

NEWS

Cognition and behavior: Corpus callosum disrupted in autism

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Two halves: Children with autism have a smaller corpus callosum, a structure that connects the left and right sides of the brain, than do controls.

Nearly half of children with malformation of the corpus callosum, which links the two hemispheres of the brain, have symptoms of autism, according to a study published 5 October in the *Journal of Autism and Developmental Disorders*¹.

The malformed structure may limit connectivity through a brain region involved in language and social behavior, leading to autism symptoms, the researchers suggest.

The corpus callosum sits near the center of the brain and is made up of neuronal projections linking one hemisphere to the other. People lacking part or all of the corpus callosum — a rare birth defect called agenesis of the corpus callosum — may show mostly typical development, but have some **social deficits**, such as problems with self-awareness and emotion recognition.

In the new study, researchers analyzed performance on the Autism Spectrum Quotient (AQ), a diagnostic questionnaire, of 106 individuals with agenesis of the corpus callosum. Parents filled out the questionnaire for the 47 children and 20 teenagers in the study.

Based on cutoffs on the AQ, 45 percent of the children, 35 percent of the adolescents and 18 percent of the adults have autism, the study found.

The researchers also used magnetoencephalography, or MEG, to examine connections between brain regions as participants lay passively in the scanner. **Defects in long-range connections** have been found in individuals with autism, although discovery of the **artifacts resulting from head motion** has called some of these data into question.

Individuals who score as being less imaginative have weaker connectivity in the superior temporal gyrus than do those with more imagination. This brain region is involved in language and social behavior, and studies have shown **abnormal connectivity** in this region in individuals with autism.

Some children with autism have a **small corpus callosum**. This study suggests that children with autism should be screened for defects in this brain region, the researchers say.

References:

1: Lau Y.C. *et al. J. Autism Dev. Disord.* Epub ahead of print (2012) **PubMed**