National Center for Learning Disabilities®

EARLY DETECTION OF LEARNING DIFFICULTIES: FROM "RECOGNIZING RISK" TO "RESPONDING RAPIDLY

INTRODUCTION

Everyone has trouble with learning and behavior from time to time. But when problems persist, they may signal an underlying learning disability (LD) or attention disorder (ADHD). Uneven progress or lags in the mastery of skills and behaviors, even with children as young as 4 or 5, should not be ignored. It's important that parents, educators, and other care providers are careful observers and share concerns among each other so targeted screening or evaluation can take place. Then students can get the help they need as quickly as possible—before experiencing self-doubt, frustration, and failure.

Early recognition of warning signs, well-targeted screening and assessment, effective intervention, and ongoing monitoring of progress are critical to helping individuals with LD to succeed in school, in the workplace, and in life.

For decades, we've known how beneficial early education can be for a child's brain development and later success in school, work, and life.[1, 2, 3, 4, 5] For example, children who attend high-quality early education programs are less likely to be placed in special education, less likely to be retained in a grade, and more likely to graduate from high school than peers who didn't attend such programs.[6] Despite an increasing number of policy makers calling for universal pre-kindergarten, 2018–2019 academic year data indicate that just 34 percent of 4-year-olds and almost 6 percent of 3-year-olds were enrolled in state-funded preschool. That represents virtually no change from the last few years, according to the State of Preschool 2019: State Preschool Yearbook.[7]

While there may be a stagnation in the rate of enrollment in preschool programs, research around brain-based difficulties has not stopped. In fact, a growing body of research is showing that we can identify students at risk for learning disabilities earlier and earlier. As policy makers continue to push for universal early childhood education programs, educators, parents, and pediatricians should be aware of characteristics and behaviors that might signal early signs of risk for difficulties with learning. In particular, advancements in neuroscience around early detection for learning difficulties is especially exciting. It could lead to early recognition and intervention and, ultimately, the prevention or reduction of difficulties.

1. National Research Council. (2000). From neurons to neighborhoods: The science of early childhood development. National Academies Press.
2. Camilli, G., Vargas, S., Ryan, S., & Barnett, W. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. Teachers College Record, 112(3), 579–620.
3. Burchinal, M., Kainz, K., & Cai, Y. (2011). How well do our measures of quality predict child outcomes? A meta-analysis and coordinated analysis of data from large-scale studies of early childhood settings. In M. Zaslow, I. Martinez-Beck, K. Tout, & T. Halle (Eds.), Quality measurement in early childhood settings (pp. 11–31). Paul H. Brookes.
4. Schindler, H., Kholoptseva, J., Oh, S., Yoshikawa, H., Duncan, G., Magnuson, K., & Shonkoff, J. (2015). Maximizing the potential of early childhood education to prevent externalizing behavior problems: A meta-analysis. Journal of School Psychology, 53(3), 243–263.
5. National Scientific Council on the Developing Child (2010). Early experiences can alter gene expression and affect long-term development: Working paper No. 10. Retrieved from www.developingchild.harvard.edu
6. McCoy, D., Yoshikawa, H., Ziol-Guest, K., Duncan, G., Schindler, H., Magnuson, K., Yang, R., Koepp, A., Shonkoff, J. (2017). Impacts of early childhood education on medium-and long-term educational outcomes. Educational Researcher, 46(8), 474–487.
7. Schulte, B., Durana, A., & Lieberman, A. (2016). The New America Care Report - Policy Recommendations: Universal Pre-K. New America Policy Paper.

This is because of how malleable children's brains are during the early years of development.[8,9] In 2006, the National Joint Committee on Learning Disabilities defined being 'at risk for learning disabilities as "... atypical patterns of development in cognition, communication, emergent literacy, motor and sensory abilities, and/or social-emotional adjustment that may adversely affect later educational performance."[10] The emergence of innovative research from neuroscientists combined with increasingly powerful calls for universal early education programs make this an optimal time for parents and professionals to consider the risk factors, signs, and interventions for young children who are struggling with learning.

