

NEWS

Sharp observation skills may guard girls against severe autism

BY ANN GRISWOLD

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Infant girls at an elevated risk for autism pay more attention to social cues in faces than do boys at the same risk¹. The finding may help to explain why girls with autism tend to have **subtler symptoms** than boys with the condition.

Researchers have long suspected that **genetic factors** guard girls against autism. The new study suggests cognitive elements help shore up the gender shield.

“For the first time, we show that infant girls at risk for autism have very unusual attention to social stimuli,” says lead researcher **Katarzyna Chawarska**, director of the Early Social Cognition Laboratory at Yale University. “This might protect against development of social difficulties and put high-risk girls on a different trajectory than high-risk boys.” Chawarska’s team published the results 15 December in the *Journal of the American Academy of Child & Adolescent Psychiatry*.

Autism is thought to affect roughly **four boys for every girl**, and girls with the condition tend to have fewer **repetitive behaviors** and **social problems** than affected boys do. The new study raises the possibility that skills learned in infancy help girls sidestep severe autism symptoms later in life.

“This is a milestone study,” says **Meng-Chuan Lai**, assistant professor in psychiatry at the University of Toronto. “It demonstrates what mechanisms in cognitive development may be associated with, or even partly underpin, the female protective effect of autism.”

Face first:

Chawarska and her team compared 101 infants who have an older sibling with autism — so-called ‘**baby-sibs**’— and 61 infants with no family history of autism on a measure of social attention. Baby

sibs are about **20 times more likely** to have autism than infants in the general population.

The researchers used eye-tracking technology to record the direction and timing of gaze in 6-, 9- and 12-month-old infants as they watched a smiling woman in a video talk to them in cooing and affectionate tones. As the woman speaks, she prepares a sandwich and occasionally gestures toward colorful toys in the upper and lower corners of the screen.

Typically developing babies tend to focus on the woman's face, and smile and coo in response. By contrast, 11- to 26-month-old babies with autism spend an unusual amount of time looking at the background, the researchers reported in a separate December 2015 paper².

Among the younger infants, however, girls at risk for autism showed more interest in the woman's face, as well as in what she was doing, than high-risk boys or low-risk infants of either gender. This pattern starts as early as 6 months of age, regardless of whether the high-risk girls are later diagnosed with autism. (The researchers gave each child a diagnostic assessment at 12 months and 24 months, and performed an additional assessment at 36 months in children with a genetic risk for autism or signs of developmental delay.)

"I find it really provocative and interesting that high-risk girls exhibit greater social attention than even low-risk girls," says **Nouchine Hadjikhani**, associate professor of radiology at Harvard Medical School, who was not involved in the study.

Why the high-risk girls pay unusual attention to faces is unclear, but Chawarska suggests that as-yet unknown genetic programs that offset the risk for autism may come into play between 6 and 12 months, possibly pushing these girls toward greater social or cognitive maturity.

Limited protection:

Whatever the reason for the social focus of these girls, it seems to benefit them. The more the girls examined faces and scenes at 6 months, the more they responded to gestures and emotions, made eye contact and initiated social interactions at ages 2 and 3.

This social practice was not enough to ward off autism, however. At age 2, high-risk girls still lagged behind their low-risk peers in language and social development.

Hadjikhani cautions that eye-tracking studies can be difficult to interpret, as gaze in people with autism can vary by context, including **the type of social interaction**. Despite these caveats, she says the results of the study are likely to carry meaning.

"The study is well conducted, with methods that have proven to be useful measures to evaluate social attention," she says.

The findings jibe with evidence that an early inclination toward faces and voices eases autism severity. In a 2014 study, Chawarska and her team showed that 20-month-old toddlers with autism who pay close attention to a speaker's mouth have milder symptoms at age 3 than those who gaze elsewhere while an adult is speaking³.

This study may prompt other autism researchers to re-examine data from behavioral studies for early signs that girls at risk for the condition act or think differently than boys, says **Sara Jane Webb**, associate professor of psychiatry and behavioral sciences at the University of Washington in Seattle, who was not involved in the work.

Such analyses may expand the understanding of the nongenetic contributors that shield girls against autism.

"If we manage to discover how innate or early environmental components protect females, we may have some opportunity to bring protection to everyone else who needs it," says Lai.

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