

Ready, set, explore! Event-related potentials reveal the time-course of exploratory decisions

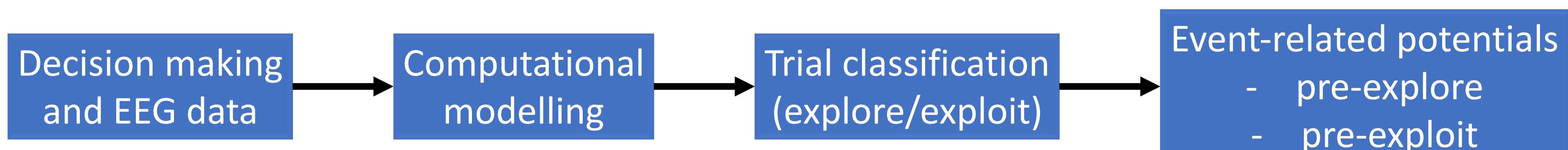
C.D. Hassall¹, C.G. McDonald², and O.E. Krigolson¹

University of Victoria¹, George Mason University²

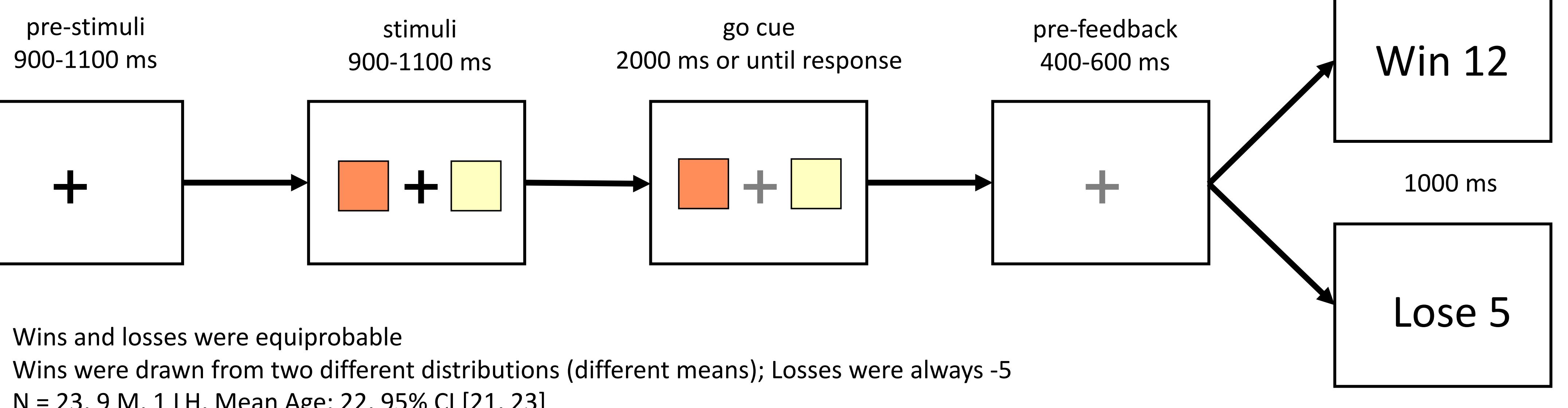
INTRODUCTION

When do we *exploit* previous learning, and when do we *explore*?
Which neural systems are involved?

