Fears may be acquired through associations of previously neutral stimuli with painful or aversive experiences. Extinction learning that employed the EU-EXT procedure of disassociating the CS and US produced more rapid extinction of a CTA and also more consistent results across two pre-clinical paradigms (Thomas et al., 2005) and CTA (current study). The use of EU-EXT procedures seems to produce consistent results across two pre-clinical paradigms that have employed experimental animals: CER (Thomas et al., 2005) and CTA (current study).

Following further preclinical testing, health-care providers treating disorders where fear is prominent may wish to consider how EU-EXT procedures may be applied in their clinical settings. This has implications for treating human fears and phobias.

Introduction

Patients may be acquired through associations of previously neutral stimuli with painful or aversive experiences. Extinction learning that employed the EU-EXT procedure of disassociating the CS and US produced more rapid extinction of a CTA and also more consistent results across two pre-clinical paradigms (Thomas et al., 2005) and CTA (current study). The use of EU-EXT procedures seems to produce consistent results across two pre-clinical paradigms that have employed experimental animals: CER (Thomas et al., 2005) and CTA (current study).

Results

CTA Acquisition

SAC Consumption After Either CS-US Pairing or Explicitly Unpaired CS-US Exposures

The CTA group showed a significant decrease in the amount of saccharin (SAC) consumed over the three exposures. The Explicitly Unpaired (EU) group showed a significant increase in SAC consumption over the three CS-US exposures. This indicates that EU-EXT group acquired a CTA, whereas the EU (control) group did not acquire a CTA. The SAC consumption of EU-EXT group was the same on the Exposure Day, but significantly different on exposure days 2 and 3. * = p < 0.001 (Bonferroni corrected tests).

A repeated measures ANOVA (Treatment x EU-EXT x Exposure Day) revealed a significant main effect for Exposure Day [F(2,150) = 88.00, p < 0.0001] and Treatment [F(1,75) = 612.35, p < 0.0001]. There was also a significant interaction [F(2,75) = 31.74, p < 0.0001].

CTA Extinction

Mean Days To Extinction After a CTA

The explicitly unpaired extinction group spent significantly fewer days to extinguish the learned fear compared to the CS-only extinction group, ** = significantly different from the CS-Only Extinction group (t(21) = 3.08, p < 0.007).

Mean Days In Each Phase Of Extinction

Nodes et al. (1997) identified three phases of extinction: static, dynamic and asymptotic. Rats experiencing the explicitly unpaired extinction procedure (EU-EXT) spent significantly fewer days in the static phase (EU-EXT group mean = 80% of baseline) and also the asymptotic phase (SAC consumption > 80% of baseline). ** = significantly different from CS-Only Extinction Group (t(21) = 2.52, p < 0.01).

SAC Consumption on the Day of Asymptotic Extinction and Spontaneous Recovery Test

The explicitly unpaired extinction group (EU-EXT) drank nearly the same amount of SAC on the day of extinction as they did on the 30-Day SR test, whereas the EU (control) group did not acquire a CTA. The CTA group showed a significant decrease in the amount of saccharin (SAC) consumed over the three exposures. The Explicitly Unpaired (EU) group showed a significant increase in SAC consumption over the three CS-US exposures. This indicates that EU-EXT group acquired a CTA, whereas the EU (control) group did not acquire a CTA.