

## ACERC02-01 - State dependence after post-retrieval amnesia (#2987)

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### 1) Have any data been collected for this study already?

No, no data have been collected for this study yet

### 2) What's the main question being asked or hypothesis being tested in this study?

Whether the internal drug state induced by propranolol, administered at the time of reactivation of a conditioned fear memory, is salient enough to render subsequent retrieval of the conditioned fear memory dependent upon re-administration of propranolol at the time of memory testing.

### 3) Describe the key dependent variable(s) specifying how they will be measured.

a. Fear potentiated startle (FPS): Startle reflex to a burst of loud noise (presented binaurally through headphones 7s after CS onset ;40ms;100dBA) will be measured using electromyography (EMG) of the right orbicularis oculi muscle. Three 4mm Ag/AgCl electrodes will be used; one electrode placed 1cm below the pupil, one electrode placed 1cm below the lateral canthus, and one ground electrode placed on the forehead. The EMG signal will be sampled at 1000Hz and band-pass filtered with a high pass filter of 13Hz and a low pass filter of 500Hz. Peak blink amplitude will be determined in a 21-200 ms interval following probe onset.

b. Skin conductance response (SCR): Will be measured using two disposable 8mm Ag/AgCl electrodes placed in the palm of the non-dominant hand. SCR will be measured continuously throughout all trials, on all three test sessions. The SCR signal will be sampled at 100Hz and SCR will be determined by subtracting the average of a 2 s baseline from the maximum score obtained in a 0 to 7 s window following CS onset.

c. Unconditioned stimulus (US; an electrical stimulus with duration 2ms delivered to the wrist of the dominant hand) expectancies: Participants will be asked to rate their US expectancies using an 11-point scale ranging from "certainly no electric stimulus" (-5), through "uncertain" (0), to "certainly an electric stimulus" (5). This scale will be presented at the bottom of the screen during all CS presentations and the participants have to answer by clicking the left mouse button within 7 s after stimulus presentation.

### 4) How many and which conditions will participants be assigned to?

Participants will be assigned to 1 of 4 conditions: 1) Reactivation/Propranolol Day 2/Propranolol Day 3, 2) Reactivation/Propranolol Day 2/Placebo Day 3, 3) Reactivation/Placebo Day 2/Placebo Day 3, 4) No Reactivation/Propranolol Day 2/Placebo Day 3

### 5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

FPS responses and SCR will be averaged in blocks of two trials and then analyzed using a repeated measures analysis of variance (ANOVA) with group as a between-subjects factor, and trial and cue (CS+, CS-) as a within-subjects factor. US expectancies will also be analyzed using a repeated measures ANOVA with group as a between-subjects factor and trial and cue (CS+, CS-) as a within-subjects factor. Follow up t-tests will be conducted for each group and each phase (acquisition, extinction, reinstatement) separately. Means and standard deviations from Day 1 will be used to standardize the data for all days (Z-scores). FPS and SCR outliers will be defined for each day by means of within-participants Z-scores ( $Z > 3$ ) and replaced by linear trend at point. A Greenhouse-Geisser procedure will be used in case of violation of the sphericity assumption in ANOVAs. An alpha level of .05 will be set for all analyses.

### 6) Any secondary analyses?

Habituation and noise-alone (NA) FPS responses will also be analyzed with a repeated measures ANOVA with group as a between-subjects factor and trial as a within-subjects factor. Retrospective distress ratings will be analyzed using a repeated measures ANOVA with group as a between-subjects factor and moment as a within-subjects factor. Fear of Spiders Questionnaire (FSQ), Anxiety Sensitivity Index (ASI) and Trait Anxiety Inventory (STAI-T) scores will be analyzed using an ANOVA with group as a between-subjects factor. State Anxiety Inventory (STAI-S) scores will be analyzed using a repeated measures ANOVA with group as a between-subjects factor and moment as a within-subjects factor.

### 7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We will test 15 participants per group, for a total of 60 participants. Excluded participants will be replaced to reach the predetermined sample size.

### 8) Anything else you would like to pre-register? (e.g., data exclusions, variables collected for exploratory purposes, unusual analyses planned?)

Additional exclusions (other than standard medical exclusion criteria): 1) participants with an ASI score of 26 or above, 2) unsuccessful fear conditioning on Day 1 (as indicated by no FPS differentiation between CS+/CS- or if responding is in the opposite direction [CS->CS+]), and 3) possible malfunctions with the psychophysiological equipment and recordings.