NEWS

Autism traits common among healthy people

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Two large studies published in the past two months have found that traits linked to autism are widely distributed in the general population. Although about 1 in 100 children is diagnosed with autism, up to 30 percent of people may have at least one of the traits associated with the disorder.

Those with one or more autism-associated traits also appear to be at higher risk for attention deficit hyperactivity disorder (ADHD), anxiety, depression and substance abuse.

Family members of people with autism often have milder versions of behaviors seen in people with the disorder. Over the past decade, many researchers have described autism as the extreme end of a behavioral continuum. The new results suggest that these milder behaviors extend to many other disorders.

"Essentially, [the studies are] a large-scale replication of data from a number of laboratories that suggested this continuity," says **John Constantino**, professor of psychiatry and pediatrics at Washington University in St. Louis, Missouri, who was not involved in either study.

Altogether, the two studies relied on responses from more than 34,000 people in the U.K. and Sweden to questionnaires about autism-like symptoms.

In the first analysis, published in the April issue of the *Journal of the American Academy of Child and Adolescent Psychiatry*, researchers used data collected as part of the Avon Longitudinal Study of Parents and Children[1], a long-term investigation of child development in the U.K. Parents of 6,539 children completed a questionnaire about social and communication difficulties similar to those seen in autism when their children were 7, 10 and 13 years old.

Signs of intelligence:

The large number of participants allowed the researchers to investigate the relationship of intelligence quotient (IQ) and sex to autism-related traits.

Studies have found that boys generally have more social and communication problems than girls do. But IQ affects these traits differently in the two sexes: the higher a girl's IQ, the fewer autism-related traits she is likely to have. Among boys, however, those of roughly average IQ are the least likely to show autism-like behavior.

In the new study, the researchers showed that this pattern is consistent throughout much of childhood, indicating that children aren't learning to overcome these difficulties with time.

In fact, the researchers found the same result regardless of how they sliced up the data: each group had the same average level of social and communication problems at age 13 as they did at age 7.

"Everyone, regardless of IQ, regardless of being male or female, was quite stable over time, on average," says **Elise Robinson**, a research fellow at the Harvard School of Public Health, who analyzed the data.

In the second study, published online 22 March in *Psychological Medicine*, Swedish researchers looked at data from two twin cohorts: a group of 10,773 children aged either 9 or 12 years who took part in the **Child and Adolescent Twin Study in Sweden** — established to investigate autism and related disorders — and 16,695 adults from the **Swedish Twin Studies of Adults: Genes and Environment**, one of the largest twin studies in the world[2].

The researchers asked each of the participants — or, in the case of children, their parents — questions based on diagnostic criteria for autism in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV).

Although only one percent of people in the study have an autism diagnosis, the data suggest that autism-related traits are commonplace: About 30 percent of the participants have at least one. The more traits a particular individual has, the higher his or her risk of other neuropsychiatric conditions, the researchers found.

Twin trouble:

That relationship isn't entirely unexpected, because many people diagnosed with autism also have ADHD, depression or other mental disorders. But the researchers say they were surprised to find that even people with only one or two autism-related traits are at markedly higher risk.

Depression could of course cause a person to withdraw socially, or communication problems could result in anxiety. "If this had been a non-twin study population, we would really have been lost in

terms of what causes what," says lead investigator **Henrik Anckarsäter**, professor of forensic psychiatry at the University of Gothenburg in Sweden. But the study's twin analysis points to a strong role for genetics.

When one twin of a pair has autism, the other is similarly at higher risk for other mental disorders, the researchers found, and this correlation is tighter in identical twins than in fraternal ones. Because identical twins share 100 percent of their genetic material and fraternal twins only 50 percent, the finding suggests that traits related to autism and the other disorders share common genetic factors.

In a previous analysis of twin-study data[3], Anckarsäter showed that autism-related traits also increase the risk for neurodevelopmental problems, including tics, learning disorders and motor coordination difficulties.

"Psychiatrists are very fond of narrow, specific mental disorders defined by precise cutoffs," Anckarsäter says. But the new analyses suggest that clinicians should look for autism-related traits in people who have other mental disorders.

Some scientists caution against over-interpreting studies of these traits[4]. "Autism is more than just social impairment," says **Jeremy Veenstra-VanderWeele**, assistant professor of psychiatry at Vanderbilt University in Nashville, Tennessee.

To be diagnosed with autism, a person must also have communication problems and repetitive behaviors, but many studies neglect these two aspects, Veenstra-VanderWeele says.

Still, according to Constantino, studies of repetitive behavior show that similar but less severe versions of the traits typical of autism are common in healthy people[5].

"Even those stereotypic and repetitive behaviors are continuously distributed in nature, and they track with the social and communicative impairments," he says. "I think that the evidence is becoming overwhelming."

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