DOCUMENT RESUME

ED 358 409 CS 011 300

AUTHOR Griesbach, Gay
TITLE Dyslexia: Its History, Etiology, and Treatment.
PUB DATE [93]
NOTE 14p.
PUB TYPE Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Dyslexia; Elementary Secondary Education; Etiology; Handicap Identification; *Learning Disabilities; Literature Reviews; *Reading Difficulties; Reading Failure; *Remedial Reading
IDENTIFIERS Historical Background

ABSTRACT

Of all human maladies which account for learning disabilities among young and old alike, few remain as poorly understood and inconclusively defined as dyslexia. The general public perceives dyslexia to be a reading problem; some psychologists believe that dyslexia can stem from a low socio-economic status; educators see the term as involving reading, writing, speech, and/or spelling; and medical professionals view dyslexia from a physical, organic and neurological viewpoint. Theories of dyslexia, usually using the term "word blindness" were first developed in 1896. Medicine paid little attention to dyslexia until the 1950s. Not every symptom of dysfunction is found in every dyslexic. The lag in maturation of behavior, speech, or appearance is not rare, but it can be a warning sign of dyslexia. Stuttering and speech defects are prevalent in dyslexics. Dyslexia is not a single symptom--it is the persistence and overlap of symptoms that point to dyslexia. Clues to a neurological cause of dyslexia may lie in the region of the corpus callosum. Heredity may also be a factor. Diagnosis of dyslexia usually begins when a parent or teacher notices reading or comprehension failure. The most widely used remedial method is the Orton-Gillingham technique, which uses a simultaneous association of visual, auditory, and kinesthetic language stimuli. Remediation can build self esteem and aid in using the special talents that are integral to the dyslexic's unique way of looking at the world. (Contains 20 references.) (RS)

Dyslexia: Its History, Etiology, and Treatment

Gay Griesbach
6091 St. Anthony Rd.
West Bend, WI 53095
414-629-9286

Of all the human maladies which account for learning disabilities among young and old alike, few remain as poorly understood an inconclusively defined as dyslexia. The subtleties of this dysfunction have kept it from being as visible and readily apparent as other mental disabilities.

The definitions of dyslexia must be considered from the point of view of each specialist describing the manifestations of dyslexia with which he or she is most familiar. The general public perceives dyslexia to be a reading problem, that letters are seen in reverse. As is evidenced, the problems associated with dyslexia are more complex and invasive to the dyslexic's daily life.

Some psychologists believe that dyslexia can stem from a low socio-economic status, or from educational disadvantages. If these problems are addressed and rectified, the dyslexia is "cured". This is the only profession that believes dyslexia to be a curable condition. However, not all psychologists are willing to adopt this view.

In the educational field the term dyslexia involves reading, speech, writing, and/or spelling. In general, if children test two years below reading expectations for their ages, this can point to several learning disabilities, with dyslexia being the least recognizable.

Medical professionals generally view the problem of dyslexia from a physical, organic, and neurological viewpoint. The most frequently cited medical definition is put forth by the World Federation of Neurology. It reads in part:

> A disorder manifested by a difficulty in learning to read despite conventional instruction, adequate intelligence, and socio-cultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin. (JAMA 2236)

Vocational rehabilitation that is provided by the Rehabilitation Services Administration defines dyslexia in similar terms, but adds to the definition the aspect of how the disability affects the employability of the subject. The most balanced definition is provided by the Education for All Handicapped Children Act (also known as PL94-142) which reads as follows:

> Specific learning disability means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations.

Thomas West, in his book, The Minds Eye, describes the diverse terminology of dyslexia as being a "constellation of terms." Neurologists prefer the term learning disability. This is because of the overlap of symptoms associated with dyslexia. Educators often use the term academic disability. the terms "word blindness" and "minimal brain damage" have negative and untrue connotations, but their use is persistent especially in the rehabilitation and medical fields. In 1976 there were "2,400

annotated terms confined to dyslexia, and this was considered less than a complete list. (Rawson 6)."

Dr. Pringle Morgan, an opthamologist, was the first to use the term "congenital word blindness" in 1896. He identified one of his patients, a boy named Percy, as having pronounced reading and spelling difficulties in spite of his intelligence. Morgan deduced that this was a congenital defect that resulted in difficulties storing the visual impressions of words.

Dr. James Hinshelwood also wrote of congenital word blindness in the early 1900's. His theories of dyslexia were similar to Dr. Morgan's with the exception of locating the area of the brain in which the problem originated .

In 1925 an article titled "Word Blindness in School Children" was published by an Iowa doctor named Samuel J. Orton. He was director of the Iowa State Psychopathic Hospital at the time. His findings were that there were children of normal intelligence who could not be taught to read by conventional methods. Orton coined the term "streptosymbolia" which means "twisted symbols." He preferred this to the term "word blindness".

Orton developed the theory that dyslexia was not a single symptom, but instead a syndrome with multiple manifestations. His paper produced the "first testable hypothesis on the defect" (Vellutino 39). Former theories had a tendency to promote the view that dyslexia was associated with low intellectual ability.

