

NEWS

Cognition and behavior: Symmetry skewed in autism brains

BY JESSICA WRIGHT

30 JANUARY 2013

Strong side: Some studies suggest that individuals with autism are more likely to be left-handed than controls are.

Teenagers with autism have an atypical balance between the right and left sides of the corpus callosum, which connects the two hemispheres of the brain, according to a study published 23 November in the *Journal of Autism and Developmental Disorders*¹.

In particular, people with autism do not show the tendency for the left side of the corpus callosum to be dominant when they are left-handed.

The left side of the brain controls language ability, which is impaired in autism. In contrast, visual ability, which is usually normal or **even enhanced** in people with the disorder, is regulated by the right side of the brain.

Many studies have looked for **evidence of an imbalance** between the right and left sides of the brain in people with autism. For example, some studies have shown that these individuals are more likely to be left-handed than the general population².

The corpus callosum, a bundle of nerve fibers that transmits information from one side of the brain to the other, may also be involved in brain symmetry. The **corpus callosum is smaller** in some

people with autism than in controls, and individuals lacking a corpus callosum show **some symptoms of the disorder**.

In the new study, researchers looked at 35 teenage boys with autism, 12 unaffected male siblings and 20 male controls. The participants answered a questionnaire that asked whether they use the right or the left hand for ten different tasks, such as writing and using a toothbrush.

The researchers also measured the volume of seven subregions of the corpus callosum using magnetic resonance imaging. These subregions — which are seen when the corpus callosum is viewed lengthwise, from the front to back of the brain — project to different brain regions.

There is no statistically significant difference in handedness between individuals with autism and controls or their unaffected siblings, the study found. This may be because of the small numbers, the researchers say, as those with autism use their left hands more, overall, than their siblings or controls do.

Two subregions of the corpus callosum are larger on the same side as the dominant hand in siblings and controls. Individuals with autism do not show the same trend.

Atypical asymmetry in the corpus callosum is linked to the severity of autism symptoms, as measured by the Autism Diagnostic and Observation Schedule – Generic, the study found. For example, individuals with more atypical asymmetry in one part of the corpus callosum have severe **repetitive behaviors**.

Correction: *This article has been modified from the original. It has been changed to reflect that individuals with autism show altered leftward dominance in the corpus callosum when left-handed, not rightward dominance when right-handed. Also, the researchers measured 7 subregions of the corpus callosum, not 13.*

References:

1: Floris D.L. *et al.* *J. Autism Dev. Disord.* Epub ahead of print (2012) [PubMed](#)

2: Leboyer M. *et al.* *J. Autism Dev. Disord.* **18**, 539-551 (1988) [PubMed](#)