

Dissociable computational mechanisms and neural representations underlying action versus reward

Vincent Man¹, Aniek Fransen¹, Zhongzheng Fu⁴, Ueli Rutishauser^{3,5,6}, John P. O'Doherty^{1,2}

Caltech

Cedars
Sinai

UT Southwestern
Medical Center

1. Humanities & Social Sciences, 2. Computation & Neural Systems,
3. Biology & Biological Engineering, Caltech
4. Neurological Surgery, UT Southwestern Medical School
5. Neurosurgery, 6. Neurology, Cedars-Sinai Medical Center

Introduction

Adaptive behaviour requires both good decisions and the skill to implement them and obtain reward.

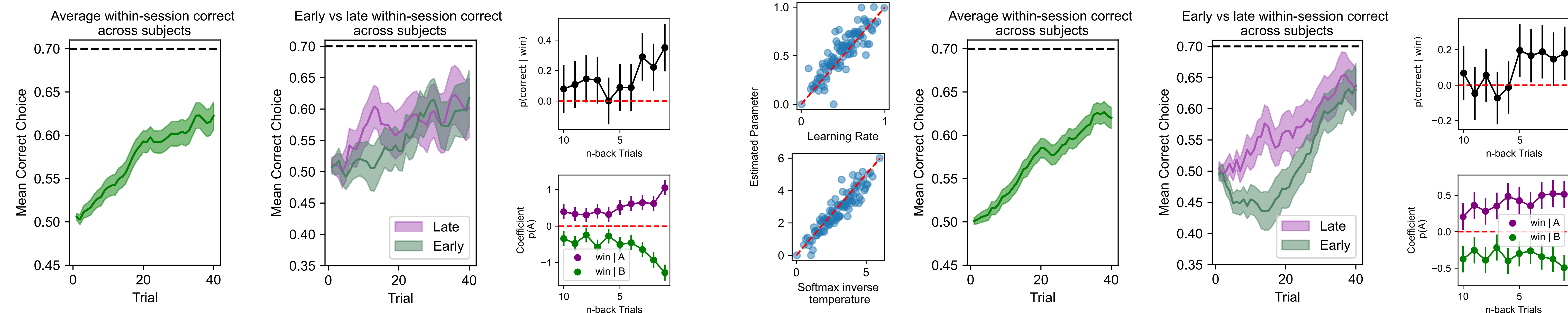
Open question whether learning signals (i.e., errors) are general or separable in the brain, across reward and action systems.
- Holroyd & Coles, 2002; Fu et al., 2019, 2002; McDougale et al., 2019

Here we present behavioural evidence of learning in both action and reward domains.

Action trajectories become more stereotyped and predictive of performance with experience, demonstrating skill acquisition.