Orton, a pioneer in the neurological field, teamed up with Anna Gillingham, a psychologist and teacher, to apply Dr. Orton's theories by remedially instructing dyslexics.

Medicine, in general, was largely insensitive to what was considered a small group of dysfunctionals. Consequently, little attention was paid to research in this field until the 1950's and 60's when Nobel prize winning neurobiologist "Roger Sperry researched the idea of the brain's left and right hemispheres having distinct functions" (West 13).

In the 1980's neurologists Albert Galaburda and Norman Geshwind advanced the theories of cerebral lateralization, i.e., that dyslexics have no dominant hemisphere. This hypothesis and history serve as the basic tenet of this paper.

The difficulties associated with dyslexia are diverse and confusing. Not every symptom of dysfunction is found in every dyslexic. Some problems are more pronounced, while others have a subtlety that does not lend itself to an easy diagnosis.

The lag in maturation of behavior, speech or appearance in itself is not a rare trait, but it can be a warning sign of dyslexia. As children progress in school, unusual difficulty in learning to read, reading orally, or learning to read or speak a foreign language might be noted. There is a persistent difficulty with learning and applying the rules of punctuation and capitalization that can persist into adulthood. Handwriting is labored and heavy handed in children as well as in adult dyslexics. Persons with dyslexia also have a problem with being

disorganized, or they may have a poor sense of time. Many are prone to excessive daydreaming, or they may have a very active imagination. Sometimes poor arithmetic skills are part of the syndrome, although some dyslexics can be quite advanced when it comes to mathematical theory.

A persistent confusion between right and left, and a problem with spatial orientation can make the dyslexic individual more clumsy or accident prone than the normal population.

It is difficult for a dyslexic person to carry out complex oral instructions. There is also a recurring difficulty with rote memorization tasks.

In addition to these traits, Dr. Orton and others have noted stuttering and speech defects prevalent in dyslexics. Many dyslexics are ambidextrous. It has been hypothesized that this may be due to a lack of cerebral dominance. Orton found a high frequency of left handedness among dyslexics and their families. The similarity of family traits, especially concerning reading difficulties, suggest a hereditary factor or genetic predisposition. Orton also found erratic eye movements typical to dyslexic children. He, as well as others, consider this to be a result rather than a cause of dyslexia.

Signs that are less readily apparent include the persistence of "some primitive reflexes of the central nervous system which should no longer be present after a certain age" (West). Irritability, inconsistence, and a certain ease of distraction are sometimes present, but not always easily detectable.

Many of these traits can be found in the normal population

at different times. They are not exclusive to dyslexia. It is the persistence and overlap of symptoms that point to dyslexia. It must be kept in mind that dyslexia is not a single symptom, and the entire person must be taken into account.

Occasional sources mention dyslexics as having a difficulty with analogies, abstractions, a difficulty distinguishing sounds, and a problem speaking and answering questions on demand. There are also several references to autoimmune diseases such as asthma, autoimmune arthritis, and allergies.

How can so many inconsistencies apply to persons with normal or above normal I.Q.? Let us look at how the development of a dyslexic's brain differs from the norm. The left hemisphere of the brain is the seat of logic, language, orderliness, and handling things in sequential order. This would include time sequences and tasks that must be done in order. Arithmetic is also a function of the left hemisphere. In simple terms, the left hemisphere "thinks" in words and numbers. The right hemisphere handles face and pattern recognition, gesture, proportion, spatial relationships, and visual images. The right hemisphere "thinks" in pictures. This is an oversimplification, but it is useful to keep in mind that most language and reading functions are a combined process including both hemispheres. In order to read aloud, several processes and parts of the brain are involved. The left hemisphere, which controls language function, is slower in development than the right side is in children. The eye transmits the message tote medial occipital area of the

brain. The course continues through the angular gyrus, to Wernickes area to be processed visually. It then continues through the arcuate fasciculus to Broca's area (speech). To read left to right the visual field must cross the splenium of the corpus callosum to reach the angular gyrus.

> "Early development in the normal brain involves the production of an excess of neurons and an excess of of connections between neurons. As development proceeds, these neurons and connections tend to die off in large numbers. Where connections are made to other neurons, the original neuron and its connective fibers survive. This is normal and usual. Dyslexics have certain significant differences with respect to the numbers and density of neurons and neural projections. (Galaburda)

Computers have been used to analyze EEGs of dyslexics and found less synchronization between the two hemispheres. Could the excess of neural connections located in the region of the corpus callosum be the cause of dyslexia? The clue seems to lie in the neural connections located in the region of the corpus callosum, and not specifically in either hemisphere.

Acquired dyslexia is caused after birth. Some of the causes indicated are high fevers in infancy, a severe blow to the head, premature birth, and respiratory distress at birth. All these conditions may cause scarring or lesions of the brain.

Developmental dyslexia is a prenatal defect. One theory of

what causes this type of congenital defect is the "presence of testosterone in utero that cause changes that alter the asymmetry of the brain" (Galaburda 43). Sex steroid experiments conducted by Dr. Galaburda on animals have also indicated that the reason there are more male dyslexics over females is that the presence of the testosterone can cause spontaneous abortion of the female fetus. It has been well documented that exposure to testosterone prenatally delays growth of the left hemisphere, and affects development of the immune system.

