

New study affirms handwriting problems affect children with autism into the teenage years

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The handwriting problems that affect children with autism spectrum disorders (ASD) are likely to continue into their teenage years, according to a study from the Kennedy Krieger Institute in Baltimore, Md. The research is published in the November 16, 2010 issue of *Neurology*, the medical journal of the American Academy of Neurology.

In 2009, Kennedy Krieger researchers conducted the first study to examine handwriting quality in children with ASD, finding that motor skills (e.g., timed movements) predicted handwriting deficits. This latest study revealed that, like children with ASD, adolescents with ASD (ages 12 to 16) have poor handwriting quality and motor skill impairments when compared to typically developing peers. However, unlike younger children, perceptual reasoning was the main predictor of handwriting performance in adolescents. Perceptual reasoning is a person's ability to reason through problems with nonverbal material.

"The importance of this research was not 'if' children and adolescents with autism struggle with handwriting, which many individuals can already attest to, but rather to document the extent of the challenge and determine if we could reveal anything about 'why' it is the case," said study author Amy Bastian, Ph.D., Director of the Motion Analysis Laboratory at the Kennedy Krieger Institute.

Researchers at the Kennedy Krieger Institute have been using the study

of motor execution and perceptual reasoning as an important window into the neurobiological basis of autism. Examining these skills provides researchers a way to study the basic brain systems important for learning and guiding actions, which has implications for all learned behavior, including complex communication and social skills.

"While adolescents with autism are more likely to have handwriting problems, there are several techniques available to improve handwriting quality, such as adjusting pencil grip, stabilizing the writing hand with the opposite hand or forming letters more slowly," said Dr. Bastian. "Our research suggests that adolescents with autism may be able to learn and utilize compensatory strategies that involve reasoning skills to compensate for their motor impairments."

About the Study

The study included 24 girls and boys between the age of 12 and 16. Half of the group had ASD and all of the adolescents scored within the normal range of perceptual reasoning on an IQ test. The teens were given the Minnesota Handwriting Assessment Test, which uses a scrambled sentence to eliminate any speed advantage for more fluent readers. The sentence used on the test was "the brown jumped lazy fox quick dogs over." Participants were asked to copy the words in the sentence, making the letters the same size and shape as the sample using their best handwriting. The handwriting was scored based on five categories: legibility, form, alignment, size and spacing. The adolescents' motor skills, including balance and timed movements, were also examined and given a rating. The research found that the [adolescents](#) with autism earned 167 points out of 204 total possible points on the [handwriting](#) assessment, compared to the 183 points scored by those in the group without [autism](#).

Provided by Kennedy Krieger Institute

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