NEWS

Many toddlers with autism and low intelligence walk on time

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Babies with autism are thought to be **late to meet physical milestones**, such as pointing and sitting. But a new report finds that most babies with autism and intellectual disability take their first steps — a major motor milestone — on time or earlier than those with other conditions that affect cognition[1].

The findings may point to a unique developmental trajectory for children who have both autism and intellectual disability.

About 97 percent of children will have begun walking by 16 months of age, according to the World Health Organization[2]. Children with intellectual disability are less likely to hit this mark, but few studies have examined walking among children with autism who also have low intelligence quotients (IQs).

“Based on what we would expect for children of a given IQ, autism seems to be associated with relatively lower rates of delayed walking,” says lead researcher **Somer Bishop**, assistant professor of psychiatry at the University of California, San Francisco. The findings appeared 3 February in *Pediatrics*.

“We think this is an exciting line of inquiry, because it highlights a potential difference between children with autism and children with non-autism diagnoses of similar IQ,” Bishop says.

Scientists surmise that delayed **motor development may impair cognition** because physical exploration can help children gain an understanding of the world. Without adequate motor skills, children may lack important stimuli for learning.

However, the fact that many children with autism and low IQ walk on time suggests that these children may come to intellectual disability differently — or, at least, later. If that’s the case, their

window for treatments that boost cognitive development may be wider.

Baby steps:

Bishop's team reviewed diagnostic records from 1,185 children evaluated for autism using the **Autism Diagnostic Observation Schedule** (ADOS), in which a doctor observes and rates autism symptoms, and the Autism Diagnostic Interview-Revised (ADI-R), which relies on parent reports. The records also indicate each child's nonverbal IQ, a measure of her ability to solve puzzles and interpret visual cues.

Most of the children — 903 — were diagnosed with autism; the remaining 282 received diagnoses such as **intellectual disability**, attention deficit hyperactivity disorder (ADHD) or **language disorders**. The researchers did not include children with brain injuries or those who have neurodevelopmental conditions with known genetic causes.

One question in the ADI-R asks parents at what age their child started to walk without holding on to something for support. The researchers used this information to see how nonverbal IQ relates to walking ability within each diagnosis.

When the researchers focused on children with a nonverbal IQ of around 85, compared with the average score of 100, they found no difference in the likelihood of walking delays among children with autism and those with other diagnoses. About 85 percent of the children in each group walked independently by 18 months.

But when researchers focused on children with IQs of around 50, they found that 60 percent of the children with intellectual disability, ADHD or language disorders walked by 18 months compared with 80 percent of those with autism.

The findings held up even when the researchers controlled for the child's **gender** and history of **seizures** — two variables thought to influence the severity of autism symptoms.

The "large and convincing dataset draws attention to the unique way that autism affects development early on," says **Sally Rogers**, professor of psychiatry at the University of California, Davis, who was not involved in the study.

Different paths:

The results suggest that the path to intellectual disability differs between children with autism and those with other neurodevelopmental conditions. Developmental delays affecting both language and motor skills often show up by the toddler years. But children with autism may develop typically through toddlerhood, after which the unique features of autism may contribute to intellectual delay by interfering with learning from social interactions.

“If kids with autism initially start out hitting these early milestones within normal limits but then end up with a low IQ,” Bishop says, “this begs the question of whether they were destined for that [low IQ] the whole time or whether autism changes the way they interact with the world, which down the road results in reductions in IQ.”

The 20 percent of children who have autism and low IQ but do not walk on time may help researchers separate autism into subgroups for diagnosis and treatment. For example, the late-walking group includes more girls than boys — and **girls with autism** tend to have more autism-linked mutations than boys do.

Bishop and others plan to explore the relationship between autism-linked variants, the age a child starts walking and intellectual ability. “Our next steps are to see if the relationship between walking and IQ can help to stratify developmental trajectories in these children,” she says.

REFERENCES:

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2. WHO Multicentre Growth Reference Study Group. *Acta Paediatr Suppl.* **450**, 86-95 (2006) **PubMed**