

Introduction

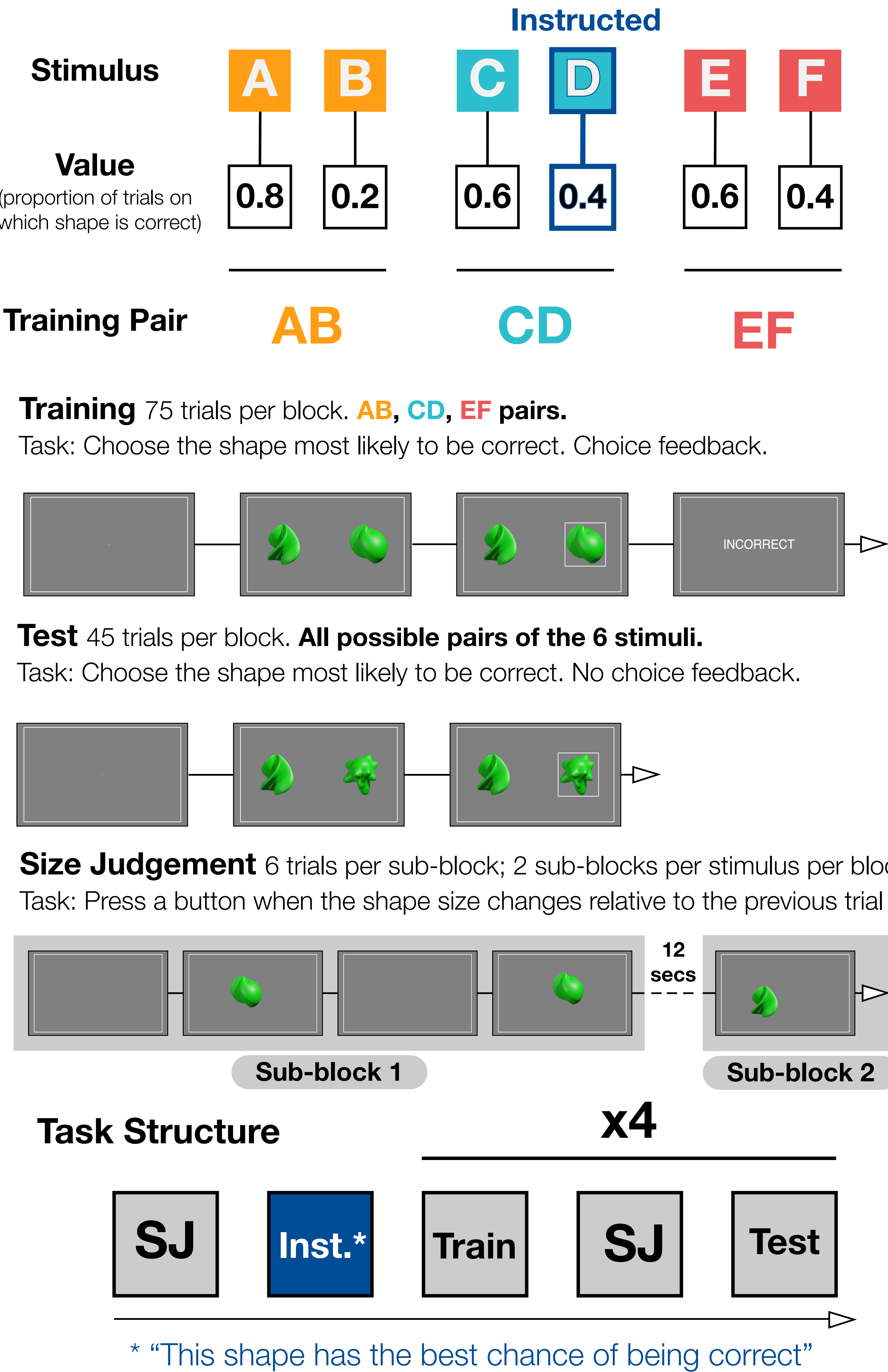
Learning which choices are good to make from the instruction of others is more time- and cost-efficient than learning via trial-and-error (**incremental reinforcement learning**). However, people will persist with choosing according to inaccurate instruction in the face of instruction-disconfirming feedback^{1,2,3,4} (**instructional bias**).

