Title: Rumination is associated with PTSD severity, symptom clusters, and self-related brain structures

Presentation Preference: Poster

Theme & Topic: G.06. Human Studies

Keywords: Rumination, PTSD, Functional imaging, Self-related thought

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Support: National Institute of Health

Abstract: Previous research has associated the occurrence of rumination with PTSD. Additionally, neuroimaging studies have consistently implicated the rostral anterior cingulate (rACC) and posterior cingulate cortex (PCC) in self-related thought, including rumination. Previous functional imaging studies have found abnormal brain activity in these self-related brain regions, rACC and PCC, in PTSD. However, no research to date has examined rumination and structural neuroimaging measures in relation to PTSD severity and symptom clusters. In the current study, we measured rumination and collected structural MRI scans in trauma-exposed (n = 16) and PTSD (n = 73) participants. Compared to trauma-exposed subjects, PTSD participants reported higher levels of rumination (p < 0.05). Within the PTSD group, we found a correlation between rumination and PTSD symptom severity (r = 0.460, p = 0.000) as well as rumination and all PTSD symptom clusters: re-experiencing, avoidance, and hyperarousal (each p < 0.01). We also found a significant correlation between PTSD and right PCC volume as well as a trend-level correlation for right rACC volume and thickness. Together, these results are consistent with previous clinical and neuroimaging studies associating PTSD with rumination, negative self-related thought, and altered activity in self-related brain regions. Future research will be necessary to investigate the relationships among negative self-thought, structure and function of self-related brain regions, and PTSD symptoms and severity after successful treatment.