Effect of Continuous and Partial Reinforcement in Conceptual Fear Generalization

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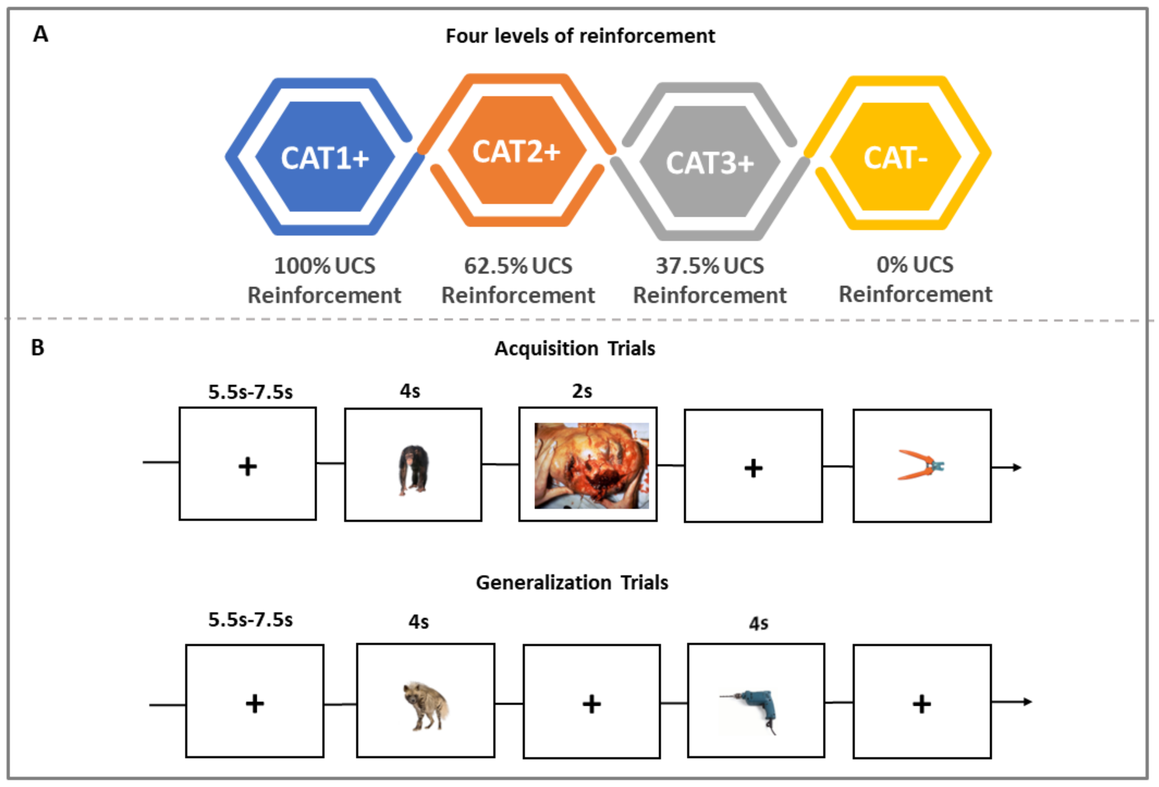
INTRODUCTION

- In threatening situations, humans generalize fear from one situation to another similar situation.
- The interpretation of an event and the ability to generalize threat is based on the **similarity between the two events**.
- In Fear Generalization, conditioned fear responses are observed for **novel stimuli which share perceptually or conceptually similar properties** with the conditioned stimulus.
- Fear generalization also depends on the **intensity and certainty of the occurrence** of the threat-related stimulus.
- Partial and continuous reinforcement of the conditioned stimuli impacts the generalized fear responses and the development of cognitive biases.
- In category-based conditioning, individuals were conditioned to **members of a category rather than a single stimulus**. Later, individuals were tested with other members of the same category with which they had never been conditioned.
- In the current study, we seek to explore the effect of **levels of UCS reinforcement** on conceptual fear generalization due to category-based similarity using a **visual UCS**.