The mechanisms underlying instructional bias are debated. Three competing models:

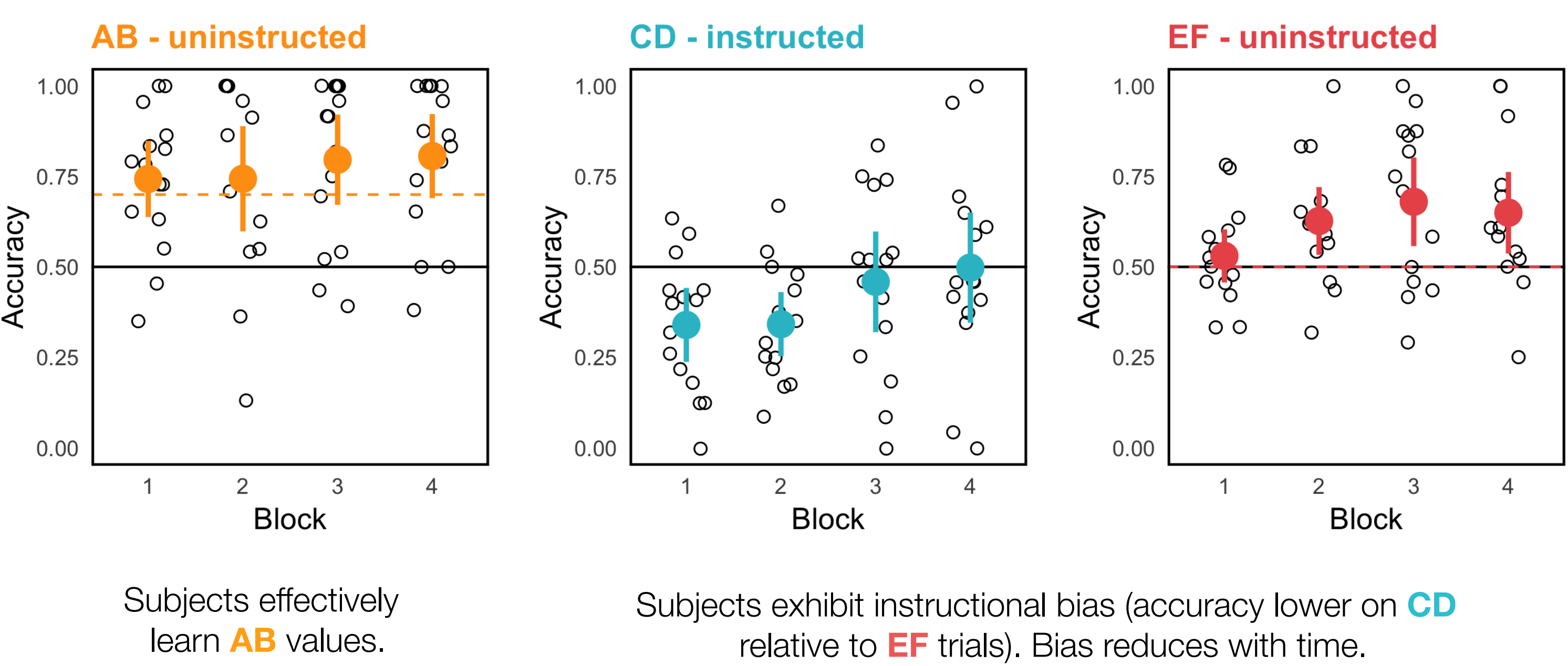
1. **Learning override**²: Learning is unaffected, but overridden at action selection.
2. **Learning bias**^{2,3}: Learning is bolstered for instruction-congruent outcomes and suppressed for instruction-incongruent outcomes.
3. **Learning suppression**⁴: Learning is suppressed for the instructed item.

Prior work showed that neural activity in early visual cortex (EVC) measured during a perceptual judgment task was sensitive to object value after learning⁵. Based on this, **we aim to use pattern analysis of EVC activity between intervals of value learning to track learning in the brain, independent of choice, and distinguish between these models of instructional bias.**