This brief is just one of a series of resources that NCLD created as part of The LD Checklist: Recognize and Respond tool. This includes:

- **The LD Checklist: Recognize and Respond**: This interactive tool builds upon the most recent research so parents and other caregivers can determine whether a child is at risk for, or shows signs of, having learning disabilities. The more characteristics checked, the more important it is to seek clarification about the presence of underlying learning disabilities.
- **The Importance of Early Screening**: This resource provides information on what a screening is and why screening for learning difficulties is important.
- **Questions Parents Should Ask Pediatricians If Their Child Seems to Be Struggling**
- **Questions Parents Should Ask Educators If Their Child Seems to Be Struggling**
- **Resources From Our Partners**: In collaboration with researchers, neuroscientists, and other experts, we've created a collection of high-quality resources that is easy to use and helpful to a range of care providers.

To access all of the resources, visit www.ncld.org/LDChecklist.

8. Cantor, P., Osher, D., Berg, J., Steyer, L., & Rose, T. (2018). Malleability, plasticity, and individuality: How children learn and develop in context. Applied Developmental Science, 23(4). 307–337.
9. Johnson, S., Riis, J., & Noble, K. (2016). State of the art review: poverty and the developing brain. Pediatrics, 137(4), e20153075.
10. National Joint Committee on Learning Disabilities. (2007). Learning disabilities and young children: Identification and intervention. A report from the National Joint Committee on Learning Disabilities, October, 2006. Learning Disability Quarterly, 30(1). 63–72.

What we know from Neuroscience research

For many years, we've known that the structure and function of the developing brain are shaped by stimulation from the environment after birth.[11] An expanding body of neuroscience research further confirms that specific learning disabilities are brain-based and result from a range of disparate neurological factors.[12, 13] Recently, large-scale collaborative programs like The Dyslexia Phenotype Project at the University of California, San Francisco Dyslexia Center are seeking to understand the phenotype (the neural, genetic, cognitive, and behavioral expression) of dyslexia throughout the lifespan, using techniques previously used in memory and Alzheimer's research. In addition, research is being conducted by entities such as the Brain Institute, the Math and Numeracy Lab, the Gaab Lab, the Numerical Cognition Laboratory, and the Brain Development Laboratory, using diffusion tensor imaging (DTI), magnetic resonance imaging (MRI), and functional magnetic resonance imaging (fMRI) scans. Neuroscientists are using these techniques to identify structural differences in the brains of people with and without learning difficulties.

While most of the neuroimaging research is focused on reading difficulties and disabilities, an increasing number of studies are focused on math difficulties, attention issues, and executive functioning in young children. Neuroscientists have found that young children who are struggling with learning can have differences in both brain structure and activation.[14, 15, 6, 17, 18, 19, 20] This evidence points toward a more robust understanding of learning difficulties and attention issues and to the importance of neuroplasticity (the brain's ability to form new neural connections throughout life) as a guiding principle to improving students' learning and behavior.[21]

Though these advancements are helpful in our quest to understand these difficulties, some have criticized "educational neuroscience" as slow to inform interventions for use by practitioners. Even Dr.

