NEWS

Long-term studies chart autism's different trajectories

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Baby steps: Some infant siblings of children with autism show symptoms around 14 months of age, but others appear to develop normally until 36 months.

Two new studies that **follow the development of children** with autism suggest that distinct subgroups of the disorder exist early on and that the severity of symptoms in most of these children remains stable over time.

The first study, published 30 October in *Child Development*, tracked **baby siblings** of children with autism, who have a five-fold higher risk than average of developing the disorder[1].

Rebecca Landa and her collaborators at the Kennedy Krieger Institute in Baltimore, Maryland, found that some children can be reliably diagnosed as having autism by 14 months of age, and others not until 36 months. Past 36 months, there is no difference in autism symptoms between the two groups of children, however.

The study is the first to track social skills, language and motor development in children from infancy to 3 years, rather than by asking parents to remember, which can bias the results.

“I see this as provocative, and inviting research into biological mechanisms,” says Landa, director

of the Center for Autism and Related Disorders at the institute. “It’s important we don’t lump all children with autism together in doing these studies.”

The second study, published in *Pediatrics*, tracked autism severity over several years in children between the ages of 2 and 15 years[2]. **Catherine Lord** and her collaborators at Weill Cornell Medical College in New York City found that although a small group of children improved with age and another small group worsened, the severity of the disorder’s core symptoms remained stable in more than 80 percent of children.

Early paths:

Landa’s group followed 204 so-called ‘baby sibs’ and 31 infants with no family history of autism. The researchers tracked the children’s social, language and motor development at 6, 14, 18, 24, 30 and 36 months of age.

At 36 months, they found the existence of three groups among the baby sibs: those who have obvious symptoms at 14 months, those who don’t show signs of autism until later, and those who never go on to develop autism. About half of the children with autism develop symptoms between 6 and 14 months.

“There doesn’t seem to be one consistent onset pattern,” says **Wendy Stone**, director of the University of Washington Autism Center in Seattle, who was not involved in the study. The variability in time of onset means that clinicians and parents need to be careful not to give high-risk children a clean bill of health at 14 months, she says.

The researchers found that the age of symptom onset doesn’t make any difference to the severity. The early- and late-onset groups both show some **regression of skills**, says Landa.

The study also adds to evidence that, at 6 months of age, it’s not possible to determine which children will develop autism.

Landa says parents who are concerned about their child’s development should be persistent, especially if there is a family history of autism. “We don’t want parents to wait if they’re concerned about their baby,” she says. “At 6 months there are strategies parents can use to support development.”

In the second study, Lord and her colleagues followed 345 children ranging from 2 to 15 years of age. By identifying which subgroups of children improve or worsen over time, the researchers say they hope to develop treatments specific to each group.

Until now, there has been no good way to follow the severity of symptoms from toddlerhood into adolescence, says Lord, director of the Center for Autism and the Developing Brain at Weill

Cornell.

Screening tests for autism are geared to particular age groups, and the raw scores can't be compared. Tests that can be compared across age groups, such as those that gauge intelligence, don't address the core social, language and motor problems characteristic of autism, Lord notes.

Severity scores:

The researchers' first step was to generate an algorithm that can compare results from a standard clinical test, the Autism Diagnostic Observation Schedule, or ADOS, given at different ages. The ADOS, which Lord **helped develop**, measures the severity of core autism symptoms.

The researchers assessed the children at different ages, all at least twice and some as many as five times. Then they let the algorithms blindly sort the children into three groups: those whose symptoms were stable over time, and those who either improved or deteriorated.

The results show that autism symptoms are surprisingly stable over time in 84 percent of the children. "We weren't surprised that a majority had this flat trajectory, but we thought it would be around 55 percent, not 80," says Lord.

Even children whose intelligence scores went up and who gained academic skills had stable scores on the core measures assessed by the ADOS. "[Autism] is a disorder that stays with kids, even though many things can get better," Lord says.

Because the ADOS is a widely used diagnostic assessment, being able to compare ADOS scores over time is "particularly valuable," says **Tony Charman**, professor of psychology and human development at the University of London. Most long-term studies of autism rely on parent interviews, he notes. "You don't always know whether you're seeing true changes in the child, or perceptual changes in the parent."

Charman adds that other studies will need to confirm the stability of autism symptoms, and that the tendency is not particular to the children in Lord's study.

In the meantime, Lord's group is studying the children whose symptoms improved. So far, the researchers say, the children's trajectory doesn't seem to be related to hours of therapy received, age, gender, race or nonverbal intelligence scores. However, they do seem to show an improvement in their language skills before their social skills.

"This suggests we should focus considerable effort on helping kids develop language, and not panic if they're not getting social gains at the same rate," says Lord. "They can catch up."

References:

1: Landa R.J. *et al. Child Dev.* Epub ahead of print (2012) **PubMed**

2: Gotham K. *et al. Pediatrics* Epub ahead of print (2012) **PubMed**