

**Table 1. Comparison of Brain Anomalies.**

	<b>Trauma</b>	<b>FASD/PAE</b>
<b>Affected brain regions</b>	<ul style="list-style-type: none"> <li>• Reduced size or thickness of               <ul style="list-style-type: none"> <li>◦ Prefrontal cortex (PFC)</li> <li>◦ Anterior cortex (ACC)</li> <li>◦ Hippocampus</li> <li>◦ Amygdala</li> <li>◦ Corpus callosum (CC)</li> <li>◦ Cerebellum</li> </ul> </li> <li>• Alterations in sensory systems:               <ul style="list-style-type: none"> <li>◦ Visual cortex</li> <li>◦ Occipital pole</li> <li>◦ Auditory cortex</li> <li>◦ Insula</li> </ul> </li> <li>• Fiber tracts linking different areas of the brain show reduced integrity</li> <li>• Different cortical organization: Reduced centrality of left CC and temporal pole, and increased centrality of right precuneus and right anterior insula</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced size or thickness of               <ul style="list-style-type: none"> <li>◦ Overall brain</li> <li>◦ Prefrontal cortex</li> <li>◦ Amygdala</li> <li>◦ Basal ganglia/Caudate nucleus</li> <li>◦ Left temporal mode of hippocampus</li> <li>◦ Corpus callosum</li> <li>◦ Cerebellum</li> <li>◦ Grey matter</li> </ul> </li> <li>• Volume asymmetries in hippocampus greater than in controls</li> <li>• Abnormalities in corpus callosum, including thinning, displacement, and sometimes absence</li> <li>• Reduced myelination of sensory and motor pathways, and prefrontal cortex</li> <li>• Atypical activity and disorganization of network connectivity</li> </ul>
<b>Associated neurocognitive difficulties</b>	<ul style="list-style-type: none"> <li>• Executive functioning (PFC, ACC, cerebellum)</li> <li>• Memory (hippocampus, PFC)</li> <li>• Regulation of emotions (amygdala, PFC, ACC, cortical network organization, cerebellum)</li> <li>• Regulation of attention (PFC, ACC, CC)</li> <li>• Impulsivity (PFC)</li> <li>• Lack of inhibition (PFC)</li> <li>• Difficulty with learning, problem-solving and complex tasks (CC)</li> <li>• Difficulty accurately detecting emotions and social cues (amygdala, CC, ACC, visual cortex, occipital pole)</li> <li>• Language deficits (fiber tracks)</li> <li>• IQ deficits (fiber tracks, CC)</li> <li>• Visual memory and spatial deficits (fiber tracks, visual cortex, occipital lobe, cerebellum)</li> <li>• Self-awareness (anterior insula)</li> </ul>	<ul style="list-style-type: none"> <li>• Executive functioning (basal ganglia, PFC, CC, cerebellum)</li> <li>• Memory (basal ganglia, CC, hippocampus)</li> <li>• Regulation of emotions (amygdala, PFC, basal ganglia, cerebellum)</li> <li>• Regulation of attention (PFC, CC)</li> <li>• Impulsivity (PFC)</li> <li>• Lack of inhibition (basal ganglia, PFC)</li> <li>• Difficulty with learning, problem-solving, and complex tasks (CC, cerebellum)</li> <li>• Difficulty understanding emotions and social cues (CC)</li> <li>• Language deficits (CC, temporal lobe)</li> <li>• Lowered IQ (myelination, PFC, grey matter)</li> <li>• Motor difficulties (cerebellum, motor pathways, parietal lobe)</li> </ul>