11. Black, M., Walker, S., Fernald, L., Andersen, C., DiGirolamo, A., Lu, C., ... & Devercelli, A. (2017). Early childhood development coming of age: science through the life course. The Lancet, 389(10064), 77–90.
12. National Joint Committee on Learning Disabilities. (2018). What are learning disabilities? Retrieved from https://njcld.org/ ld-topics
13. Learning Disabilities Association of America. (2018). Core principles: What are learning disabilities? Retrieved from https://ldaamerica.org/core-principles-what-are-learning-disabilities/
14. Raschle, N., Chang, M., & Gaab, N. (2011). Structural brain alterations associated with dyslexia predate reading onset. Neuroimage, 57(3), 742–749.
15. Im, K., Raschle, N., Smith, S., Grant, P. E., & Gaab, N. (2016). Atypical sulcal pattern in children with developmental dyslexia and at-risk kindergarteners. Cerebral cortex, 26(3), 1138–1148.
16. Specht, K., Hugdahl, K., Ofte, S., Nygård, M., Bjørnerud, A., Plante, E., & Helland, T. (2009). Brain activation on pre-reading tasks reveals at-risk status for dyslexia in 6-year-old children. Scandinavian Journal of Psychology, 50(1), 79–91.
17. Vandermosten, M., Vanderauwera, J., Theys, C., De Vos, A., Vanvooren, S., Sunaert, S., ... & Ghesquière, P. (2015). A DTI tractography study in pre-readers at risk for dyslexia. Developmental Cognitive Neuroscience, 14, 8–15.
18. Matejko, A., & Ansari, D. (2018). Contributions of functional magnetic resonance imaging (fMRI) to the study of numerical cognition. Journal of Numerical Cognition, 4(3), 505–525.
19. Bugden, S., Price, G., McLean, D., & Ansari, D. (2012). The role of the left intraparietal sulcus in the relationship between symbolic number processing and children's arithmetic competence. Developmental Cognitive Neuroscience, 2(4), 448–457.
20. Aguiar, A., Eubig, P., & Schantz, S. (2010). Attention deficit/hyperactivity disorder: A focused overview for children's environmental health researchers. Environmental Health Perspectives, 118(12), 1646–1653.
21. Wexler, B., Iseli, M., Leon, S., Zaggle, W., Rush, C., Goodman, A., ... & Bo, E. (2016). Cognitive priming and cognitive training: Immediate and far transfer to academic skills in children. Scientific Reports, 6, 32859.

John Gabrieli, an esteemed MIT neuroscientist who runs the Gabrieli Lab, agrees that the pace of translating brain science into instructional practice is disheartening. Once new knowledge about brain networks comes to light, interventions that are informed by these findings require robust field research, sometimes expensive technology, targeted professional development, and coordination with schools, parents, teachers, and students. While this foundational work is incredibly important, parents, educators, and pediatricians may find new discoveries interesting but not helpful in determining whether a child is at risk for particular types of difficulties—and what, if any, interventions are recommended based on the hard science.

Recognizing environmental and genetic risk factors and cultural considerations

In some cases, a student who is struggling may be misidentified as being "at risk" despite not having an underlying learning disability. This could be for a variety of reasons. The Individuals with Disabilities Education Act (IDEA) attempts to prevent misidentification by requiring schools and early education providers to determine whether any exclusionary factors are at play. Education professionals must consider whether, in comparison with their peers, a student's lack of success might be primarily attributed to something other than a learning disability. While the law attempts to require schools to distinguish between students who are having difficulty in school due to a learning disability and those who might be showing signs of difficulty due to other factors or circumstances, it can be hard to make this determination in practice. In addition to there being no test to "diagnose" LD, nor a detailed menu of discernible causes for learning disabilities, many factors—such as the child's environment, cultural background, language development, family economic status, and developmental history—each play a role in, and have an impact on, a child's learning.

Exclusionary Factors

Education professionals must determine that the following factors are not the primary cause for learning dificulties:

- Visual, hearing, or motor disabilites
- Intellectual disabilites
- Emotional disturbance
- Environmental, cultural, or economic disadvantage
- Limited English proficiency

22. Individuals with Disabilities Education Act, 20 U.S.C. § 602 (2004).

Environmental Factors

There is a long history of studies looking at the risk factors and signs of learning difficulties in young children. Unsurprisingly, brain development can be negatively impacted in children by such factors as poverty, lack of appropriate nutrition, stress associated with violence and trauma, or exposure to toxic materials.[23,24,25] In addition, a child's brain development can be negatively impacted by maternal factors, including poor nutrition and mental health disorders (e.g., depression).[26] Furthermore, correlations have been shown between levels of parental education and children's brain development.[27]However, there is no evidence that any of these factors necessarily cause learning difficulties.

