It is not uncommon for children with specific learning disorders (SLDs) to go through several years of school without receiving necessary academic support, emphasizing the need for earlier detection. Precursor skills of learning often provide important, early indications about whether a child might be at risk for developing an SLD. In this issue of Pediatrics, Sanfilippo et al provide a timely overview of current evidence on precursors of reading and outline how pediatricians can contribute to early identification of children at risk for dyslexia.

Sanfilippo et al highlight "red flags" that can assist pediatricians in identifying dyslexia, including screening for family history, language development, and early literacy skills. Screening may be composed of cognitive-behavioral assessments that typically focus on phonological awareness, basic letter knowledge, vocabulary size, and language comprehension. Given that SLDs are of neurobiological origin, neuroimaging techniques have been used to investigate neural signatures of these precursor skills. Increasing evidence suggests that neurobiological markers can predict individual reading outcomes, outperforming the prediction accuracy of cognitive-behavioral precursors of literacy. As the authors point out, neuroimaging screenings are not (yet) available, and it is unforeseeable when they will be integrated into clinical practice. Nevertheless, basic research findings on neurobiological mechanisms associated with poor reading are still needed to inform the development of more precise, symptom-specific cognitive-behavioral screeners. Indeed, neuroimaging studies provide critical evidence supporting or disproving theoretical models of dyslexia, which continue to be actively debated. Neuroimaging evidence could thus validate which theoretical frameworks behavioral assessments should rely on to improve precision. In addition, longitudinal neuroimaging studies starting in early childhood may identify specific neurocognitive processes that could be targeted in screening and potentially treating children in early stages of development.

In the review, the authors also make an important distinction between early literacy screeners for prereaders that aim to identify children at risk for dyslexia and diagnostic assessments that consist of a thorough neurocognitive evaluation of literacy skills. Increased use of literacy screeners in pediatric practice will likely identify more children at risk for dyslexia even before school entry. These children will need to be carefully monitored and then referred for diagnostic assessment after the start of formal schooling. Pediatricians play significant roles in the diagnostic process, including evaluation and treatment of common comorbidities of dyslexia, such as attention-deficit/hyperactivity disorder and autism. As discussed in the review, SLDs also increase the risk for mood and anxiety conditions, which require particular consideration in establishing a clear diagnosis. Together, these factors
underscore the need for considering the full cognitive and behavioral clinical presentation for each individual to provide accurate assessment. Until recently, this would also have commonly included a measure of cognitive abilities, that is, an IQ estimate, to identify discrepancies between IQ and literacy measures. The IQ-achievement discrepancy criterion has long been removed from the definition of SLD, and currently, an IQ estimate is only necessary to rule out intellectual disability. Nevertheless, particularly when diagnostic literacy assessments are inconsistent or children report symptoms consistent with reading difficulties despite not meeting clinical thresholds on literacy assessments, more comprehensive diagnostic testing, including IQ, may provide a more nuanced clinical picture. Individualizing the diagnostic process while relying on standardized measures provides more comprehensive clinical profiles and ensures that all children who require support will receive interventions to improve their reading skills.

The authors also address that low socioeconomic background is associated with adverse literacy outcomes, independent from a dyslexia diagnosis. This highlights the critical need to increase support for all children struggling with reading and to facilitate educational policies that promote access to resources, such as books for beginning readers, and enriched literacy environments in and outside of the home. Children from low socioeconomic backgrounds benefit from reading interventions designed for children with dyslexia, but it remains unclear if response to such interventions is related to its content (eg, multisensory approach) or merely is an effect of increased exposure to learning activities. Dyslexia is defined as an SLD that develops despite adequate access to schooling and educational opportunities, which may be difficult to reconcile with known effects on reading resulting from socioeconomic disadvantage. Literacy needs of children from low socioeconomic backgrounds need to be acknowledged and may be addressed by specifically countering socioeconomic disadvantages, for example, with interactive reading programs, rather than with dyslexia programs, although this remains a critical area requiring further study.

Moving forward, there is a pressing need to make early interventions available to all children at risk for developing reading problems to mitigate longer-term adverse outcomes. Screenings in pediatric practice will play a key role in identifying children at risk for dyslexia in early stages of development at a time when intervention programs are expected to be most effective. Children will presumably benefit most from individualized intervention programs that selectively target either impairments related to SLDs or disadvantages related to socioeconomic status. Thus, careful diagnostic evaluations in all developmental stages are crucial to assess children’s specific needs and plan reading interventions throughout elementary school, a period during which continued brain plasticity is expected to support improvements in reading achievement.

**ABBREVIATION**

SLD: specific learning disorder

**REFERENCES**


Dyslexia in Pediatrics: Simple Practices to Tackle a Complex Issue
Iliana I. Karipidis and David S. Hong
Pediatrics 2020;146;
DOI: 10.1542/peds.2020-1470 originally published online June 23, 2020;

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