Humans are not rats - recovery of fear following immediate extinction

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Background

Research has demonstrated that extinguished fear associations can be recovered under certain circumstances, suggesting that fear extinction is due to the inhibition rather than the erasure of the fear association.

However, recent rat studies have shown that when extinction is conducted immediately after acquisition, conditioned fear responses fail to reemerge, suggesting that the fear association is unlearned or erased (Myers et al., 2008).

Animal Data

Adapted from Myers et al. 2008

- Acquisition
- Extinction
- Re-extinction
- Recovery Test

Recovery Test Results:

Immediate extinction

Delayed extinction

Are humans similar to rats?

We attempted to replicate this immediate extinction effect in humans.

If rats and humans indeed share the same extinction mechanisms, we expect that fear will not be recovered when extinction is conducted immediately after acquisition.

Methods & Results

Spontaneous Recovery

DAY 1
- Acquisition
- Immediate extinction

DAY 2
- Re-extinction

Contextual Reinstatement

DAY 1
- Acquisition
- Immediate extinction

DAY 2
- Reinstatement

DAY 3
- Re-extinction

Discussion

Rat studies conducted by Myers et al. (2008) used spontaneous recovery and reinstatement paradigms with immediate extinction, which led to the failure of extinguished fear memories to recover.

This provided evidence that fear memories can be erased if they are extinguished immediately after acquisition.

However, the use of similar procedures on human subjects did not lead to the erasure of fear memories.

Conclusions

We find that, in humans, immediate extinction is not a sufficient method for erasing fear memories.

The ability to erase fear memories is an intriguing possibility with important implications in the treatment of anxiety disorders. However, there has yet to be a way to erase fear memories in humans.

Humans are not rats...

References


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