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Emotional Memory Activation Patterns in Pediatric Bipolar Disorder Using a Paired Associated Learning fMRI Paradigm

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Pediatric Bipolar Disorder (PBD) is a debilitating psychiatric disorder which has been found to have neurofunctional activation differences with regard to emotional memory compared to healthy controls (HC). To date, there appears to be no research on paired associate memory that involves negative affective stimuli (with in scanner encoding and retrieval phases) to evaluate the activation variability in PBD patients with regard to emotional memory. This study used a novel paired associate learning fMRI task to assess emotional memory in 10 PBD patients in order to compare their performance to 10 HCs that were matched on several demographic and clinical variables. Compared to HCs, participants with PBD showed decreased activation in the left parahippocampus, right supramarginal gyrus, and the left vermis of the cerebellum during the encoding phase ($p < 0.005$). Further compared to the HC group, the PBD group showed decreased activation in the right SMG and left MFG in angry vs. neutral conditions ($p < 0.01$). In the recall phase, PBD participants showed increased activation in the left hippocampus, right DLPFC, and right VMPFC ($p < 0.005$). The emotional processing contrast of the recall phase showed decreased bilateral insula and right VMPFC activation ($p < 0.01$). The results from the current study suggest that individuals with PBD, compared to HCs, have demonstrative neurofunctional abnormalities during both the encoding and retrieval phases of the emotional memory task. Specifically, the patients with PBD showed functional impairment when encoding or retrieving associative memory of angry faces paired with neutral objects.

Biography

Anthony Juliano is currently in his predoctoral internship in Clinical Neuropsychology through Chestnut Hill College Internship Consortium in Pennsylvania. He has worked as an affiliate researcher for three years at the University of Illinois: Chicago's Medical School, Department of Psychiatry. There, he has worked on several structural, functional, and neurochemical imaging studies under the direction of his research mentors.

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