

Childhood Maltreatment Associated Alterations in Neural Activation During Emotional and Attention Processing in Emerging Typically Developing Adults

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Abstract:

Background: Biomarkers that can predict risk for unipolar depression and other psychopathology are needed to inform early intervention strategies. Childhood maltreatment is well established to increase risk for unipolar depression onset and to alter disease course in unipolar depression. Studies suggest maltreatment is associated with long-lasting structural changes in the prefrontal cortex and the prefrontal cortex's striatal and paralimbic projection sites. However, there is a paucity of studies investigating functional consequences of childhood maltreatment in emerging adulthood, when signs of mood symptoms often begin to emerge. This preliminary study investigated emotional and attentional processing with a functional MRI task that incorporates both emotional and attention stimuli and associations with childhood maltreatment and mood symptoms in emerging adults.

Methods: Twenty four typically developing young adults (age: $M = 21$ years, $SD = 2$ years; range: 18 to 25 years, 71% female) were recruited and underwent detailed clinical and behavioral assessments, including the Childhood Trauma Questionnaire (CTQ) to assess childhood maltreatment. All participants completed a continuous performance fMRI task with emotional and neutral distractors (CPT-END), an oddball attention task with emotional distractors. The relations between total CTQ scores and neural activation to emotional stimuli and targets were modeled while covarying with sex. Relations between childhood maltreatment-associated activation differences and mood symptoms, measured by clinical assessment and self-report, were modeled.

Results: Greater total CTQ scores were associated with lower caudate activity to targets and lower insula activity to emotional distractors ($p < 0.005$, cluster > 20 voxels). Decreased activity in the insula was associated with greater anxiety and depression symptoms at the time of the scan (Spearman $r_s = -0.4$ to -0.5 , $p < 0.05$).

Conclusion: Results from this preliminary study suggest childhood maltreatment is associated with altered paralimbic activity during emotional processing with exploratory analyses suggesting these differences may be related to risk for anxiety and depression. Longitudinal assessment (1 year following scan) of interim mood symptoms are ongoing to extend findings and investigate if neural differences associated with childhood maltreatment are related to increased risk for unipolar depression and other related outcomes.

Demographic:

Emerging Adults (college students)

Disorder:

Stress

Treatment Approach:

Neuroimaging