

NEWS

In autism, intelligence scores may not predict school success

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6 NOVEMBER 2017

Many children with autism do better in school than their intelligence scores would predict, according to a new study¹. And about 16 percent do worse.

The study is the first to track cognitive ability and academic skills in children with autism throughout childhood. The findings suggest that these children should be screened for learning difficulties regardless of their intelligence scores.

“For high-functioning children, sometimes you are not really focusing on academic skills, because you assume that they will be fine given their high cognitive profile,” says lead investigator **So Hyun “Sophy” Kim**, assistant professor of psychology in clinical psychiatry at Weill Cornell Medicine in New York. “I think it’s important to do more careful screening for potential learning difficulties or problems for these children.”

About half of children with autism perform as well as or better than their intelligence scores would predict. The study also identifies other predictors of academic performance in these children, such as being in a mainstream classroom or having parents trained to provide an autism behavioral therapy.

“We haven’t had a lot of data to look at the longitudinal academic achievements of individuals with autism,” says **Mark Klinger**, associate professor of clinical rehabilitation and mental health counseling at the University of North Carolina at Chapel Hill, who was not involved in the work. “The good news is, they’re doing pretty well.”

The findings appeared in September in the *Journal of Child Psychology and Psychiatry*.

Track records:

Kim and her colleagues analyzed data from 111 children in North Carolina and the city of Chicago who were evaluated for autism at age 2. Of those, 74 received an autism diagnosis and another 26 were diagnosed with other conditions, such as a language disorder or intellectual disability; 11 children did not receive any diagnosis. The children are part of a larger study of **how autism changes with age**.

The researchers gave the children an intelligence quotient (IQ) test at ages 3, 9 and 18 years. At age 3, the team logged the number of hours of training the children's mothers received in delivering an autism behavioral therapy. At the later ages, the children also took tests of academic skills, such as spelling, math and reading comprehension.

Intelligence scores track strongly with academic achievement in typical children, so the researchers split the participants into two groups — those with IQs of 85 or higher and those with IQs below 85. At age 9, there were 47 children with autism in the low IQ group and 27 in the high IQ group; by age 18, 3 children from the low IQ group had moved to the high IQ group.

Memory gap:

As expected, the children with high IQs generally performed better on the academic tests at both age 9 and 18 than did the children with more limited cognitive abilities.

But 73 of the children at age 9 and 85 of them at age 18 showed a large mismatch between their IQ and their performance in at least one academic area. Most of these children scored better on the academic tests than expected for their IQ.

“Even those with more intellectual impairment — we see that they're still coming out of high school with abilities that are commensurate [with], or may even exceed, their intellectual functioning,” Klinger says.

But 12 of the children with autism at age 9 and 7 of them at age 18 perform worse than expected.

This may be because many children with autism have trouble with ‘**executive function**,’ says **Annette Estes**, director of the University of Washington Autism Center in Seattle, who was not involved in the study. This set of mental skills includes **cognitive flexibility** — the ability to switch tasks or strategies — and short-term memory.

In a study also published in September, Estes and her colleagues showed that children with autism who perform well on a test of cognitive flexibility and working memory at age 6 are better able to name numbers and solve math problems at age 9, regardless of their IQ².

Predicting success:

By tracking the same children over time, Kim and her colleagues were able to explore which factors at age 3 predict later academic achievements. As expected, IQ tops the list: the higher a child's IQ at age 3, the better his or her academic test performance at 9 and 18.

Children whose mothers completed more than 20 hours of training in autism behavioral therapy perform better than those whose mothers had less or no training. Providing therapies to children with autism early in life may have “long-term ripple effects,” says Estes. “One of those ripple effects might be in the area of academic achievement.”

Children in mainstream classrooms at ages 9 and 18 have higher academic scores than those in special-education classrooms. Having neurotypical peers may boost academic development in these children, but it is also possible that children placed in mainstream classes have a high IQ and good academic skills to begin with.

It is unclear whether excelling on academic tests predicts success outside academia — such as securing a job, Klinger says. His unpublished results from a study of adults with autism suggest that daily living skills, such as the ability to make meals and bathe, are better predictors of employment than is academic performance.

Preliminary results from Kim's team indicate that academic ability does matter. Some data from the study's participants at age 26 suggests that academic achievement tracks with daily living skills and quality of life, as well as the chances of having a job and living independently.

REFERENCES:

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2. St. John T. *et al. J. Autism Dev. Disord.* Epub ahead of print (2017) [PubMed](#)