

Visual Dyslexia

- Confuses letters and words with similar appearance
- Slow rate of perception
- Reversals in reading and writing
- Difficulty retaining visual sequences

Source: Johnson, D. J., & Myklebust, H. R. (1967). *Learning disabilities: Educational principles and practices*. Grune & Stratton.

Auditory Dyslexia

- Difficulty hearing the differences among speech sounds
- Difficulty discriminating short vowel sounds
- Difficulty with blending and segmentation

Source: Johnson, D. J., & Myklebust, H. R. (1967). *Learning disabilities: Educational principles and practices*. Grune & Stratton.

1. Dyslexia is not primarily a problem in reading comprehension.

“...specific language impairment and reading disability are best considered as distinct disorders that are often comorbid” (Ramus et al., 2013) (p. 25).

Source: Elliott, J. G., & Grigorenko, E. L. (2014). *The dyslexia debate*. Cambridge University Press.

Reading Comprehension

“Individuals with problems in reading comprehension that are not attributable to poor word recognition have comprehension problems that are general to language comprehension rather than specific to reading.” (p. 3)

Source: Spencer, M., Quinn, J. M., Wagner, R. K. (2014). Specific reading comprehension disability: Major problem, myth, or misnomer? *Learning Disabilities Research & Practice*, 29, 3-9.

But...

Students with dyslexia do have reading comprehension problems because of poor decoding and/or slow reading


And...

There is high comorbidity between dyslexia and developmental language disorders so that there are many students who struggle with both.

Two Questions to Ask

- Is listening comprehension higher than word reading?
- Did the student receive early speech and language services?

It is much more difficult to assess reading comprehension than word reading skills.



Reading Comprehension Test Differences

Keenan and Meenan (2014) compared the performances of approximately 1,000 children on four standardized tests:

- Gray Oral Reading Test-3 (Wiederholt & Bryant, 1992)
- Peabody Individual Achievement Test (Dunn & Markwardt, 1970)
- Qualitative Reading Inventory-3 (Leslie & Caldwell, 2001)
- Woodcock-Johnson III Tests of Achievement: Passage Comprehension (Woodcock, McGrew, & Mather, 2001).

Source: Keenan, J., & Meenan, C. (2014). Test differences in diagnosing reading comprehension deficits. *Journal of Learning Disabilities*, 47, 125-135.

Results

- The median correlation between the different tests was only .54.
- The average consistency between two tests in diagnosing a comprehension problem was only 43%.
- Some tests are more influenced by word recognition ability, others involve working memory and background knowledge

Reading Comprehension Interventions

- Background knowledge instruction
- Strategy instruction

"It is unsurprising that interventions that target both word reading and reading comprehension yielded overall larger effects, as many students have deficits in both word reading and language comprehension" (p. 177).


Source: Filderman, M. J., Austin, C. R., Boucher, A. N., O'Donnell, K., & Swanson, E. A. (2022). A meta-analysis of the effects of reading comprehension interventions on the reading comprehension outcomes of struggling readers in third through 12th grades. *Exceptional Children*, 88(2), 163-184. <https://doi.org/10.1177/00144029211050660>.

The Four Most Effective Strategies

- Finding the main idea: identifying the most important point of the text.
- Making inferences, drawing conclusions that are not specifically stated.
- Retelling, restating the ideas or facts in a text in an organized way.
- Predicting, a prereading activity to support inference making.

Source: Filderman et al., (2022).

2. Dyslexia is real and has a genetic basis. We should say the word *dyslexia*.



“We do not understand why the term “dyslexia” is often viewed as if it were a four-letter word, not to be uttered in polite company” (p. 187).

Source: Siegel, L. S., & Mazabel, S. (2013). Basic cognitive processes and reading disabilities. In H. L. Swanson, K. R. Harris, & S. Graham (Eds.), *Handbook of learning disabilities* (2nd ed.) (pp. 186-213). Guilford Press.

