

Neural patterns of threat relevant social information during aversive learning

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Introduction

- Intended and unintended actions are evaluated differently. An accidental harm is forgiven, whereas a failed-attempt is condemned (1).
- Pain received from an intentional vs. an unintentional agent is perceived to be more painful (2). Anger towards an agent delivering an aversive stimulus is greater if the agent is known to be intentional in her actions (3).

Question

- Although perceived agency impacts both evaluations of a harm-doer and the resulting harm, little is known about how agency influence learning and memory about harm
- How is learning and memory regulated by perceived agency?**

Methods

- Forty healthy adults were recruited. Seven were excluded due to excessive motion for neuroimaging analyses, and nine due to technical difficulties for pupil dilation analysis.

F. Loc.

RS

Acquisition

RS

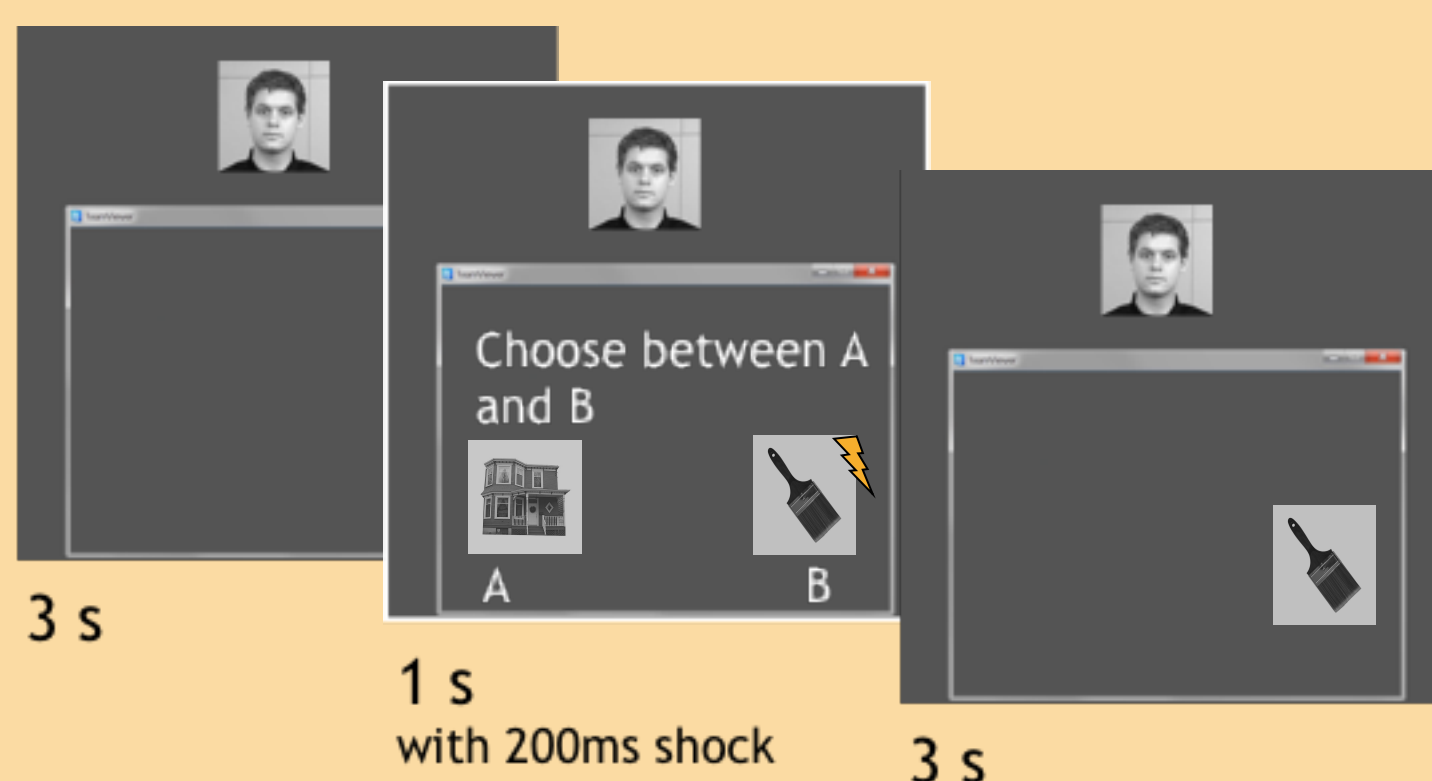
Extinction

- 13 trials per CS type, 23 trials per confederate.
- 50% reinforcement: only 6 of the chosen CS+'s preceded with a shock.

