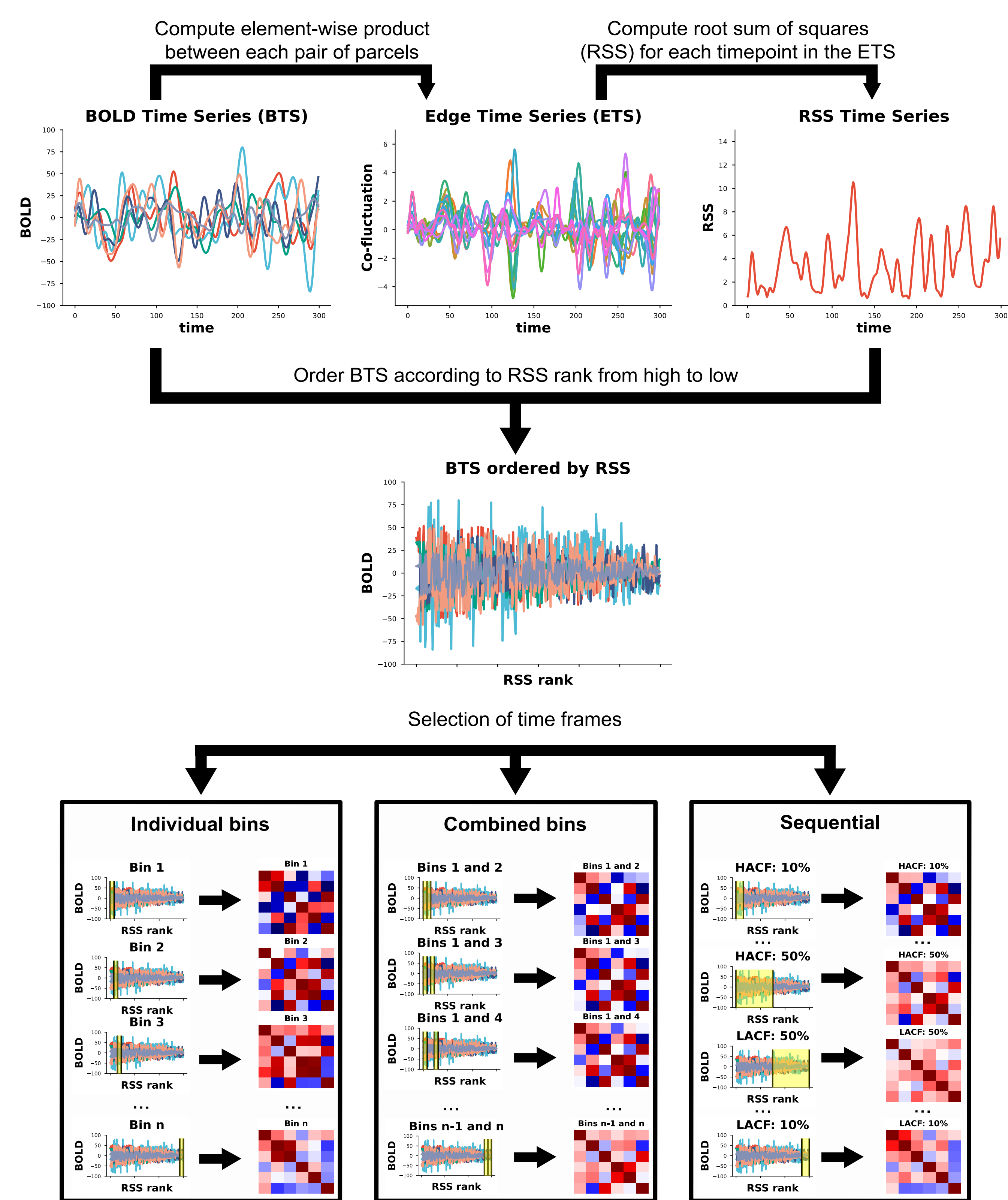
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## Introduction

