

Link found between child prodigies and autism

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(Medical Xpress)—A new study of eight child prodigies suggests a possible link between these children's special skills and autism.

Of the eight prodigies studied, three had a diagnosis of [autism spectrum disorders](#). As a group, the prodigies also tended to have slightly elevated scores on a test of [autistic traits](#), when compared to a control group.

In addition, half of the prodigies had a family member or a first- or second-degree relative with an [autism diagnosis](#).

The fact that half of the families and three of the prodigies themselves were affected by [autism](#) is surprising because autism occurs in only one of 120 individuals, said Joanne Ruthsatz, lead author of the study and assistant professor of psychology at Ohio State University's Mansfield campus.

"The link between child prodigies and autism is strong in our study," Ruthsatz said. "Our findings suggest child prodigies have traits in common with autistic children, but something is preventing them from displaying the deficits we associate with the disorder."

The study also found that while child prodigies had elevated general [intelligence scores](#), where they really excelled was in [working memory](#) - all of them scored above the 99th percentile on this trait.

Ruthsatz conducted the study with Jourdan Urbach of Yale University.

Their results were published in a recent issue of the journal *Intelligence*.

For the study, the researchers identified eight child prodigies through the internet and television specials and by referral. The group included one art prodigy, one math prodigy, four musical prodigies and two who switched domains (one from music to gourmet cooking, and one from music to art). The study included six males and two females.

The researchers met with each prodigy individually over the course of two or three days. During that time, the prodigies completed the Stanford-Binet intelligence test, which included sub-tests on fluid reasoning, knowledge, quantitative reasoning, visual [spatial abilities](#) and working memory.

In addition, the researchers administered the Autism-Spectrum Quotient assessment, which scores the level of autistic traits. The prodigies' scores on the test were compared to a control group of 174 adults who were contacted randomly by mail.

Ruthsatz said the most striking data was that which identified autistic traits among the prodigies.

The prodigies showed a general elevation in autistic traits compared to the control group, but this elevation was on average even smaller than that seen in high-functioning autistic people diagnosed with Asperger's syndrome.

Autism is a developmental disability characterized by problems with communicating and socializing and a strong resistance to change. People with Asperger's are more likely than those with autism to have normal intelligence, but tend to have difficulties with social interaction.

The prodigies did score higher than the control group and the Asperger's

group on one subsection of the autism assessment: attention to detail.

"These prodigies had an absolutely amazing memory for detail," she said. "They don't miss anything, which certainly helps them achieve the successes they have."

Ruthsatz said it was not the three prodigies who were diagnosed with autism who were driving this particular finding. In fact, the three autistic prodigies scored an average of 8 on attention to detail, compared to 8.5 for the entire group of prodigies.

On the intelligence test, the prodigies scored in the gifted range, but were not uniformly exceptional. While five of the eight prodigies scored in the 90th percentile or above on the IQ test, one scored at the 70th percentile and another at the 79th percentile.

But just as they did in the autism assessment, the prodigies stood out in one of the sub-tests of the intelligence test. In this case, the prodigies showed an exceptional working memory, with all of them scoring above the 99th percentile.

Working memory is the system in the brain that allows people to hold multiple pieces of information in mind for a short time in order to complete a task.

The findings paint a picture of what it takes to create a prodigy, Ruthsatz said.

"Overall, what we found is that prodigies have an elevated general intelligence and exceptional working memory, along with an elevated autism score, with exceptional attention to detail," Ruthsatz said.

These results suggest that prodigies share some striking similarities with

autistic savants - people who have the developmental disabilities associated with autism combined with an extraordinary talent or knowledge that is well beyond average.

"But while autistic savants display many of the deficits commonly associated with autism, the child prodigies do not," Ruthsatz said. "The question is why."

The answer may be some genetic mutation that allows prodigies to have the extreme talent found in savants, but without the deficits seen in autism. But the answer will require more study, Ruthsatz said.

"Our findings suggest that prodigies may have some moderated form of autism that actually enables their extraordinary talent."

Provided by The Ohio State University

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