

Reading Disabilities: Why Do Some Children Have Difficulty Learning to Read? What Can Be Done About It?

by G. Reid Lyon, Ph.D.

The National Institute of Child Health & Human Development (NICHD) considers that teaching and learning in today's schools reflect not only significant educational concerns, but public health concerns as well. Our research has consistently shown that if children do not learn to understand and use language, to read and write, to calculate and reason mathematically, to solve problems, and to communicate their ideas and perspectives, their opportunities for a fulfilling and rewarding life are seriously compromised. Specifically, in our NICHD-supported longitudinal studies, we have learned that school failure has devastating consequences with respect to self-esteem, social development, and opportunities for advanced education and meaningful employment. Nowhere are these consequences more apparent than when children fail to learn to read. Why? Simply stated, the development of reading skills serves as THE major foundational academic ability for all school-based learning. Without the ability to read, the opportunities for academic and occupational success are limited. Moreover, because of its importance, difficulty in learning to read crushes the excitement and love for learning, which most children have when they enter school.

As we follow thousands of children with reading difficulties throughout school and into adulthood, these young people tell us how embarrassing and devastating it was to read with difficulty in front of peers and teachers, and to demonstrate this weakness on a daily basis. It is clear from our NICHD research that this type of failure affects children negatively earlier than we thought. By the end of first grade, children having difficulty learning to read begin to feel less positive about their abilities than when they started school. As we follow children through elementary and middle school, self-esteem and the motivation to learn to read decline even further. In the majority of cases, the students are deprived of the ability to learn about literature, science, mathematics, history, and social studies because they cannot read grade-level textbooks. Consider that by middle school, children who read well read at least 10,000,000 words during the school year. Children with reading difficulties read less than 100,000 words during the same period. Poor readers lag far behind in vocabulary development and in the acquisition of strategies for understanding what they read, and they frequently avoid reading and other assignments that require reading. By high school, the potential of these students to enter college has decreased substantially. Students who have stayed in school long enough to reach high school tell us they hate to read because it is so difficult and it makes them feel "dumb." As a high school junior in one of our studies remarked, "I would rather have a root canal than read."

It is important to note that this state of educational affairs describes an extraordinary and unacceptable number of children. According to the National Center for Educational Statistics (1998), 38% of fourth graders nationally cannot read at a basic level – that is, they cannot read and understand a short paragraph similar to that in a children's book. Unfortunately, reading failure is disproportionately prevalent among children living in poverty. In many low-income urban school districts the percentage of students in the fourth grade who cannot read at basic level approaches 70%.

The educational and public health consequences of this level of reading failure are dire. Of the 10 to 15% of children who will eventually drop out of school, more than 75% will report difficulties learning to read. Likewise, only two percent of students receiving special or compensatory education for difficulties learning to read will complete a four-year college program. Approximately half of children and adolescents with a history of substance abuse have reading problems. Failure to learn to read places children's futures and lives at risk for highly deleterious outcomes. For this reason the NICHD considers reading failure to reflect a national public health problem.

How Reading Develops, and Why So Many of Our Children Have Difficulty Learning to Read

Converging scientific evidence from studies supported by NICHD indicates that learning to read is a relatively lengthy process that begins before children enter formal schooling. Children who receive stimulating oral language and literacy experiences from birth onward appear to have an edge when it comes to vocabulary development, developing a general awareness of print and literacy concepts, understanding and the goals of reading. If young children are read to, they become exposed, in interesting and entertaining ways, to the sounds of our language. Oral language and literacy interactions open the doors to the concepts of rhyming and alliteration, and to word and language play that builds the foundation for phonemic awareness – the critical understanding that the syllables and words that are spoken are made up of small segments of sound (phonemes). Vocabulary and oral comprehension abilities are facilitated substantially by rich oral language interactions with adults that might occur spontaneously in conversations and in shared picture book reading.

However, the experiences that help develop vocabulary and general language and conceptual skills in preschoolers are different from the experiences that develop specific types of knowledge necessary to read, including knowledge about print, phonemic awareness, and spelling. These skills need to be systematically and, depending upon the level of the child's background knowledge, explicitly taught. Preschool children who can recognize and discriminate letters of the alphabet are typically from homes in which materials such as magnetized letters and alphabet name books are present and are the source of teaching interactions with parents. Clearly, these children will have less to learn when they enter kindergarten. The learning of letter names is also important because the names of many letters contain the sounds they most often represent. With this knowledge, the child is oriented to what is termed "the alphabetic principle" – a principle that explains how sounds of speech (phonemes) become associated with letters of the alphabet (phonics). This principle stands at the core of learning and applying phonics skills to print.

Ultimately, children's ability to comprehend what they listen to and what they read is inextricably linked to the depth of their background knowledge. Very young children who are provided opportunities to learn, think, and talk about new areas of knowledge will gain much more from the reading process. With understanding comes the desire to read more. Thus, ensuring that reading practice and the development of new vocabulary takes place. Through these early interactions and the systematic exposure to language and literacy concepts provided by parents, caregivers, and teachers, skilled readers learn to apply phonemic and phonics skills rapidly and accurately. Children that practice reading develop fluency, automaticity, and the ability to read with expression, and to apply comprehension strategies to what they are reading to facilitate understanding. It all starts very early, with those initial language and literacy interactions that expose the child to the structure of our language and how print works.

Unfortunately, few children who later have difficulties learning to read, and particularly children from poverty, come to kindergarten and the first grade with these advantages. We know that the average middle class child is exposed to approximately 500,000 words by kindergarten; an economically disadvantaged child is exposed to half as many, at best.