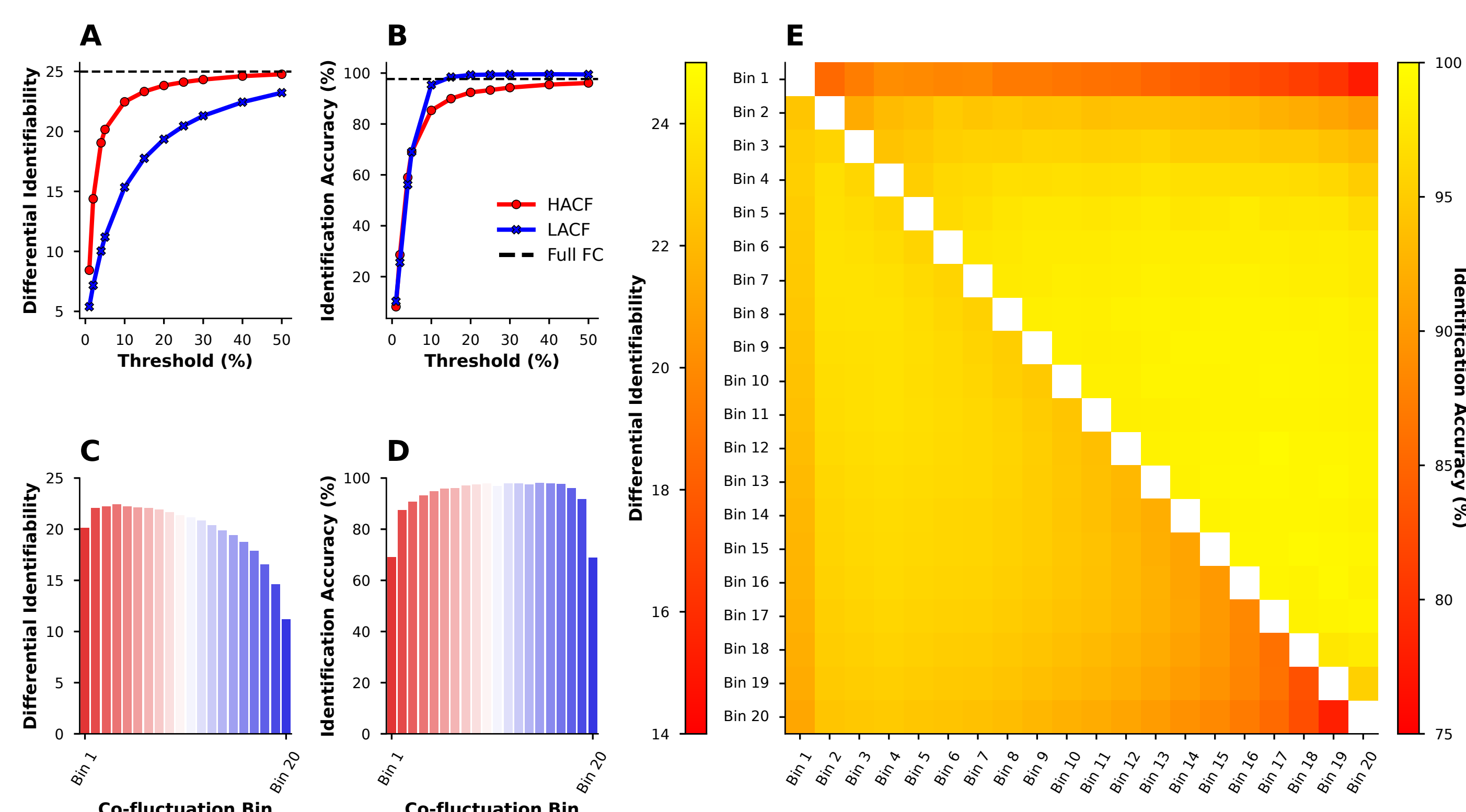
- Functional connectivity (FC) refers to the statistical dependencies between activity of distinct brain areas [1].
- To study temporal fluctuations in FC researchers have proposed the computation of an edge time series (ETS) and their derivatives.
- Evidence suggests that FC is driven by a few time frames of high-amplitude co-fluctuation (HACF) in the ETS, which may also contribute disproportionately to interindividual differences [2].
- It remains unclear to what degree different time points actually contribute to brain-behaviour associations. Here, we systematically evaluate this question in the Human Connectome Project (HCP) dataset [3]