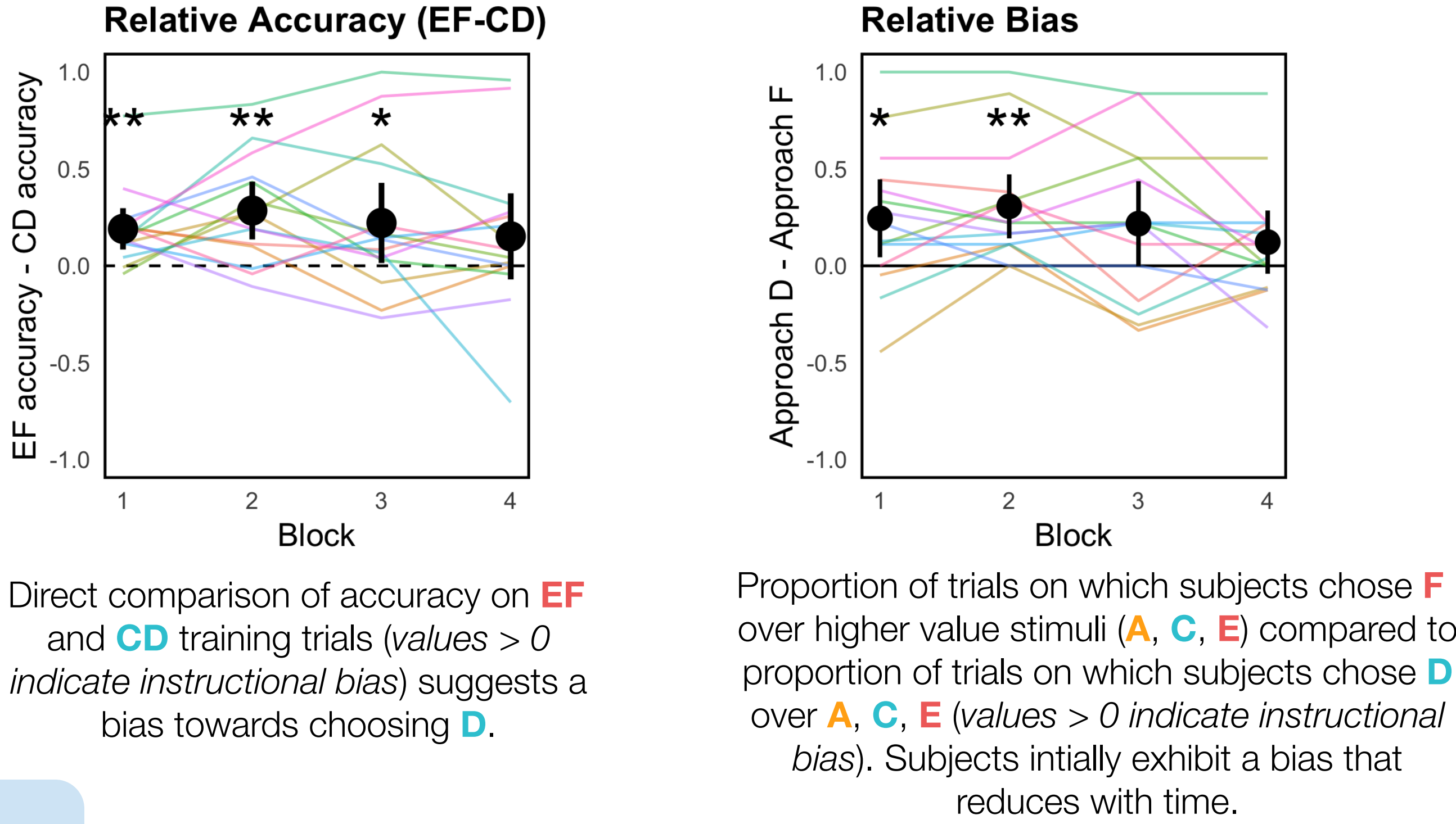
Design



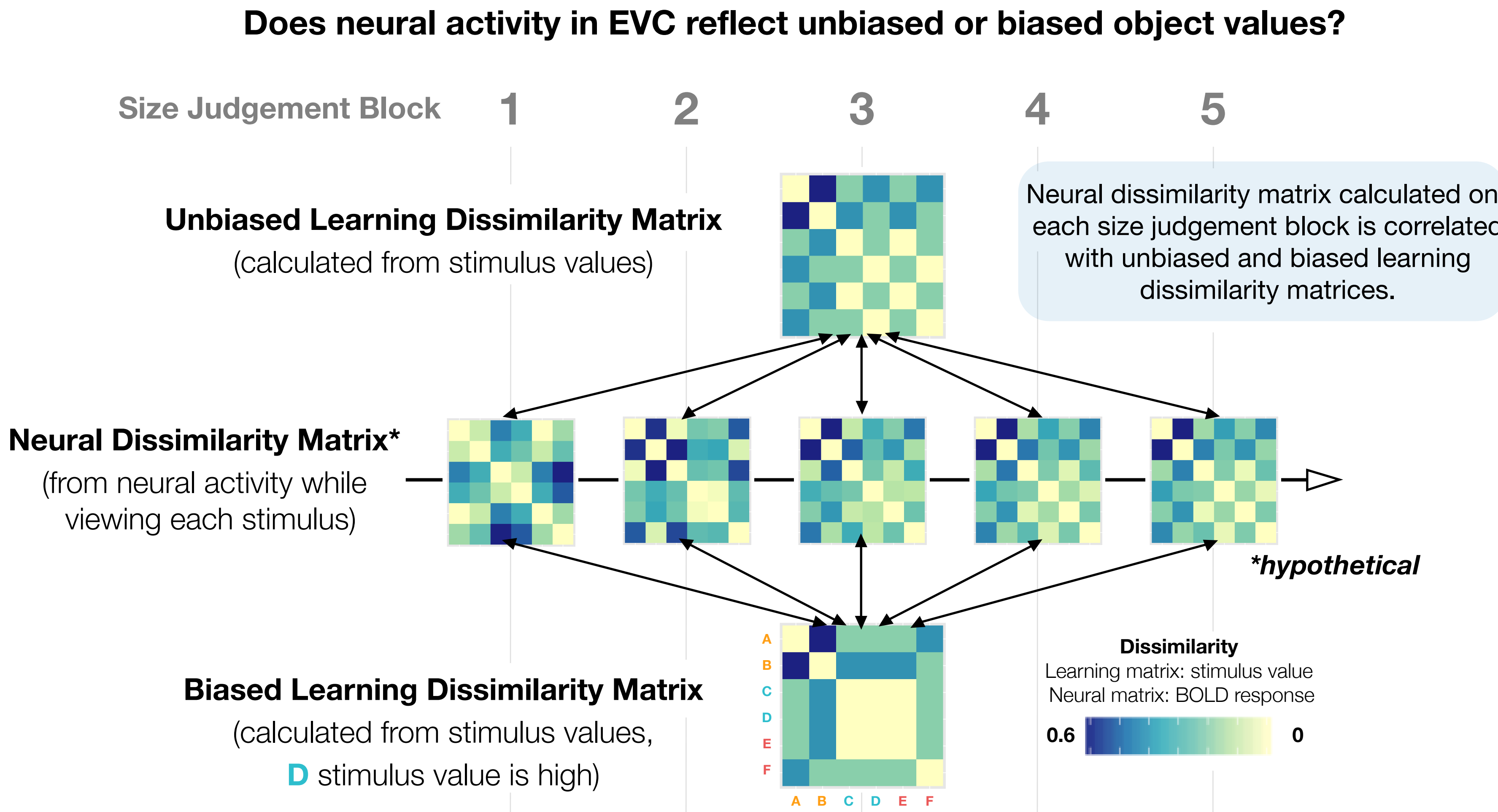
Pilot Results: Training



Pilot Results: Test

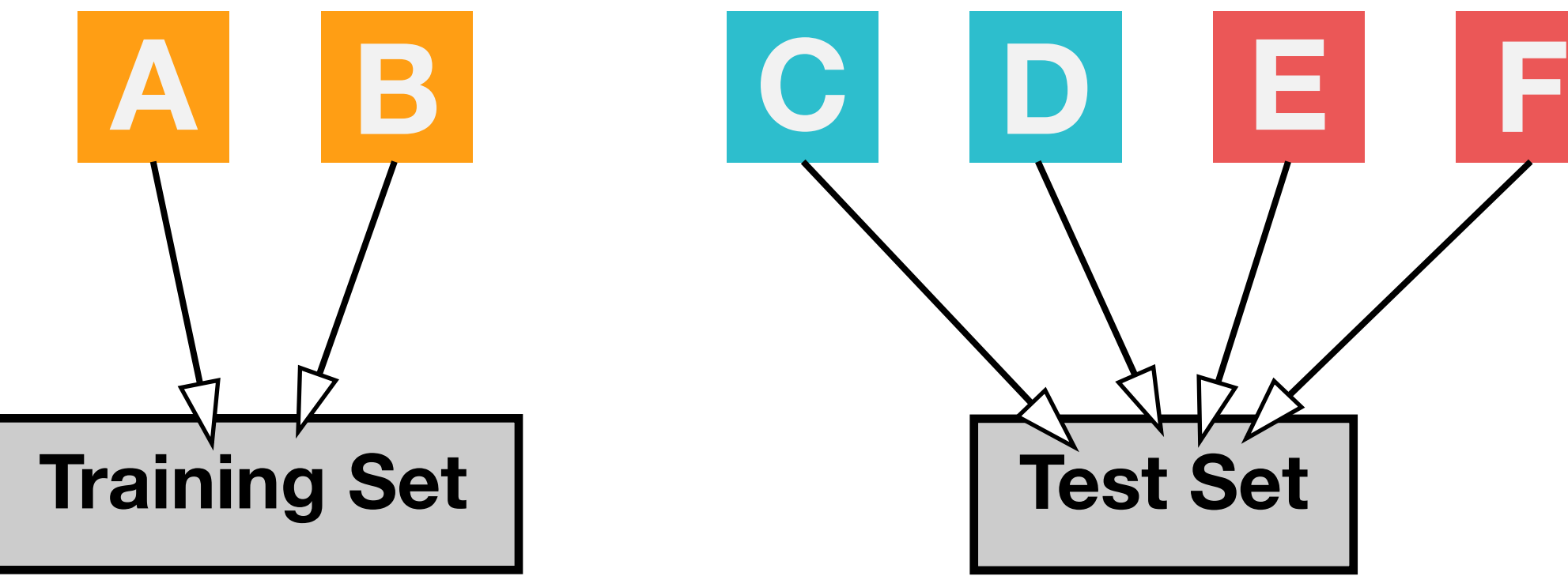


Planned fMRI Analyses: Pattern-similarity



Planned fMRI Analyses: Classification

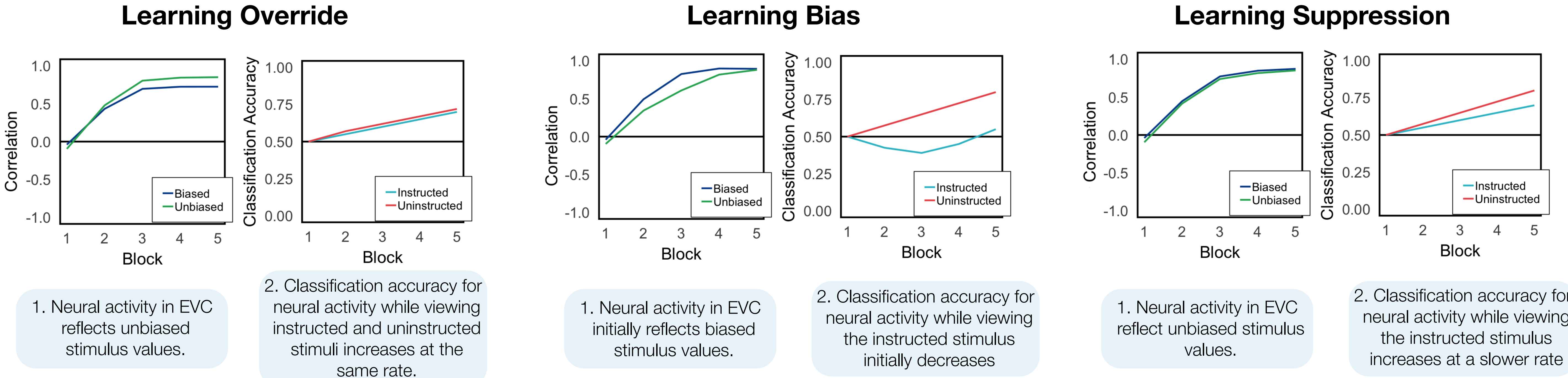
Does neural activity while viewing the instructed stimulus become more similar to neural activity while viewing the high value stimulus (A) or the low value stimulus (B), and at what rate?



Classifier is trained on BOLD activity from size judgement trials with the very high (A) and low (B) value stimuli.

Classification accuracy is tested on BOLD activity from remaining size judgement trials.

Hypothesised fMRI results



References

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3. Biele, Rieskamp, Krugel, & Heekeren, (2011). *PLoS Biol.* 9:e1001089.
4. Li, Delgado, & Phelps, (2011). *Proc. Natl. Acad. Sci.* 108, 55–60.
5. Persichetti, Aguirre, & Thompson-Schill, (2015). *Journal of Cognitive Neuroscience*.

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