Dyslexia and Alternate Terms

- Specific Reading Disability
- Specific Learning Disability in Basic Reading Skills
- Specific Reading Fluency/Rate Disability
- Specific reading disorder (ICD-10-F81.00)
- Specific learning disorder with an impairment in reading (DSM-5 315.00)

Labels

“...without a label we have no way of talking about a problem.”

Source: Johns, B. H., & Kauffman, J. M. (2009). Caution: Response to intervention (RtI). *Learning Disabilities: A Multidisciplinary Journal*, 15, 157-160.

The Term Dyslexia

“In the first half of this century the story of dyslexia has been one of decline and fall; in the second half it has culminated in a spectacular rise. From being a rather dubious term, dyslexia has blossomed into a glamorous topic; and rightly so, for with a prevalence of around 5% the condition is remarkably common” (Frith, 1999, p. 192).

Source: Frith, U. (1999). Paradoxes in the definition of dyslexia. *Dyslexia*, 5, 192-214.

Hereditary Factors

Strong converging evidence indicates that:

1. Dyslexia has a genetic basis but there is not one specific gene for reading.
2. Family history is a key risk indicator.
3. If one parent is affected, there is a 34 to 54% chance, the child will have dyslexia.

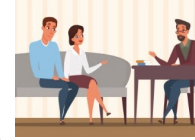
Sources: Lomic, O., Feng, J., Quinlan, A., Hart, S., & Hoeft, F. (2022). The importance of family history in dyslexia. *Reading League Journal*, 3(2), 35-40.
Snowling, M. J., & Stothard, M. (2010). Oral language deficits in familial dyslexia: A meta-analysis and review. *Psychological Bulletin*, 142, 498-545

At-Risk Indicators

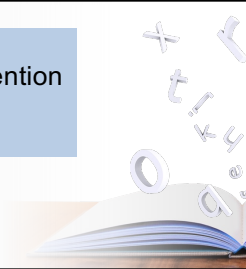
Two questions you always want to ask:

Did anyone in your family have difficulty learning to read?

Did your child have difficulty with speech or language development?



3. Early intervention is critical.



The Dyslexia Paradox

Dyslexia is typically not identified until a child is in second grade and has not learned to read as expected. Early intervention is most effective when provided from Pre-K to Grade 1 prior to reading failure.



A Paradox

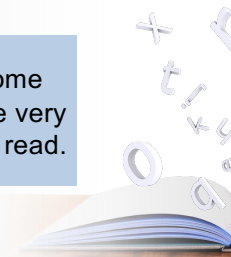
Source: Ozernov-Palchik, O. & Gaab, N. (2016). Tackling the 'dyslexia paradox': Reading brain and behavior for early markers of developmental dyslexia. *WIREs Cognitive Science*, 7, 156-176. <https://doi.org/10.1002/wcs.1383>

The Importance of Early Intervention

"It is evident that it is a matter of the highest importance to recognise as early as possible the true nature of this defect, when it is met with in a child. It may prevent much waste of valuable time and may save the child from suffering and cruel treatment...The sooner the true nature of the defect is recognised, the better are the chances of the child's improvement" (p. 10).

Source: Hinshelwood, J. (1902). *Congenital word-blindness with reports of two cases*. John Bale, Sons & Danielsson, Ltd.

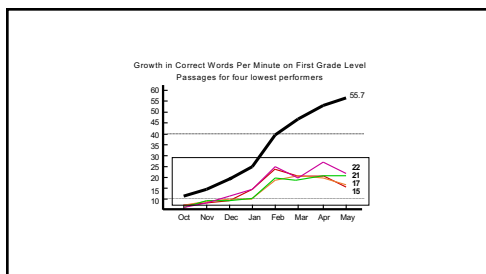
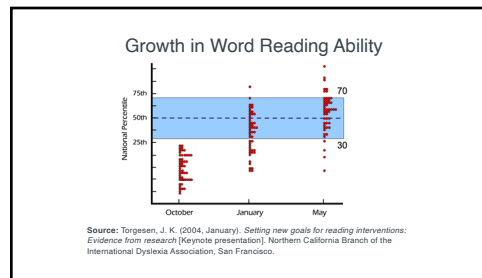
4. We have some children who are very hard to teach to read.



