

Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede the growth of vocabulary and background knowledge.

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### **What is dyslexia?**

Dyslexia is a language-based learning disability. Dyslexia refers to a cluster of symptoms, which result in people having difficulties with specific language skills, particularly reading. Students with dyslexia usually experience difficulties with other language skills such as spelling, writing, and pronouncing words. Dyslexia affects individuals throughout their lives; however, its impact can change at different stages in a person's life. It is referred to as a learning disability because dyslexia can make it very difficult for a student to succeed academically in the typical instructional environment, and in its more severe forms, will qualify a student for special education, special accommodations, or extra support services.

### **What causes dyslexia?**

The exact causes of dyslexia are still not completely clear, but anatomical and brain imagery studies show differences in the way the brain of a dyslexic person develops and functions. Moreover, most people with dyslexia have been found to have problems with identifying the separate speech sounds within a word and/or learning how letters represent those sounds, a key factor in their reading difficulties. Dyslexia is not due to either lack of intelligence or desire to learn; with appropriate teaching methods, dyslexics can learn successfully.

### **How widespread is dyslexia?**

About 13-14% of the school population nationwide has a handicapping condition that qualifies them for special education. Current studies indicate that one-half of all the students who qualify for special education are classified as having a learning disability (LD) (6-7%). About 85% of those LD students have a primary learning disability in reading and language processing. Nevertheless, many more people—perhaps as many as 15-20% of the population as a whole have some of the symptoms of dyslexia, including slow or inaccurate reading, poor spelling, poor writing, or mixing up similar words. Not all of these will qualify for special education, but they are likely to struggle with many aspects of academic learning and are likely to benefit from systematic, explicit, instruction in reading, writing, and language. Dyslexia occurs in people of all backgrounds and intellectual levels. People who are very bright can be dyslexic. They are often capable or even gifted in areas that do not require strong language skills, such as art, computer science, design, drama, electronics, math, mechanics, music, physics, sales, and sports. In addition, dyslexia runs in families; dyslexic parents are very likely to have children who are dyslexic. Some people are identified as dyslexic early in their lives, but for others, their dyslexia goes unidentified until they get older.

### **What are the effects of dyslexia?**

The impact that dyslexia has is different for each person and depends on the severity of the condition and the effectiveness of instruction or remediation. The core difficulty is with word recognition and reading fluency, spelling, and writing. Some dyslexics manage to learn early reading and spelling tasks, especially with excellent instruction, but later experience their most debilitating problems when more complex language skills are required, such as grammar, understanding textbook material, and writing essays. People with dyslexia can also have problems with spoken language, even after they have been exposed to good language models in their homes and good language instruction in school. They may find it difficult to express themselves clearly,

or to fully comprehend what others mean when they speak. Such language problems are often difficult to recognize, but they can lead to major problems in school, in the workplace, and in relating to other people. The effects of dyslexia reach well beyond the classroom.

Dyslexia can also affect a person's self-image. Students with dyslexia often end up feeling "dumb" and less capable than they actually are. After experiencing a great deal of stress due to academic problems, a student may become discouraged about continuing in school.

### **How is dyslexia diagnosed?**

Schools may use a new process called Response to Intervention (RTI) to identify children with learning disabilities. Under an RTI model, schools provide those children not readily progressing with the acquisition of critical early literacy skills with intensive and individualized supplemental reading instruction. If a student's learning does not accelerate enough with supplemental instruction to reach the established grade-level benchmarks, and other kinds of developmental disorders are ruled out, he or she may be identified as learning disabled in reading. The majority of students thus identified are likely dyslexic and they will probably qualify for special education services. Schools are encouraged to begin screening children in kindergarten to identify any child who exhibits the early signs of potential reading difficulties.