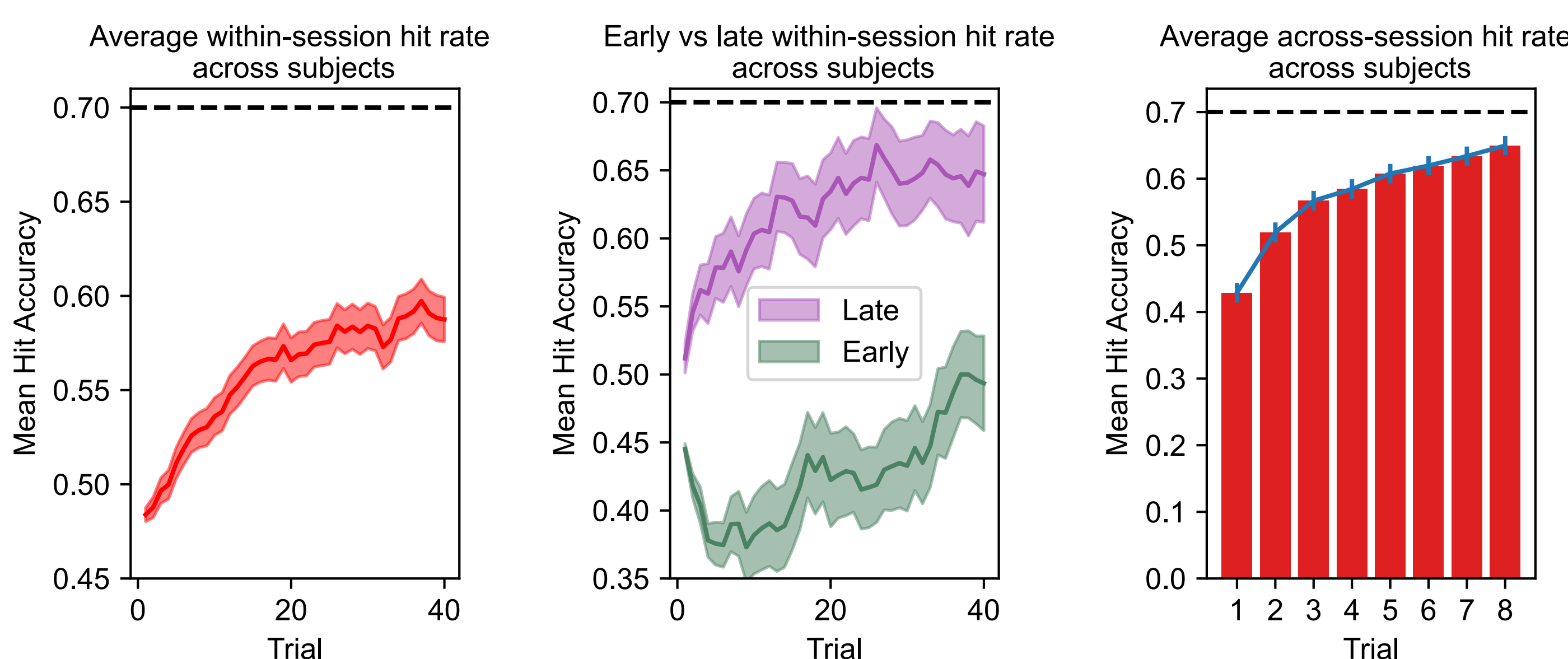
Action and reward errors are dissociated in dorsal and ventral striatum, respectively, but overlap in medial frontal cortex.

