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### **Lower Grey Matter Volume and Emotion Regulation in Young Adults with Bipolar Disorder and a History of Psychosis**

**BACKGROUND:** Psychosis is a common feature of bipolar disorder and is associated with worse clinical trajectories. Yet, few studies have looked at neural structure and function associated with psychosis in bipolar disorder. This preliminary study investigates differences in grey matter volume (GMV) and neural responses to emotional stimuli in young adults with bipolar disorder and a history of psychosis compared to diagnostic controls without a history of psychosis.

**METHODS:** 22 young adults with bipolar disorder type 1 (10 with a history of psychosis, 12 without, 73% female,  $age_{mean \pm stdev} = 22 \pm 2$  years) completed a structural scan and a Continuous Performance fMRI Task with Emotional and Neutral Distracters (CPT-END). Differences in GMV and neural responses to emotional stimuli were modelled between those with and without psychosis, controlling for sex.

**RESULTS:** Those with bipolar disorder and a history of psychosis, compared to those without a history of psychosis, showed lower grey matter volume in the ventral and dorsal prefrontal cortices, including the dorsolateral prefrontal and dorsal anterior cingulate cortex ( $p < 0.005$ ,  $\geq 20$  voxels). A history of psychosis was also associated with lower activity in the dorsolateral prefrontal cortex in response to emotional stimuli ( $p < 0.005$ ,  $\geq 20$  voxels).

**CONCLUSIONS:** Results from this preliminary study demonstrate differences in grey matter volume and prefrontal activation during emotional processing in young adults with bipolar disorder and a history of psychosis compared to those without. Future studies using larger samples are needed to further assess the implications of the effects of psychosis on clinical outcomes and associated neural systems.