

Visual-spatial learning disorder is more common than thought, finds study

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Nonverbal learning disability (NVLD), a poorly understood and often-overlooked disorder that causes problems with visual-spatial processing, may affect nearly 3 million children in the United States, making it one

of the most common learning disorders, according to a new study by led by Columbia University Irving Medical Center.

The study, the first to estimate the prevalence of NVLD in the [general population](#), was published online today in *JAMA Network Open*.

"NVLD is a huge and hidden public health burden," said Jeffrey Lieberman, Chair of Psychiatry at the Columbia University Vagelos College of Physicians and Surgeons and Director of the New York State Psychiatric Institute. "This important work might never have come to light if not for the support of dedicated advocate and their philanthropic support. We hope that these findings raise awareness of the disorder and lead to an understanding of its neurobiology and better treatments."

The name of this neurodevelopmental disorder may be part of the problem: children with NVLD are not nonverbal, as the name suggests, and have no difficulty reading. Instead, children with NVLD have difficulty processing visual-spatial sensory information, which can cause problems with math, executive function, and fine motor and social skills. "Children with this disorder might shy away from doing jigsaw puzzles or playing with Legos," says lead author Amy E. Margolis, Ph.D., assistant professor of medical psychology at Columbia University Vagelos College of Physicians and Surgeons. "They may have trouble tying their shoes, using scissors, or learning routes or schedules."

NVLD was first described in 1967, but compared with other learning disorders it has received little attention. There's little consensus among physicians on how to diagnose the disorder, and it is not included in the current edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM). The cause of NVLD is not known and there are no treatments.

Few parents have heard of NVLD. "Most parents recognize that a child

who isn't talking by age two should be evaluated for a learning disorder. But no one thinks twice about kids who have problems with visual-spatial tasks," says Margolis.

To see how common the disorder is, the researchers analyzed three independent samples of children (ages 6 to 19) in the U.S. and Canada, including a total of 2,596 individuals. Any child with a deficit in spatial reasoning and impairment in two of four domains (fine motor skills, math calculation, visual executive functioning, and [social skills](#)) was considered to have NLVD.

The researchers found that 3 to 4 percent of children in each sample met the criteria for NLVD. "When applied to the U.S. population under 18, this translates to approximately 2.2 to 2.9 million children having NVLD," says co-author Katherine Keyes, Ph.D., MPH, associate professor of epidemiology at the Columbia Mailman School of Public Health.

Many of the children in the study who were identified as having NVLD had been diagnosed with attention-deficit hyperactivity disorder (ADHD) or anxiety disorder. "While there is some overlap in symptoms between the two [disorders](#), it's important to distinguish between them so we can begin to develop interventions for NVLD," says Margolis.

The researchers plan to submit an application to the American Psychiatric Association to include the disorder in the next (sixth) edition of the DSM. They also plan to propose a new name—developmental visual spatial disorder—to improve understanding and recognition of the disorder.

Margolis advises parents to seek evaluation for [children](#) with symptoms of NVLD. "Diagnosis can be accomplished using basic assessment tools," says Margolis. "It doesn't have to involve complex and costly

neuropsychological testing. We envision that all clinicians who use DSM5 will be able to use our new criteria to determine who may meet criteria. They can then send patients for basic psychological testing that is always available through schools to identify/quantify a problem with visual-spatial processing."

The article is titled, "Estimated Prevalence Of Nonverbal Learning Disability Among North American Children and Adolescents In Three Community Samples."

More information: Amy E. Margolis et al, Estimated Prevalence of Nonverbal Learning Disability Among North American Children and Adolescents, *JAMA Network Open* (2020). [DOI: 10.1001/jamanetworkopen.2020.2551](https://doi.org/10.1001/jamanetworkopen.2020.2551)

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