Reward learning

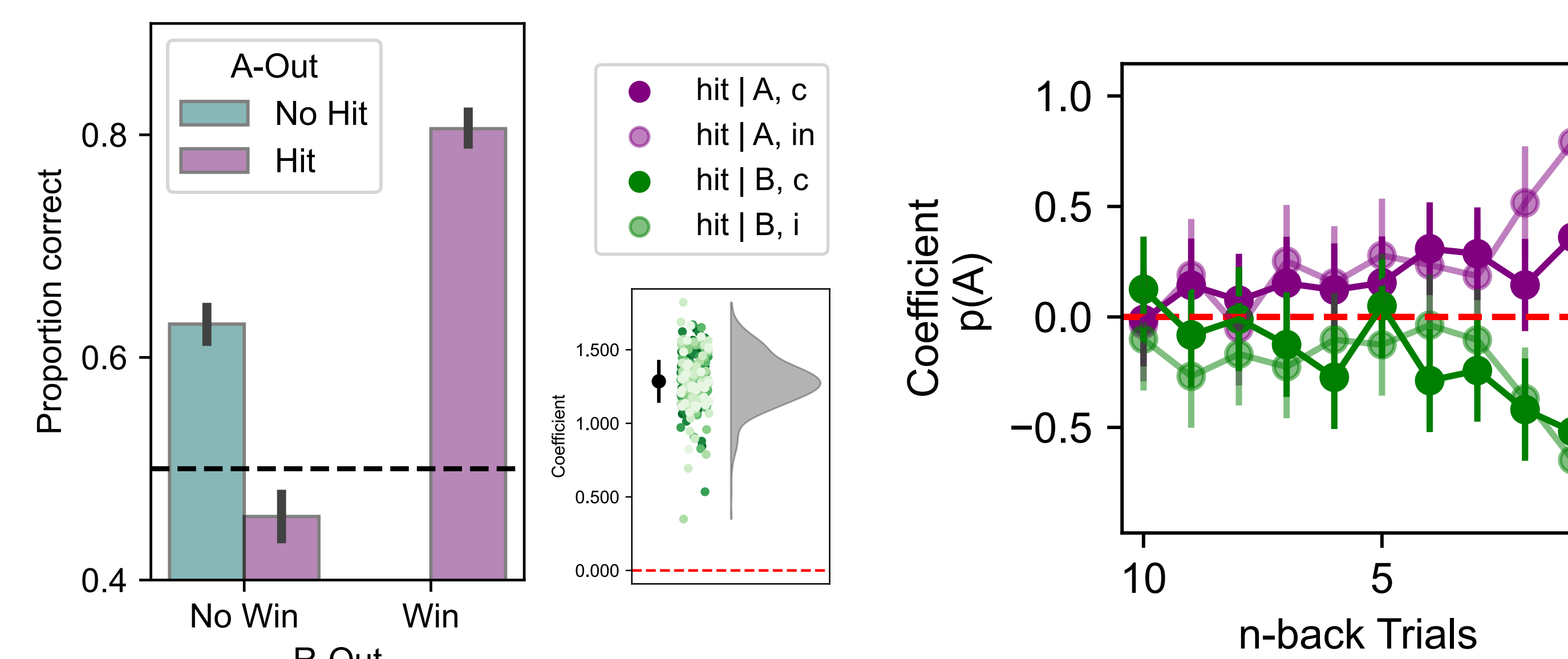


Computational Model

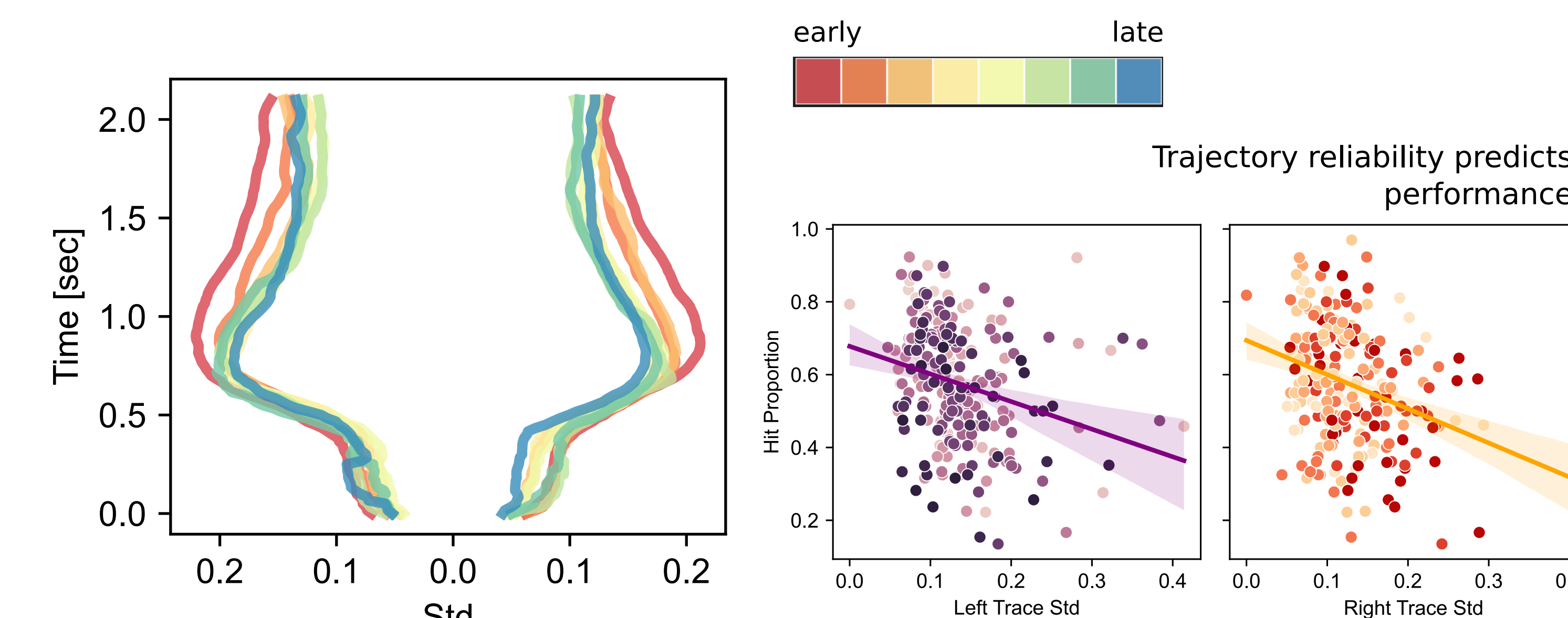