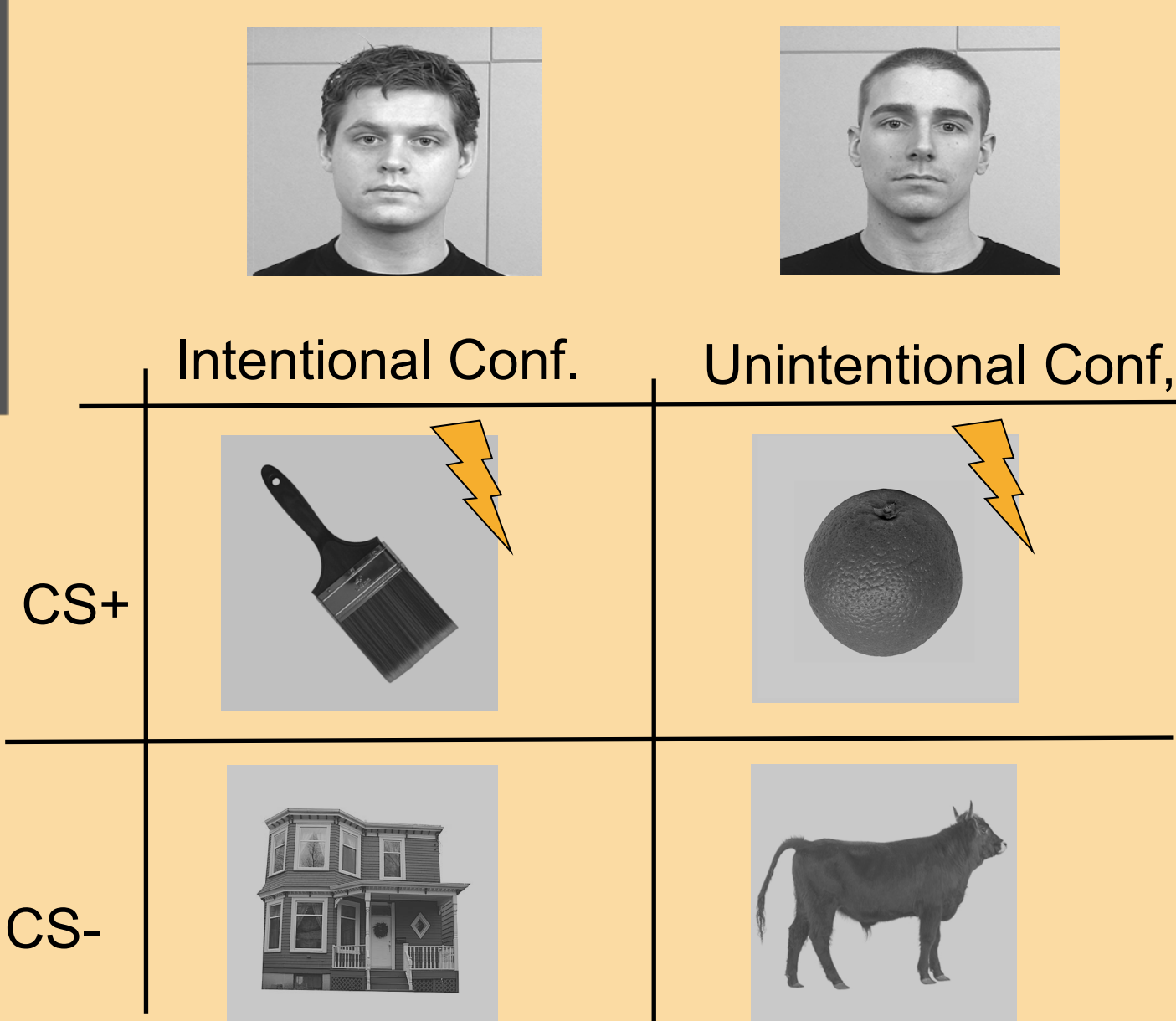
