

School readiness impaired in preschoolers with ADHD symptoms, study finds

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Preschoolers with symptoms of attention-deficit hyperactivity disorder are much less likely than other children their age to be ready for school, new research from the Stanford University School of Medicine has found.

The study, which will be published online July 21 in *Pediatrics*, is among the first to comprehensively examine [school](#) readiness in young children with ADHD. Several previous studies have addressed academic difficulties in [school-aged children](#) with ADHD, but few studies have investigated whether these children start school behind their peers.

"We were pretty surprised at the proportion of kids within the ADHD group who were not school-ready," said the study's senior author, Irene Loe, MD, assistant professor of pediatrics. Seventy-nine percent of children with ADHD had impaired school readiness compared with 13 percent of children in a [control group](#), the study found. "It's a really high number," Loe said.

The study's lead author is Hannah Perrin, MD, who was a fellow in developmental and behavioral pediatrics at Stanford when the research was done.

The main symptoms of ADHD—inattention, hyperactivity and impulsivity—can be normal in toddlers, and these behaviors sometimes persist into the preschool years even in children who will not ultimately meet the diagnostic criteria for ADHD. This makes the disorder difficult

to diagnose in preschoolers. "A lot of these kids are not identified until they're really having a lot of trouble in the school setting," Loe said.

The study included 93 children, all of whom were 4 or 5 years old. Nearly all had attended or were currently enrolled in preschool, and some were enrolled in kindergarten. The ADHD group included 45 children who previously had been diagnosed with the disorder or were identified by their parents as having significant levels of ADHD symptoms. The comparison group consisted of 48 children without ADHD. The researchers tested all the children to confirm their levels of ADHD symptoms.

The researchers conducted tests and administered parent questionnaires to measure five areas of the children's functioning: physical well-being and [motor development](#); social and [emotional development](#); approaches to learning; language development; and cognition and general knowledge. "Approaches to learning" included measures of executive function, which is a person's ability to prioritize actions and tasks and exercise self-control to regulate behavior and meet long-term goals.

Children were considered impaired in an area of functioning if their assessment scores in that area were more than one standard deviation worse than the mean score for their age. They were considered unready for school if they were impaired in two or more of the five areas of functioning measured in the study.

Struggling in 4 of 5 areas

Children with ADHD were no more likely than their peers to show impairment in the area of cognition and general knowledge, the study found. This area includes IQ and, importantly, knowledge people traditionally associate with kindergarten readiness, such as being able to identify letters, numbers, shapes and colors.

But children with ADHD were much more likely than their peers to struggle in all four other areas measured. They were 73 times more likely than children without ADHD to be impaired in approaches to learning; more than seven times as likely to have impaired social and emotional development; six times as likely to have impaired language development; and three times as likely to have impaired physical well-being and motor development.

The assessment was broader than other school-readiness measures researchers have used in the past, Loe said. "We looked at many aspects of the child more comprehensively," she said, adding that approaches to learning or executive function as a component of [school readiness](#) has been especially under-studied.

The findings suggest that identifying and helping preschoolers with significant levels of ADHD symptoms could reduce their struggles in elementary school.

"We need to help general pediatricians figure out how they can flag kids who might be at risk for school failure," Loe said. Families also need better access to behavioral therapy for preschoolers with ADHD, which is not always available or covered by insurance, even though it is recommended as the first-line ADHD treatment for this age group, she added.

"Thinking about how we can provide services for young [children](#) with ADHD or who are at high risk for the diagnosis is really important," she said.

Loe is a member of the Stanford Maternal & Child Health Research Institute. Nicole Heller, a former clinical research coordinator at Stanford, is also a co-author of the research.

Provided by Stanford University Medical Center

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