Action learning



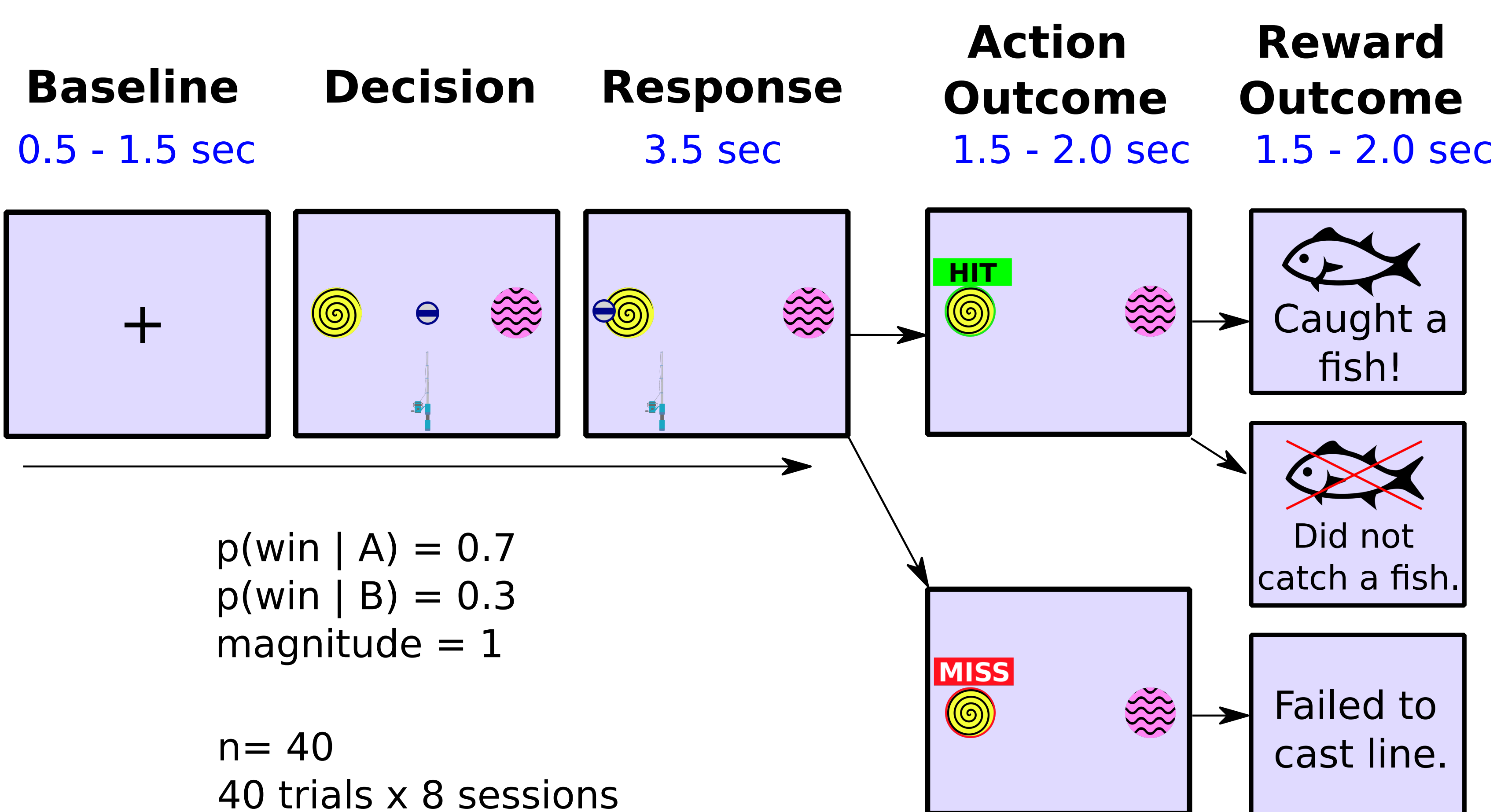
Interaction



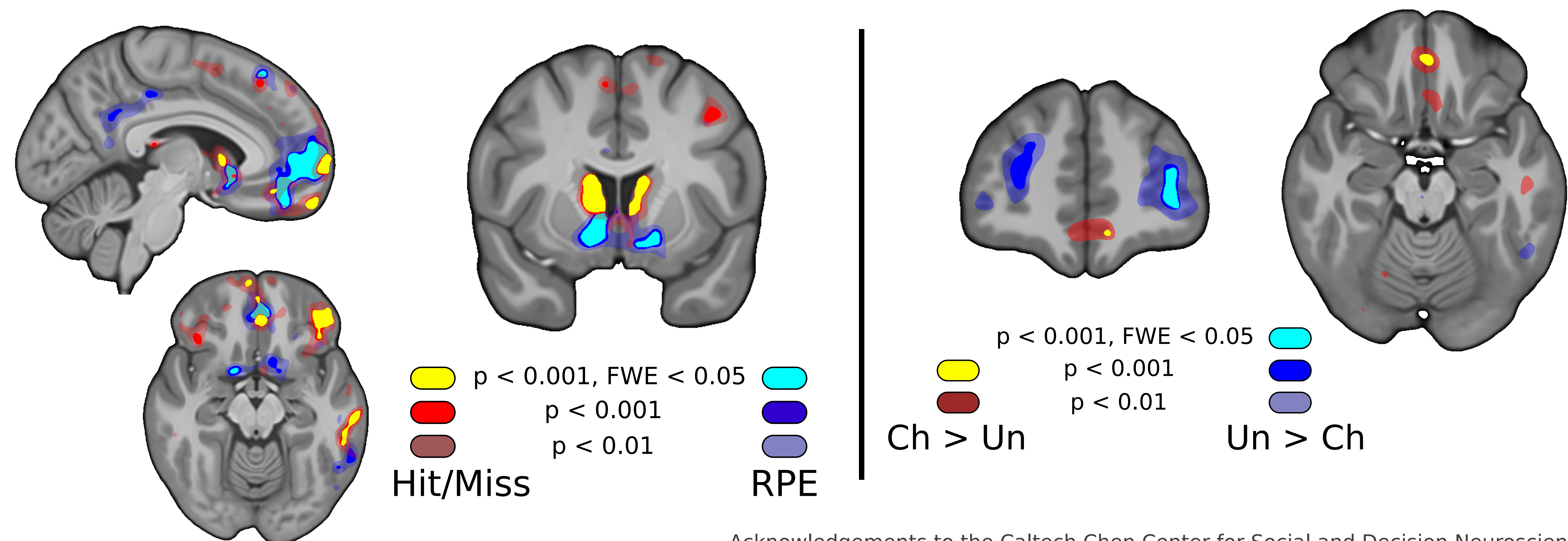
Skill learning



Experimental Design



fMRI correlates



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