With regard to disorders of attention, research has pointed to risk factors, including prenatal substance exposures (e.g., heavy metals, chemicals), nutritional factors, and lifestyle/psychosocial factors. There is a well-established link between lead exposure and ADHD, and growing but more limited evidence that suggests an increased ADHD risk with exposure to manganese, organophosphates, and phthalates. Recent studies provided additional evidence for an association between ADHD and low zinc and omega-3 fatty acid levels in children.[28] Other studies show maternal folate levels during pregnancy and childhood "Western" dietary patterns, as well as maternal obesity during pregnancy, as possible risk factors for childhood ADHD.[29] Finally, psychosocial adversity (e.g., maternal stress during pregnancy, early traumatic experiences, and early institutional care) may increase the risk for ADHD.[30]

Genetic Factors

Another factor that caregivers, pediatricians, and early educators should be aware of is that children are likely more at risk if their parents and close family relatives also struggled with learning and attention issues. Reports in the pediatric literature suggest that as many as 49 percent of parents of children with dyslexia also report significant challenges with reading.[31] And about 40 percent of siblings were found to struggle with reading. In addition, the risk of ADHD in parents and siblings of children with ADHD is increased two to eight times, with heritability estimated at 76 percent, based on pooled data from twin studies. [32]Researchers have clearly demonstrated that there is a strong familial component to dyslexia, but the precise genetic nature of this well-researched disorder remains

23. Felitti, V., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V., & Marks, J. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. American Journal of Preventive Medicine, 14(4), 245–258
24. Lacour, M., & Tissington, L. (2011). The effects of poverty on academic achievement. Educational Research and Reviews, 6(7), 522–527.
25. Walker, S., Wachs, T., Grantham-McGregor, S., Black, M., Nelson, C., Huffman, S. L., ... & Gardner, J. (2011). Inequality in early childhood: risk and protective factors for early child development. The Lancet, 378(9799), 1325–1338.
26. Ibid.
27. Noble, K., Houston, S., Brito, N., Bartsch, H., Kan, E., Kuperman, J., ... & Schork, N. (2015). Family income, parental education and brain structure in children and adolescents. Nature Neuroscience, 18(5), 773–778.
28. Froehlich, T., Anixt, J., Loe, I., Chirdkiatgumchai, V., Kuan, L., & Gilman, R. (2011). Update on environmental risk factors for attention-deficit/hyperactivity disorder. Current Psychiatry Reports, 13(5), 333–344.
29. Howard, A., Robinson, M., Smith, G., Ambrosini, G., Piek, J., & Oddy, W. (2011). ADHD is associated with a "Western" dietary pattern in adolescents. Journal of Attention Disorders, 15(5), 403–411.
30. Sagiv, S., Epstein, J., Bellinger, D., & Korrick, S. (2013). Pre- and postnatal risk factors for ADHD in a nonclinical pediatric population. Journal of Attention Disorders, 17(1), 47–57.
31. Shaywitz, S., & Shaywitz, B. (2005). Dyslexia (specific reading disability). Biological Psychiatry, 57(11), 1301–1309.

unknown. The term "learning disabilities" refers to a number of different types of disorders. And no common genetic factors have been identified to predict the onset of LD or to validate the presence of subtypes of LD in any population.

Cultural Considerations and English Learners

Finally, educators and pediatricians should consider the cultural and linguistic background of families in children deemed to be at risk for learning difficulties. This is especially important to take into account when differentiating perceived learning disabilities from typical language acquisition challenges. For example, a child may exhibit many of the signs of a language difficulty if they come from a household where mainstream English is not spoken. Recent research has shown the importance of considering linguistic variation both in the assessment and instruction of spelling skills, especially among African American children who speak African American English (AAE). For example, one study found that typically achieving children who spoke AAE shared a specific behavior that has been observed among students with learning disabilities: variable omission of inflected endings on written tasks. The study concluded that "because typically achieving African American children who speak AAE may exhibit skill profiles that look similar to those of students with learning disabilities, clinicians and teachers must take care to ensure that errors based on language differences are not misinterpreted as errors based on learning difficulties." Furthermore, English language learners can have particular challenges with reading, writing, or speaking as they work to become proficient with the English language. This might lead to misidentification of a learning disability. Those determining eligibility for special education services should use culturally responsive assessments to avoid risking improper identification.[35]

In sum, the existence of environmental, genetic, or linguistic and cultural factors should not automatically disqualify a child from being identified as having a learning disability. Rather, they should be seriously considered as part of an examination of the child's development. Environmental, genetic, and cultural factors cannot predict learning difficulties. It is important to understand these factors and their role in a child's development so they do not lead to the misidentification of students needing special education.