Design of the Study

- Most "at-risk" first graders from five elementary school-PPVT scores above 70
- Instruction was provided in 45-min. sessions every day from October through May in groups of three or five by experienced teachers or well-trained paraprofessionals
- Used a structured (scripted) reading program that contained instruction and practice in phonemic awareness, phonics, fluency, and comprehension
- Used a number of methods to achieve fidelity of implementation:
 - 3 days of initial training, weekly supervisory visits, and monthly in-services (3 hours)

Source: Torgesen, J. K. (2004, January). *Setting new goals for reading interventions: Evidence from research* [Keynote presentation]. Northern California Branch of the International Dyslexia Association, San Francisco.

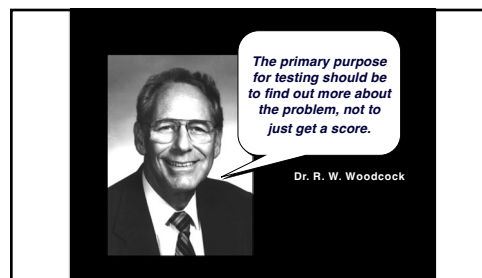


A Consistent Finding

"The remedial work was unsuccessful in about 4 or 5 percent of the cases, in that this percentage of cases did not show improved scores on the retests" (p. 151).

Source: Monroe, M., & Backus, B. (1937). *Remedial reading*. Houghton Mifflin.

5. Individuals with dyslexia need comprehensive evaluations.



"To be effective, remedial instruction in reading must be preceded by careful diagnosis."



Source: Stanger, M. A., & Donohue, E. K. (1937). *Prediction and prevention of reading difficulties*. Oxford University Press.

Comprehensive Evaluations

Ensure that students with dyslexia get a comprehensive evaluation that:

- Explains the reason(s) why a student is struggling with reading
- Determines where the student is developmentally and what type of instruction is needed (phonemic awareness, phonics, structural analysis, reading fluency, spelling, vocabulary, reading comprehension)
- Describes what accommodations are needed
- Identifies the strengths

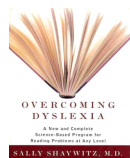
The importance of an "island of competence" (Brooks, 2001)...



Diagnosis of Word Blindness

"With the possession of a knowledge of the symptoms, there is little difficulty in the diagnosis of congenital word-blindness when the cases are met with, since the general picture of the condition stands out as clear-cut and distinct as that of any pathological condition in the whole range of medicine" (p. 88).

Source: Hinshelwood, J. (1917). *Congenital word-blindness*. H. K. Lewis.



"The diagnosis of dyslexia is as precise and scientifically informed as almost any diagnosis in medicine" (p. 165).

Source: Shaywitz, S. (2003). *Overcoming dyslexia: A new and complete science-based program for reading problems at any level*. Alfred Knopf.

6. There are other linguistic risk factors in addition to phonological awareness.



Many students with dyslexia have poor phonological awareness and difficulty connecting sounds to print, which results in slow word perception, a delay in developing instant word reading, and poor spelling.


In summarizing results about the factors that impede reading, Monroe (1932) concluded:

"No one factor was present in all cases. It is probable that the reading defect is caused by a constellation of factors rather than by one isolated factor" (p. 110).

Source: Monroe M. (1932). *Children who cannot read*. University of Chicago Press.

Multiple Deficit View

Adherence to a single deficit profile has limited utility; using only poor phonological awareness as a criterion for dyslexia would result in missing about one half of the cases.



