Title: Effect of instructed reversals on cardiac responses during aversive learning

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Abstract: 1.52

During aversive learning, heart rate changes in response to conditioned stimuli and in preparation of upcoming aversive events. Previous studies have linked the magnitude of these responses to quantities derived from models of learning, such as expected value or prediction error. But knowledge of relations between stimuli and outcomes can come from other sources, such as verbal instructions. Current computational and cognitive models of learning dissociate between two neural systems of aversive learning, one that uses precomputed values from previous reinforcement history, and one that infers values and can be modulated by verbal instructions. Here, we investigated cardiac responses in humans during an aversive learning task with reversals, to test whether instructed knowledge modulated phasic cardiac responses to conditioned stimuli. One group was informed about contingencies and reversals, and another group learned from reinforcement alone. We compare reinforcement and instruction contributions to phasic cardiac responses both in between groups, and within-subjects before and after reversals. Cardiac responses updated immediately upon instruction. We further analyse trial-by-trial changes comparing instructed vs. reinforcement contributions to aversive learning.