32. Franke, B., Neale, B., & Faraone, S. (2009). Genome-wide association studies in ADHD. Human Genetics, 126(1), 13–50.
33. Patton-Terry, N., & Connor, C. (2010). African American English and spelling: How do second graders spell dialect-sensitive features of words? Learning Disability Quarterly, 33(3), 199–210.
34. Ibid.
35. Flanagan, D., Ortiz, S., & Alfonso, V. (2013). Essentials of cross-battery assessment (Vol. 84). John Wiley & Sons.

Recognizing Early Signs

Recognizing early at-risk signs for reading/writing/language disorders

There are many signs that parents, educators, pediatricians and others should look for when determining if a young child may be at risk for reading disabilities. These include:

- Trouble naming letters (e.g., confuses similar looking letters and numbers)
- Difficulty recognizing the small units of sounds (phonemes) in spoken words
- Difficulty tapping or clapping out the syllables in words
- Problems connecting letters to the sounds they make
- Trouble blending sounds together to make words
- Needing to sound out words already encountered in printed text
- Poor retention of new vocabulary

As is the case with all types of learning disabilities, students who struggle with learning and attention may demonstrate slow processing speed and have weaknesses with working memory skills.

Children who have underdeveloped phonological processing and/or oral language skills that underlie decoding are at increased risk are at increased risk of being identified as having reading disabilities.[36] Furthermore, fluent reading also depends on orthographic processing, i.e., the ability to identify written letter patterns and words as whole units (rather than letter by letter). Recent studies have shown that these types of weaknesses can sometimes be identified in children as early as the preschool years.

Reading and writing difficulties often co-occur and are widely seen as related. However, there is less agreement on the exact relationship between the two.[37] Specific to writing disabilities, there are many signs that could determine if a young child may be at risk. These include:

- Disliking and avoiding writing or copying
- Demonstrating delays in writing or copying
- Having difficulty remembering shapes of letters and numerals
- Frequently reversing or misdrawing letters, numbers, and symbols

36. Harm, M., & Seidenberg, M. (2004). Computing the meanings of words in reading: Cooperative division of labor between visual and phonological processes. Psychological Review, 111(3), 662–720.
37. Wengelin, Ä., & Arfé, B. (2017). The complementary relationships between reading and writing in children with and without writing difficulties. In Miller, B., McCardle, P., & Connelly, V. (Eds.), Writing development in struggling learners (pp. 29–50). Brill.

Additionally, there are many signs that might point to risk for language disorders. These include:

- Early delays in learning to speak
- Difficulty modulating voice (e.g., too soft, too loud)
- Trouble naming people or objects in conversation
- Difficulty staying on topic
- Inserting invented words into conversation
- Difficulty re-telling what has just been said
- Trouble engaging in long conversations
- Using vague, imprecise language and having a limited vocabulary
- Demonstrating slow and halting speech, using lots of fillers (e.g., uh, um, and, you know, so)
- Using poor grammar or misusing words in conversation (note: take into account regional and cultural factors)
- Mispronouncing words frequently
- Struggling with rhyming
- Having limited interest in books or stories
- Having trouble understanding instructions or directions

IDENTIFIED EVALUATED Some Children

Check out the American Speech-Language- Association's (ASHA) resources around communications disorders from their "Identify the Signs"

Recognizing early at-risk signs for Math disorders

Compared to the area of reading and literacy, there is much less research on early signs or at-risk factors in the area of math (numeracy). However, like reading, factors such as processing speed, temporal processing, and memory skills may contribute to difficulties in this area. In addition, home experiences such as the frequency with which parents reported informal activities that have quantitative components (e.g., board and card games, shopping, cooking) may influence whether children experience math learning difficulties later on.[38] Finally, there are indications that poor executive functioning skills are related to math difficulties.[39,40]

