#### Supplementary Information for Song et al., “Effects of Incidental Positive Emotion and Cognitive Reappraisal on Affective Responses to Negative Stimuli”

#### Study 1

#### Data collection took place between September 22nd and October 2nd, 2017.

#### Sample size rationale

We have previously conducted two similar studies (not including 3 studies that were severely flawed) using a similar design[[1]](#footnote-1). We collected effect sizes from the interaction of valence (positive, neutral) and condition (change negative, look negative, look neutral) and paired t-tests of the critical trial (positive change neg vs. neutral change neg) for both positive and negative emotional responses from all three studies. We chose the lowest effect size of these (eta2 = .105) and used GPower to determine that we would need 30 participants to obtain 95% power at alpha = .05 to detect an effect of this size. To account for excluding some participants based on strict data integrity criteria, we doubled this target sample size to 60.

#### **Images.**

Sixty negative target pictures were distributed among the four negative conditions evenly, ensuring that each condition had virtually equivalent (within .05 on a 1-5 scale) mean positive and negative ratings (using ratings from previous versions of this task done at Wake Forest and the University of Denver). We also made sure that the variation of ratings (SD) within each condition were similar as well (within .05). The same procedure was followed with the 30 neutral target pictures between the two neutral conditions. We chose 90 positive induction pictures that had the highest valence score in IAPS (omitting erotic content), and selected 90 neutral pictures that had the lowest valence score (i.e., the highest level of neutrality).

Supplementary Table 1

Normed ratings for images

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Positive Induction | | | Neutral Induction | | |
|  | Look Neutral | Change Negative | Look Negative | Look Neutral | Change Negative | Look Negative |
| Induction rating\* | 7.62 (.20) | 7.62 (.19) | 7.62 (.25) | 5.03 (.16) | 5.03 (.14) | 5.03 (.12) |
| Target Image rating^ | 1.79 (.27) | 1.56 (.31) | 1.56 (.28) | 1.77 (.22) | 1.57 (.30) | 1.56 (.32) |

Note. There were two counterbalanced pairings of the stimuli. The above table presents one set of pairings. For the second set, the positive and neutral induction images were swapped for each of the target images (i.e. Positive + Look Neutral -> Neutral + Look Neutral and vice versa). \*ratings from original IAPS (Lang et al., 1997). ^ positive emotion ratings from previous lab studies on a scale from 1 (not positive) to 5 (very positive). Positive emotion ratings were our primary dependent variable given that we induced positive emotional contexts and told participants to reappraise to make themselves feel more positively.

#### **Study 2**

**Sample size rationale**

Same as for Study 1.

**Images**

Same as for Study 1.

**Study 3**

#### **Sample size rationale**

There was no previous research indicating the effect size of an interaction between emotional context (positive, neutral) and reappraisal instruction (reappraisal, control) during stress anticipation. Instead, we calculated a predicted effect size in our study based on a hypothesized ratio of the effect size of the interaction to an established main effect size of the instructions. To do so, we first carefully selected studies from a meta-analysis paper (Webb, Miles, & Sheeran, 2012) which had within-subjects designs and compared instructions of reappraising emotional stimulus with no instruction or instructions of looking naturally. The average main effect (f) of reappraisal instruction vs. no instruction/look naturally instruction from previous relevant studies was 0.30. We estimated that the effect size of interaction was around half of the main effect size of the instructions, so the effect sizes (f) for the interaction of emotional context and instruction during stress should be .15. We then conducted a power analysis using G\*Power, determining that we needed 120 participants to obtain 90% power at alpha = .05[[2]](#footnote-2). To account for the possibility that some of the participants might be excluded in data analysis, we increased the original sample size to 128. Therefore, we originally recruited 128 participants, which was our preregistered sample size; however, before we analyzed the data, we discovered that 29 participants needed to be excluded based on our pre-registered data exclusion criteria. To ensure that we had enough power in our final analyses, we recruited 24 more participants, which was as many as we could recruit before the end of the semester, for a final total of N = 152.

1. To explore the effects of positive emotion on cognitive reappraisal, we initially conducted three studies in which there were problems with picture assignment among the different conditions (they were not entirely counter- balanced). Although we corrected this problem in two subsequent studies, we discovered other issues with the design of each of these that tempered our confidence in their findings. The current study features a design in which we try to rectify all of these issues to more confidently test our hypotheses. These include, but are not limited to, a) getting current normed ratings of the images from a contemporaneous sample (current college students), b) balancing these normed ratings among the trial types to within .05 pts on a 1 to 5 scale, c) counterbalancing the emotion induction and target image pairs, d) removing negative images with extreme intensity ratings (mutilated bodies/death) images, and e) putting the emotional images in blocks to increase the probability of inducing sustained positive emotion. [↑](#footnote-ref-1)
2. Considering that we adopted a two-tailed .025 alpha for each omnibus test in confirmatory analyses, we recalculated the effective power for 115 participants who were included in data analyses and ultimately got the actual power of the present study, which was .83. [↑](#footnote-ref-2)