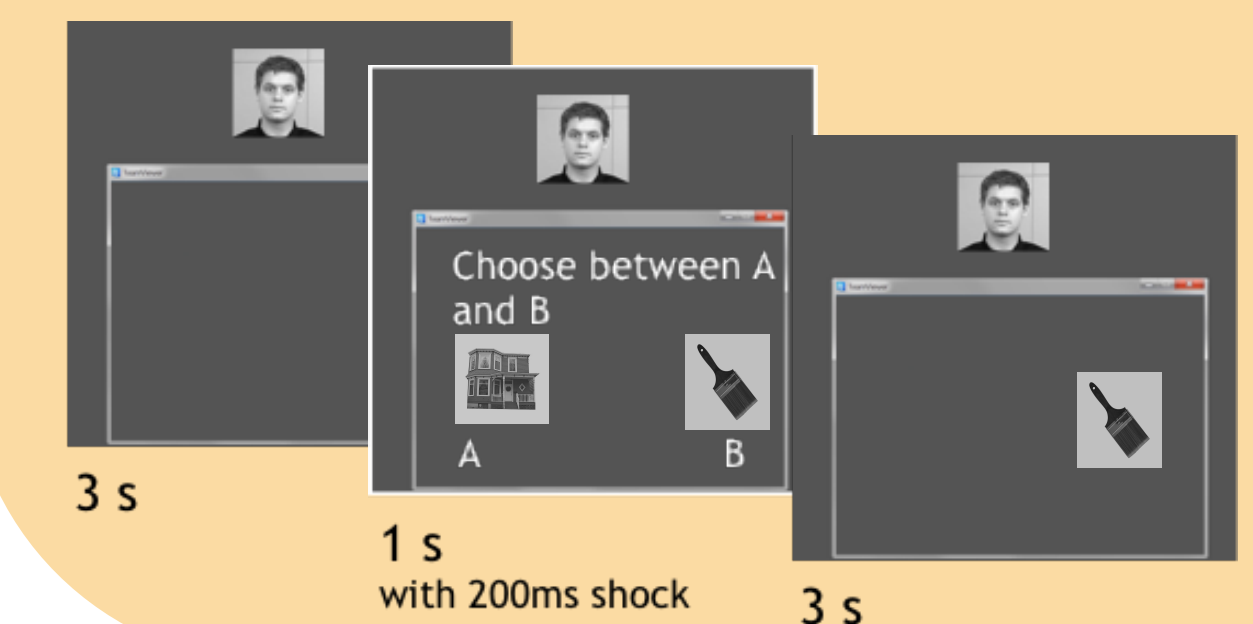
2 phases:

- Phase 1 with 10 trials of each confederates face.
- Phase 2 with 10 trials of each CS.

CS+ preceding with a shock

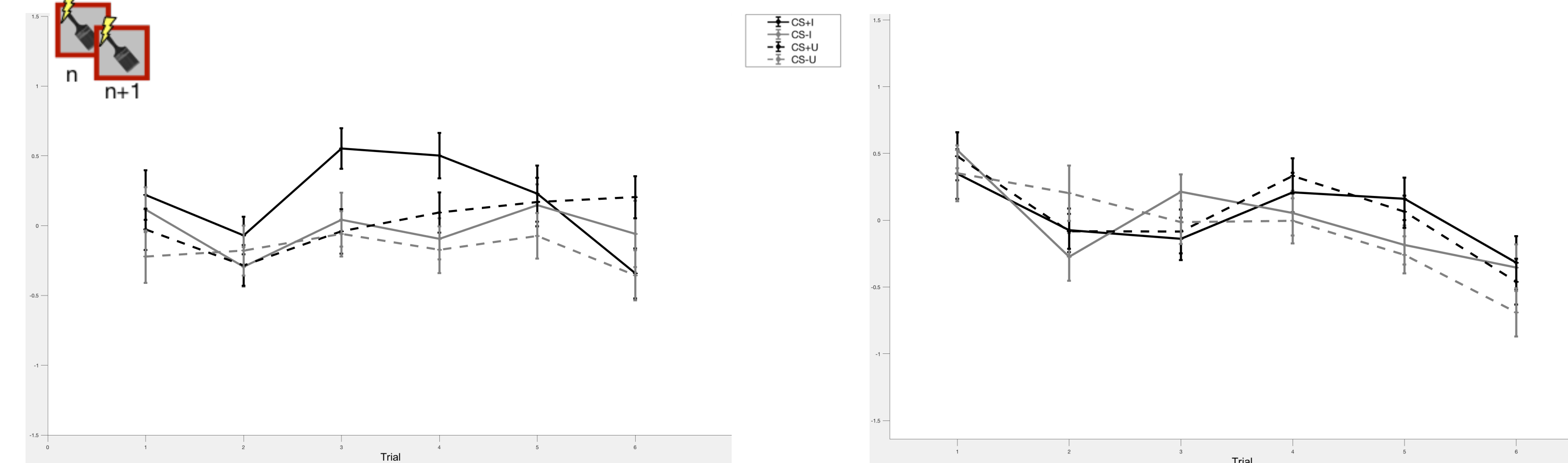
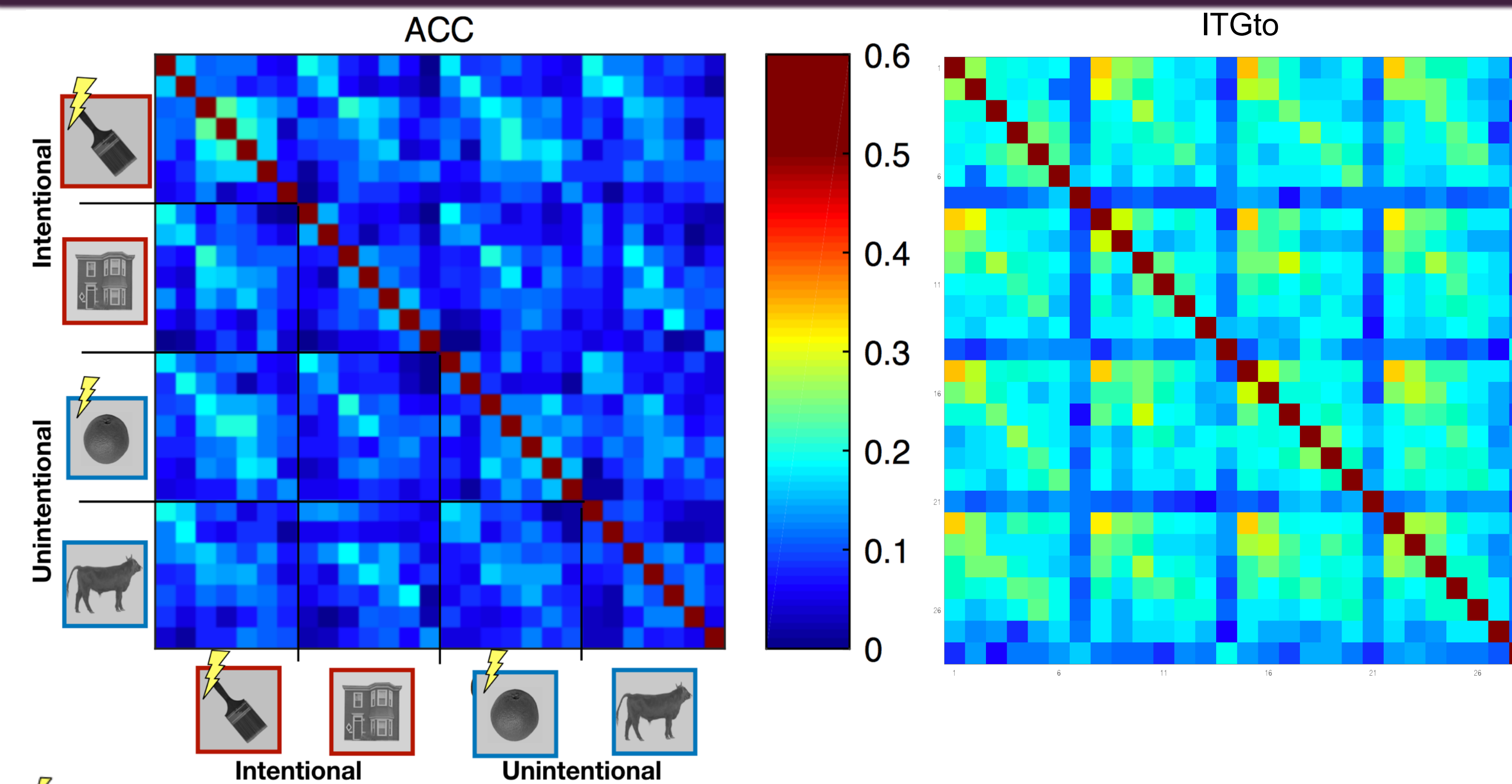


