**Background**

**RECONSOLIDATION**: the process by which reactivating a memory returns it to a labile state during which it is once again being consolidated.

- Evidence from animal studies indicate that memory reconsolidation, similar to consolidation, is prone to interference using molecular and pharmacological manipulations.
- This suggests there might be a window of opportunity to modify, change, or even erase *old* memories.
- Recent evidence in rats suggests that reconsolidation might be impaired using a drug-free behavioral manipulation.
- However, these findings have yet to be demonstrated convincingly in humans.

### Extinction & Fear Recovery:

**Extinction** involves new inhibitory learning indicating fear memory traces are suppressed rather than erased.

Evidence for this includes the resurfacing of fear after exposure to an unconditioned stimulus (US) such as shock.

This phenomenon is referred to as **Reinstatement**.

### PRELIMINARY FINDINGS IN RATS:

**Goal**: To extend these findings to humans using this same behavioral manipulation.

**Significance**: Successful replication would suggest an effective treatment for the intrusive memories in PTSD.

#### Methods

**Day 1**

- *Acquisition*

**Day 2**

- *Reminder Extinction*

**Day 3**

- *Reinstatement Extinction*

#### Results

**Expectation**: Reactivation prior to extinction would prevent the fear memory from recovering. Therefore, only **CS+B** would elicit fear responses.

Fear recovery was assessed by examining the fear response to the first trial after reinstatement.

#### Discussion

- Our results suggest that reactivation prior to extinction might prevent the fear memory from resurfacing.
- These findings point to cross-species similarities, suggesting fear memories can undergo erasure under specific behavioral manipulations.
- However, more subjects are necessary to accurately assess whether fear memories can be erased.
- These results offer a possible drug-free treatment for the traumatic memories associated with PTSD and other anxiety disorders.

#### References