Reflection Ruminative Reduces Negative Emotional Processing During Goal-Directed Behavior.

Principle Investigator: Jessica M. Renaud
Faculty advisors: Dr. Owens

Methods
Participants were selected from SONA, a USF experiment recruiting system. Participants’ neural activity was recorded with EEG during a facial recognition task with happy, sad, and neutral distractors. Patients were shown three faces, then told to ignore a distractor face. One more face was shown, and the participant was asked to indicate if this face belonged to the initial three faces. Participants (n=22) were chosen between the ages of 18 and 40, and who had more than a 50% hit rate in performance scores, indicating more than a chance level of success in the task.

Neural Activity in Response to Emotional Distractors

Differences in Ruminative Style Predict Emotional Reactivity to Sad Faces
A repeated-measures ANOVA was conducted with distractor type (happy, mixed, sad) as the within-subjects factor. Ruminative styles (brooding, reflective) and BDI scores were included as continuous covariates to examine their specific relationships with emotional processing.

Distractor type had a significant main effect on neural activation, F(2, 22) = 6.642, p = .003. Neural activity was significantly different for happy faces (M= 2.82, SD = 2.56), sad faces, (M= 4.61, SD = 3.52), and neutral faces (M= 1.55, SD = 5.00).

This relationship changed as a function of an individual’s rumination style. A significant interaction between reflection and distractor type emerged. Neural activity in response to sad faces versus neutral faces changed as a function of an individual’s use of reflection as a rumination style. F(2, 22) = 5.037, p = .036. Neural activity did not differ significantly from happy to sad faces, F(2, 22) = 3.768, p = .066.

Study Purpose
This study aims to elucidate the relationship between rumination in depression, emotional reactivity, and cognitive performance. We will measure participants’ rumination scores and utilize EEG to measure the late positive potential (LPP) while participants perform a working memory task. The LPP is thought to represent emotional processing in individuals and reflects emotional reactivity to a specific stimulus. We can then examine differences in the LPP to test if emotional reactivity and task performance change as a function of and individual’s rumination style.

Hypotheses:
1. We predict that outcomes in emotional reactivity will change as a function of BDI rumination style.
2. That emotional reactivity will impact performance on the working memory task.

Discussion
The findings from this research indicate that rumination style (reflection/brooding) may play a role in an individual’s interpretation of emotional stimuli. Those who utilize reflection as a rumination style are more likely to inhibit their emotional response to distracting emotional content such as a sad face.

This may indicate cognitive inefficiency. While task performance is consistent across participants, neural activity across participants differs. This suggests that while participants high in reflection scores can successfully complete a working memory task at the same level as their peers, doing so may elicit differing neural processes to maintain this success.

References