In essence, children who are likely to have difficulties learning to read can be readily observed in the initial stages of their literacy development. They approach the reading of words and text in a laborious manner, demonstrating difficulties linking sounds (phonemes) to letters and letter patterns. Their reading is hesitant and characterized by frequent starts, stops, and mispronunciations. Comprehension of the material being read is usually extremely poor. However, it is often not because he or she is not smart enough. In fact, many children who have difficulty learning to read are bright and motivated to learn to read – at least initially. Their difficulties understanding what they have read occur because it takes far too long to read words, leaving little energy for remembering and comprehending what was read. Unfortunately, the slow

and inaccurate reading of words cannot be improved in any appreciable way by using the context of what is read to help pronounce the words correctly. Consequently, while the fundamental purpose of reading is to derive meaning from print, the key to comprehension starts with the rapid and accurate reading of words. In fact, difficulties in decoding unfamiliar words and learning to recognize words rapidly are at the core of most reading difficulties. These difficulties can be traced systematically to initial difficulties in understanding that the language that is heard by the ear is actually composed of smaller segments of sound (e.g., phonemic awareness). And here we come full circle - many of these early difficulties in developing phonemic awareness are due to a lack of literacy and oral language interactions with adults during infancy and early childhood. Thus, because the environments most bereft of these interactions are those characterized by poverty, the cycle continues.

Can Children with Reading Problems Overcome Their Difficulties?

Yes, the majority of children who enter kindergarten and elementary school at-risk for reading failure can learn to read at average or above levels, but only if they are identified early and provided with systematic, explicit, and intensive instruction in phonemic awareness, phonics, reading fluency, vocabulary, and reading comprehension strategies. Substantial research supported by NICHD shows clearly that without systematic, focused, and intensive interventions, the majority of children rarely “catch up.” Failure to develop basic reading skills by age nine predicts a lifetime of illiteracy. Unless these children receive the appropriate instruction, more than 74% of the children entering first grade who are at-risk for reading failure will continue to have reading problems into adulthood. On the other hand, the early identification of children at-risk for reading failure coupled with the provision of comprehensive early reading interventions can reduce the percentage of children reading below the basic level in the fourth grade (i.e., 38%) to six percent or less.

Are Certain Reading Instructional Approaches More Effective Than Others?

Yes. On the basis of a thorough evidence-based review of the reading research that met rigorous scientific standards, the National Reading Panel (NRP), convened by the NICHD and the Department of Education, found that instructional programs that provided systematic instruction in phonemic awareness, phonics, guided repeated reading to improve reading fluency, and direct instruction in vocabulary and reading comprehension strategies were significantly more effective than approaches that were less explicit and less focused on the reading skills to be taught (e.g., approaches that emphasize incidental learning of basic reading skills). The NRP found that children as young as four years of age benefited from instruction in phonemic awareness and the alphabetic principle when the instruction was presented in an interesting and entertaining, albeit systematic manner. Likewise, the National Center for Educational Statistics recently reported data from its Early Childhood Longitudinal Study involving 22,000 children showing that, after controlling for family income, youngsters who attended more academically oriented preschool programs had significantly higher scores in reading, math, and general knowledge when tested in the fall of their kindergarten year than children attending less academically oriented preschools. Five NICHD longitudinal early intervention studies have examined the effectiveness of different early intervention approaches provided in kindergarten and first and second grades for those children most at-risk for reading difficulties. These studies strongly suggest that such programs if implemented appropriately, could reduce the number of children who fail to learn to read well below the 38 % rate currently observed nationally. It is also important to note that the majority of children composing this unacceptably large group of poor readers ARE NOT provided special education services, as is discussed next.

Will Effective Reading Instruction Reduce the Need for Special Education?

That is possible in the long run. What is now clear is that effective instruction will help differentiate between children whose reading problems are related to inadequate instruction

(curriculum casualties) versus children who continue to struggle despite early and intensive instruction. The number of children with reading difficulties served in special education reflects only a fraction of the number of school-age children who fail to learn to read. Recall from the previous discussion that approximately 38 % of fourth grade students read below the basic level. Keeping in mind that the majority of these children will continue to have reading difficulties throughout their school career if they do not receive systematic and focused early intervention, we can estimate that at least 20 million school-age children suffer from reading failure. Among these 20 million children, only approximately 2.3 million school-age children are served in special education under the category of Specific Learning Disabilities (SLD). The remaining 17.7 million poor readers not meeting the eligibility requirements for the SLD category are either provided some form of compensatory education or overlooked all together.

We have taken care in our NICHD early intervention and prevention studies to identify ALL children who are at-risk for reading failure within a given sample and to identify the instructional approaches that are the most effective for the majority of these students, irrespective of whether they are eligible for special education. As noted earlier, these studies have indicated that, with the proper early instruction, the national prevalence of reading failure can be reduced significantly. Thus, by putting in place well designed evidence-based early identification, prevention, and early intervention programs in our public schools, our data strongly show that the 20 million children today suffering from reading failure could be reduced by approximately two-thirds. While still a totally unacceptable rate of reading failure, such a reduction would allow us to provide services to the children who are in genuine need of special education services with substantially greater focus and intensity.

Our challenge now is to close the gap between what we know works from research and the ineffective practices that many prospective teachers are taught during their preparation and the ineffective instruction still being provided in most of our nation's classrooms. The question is, do we have the courage to do so?

G. Reid Lyon, Ph.D., is Chief of the Child Development and Behavior Branch of the National Institute of Child Health & Human Development, National Institutes of Health, Bethesda, MD.

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