For children and adults who do not go through this RTI process, an evaluation to formally diagnose dyslexia is needed. Such an evaluation traditionally has included intellectual and academic achievement testing, as well as an assessment of the critical underlying language skills that are closely linked to dyslexia. These include receptive (listening) and expressive language skills, phonological skills including to phonemic awareness, and also a student's ability rapidly name letters and names. A student's ability to read lists of words in isolation, as well as words in context, should also be assessed. If a profile emerges that is characteristic of dyslexic readers, an individualized intervention plan should be developed, which should include appropriate accommodations, such as extended time. The testing can be conducted by trained school or outside specialists.

### **What are the signs of dyslexia?**

The problems displayed by individuals with dyslexia involve difficulties in acquiring and using written language. It is a myth that dyslexic individuals read backwards, although spelling can look quite jumbled at times because students have trouble remembering letter symbols for sounds and forming memories for words. Other problems experienced by dyslexics include the following:

- Learning to speak
- Learning letters and their sounds
- Organizing written and spoken language
- Memorizing number facts
- Reading quickly enough to comprehend
- Persisting with and comprehending longer reading assignments
- Spelling
- Learning a foreign language
- Correctly doing math operations

Not all students who have difficulties with these skills are dyslexic. Formal testing of reading, language, and writing skills is the only way to confirm a diagnosis of suspected dyslexia.

### **How is dyslexia treated?**

Dyslexia is a life-long condition. With proper help, many people with dyslexia can learn to read and write well. Early identification and treatment is the key to helping dyslexics achieve in school and in life. Most people with dyslexia need help from a teacher, tutor, or therapist specially trained in using a multisensory, structured language approach. It is important for these individuals to be taught by a systematic and explicit method that involves several senses (hearing, seeing, touching) at the same time. Students with dyslexia need a great deal of structured practice and immediate, corrective feedback to develop automatic word recognition skills.

Schools can implement academic accommodations and modifications to help dyslexic students succeed. For example, a student with dyslexia can be given extra time to complete tasks, help with taking notes, and work assignments that are modified appropriately. Teachers can give taped tests or allow dyslexic students to use alternative means of assessment. Students can benefit from listening to books on tape and using the computer for text reading programs and for writing.

### **What are the rights of a dyslexic person?**

The Individuals with Disabilities Education Act 2004 (IDEA), Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act (ADA) define the rights of students with dyslexia and other specific learning disabilities. These individuals are legally entitled to special services to help them overcome and accommodate their learning problems. Such services include education programs designed to meet the needs of these students. The Acts also protect people with dyslexia against unfair and illegal discrimination.

### **Is My Child Dyslexic?**

Individuals with dyslexia have trouble with reading, writing, spelling and/or math even though they have the ability and have had opportunities to learn. Individuals with dyslexia can learn, but they often need specialized instruction to overcome the problem. Often these individuals, who have talented and productive minds, are said to have a language learning difference.

### **Common characteristics of dyslexia**

Most of us have one or two of these characteristics. That does not mean that everyone has dyslexia. A person with dyslexia usually has several of these characteristics that persist over time and interfere with his or her learning.

#### Oral language

- Late learning to talk
- Difficulty pronouncing words
- Difficulty acquiring vocabulary or using age appropriate grammar
- Difficulty following directions
- Confusion with before/after, right/left, and so on
- Difficulty learning the alphabet, nursery rhymes, or songs
- Difficulty understanding concepts and relationships
- Difficulty with word retrieval or naming problems

#### Reading

- Difficulty learning to read
- Difficulty identifying or generating rhyming words, or counting syllables in words (phonological awareness)
- Difficulty with hearing and manipulating sounds in words (phonemic awareness)
- Difficulty distinguishing different sounds in words (phonological processing)
- Difficulty in learning the sounds of letters (phonics)
- Difficulty remembering names and shapes of letters, or naming letters rapidly
- Transposing the order of letters when reading or spelling
- Misreading or omitting common short words
- Stumbles through longer words
- Poor reading comprehension during oral or silent reading, often because words are not accurately read
- Slow, laborious oral reading

#### Written language

- Difficulty putting ideas on paper
- Many spelling mistakes

- May do well on weekly spelling tests, but may have many spelling mistakes in daily work
- Difficulty proofreading