Source: Pennington, B. F., Santerre-Lemmon, L., Rosenberg, J., MacDonald, B., Boada, R., Friend, A., Leopold, D. R., Samuelsson, S., Byrne, B., Willcutt, E. G., & Olson, R. K. (2012). Individual prediction of dyslexia by single versus multiple deficit models. *Journal of Abnormal Psychology, 121*(1), 212–224. <https://doi.org/10.1037/a0028823>

Other Linguistic Risk Factors


- **Orthographic processing** (the writing system of a language, including the recall of spelling patterns and words)
- **Rapid automatized naming (RAN)** (quick naming of colors, objects, letters, and/or digits)
- **Working memory** (recalling and rearranging stimuli)

Orthographic processing is also a linguistic risk factor. Findings from a recent meta-analysis indicated that individuals with dyslexia have a deficit in orthographic knowledge that is as large as that of phonological awareness and rapid automatized naming (RAN).

Source: Georgiou, G. K., Martinez, D., Vieira, A. P. A., & Guo, K. (2021). Is orthographic knowledge a strength or a weakness in individuals with dyslexia? Evidence from a meta-analysis. *Annals of Dyslexia, 71*, 5–27. <https://doi.org/10.1007/s11881-021-00220-6>

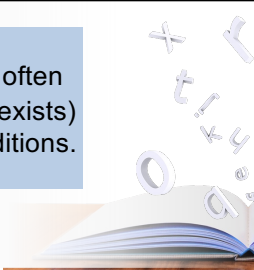
The Major Question

Gary, Grade 5



How can this be a phonological processing problem when a student spells words exactly the way they sound?

7. Dyslexia is often co-morbid (co-exists) with other conditions.




Comorbidity

High comorbidity (two or more disorders in the same person) exists between dyslexia and other learning disorders. 40% of children with dyslexia will have another learning disorder as well.

Source: Moll, K., Snowling, M. J., & Hulme, C. (2020). Introduction to the special issue "Comorbidities between reading disorders and other developmental disorders." *Scientific Studies of Reading*, 24(1), 1–6. <https://doi.org/10.1080/10888438.2019.1702045>


Three Most Common Comorbid Disorders

- Mathematics (Dyscalculia)
- ADHD
- Developmental Language Disorder




Mathematics

- Working memory
- Storing and retrieving facts
- Processing speed
- Rapid number naming
- ADHD



8. Students with dyslexia require systematic instruction in phonics, structural analysis, fluency, and spelling.



Importance of Phonics

"... that the logical training for these children would be that of extremely thorough repetitive drill on the fundamentals of phonic associations with letter forms, both visually presented and produced in writing, until the correct associations were built up..." (Orton, 1925, p. 614).

Other Things

A good word for practicing reading multisyllabic words:
 hippopotomonstrosesquipedaliophobia

Meaning:


hippopotomonstrosesquipedaliophobia refers to the phobia or fear of long words. Feelings of shame or fear of ridicule for mispronouncing long words when speaking or reading may cause distress or anxiety.

Other symptoms can include:

- trembling
- sweating
- dizziness
- fainting
- dry mouth
- headache
- trouble breathing
- avoiding reading because of your fear
- feeling distressed over academics or work involving long words

Source:
<https://www.healthline.com/health/hippopotomonstrosesquipedaliophobia>

Students with dyslexia require teachers who are trained in Structured Literacy™.



International **DYSLEXIA** Association™
 Structured Literacy: Effective Instruction for Students with Dyslexia and Related Reading Difficulties

IDA Fact Sheet on Structured Literacy (2020)


Structured Literacy (SL) teaching is the most effective approach for students who experience trouble difficulty learning to read and spell—printed words. The term refers to both the content and methods or principles of instruction. It means the same kind of instruction as the term multi-sensory structured language instruction and multisensory language and literacy instruction.

Structured literacy teaching stands in contrast with approaches that are popular in many schools but that do not teach oral and written language skills in an explicit, systematic manner. Evidence is strong that the majority of students learn to read better with structured teaching of basic language skills, and that the components and methods of Structured Literacy are critical for students with reading disabilities including dyslexia.

Content of SL Instruction: Language
 Dyslexia and other reading disabilities require explicit with language processing awareness. Consequently, the content of instruction is analysis and production of language at all levels: sounds, spelling, morphology and morphology, syntax and semantics, the writing system, meaningful parts of words, sentences, paragraphs, and discourse within larger texts.