There are a few potential at-risk signs relating to "number sense" that parents, educators, pediatricians, and others should look for when determining if a young child may have math disabilities.[41] Number sense has two basic components.[42] The first is related to counting and its underlying digital, sequential, and verbal structure. The second component is related to quantity discrimination. For example, which is more, 5 or 3? (Some students may be able to count to 5 without

38. LeFevre, J., Skwarchuk, S., Smith-Chant, B., Fast, L., Kamawar, D., & Bisanz, J. (2009). Home numeracy experiences and children's math performance in the early school years. Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement, 41(2), 55–66.
39. Toll, S., Van der Ven, S., Kroesbergen, E., & Van Luit, J. (2011). Executive functions as predictors of math learning disabilities. Journal of Learning Disabilities, 44(6), 521–532.
40. Clark, C., Pritchard, V., & Woodward, L. (2010). Preschool executive functioning abilities predict early mathematics achievement. Developmental Psychology, 46(5), 1176–1191.
41. Jordan, N., Kaplan, D., Nabors Oláh, L., & Locuniak, M. (2006). Number sense growth in kindergarten: A longitudinal investigation of children at risk for mathematics difficulties. Child Development, 77(1), 153–175.
42. Case, R., Okamoto, Y., Griffin, S., McKeough, A., Bleiker, C., Henderson, B., ... & Keating, D. (1996). The role of central conceptual structures in the development of children's thought. Monographs of the Society for Research in Child Development, 61(1-2), 1–295

error, but cannot say which number is bigger, 5 or 3.) While researchers agree that these two key components of number sense are not well linked, there is consensus that these two foundational skills are precursors of other components of number sense, such as estimation and the ability to move across representational systems. These components include:

- Counting: Grasping one-to-one correspondence, knowing stable order and cardinality principles, and knowing the count sequence
- Number knowledge: Discriminating and coordinating quantities, making numerical magnitude comparisons
- Number transformation: Transforming sets through addition and subtraction, calculating in verbal and nonverbal contexts, calculating with and without referents (physical or verbal)
- Estimation: Approximating or estimating set sizes, using reference points
- Number patterns: Copying number patterns, extending number patterns, and discerning numerical relationships

Any indication that a young child struggles with number sense could be a sign that the child will struggle with math learning. However, here are some particular signs that parents, educators, pediatricians, and others should look for when determining if a young child may be at risk for math disabilities. These include:

- Difficulty with simple counting and one-to-one correspondence between number symbols and objects
- Difficulty recognizing quantities without counting
- Difficulty estimating (e.g., quantity, value)
- Difficulty with comparisons (e.g., less than, greater than)
- Trouble telling time (on either a digital or analog clock)

Recognizing early at-risk signs for attention disorders

Attention issues are complex with great heterogeneity in the behavioral characteristics presented and in brain functions and structures affected. Problems with executive functioning are hallmark characteristics of disorders like ADHD, and individuals with this disorder struggle to modulate attentional skills that are key to learning. Several aspects of attention and executive function which are key to learning—particularly vigilance, working memory, and response inhibition—are compromised in children with ADHD.[43]

According to Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD), children as young as 4 years old can be diagnosed with ADHD. Preschoolers with ADHD often have difficulties

43. Understood. (2020, April 17). What is executive function? Retrieved June 08, 2020, from https://www.understood.org/en/learning-thinking-differences/child-learning-disabilities/executive-functioning-issues/what-is-executive-function