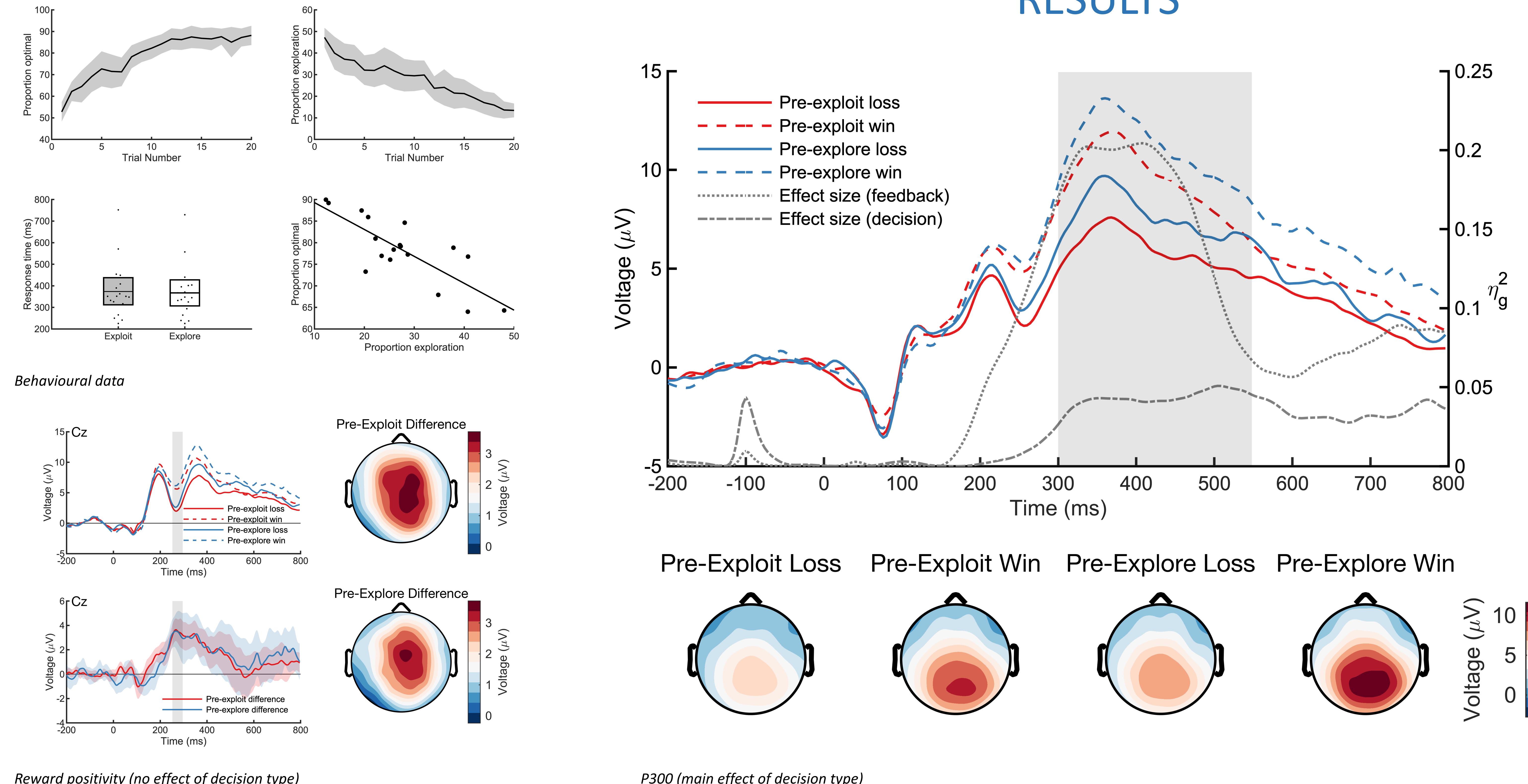
Neurotransmitter	Source	Target	Event-Related Potential	Function
Dopamine	Basal Ganglia	ACC	reward positivity ¹	reinforcement learning ¹
Norepinephrine	Locus Coeruleus	Various	P300 ² , N200 ³	neural interrupt ⁴ , response conflict ⁵



METHODS



RESULTS



Conclusions

- Phasic activity of the LC-NE system, as indexed by a feedback-locked P300, plays a critical role in triggering a switch from exploitative to explorative decision making
- Phasic midbrain dopamine does not appear to play this same role
- The period just prior to a decision to explore involves response conflict

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