Other common symptoms that occur with dyslexia

- Difficulty naming colors, objects, and letters rapidly, in a sequence (RAN: rapid automatized naming)
- Weak memory for lists, directions, or facts
- Needs to see or hear concepts many times to learn them
- Distracted by visual or auditory stimuli
- Downward trend in achievement test scores or school performance
- Inconsistent school work
- Teacher says, "If only she would try harder," or "He's lazy."
- Relatives may have similar problems

Common characteristics of other related learning disorders Dysgraphia (Handwriting)

- Unsure of handedness
- Poor or slow handwriting
- Messy and unorganized papers
- Difficulty copying
- Poor fine motor skills
- Difficulty remembering the kinesthetic movements to form letters correctly

Dyscalculia (Math)

- Difficulty counting accurately
- May misread numbers
- Difficulty memorizing and retrieving math facts
- Difficulty copying math problems and organizing written work
- Many calculation errors
- Difficulty retaining math vocabulary and concepts

ADHD? Attention-Deficit/Hyperactivity Disorder (Attention)

- Inattention
- Variable attention
- Distractibility
- Impulsivity
- Hyperactivity

Dyspraxia (Motor skills)

- Difficulty planning and coordinating body movements
- Difficulty coordinating facial muscles to produce sounds

Executive Function/Organization

- Loses papers
- Poor sense of time
- Forgets homework
- Messy desk
- Overwhelmed by too much input
- Works slowly

### **What kind of instruction is needed?**

Dyslexia and other related learning disorders cannot be cured. Proper instruction promotes reading success and alleviates many difficulties associated with dyslexia. Instruction for individuals with reading and related learning disabilities should be:

- Intensive given every day or very frequently for sufficient time.
- Explicit component skills for reading, spelling, and writing are explained, directly taught, and modeled by the teacher. Children are discouraged from guessing at words.
- Systematic and cumulative has a definite, logical sequence of concept introduction; concepts are ordered from simple to more complex; each new concept builds upon previously introduced concepts, with built in review to aid memory and retrieval.
- Structured has step-by-step procedures for introducing, reviewing, and practicing concepts.
- Multisensory links listening, speaking, reading, and writing together; involves movement and “hands on” learning.

#### Suggested Readings

Moats, L. C., & Dakin, K. E. (2007). Basic facts about dyslexia and other reading problems.

Baltimore: The International Dyslexia Association.

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

Tridas, E. Q. (Ed.). (2007). From ABC to ADHD: What every parent should know about dyslexia. Baltimore: The International Dyslexia Association.

## MULTISENSORY STRUCTURED LANGUAGE TEACHING

**What is meant by multisensory teaching?** Multisensory teaching is one important aspect of instruction for dyslexic students that is used by clinically trained teachers. Effective instruction for students with dyslexia is also explicit, direct, cumulative, intensive, and focused on the structure of language. Multisensory learning involves the use of visual, auditory, and kinesthetic-tactile pathways simultaneously to enhance memory and learning of written language. Links are consistently made between the visual, auditory, and kinesthetic-tactile pathways in learning to read and spell.

Margaret Byrd Rawson, a former President of the International Dyslexia Association (IDA), said it well:

“Dyslexic students need a different approach to learning language from that employed in most classrooms. They need to be taught, slowly and thoroughly, the basic elements of their language “the sounds and the letters which represent them” and how to put these together and take them apart. They have to have lots of practice in having their writing hands, eyes, ears, and voices working together for conscious organization and retention of their learning.”

Teachers who use this approach help students perceive the speech sounds in words (phonemes) by looking in the mirror when they speak or exaggerating the movements of their mouths. Students learn to link speech sounds (phonemes) to letters or letter patterns by saying sounds for letters they see, or writing letters for sounds they hear. As students learn a new letter or pattern (such as s or th), they may repeat five to seven words that are dictated by the teacher and contain the sound of the new letter or pattern; the students discover the sound that is the same in all the words. Next, they may look at the words written on a piece of paper or the chalkboard and discover the new letter or pattern. Finally, they carefully trace, copy, and write the letter(s) while saying the

corresponding sound. The sound may be dictated by the teacher, and the letter name(s) given by the student. Students then read and spell words, phrases, and sentences using these patterns to build their reading fluency. Teachers and their students rely on all three pathways for learning rather than focusing on a “whole word memory method,” a “tracing method,” or a “phonetic method” alone.