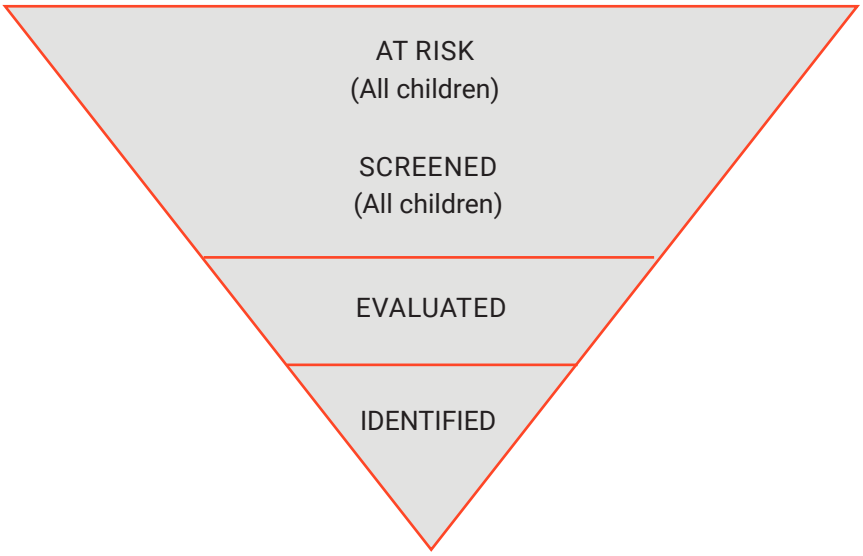
in daycare or school settings, including problems with peer relationships and content learning. For preschoolers and young school-age children, behavioral treatments (involving all care providers, including parents and school personnel) should be considered before prescribing medication, but pharmacological intervention is a safe and effective option with careful monitoring and regular medical supervision. Important signs to look for in young children include difficulty sustaining attention in play activities and work tasks compared to their peers, and problems staying on task across a variety of different settings. For school-age children and older, the following behaviors may indicate being at risk for attention disorders:

- Failing to pay close attention to details or making careless mistakes in schoolwork, work, or other activities
- Struggling to sustain attention in play activities and work tasks
- Not appearing to listen when spoken to directly
- Not following through on instructions
- Failing to finish schoolwork, chores, or duties in the workplace
- Having trouble organizing tasks and activities
- Avoiding or disliking tasks that require sustained mental effort (e.g., homework, organizing work tasks)
- Consistently losing things that are necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
- Being easily distracted by sounds, motion, or other stimuli
- Being forgetful about daily routines and activities

It's important to note that behavior mimicking ADHD might appear when there are changes in a child's environment, when adults are not equipped with effective behavior management strategies, or when other disorders are present (e.g., anxiety or mood disorders and oppositional defiant disorder). In addition, all young children are active, impulsive, and inattentive at times. Great care needs to be taken to ascertain the extent to which these behaviors are internally driven or externally motivated, and in what ways they pose real barriers to learning. As is the case with specific learning disabilities, each child with ADHD presents as having a unique learning and behavioral profile, with behaviors and recommended interventions varying from child to child.

From screening to identification

The American Academy of Pediatrics (AAP) recommends that all infants and young children be screened for delays as a regular part of their ongoing health care.[44] Medical providers should capture data using a developmental screening tool that includes questions about a child's physical well-being as well as their language, motor, cognitive, social, and emotional development. A screening does not provide a diagnosis. Rather, it indicates if a child is on track developmentally and if a closer look by a specialist is needed. Even though screening for learning and attention issues has been determined to be a best practice for all young children, early and evidence-based screening for these types of difficulties by pediatricians and early educators is not widely accessible. This is in part due to the cost of screening, a lack of trained professionals to administer and interpret the screening, and other resource limitations that educators and other professionals experience.[45] However, new digital technologies (e.g., mobile apps) are increasingly available to support widespread screening for risk for difficulties, specifically reading disabilities.[46] These apps are largely in their infancy but may help caregivers, educators, and pediatricians respond more quickly and help mitigate the difficulties young children may have in acquiring skills needed for academic and social-emotional success in school, at home, and in the community.



44. Council on Children With Disabilities, Section on Developmental Behavioral Pediatrics, Bright Futures Steering Committee and Medical Home Initiatives for Children With Special Needs Project Advisory Committee. (2006). Identifying infants and young children with developmental disorders in the medical home: An algorithm for developmental surveillance and screening. Pediatrics, 118(1), 405–420.
45. Gaab Lab. Early literacy screener study. Retrieved from https://www.gaablab.com/early-literacy-screener-study
46. Ibid.

If screening data suggests that a child is struggling in a particular area, it's important for educators, parents, and other care providers to work together and articulate a plan for intervention. It may be that the child needs targeted behavioral intervention or a short-term program of intensive, evidence-based instruction. Whatever decisions are made, ongoing progress monitoring should occur and data should be shared among all providers so that needed adjustments in the types and intensity of intervention can be made in a timely manner.

