

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 |