CS+ not preceding with a shock

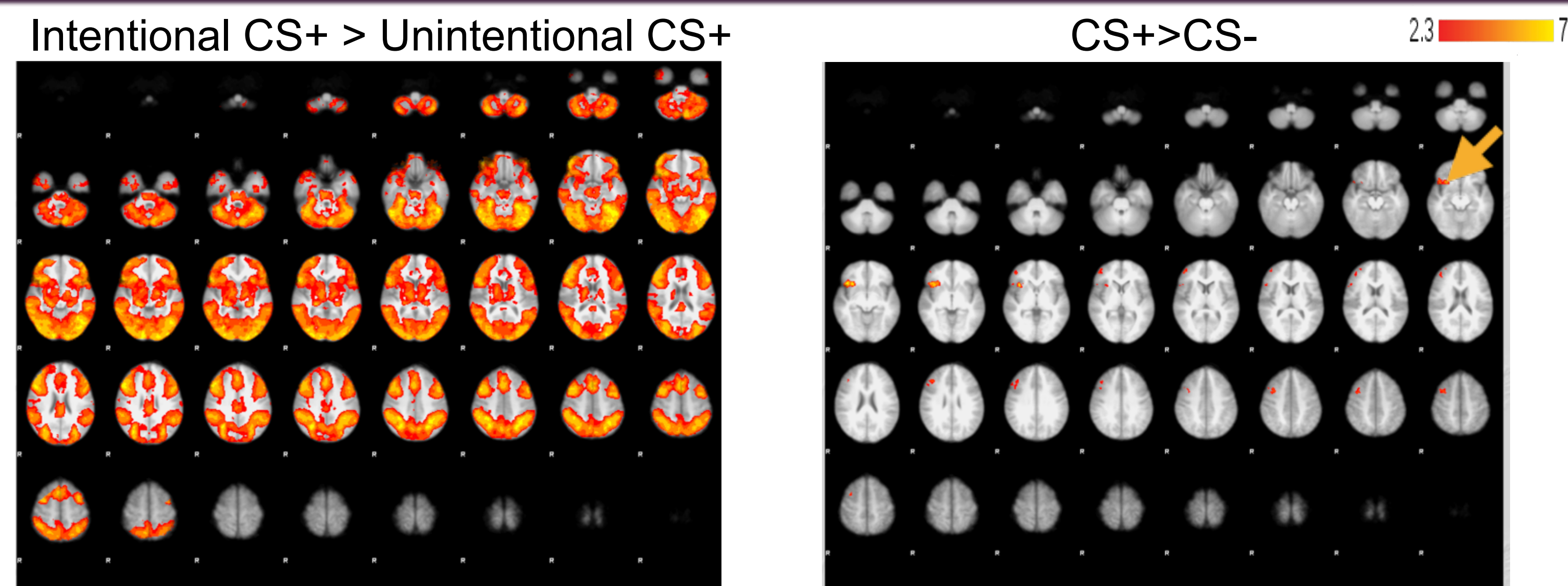


Results

Acquisition | Multivariate

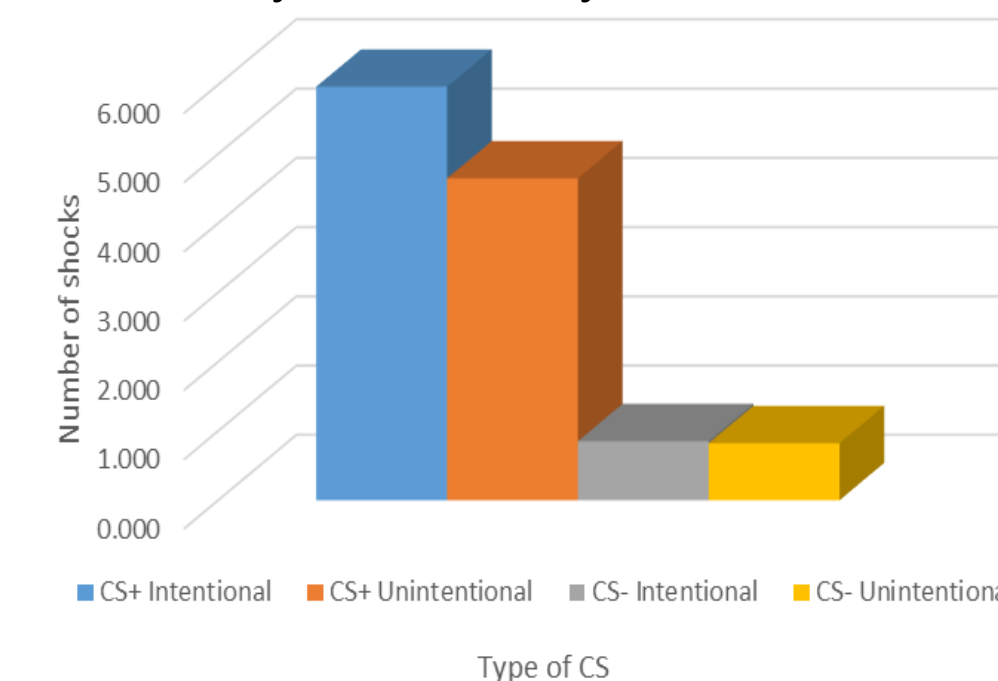


Acquisition | Univariate

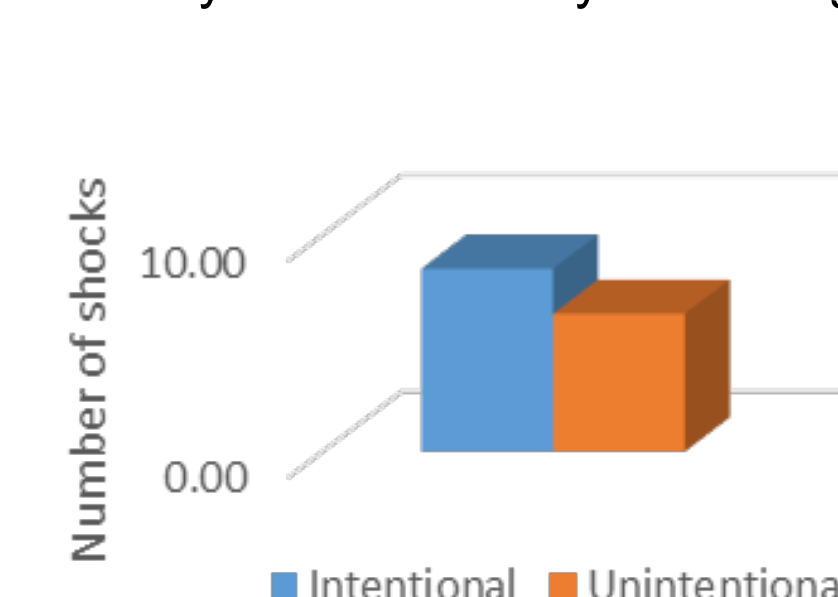


Behavioral

How many shocks did you receive from this choice?



How many shocks would you like to give back to...?



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Other results

- Memory tests conducted 24 hours later show no sig. difference between intentional and unintentional faces or stimuli.
- Autism and Social anxiety measures do not correlate with multivariate analysis data. The rest to be correlated.
- Functional localizer scans are being analyzed to create ROI's for each CS. This will be used later in analyzing the resting state scans.
- Resting state analysis in the planning phase:

Second study in progress

- An fMRI study using delayed conditioning and skin conductance responses.
- Ongoing analysis of RS data & functional localizers.

Discussion

- We established an experimental paradigm to test the role of agency in learning and memory.
- Pupil responses confirmed that the conditioning procedure was successful, and that the participants had elevated responses to CS+'s.
- Neuroimaging results suggest that intentionality of an agent is represented differentially in ACC, seen by trial-by-trial pattern similarity increase.

Univariate analyses show activation in the DMN, when intentional CS+'s that did not deliver shocks are compared with unintentional ones. This could be due to surprise.

Acquisition

5
mins

Extinction

References

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