

Twin Study Helps Scientists Link Relationship Among ADHD, Reading, Math

December 09, 2010

Children with ADHD can sometimes have more difficulties on math and reading tests compared to their peers. A new study published in *Psychological Science*, a journal of the Association for Psychological Science, used identical and fraternal twins to look at the genetic and environmental influences underlying ADHD behaviors, reading, and math skills in children in an attempt to better understand the relationship among them.

Sara Hart, of the Florida State University, and her colleagues used twins enrolled in a long-term study of reading and math. Hart says by focusing on twins specifically, psychological scientists are able to tease out the difference between nature and nurture.

To do this, scientists compare identical twins, who have nearly the same DNA, with fraternal twins, who generally only share about half of their DNA. If identical twins are generally more alike on a trait—say, their eye color or reading ability—and fraternal twins are much less alike on the same trait, you can presume the trait is inherited. On the other hand, if pairs of identical twins are alike on a trait to the same extent that pairs of fraternal twins are alike on that trait—like how outgoing they are—you know the trait is probably influenced by their environment. Most traits fall somewhere in between, and twin studies can show that, too.

In this case, Hart and her colleagues were interested in how twins matched up on symptoms of ADHD, reading achievement, and math achievement. At about age 10, every pair of twins was tested on their reading and math ability. Their mothers also filled out surveys on any problems the children have with attention or hyperactivity.

The researchers found that ADHD behaviors, reading achievement, and math achievement were all influenced by the same genetic influences; this doesn't prove anything about what causes what, but some psychological scientists think that all three might be linked through the working memory system.

Although common genetic influences is a typical result from twin studies, the exciting aspect of this work was that that ADHD behaviors, reading achievement, and math achievement are also associated by common environmental influences.

Although it is not known what the actual environmental influences are, Hart and her colleagues suggest that it could be related to aspects of the classroom and homework environment. If researchers can figure out what these environmental influences really are, they may be able to help children with ADHD do better in school.