In general oral and early developmental, children typically learn the underlying for phoneme awareness, including hearing, counting, segmenting, syllables, and hearing phrases beginning with the same sound. By the end of kindergarten, children should identify each speech sound by ear and be able to blend speech sounds to form words. Some advanced phoneme awareness skills, especially important for spelling and reading fluency, include rhyminally and accurately taking apart the sounds in spoken words (segmentation), putting together (blending) spoken word segments, and hearing and thinking of substituting one sound or letter to make a new word. These exercises are done orally, without print, and build toward oral instruction used to address oral production. A major purpose of instruction with dyslexia is to help students with this level of language analysis and word processing skills by grade 1.

Phoneme awareness is an essential foundation for reading and writing skills as applied to an alphabetic writing system. It is related to oral and letter combinations represent phonemes, thinking prior to a written word if the reader can read oral to speak effectively, therefore, the elements of speech must be heard and accurately identified in the spoken context.



“To be successful, the most struggling child requires the most expert teacher.”
 Lose, 2007

Rather than a knowledge gap, we have an action gap... (Shaywitz & Shaywitz, 2014)



“...lower level language mastery is as essential for the literacy teacher as anatomy is for the physician” (p. 99).

Source: Moats, L. C. (1994). The missing foundation in teacher education: Knowledge of the structure of spoken and written language. *Annals of Dyslexia*, 44, 81–102.

Teaching reading really is rocket science
(Moats, 1999).



Source: Moats, L.C. (1999). *Teaching reading is rocket science*. American Federation of Teachers.

“If teachers are better prepared, the impact of reading difficulties, including dyslexia, will be lessened, and many more students will receive the instruction and support they require to reach their potential.”

Source: Press Release: International Dyslexia Association Recognizes Nine Universities for Meeting Teacher Training Standards in Reading. *Teachers who are Better Prepared Lessen the Impact of Reading Difficulties*. BALTIMORE, May 2, 2012.

“In the final analysis, reading difficulties can be prevented to the degree that the teacher has a professional understanding of her work” (p. 245).



Source: Betts, E. A. (1936). *The prevention and correction of reading difficulties*. Row, Peterson and Company.

9. Dyslexia affects self-esteem, motivation, and behavior.



Behavior and Motivation

Reading and writing are so hard and frustrating that sometimes these kids act out or just give up.



In discussing his own realization that he had dyslexia, Schultz (2011), a Pulitzer prize winning poet, reflected: "My ignorance of my dyslexia only intensified my sense of isolation and hopelessness. Ignorance is perhaps the most painful aspect of a learning disability" (p. 64).

Source: Schultz, P. (2011). *My dyslexia*. W. W. Norton & Company.

"Every child would read if it were in his power to do so"
(Betts, 1936, p.5).

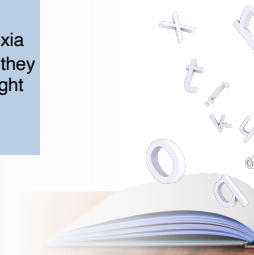


Source: Betts, E. A. (1936). *The prevention and correction of reading difficulties*. Row, Peterson and Company.

"Failure in reading is likely to lead to a general sense of inferiority that will cripple the individual's whole life. One of the greatest compensations in remedial reading work is to see the transformation in a child when you have shown him, in spite of his conviction, that he can read" (p. 3).

Source: Dolch, E. W. (1939). *A manual for remedial reading*. Garrard Press.

10. Students with dyslexia can be successful when they are provided with the right supports.



Students with Dyslexia Need Understanding Teachers

- Sympathetic
- Interested
- Developmental
- Supportive
- Inspiring



Successful Instruction

1. Provide instruction slightly above the present performance level.
2. Adapt and modify instruction, as needed.
3. Be eclectic in methodologies.
4. Provide systematic, intensive reading and spelling instruction in the most effective setting for the student.

