

Serotonin Transporter Genotype Impacts Amygdala Habituation in Youth with Autism Spectrum Disorder

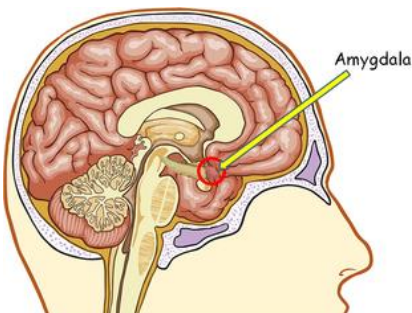
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Autism Spectrum Disorder (ASD) is a complex brain development disorder characterized by varying degrees of difficulties in social interaction, verbal and nonverbal communication, and repetitive behaviors.

When youth with ASD interpret faces, their amygdala acts differently. So, what does the amygdala do? It is the control center for anxiety provoking situations during times of distress and is a critical function of the brain that distinguishes emotional faces. Therefore, analyzing the amygdalae of ASD youth is a necessary part of understanding ASD. In ASD individuals, the amygdala oftentimes fails to familiarize itself to repeated faces, potentially being a reason that they develop and maintain social unawareness. In order to further previous research, neuroscientists from the University of Michigan conducted a study with the hypothesis that serotonin transporter-linked promoter region (5-HTTLPR) genotype affects change in amygdala response to repeated sad faces differently in individuals with ASD versus in healthy controls.

44 youth with ASD and 65 controls between the ages of 8 and 19 were genotyped and underwent functional magnetic resonance imaging in which they identified the gender of emotional faces that were presented for 250 milliseconds. With the idea that the 5-HTTLPR genotype influences amygdala habituation to sad faces, results were recorded for the responses of individuals with ASD and the controls. As expected, individuals with ASD and low expressing genotypes trended toward increased amygdala activation. Although this was expected, this study opened the doors to ground-breaking genotype research, being the first study to examine genetic influences on amygdala function in ASD. These researchers found that individuals with ASD fail to habituate to sad faces dependent on the genotype. In fact, there was a statistical trend that showed increased activation over time, proving that these individuals had more amygdala movement than individuals who also have ASD, but higher expressing genotypes.



Amygdala Facts

- It is almond shaped
- The word is derived from the Greek word for "almond"
- It's divided into three groups
 - Basolateral nuclei
 - Corticomедial nuclei
 - Central nucleus

Jillian Lee Wiggins, Johnna R. Swartz, Donna M. Martin, Catherine Lord, Christopher S. Monk; Serotonin transporter genotype impacts amygdala habituation in youth with autism spectrum disorders, *Social Cognitive and Affective Neuroscience*, Volume 9, Issue 6, 1 June 2014, Pages 832–838, <https://doi.org/10.1093/scan/nst039>