However, if screening results warrant a more thorough assessment of the child's needs, or if the initial interventions provided are not resulting in sufficient progress, a comprehensive evaluation may be warranted. This evaluation (as defined under IDEA) may lead to the identification of a disability ("educationally handicapping condition") and result in a guarantee that the child will receive interventions designed to address their unique challenges. The IDEA Part B program is available in every state and territory of the United States and offers child evaluations if the child is suspected of having a disability. Part B is designed for children ages 5–21, and Section 619 of Part B is designed specifically for children ages 3–5. IDEA also includes a critical mandate called "Child Find," which requires school districts to have a process for identifying and evaluating children who may need special education and related services, such as counseling or speech therapy. Even infants and toddlers can be evaluated under the provisions of this law. Any eligible child, pre-K to grade 12, can receive services for developmental delays, learning disabilities, or any of the 13 classifications listed in the law. While not all children will need to undergo a formal evaluation or receive special education services under IDEA, early screening, intervention, and supports provided at the first signs of difficulty can offer a child the best chance for success.

Intervention before kindergarten has huge academic, social, and economic benefits. Developmental delays, learning disorders, and behavioral and social-emotional problems are estimated to affect 1 in every 6 children.[47] Yet, only 30–50 percent of all children with disabilities are identified before starting school.[48] Studies have shown that children who receive early treatment for developmental delays are more likely to graduate from high school, hold jobs, live independently, and avoid teen pregnancy, delinquency, and violent crime, resulting in a large savings to society.[49] A comprehensive RAND Corporation study stated that well-designed programs for disadvantaged children ages 4 and younger can produce economic benefits ranging from $1.26 to $17 for each $1 spent on the programs.[50] In addition, the study found that high-quality early childhood programs can keep children out of expensive special education programs.[51]

47 Zablotsky, B., Black, L., Maenner, M., Schieve, L., Danielson, M., Bitsko, R., ... & Boyle, C. (2019). Prevalence and trends of developmental disabilities among children in the United
48 States: 2009–2017. Pediatrics, 144(4), e20190811.
49 Glascoe, F. (2000). Early detection of developmental and behavioral problems. Pediatrics in Review, 21(8), 272–280.
50 Heckman, J., Moon, S., Pinto, R., Savelyev, P., & Yavitz, A. (2010). The rate of return to the High/Scope Perry Preschool Program. Journal of Public Economics, 94(1-2), 114–128.
51 Karoly, L., Kilburn, M., & Cannon, J.. (2006). Early childhood interventions: Proven results, future promise. Rand Corporation.
Ibid.

Early identification and intervention are the most effective methods of ensuring learning success, regardless of the challenges faced by students. Once a child is identified as having a learning difficulty or even a disability, there are clear steps that can be taken to support their progress. For example, data-based problem-solving approaches, which include multi-tier system of supports (MTSS), response to intervention (RTI), or positive behavioral interventions and supports (PBIS), can all be mapped on to early education programs.[52]

CONCLUSION

The research is clear. We know what early learning difficulties look like in young children. And we know many of the signs and early factors that place children at risk for having learning disabilities and related disorders of attention and behavior. We also know the benefits of universal screening, targeted intervention, and high-quality early education programs. Yet, hundreds of thousands of students continue to enter kindergarten not "school ready" and even greater numbers struggle during the early elementary school grades as a consequence of absent or insufficient efforts to screen and intervene.

With advancements in neuroscience research, the rapid development of easily accessed technology tools, and a growing push for universal preschool, there is good reason to be optimistic about systemic change to support the early detection of learning and behavioral difficulties in young children. Changes in both policy and practice will be needed to alter the trajectory of so many of our nation's children who, despite early struggles, can experience success when provided the right kinds of instruction and support. Investing in early recognition and response not only makes good economic sense—it is a moral imperative that levels the playing field for every child, paving the way for a successful early start in school and in life.

52 Carta, J. (Ed.). (2019). Multi-tiered systems of support for young children: Driving change in early education. Paul H. Brookes.

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