What areas of the brain may show abnormalities in childhood bipolar disorder?

Brain Region	Abnormality	Area which may be Impacted
Anterior Cingulate Cortex	Changes in gray matter with development. Lower glutamine levels. Decreased response to emotional faces. Increased DNA fragmentation in some neurons.	Cognitive function, decision making, and emotion.
Cingulate Gyrus	Smaller volume in the left anterior.	Emotional response to stimuli and Aggression.
Frontal Lobe	White matter lesions that worsen over time.	Impulse control, planning, judgment, reasoning, attention, language, problem solving and socializing.
Fusiform Gyrus	Increased gray matter.	Processing stimuli related to social interaction, face recognition and emotional context.
Hippocampus	Reduced volume especially in girls.	Forming memories and associations.
Motor Cortex	Increased gray matter.	Motor movement.
Orbitofrontal Cortex	Abnormal gray matter volumes.	Mood, motivation, responsibility and addiction.
Prefrontal Cortex	Lower N-Acetylaspartate/ Creatine ratios. Decreased gray matter in the Left. Increased gray matter Ventrally. Abnormal activation.	Planning, sequencing, working memory, judgment, and social control.
Putamen	Enlarged and increased activation.	Motor control and sensory motor integration.
Right and Left Amygdala	Reduced gray matter. Abnormal development of the left Amygdala. Increased activation to emotional faces.	Processing emotional significance and perception.
Right Nucleus Accumbens	Larger volume pronounced in prepuberty.	Modulating desire, satisfaction, and inhibition.
Septum Pellucidum	The cavity separating two membranes which would normally fuse during infancy is found to be present and enlarged in adults who had childhood onset bp.	Modulating emotional expression.
Striatum	Abnormal volume changes that progress with age.	Motor activity, learning by habit and cognitive function.
Superior Parietal Lobule	Decreased gray matter.	Spatial orientation.
Superior Temporal Gyrus	Smaller total volume in the left. Decreased white matter.	Insight, processing speech and music.
Temporal Lobe	Reduced average volume. Increased gray matter (left side).	Integration of sensory information and memory.
Thalamus	Increased activation.	Processing sensory information.
Whole Brain	Smaller total volume.	Multiple