## Methods

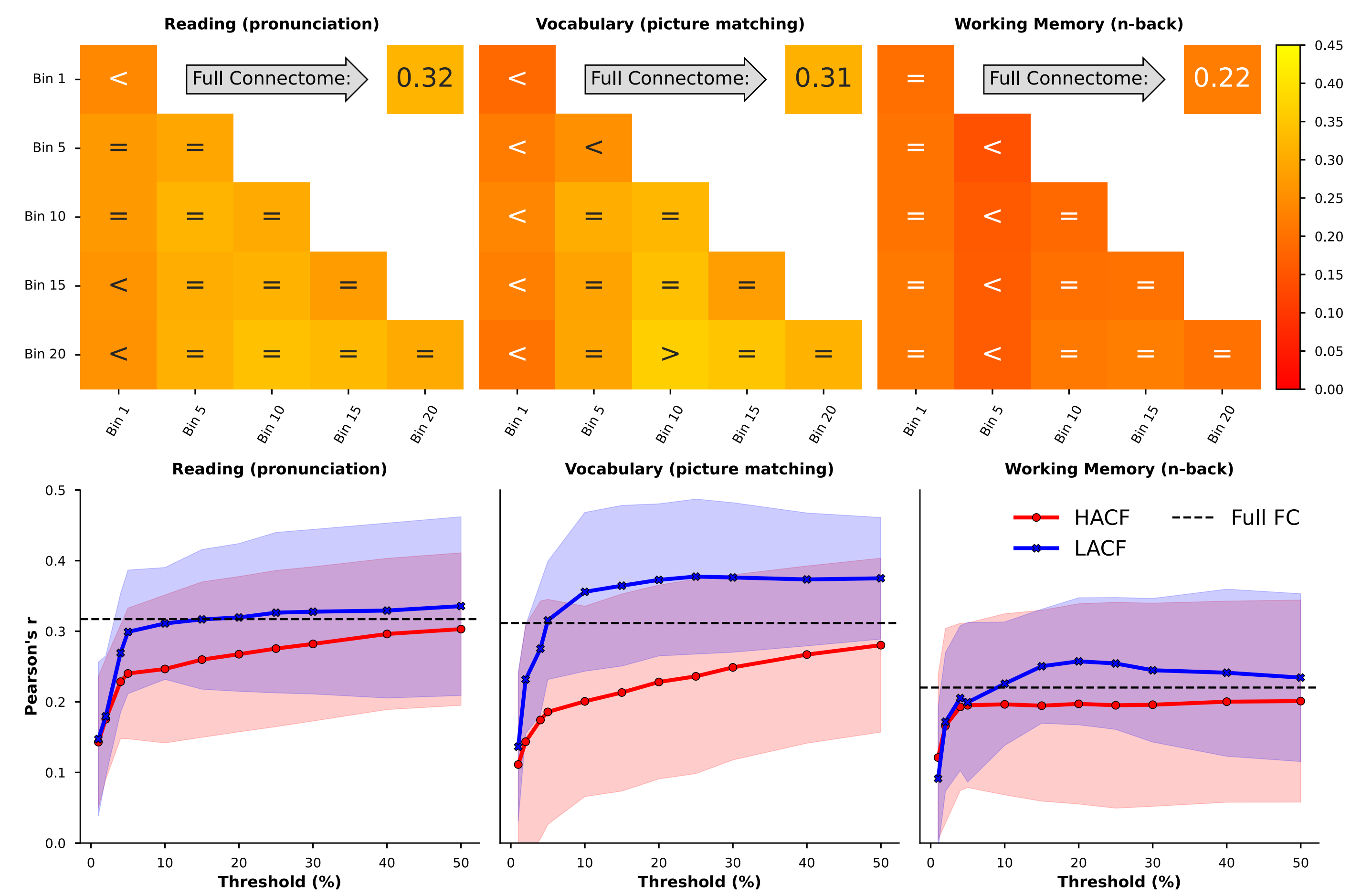


## Results

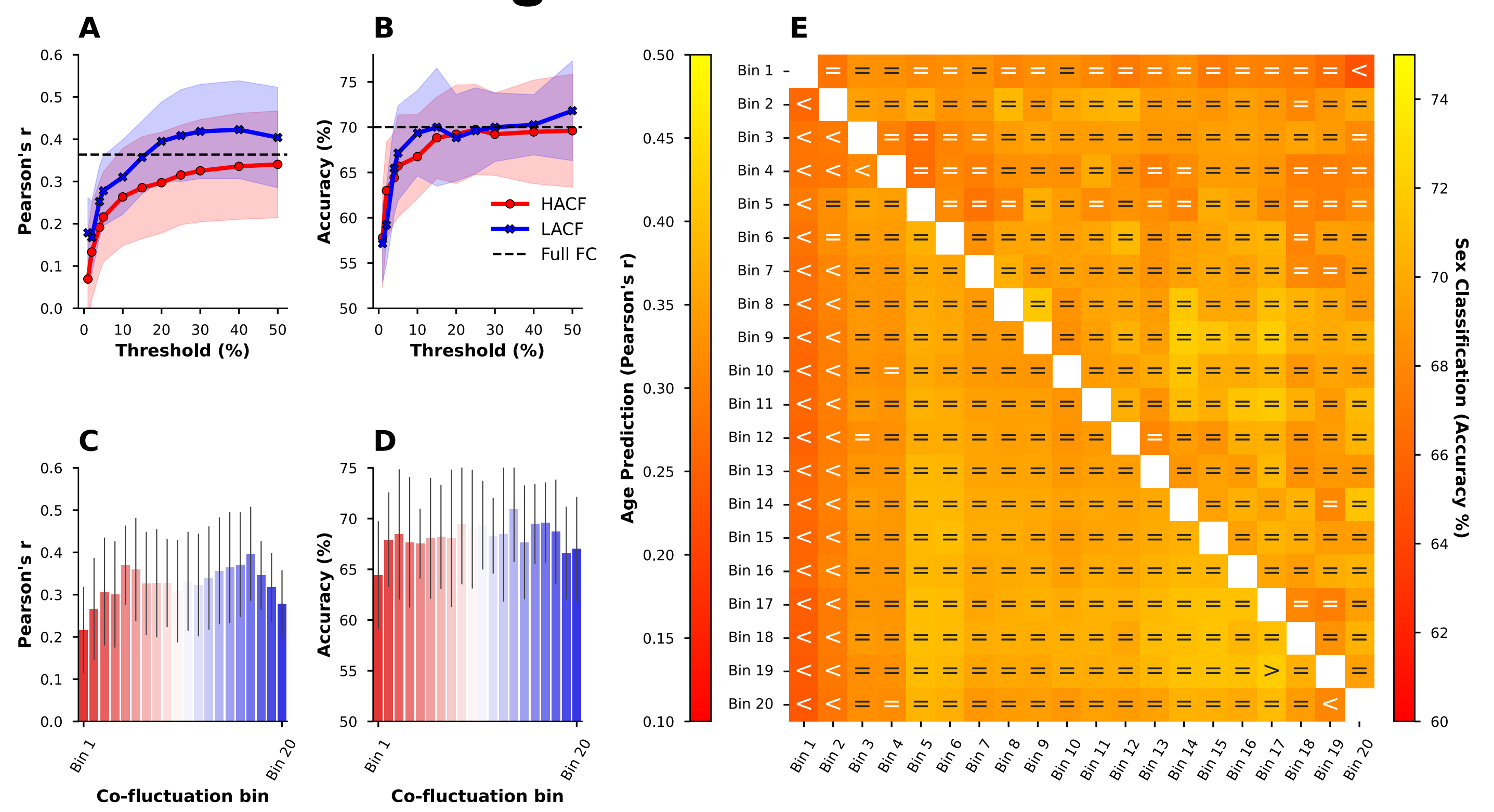
### Subject Identifiability



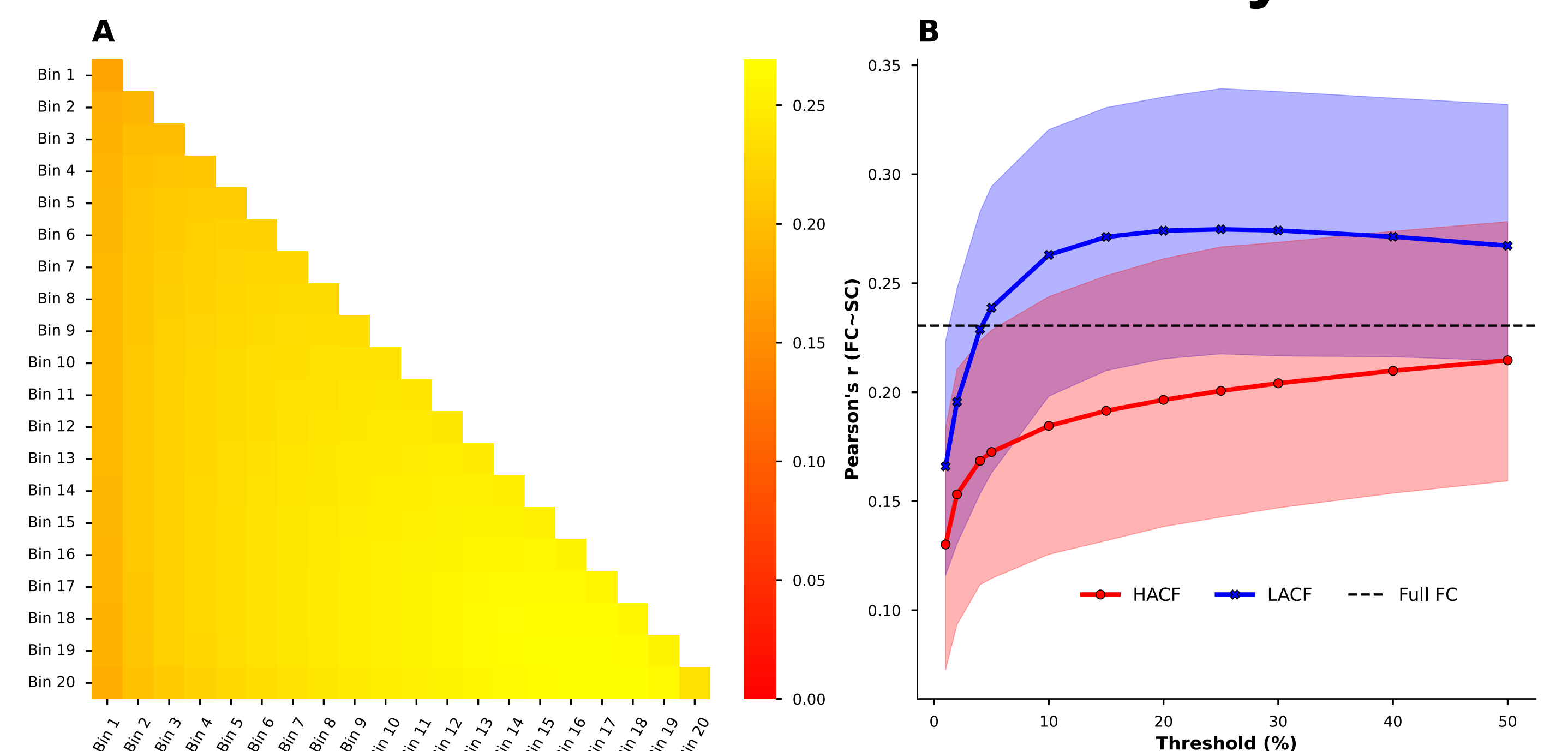
### Prediction of Cognition



### Prediction of Age and Sex



### Correlation to Structural Connectivity



## Discussion

- Intermediate levels of co-fluctuation yield highest subject identifiability and predictive capacity.
- Assessments of subject identifiability provide more robust conclusions when multiple metrics are used.
- Results may inform future preprocessing strategies aiming at identifying robust brain-based biomarkers.

### References

- [1] Biswal, B., Yetkin, F. Z., Haughton, V. M. & Hyde, J. S. Functional connectivity in the motor cortex of resting human brain using echo-planar MRI. *Magnetic Resonance in Medicine* **34**, 537–541 (1995).
- [2] Zamani Eshfahani, F. et al. High-amplitude co-fluctuations in cortical activity drive functional connectivity. *Proceedings of the National Academy of Sciences of the United States of America* **117**, 28393–28401 (2020).
- [3] Van Essen, D. C. et al. The WU-minn human connectome project: An overview. *Neuroimage* **80**, 62–79 (2013).