### **What is the rationale behind multisensory, structured language teaching?**

Students with dyslexia often exhibit weaknesses in underlying language skills involving speech sound (phonological) and print (orthographic) processing and in building brain pathways that connect speech with print. The brain pathways used for reading and spelling must develop to connect many brain areas and must transmit information with sufficient speed and accuracy. Most students with dyslexia have weak phonemic awareness, meaning they are unaware of the role sounds play in words. These students may also have difficulty rhyming words, blending sounds to make words, or segmenting words into sounds. Because of their trouble establishing associations between sounds and symbols, they also have trouble learning to recognize words automatically (by sight) or fast enough to allow comprehension. If they are not accurate with sounds or symbols, they will have trouble forming memories for common words, even the “little” words in students’ books. They need specialized instruction to master the alphabetic code and to form those memories.

When taught by a multisensory approach, students have the advantage of learning alphabetic patterns and words with engagement of all learning modalities. Dr. Samuel Terry Orton, one of the first to recognize the syndrome of dyslexia in students, suggested that teaching the fundamentals of phonic association with letter forms, both visually presented and reproduced in writing until the correct associations were built up, would benefit students of all ages.

### **Is there solid evidence that multisensory teaching is effective for students with dyslexia?**

Current research, much of it supported by the National Institute of Child Health and Human Development (NICHD), has demonstrated the value of explicit, structured language teaching for all students, especially those with dyslexia. Programs that work differ in their techniques but have many principles in common. The multisensory principle that is so valued by experienced clinicians has not yet been isolated in controlled, comparison studies of reading instruction, but most programs that work do include multisensory practice for symbol learning. Instructional approaches that are effective use direct, explicit teaching of letter- sound relationships, syllable patterns, and meaningful word parts, and provide a great deal of successful practice of skills that have been taught. Fluency-building exercises, vocabulary instruction, language comprehension and writing are also included in comprehensive programs of instruction and intervention. Word recognition and spelling skills are applied in meaningful reading and writing of sentences and text passages, and students receive immediate feedback if they make mistakes. Guessing at words and skipping words are discouraged and replaced by knowledge of how to analyze and read unknown words. Other key principles of instruction are listed below.

### **Summary: What are the principles of a multisensory, structured language approach?**

- Simultaneous, Multisensory (VAKT): Teaching uses all learning pathways in the brain (i.e., visual, auditory, kinesthetic- tactile) simultaneously or sequentially in order to enhance memory and learning.
- Systematic and Cumulative: Multisensory language instruction requires that the organization of material follows the logical order of the language. The sequence must begin with the easiest and most basic concepts and progress methodically to more difficult material. Each concept must also be based on those already learned. Concepts taught must be systematically reviewed to strengthen memory.
- Direct Instruction: The inferential learning of any concept cannot be taken for granted. Multisensory language instruction requires direct teaching of all concepts with continuous student-teacher interaction.

- **Diagnostic Teaching:** The teacher must be adept at flexible or individualized teaching. The teaching plan is based on careful and continuous assessment of the individual's needs. The content presented must be mastered step by step for the student to progress.
- **Synthetic and Analytic Instruction:**  
Multisensory, structured language programs include both synthetic and analytic instruction. Synthetic instruction presents the parts of the language and then teaches how the parts work together to form a whole. Analytic instruction presents the whole and teaches how this can be broken down into its component parts.
- **Comprehensive and Inclusive:** All levels of language are addressed, often in parallel, including sounds (phonemes), symbols (graphemes), meaningful word parts (morphemes), word and phrase meanings (semantics), sentences (syntax), longer passages (discourse), and the social uses of language (pragmatics).

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