The influence of observational fear learning on emotional responses and neural stimulus representations

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Disentangling emotion and perception

**Background.** Learning emotional value of stimuli is key for survival and health, and is often attained through observing the behavior and responses of others.

**Aim.** We aim to identify the neural responses associated with learned changes in emotional responses to visual stimuli, and separate these from the perceptual responses to the stimuli.

**Pilot study.** Using an observational learning task, we pilot a paradigm that alters emotional responses to selected stimuli between sessions, and measure responses to these stimuli by combining MEG, pupillometry, and subjective emotional rating.

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**Pilot results**

**Subjective rating.** As expected, emotional responses to stimuli paired vs. not paired with shock decrease in valence and increase in arousal.

**MEG.** MVPA's of raw evoked potentials show reliable decodability of perceptual stimulus features, but no strong modulation by emotional learning when comparing baseline and test.

**Conclusion.** Weak learning or habituation across repeated exposures may influence results. Although the ratings indicate successful aversive learning, further analyses on a more comprehensive MEG dataset are needed to capture the emotional response.

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**Behavioral pilot results**

Subjective rating: Baseline vs. Test

Explicit memory of stimulus-shock contingency

Number of participants, by the rate at which they correctly identified stimuli paired with shock in the videos.

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**MEG pilot results**

Shock decoding

Session differences

A) Multivariate pattern analysis of evoked responses to shock paired stimuli (CS+) vs. the other stimuli (CS-) at baseline and test, and B) test - baseline. In progress are continued MVPA on raw and time-frequency decomposed MEG data, as well as pupillometry data.