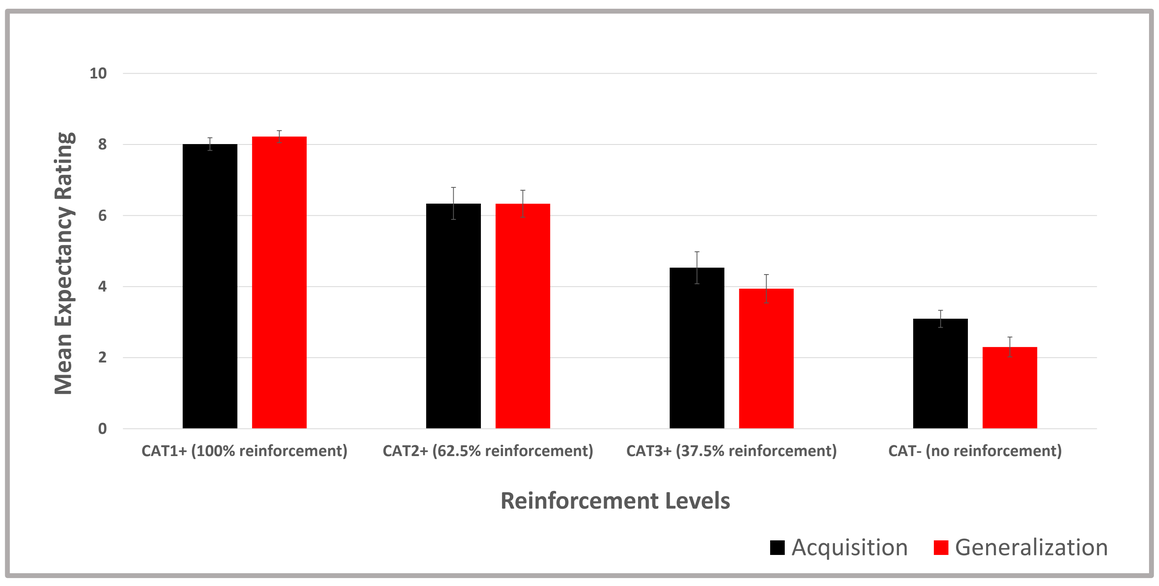
METHODS

- Twenty-two healthy undergraduate students aged 18 to 21 years (M=19.18, SD= 0.17) were recruited as participants.
- A **within-subject** design with a **differential fear conditioning paradigm** was used.
- Exemplars from four categories (denoted as CAT), **animals, insects, household appliances, and mechanical tools** were used as **conditioned stimuli**.
- The **unconditioned stimulus** was an **aversive image** selected from the International Affective Picture System (IAPS).
- The experiment comprised two phases: **Acquisition and Generalization**.
- In the acquisition phase, exemplars from the **four stimulus categories** were presented with **varying levels of UCS reinforcement**.
- In the generalization phase, **new exemplars from each category was presented without reinforcement**.



RESULTS

- A **one-way repeated measures ANOVA** was performed with **reinforcement level** (0%, 37.5%, 62.5% and 100%) as the **within-subject factor**.
- We compare their effect on the UCS expectancy ratings in the Acquisition and Generalization Phases.
- For the acquisition phase we calculated the **mean expectancy ratings from trial 2 to trial 8**.
- Trial 1 was eliminated due to orientation response.
- For the generalization phase we calculated the **mean expectancy ratings from trial 1 to trial 10**.



DISCUSSIONS

- A **significant effect of reinforcement** on the expectancy (UCS) and contingency (CS-UCS) ratings was observed in the continuous reinforcement categories.
- UCS expectancy ratings **increased with increasing certainty of UCS occurrence** in the generalization phase.
- Our results may help to understand **how fear generalizes to conceptually related stimuli based on the certainty of the UCS occurrence**.
- Furthermore, our findings may help to understand how fear generalizes **using less noxious stimuli (visual) as the UCS**.

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