Heredity has also been mentioned as a factor in dyslexia. Estimates of a parent or close relative with similar symptoms range from 30 to 80 percent.

How is dyslexia diagnosed? A parent or teacher who notices reading or comprehension failure in a child is where the diagnosis usually begins. A psychological examination can give a balanced view of a person's strengths and weaknesses, but this alone can not point to a diagnosis of dyslexia. Opthamologists may note an eccentricity of eye movement, but this is not a sure indication of the dysfunction. A physical exam most often rules out any hearing impairment or other defect, and an astute physician who has a comprehensive history of the child, as well as a coherent family history may be able to make a diagnosis. It is more often a parent who senses that something is wrong. Through a parent's insistence a combination of examination and observation can lead to remedial help. There is no known cure for dyslexia.

After the potential dyslexic is screened by physicians, psychologists, and referred by a teacher or teachers who have administered intelligence tests, the remedial process can begin. There are several remedial techniques.

The colo phonics method was developed by Edith Norrie, a self-taught dyslexic. She founded the Ordblinde Institute in Denmark. her idea is to use color to help a child recall certain sounds. Letters are arranged phonetically. Vowels are put on red cards, and a child can not develop a word or syllable without using a red card. The initial vocabulary consists of words that are phonetically regular. As the child progresses, a mirror is used to show the child the placement of the lips, tongue, and jaw when forming words. Additional training in the number of syllables of words, grammar, and left-right scanning is also implemented.

The Fernal approach was developed in the 1920's at the Clinic School at the University of California. The underlying assumption is that dyslexic children need success and positive reinforcement. These methods direct children toward learning as a positive experience. Children are allowed to select words they would like to learn. The work is then written on a card. The child then traces the word with his finger until he can write it from memory. After this, the words are alphabetized and filed. As progress is realized, the child stops tracing.

The most widely used remedial method is the Orton-Gillingham technique. First, a language evaluation study is done. This

points out a person's particular difficulties. A simultaneous association of visual, auditory and kinesthetic language stimuli is used. One of the aims of this type of remedial teaching is to break the complex whole into smaller, more understandable units. The remediation is handled as a team, with parents, teachers at school, a tutor, and the student participating. The program is individually tailored to the student. Rosanne Aman, Director of the Wisconsin Dyslexia Institute says that, "dyslexia can be overcome with appropriate therapy. Language and reading responses can become automatic and interlaced." Information is arranged sequentially and taught directly. A multi-sensory approach is used.

If dyslexia can be diagnosed and remediation applied, it can help children and their parents understand the frustration and difficulties of learning by conventional means. It can build self esteem and aid in using the special talents that are integral to the dyslexics unique way of looking at the world.

Bibliography

Aman, Rosanne, Regional Director, Wisconsin Dyslexia Institute. Interview West Bend, WI. 28 Oct. 1992.

Bakker, Dirk J. "Neuropsychological Classification and Treatment of Dyslexia" Journal of Learning Disabilities Vol. 25, Feb. 1992:102-109.

Beattie, Geoffrey. "Is Dyslexia a General Learning Deficiency?" New Scientist Vol. 129, 12 Jan. 1991: 33.

Benton, Arthur L. Ph.D., David Pearl, Ph.D. Dyslexia: An Appraisal of Current Knowledge. New York, Oxford University Press, 1978.

Bos, Candace s., et al. "The Effects of an Interactive Instructional Strategy for Enhancing Reading Comprehension and Content Area Learning for Students With Learning Disabilities" Journal of Learning Disabilities. June/July 1989: 384-90.

Chan, Lorna K. S. "Promoting Strategy Generalization Through Self-Instructional Training in Students with Reading Disabilities" Journal of Learning Disabilities. Aug/Sept. 1991 427-433.

Clark, Diana Brewster. Dyslexia: Theory and Practice of Remedial Instruction Baltimore, MD. York Press, 1988.

Cotton, M.M. Ph.D., K.M. Evans. A Review of the Use of Irlen (tinted) Lenses. New Zealand Journal of Opthamology. 991: 307-12.

"Dyslexia" Journal of the American Medical Association. 15, April 1989: 2236-2239.

"Dyslexia" The Lancet. 23, Sept. 1989:719.

Fawcett, Angela J., and Roderick I. Nicholson. "Vocabulary Training for Children With Dyslexia." Journal of Learning Disabilities. June/July 1991: 179-83.

Healy, Alfren M.D., et al. "Leaning Disabilities, Dyslexia, and Vision." Pediatrics, July 1992: 124-5.

Jenkins, Joseph R. et al. "Improving Reading Comprehension by Using Paragraph Restatements." Journal of Exceptional Children. Sept. 1987: 54-59.

MacCracken, Mary. Turnabout Children. New York, Signet, 1987.

Pavlidis, George Th., ed. Dyslexia: Its Neuropsychology and Treatment. New York. John Wiley and Sons, 1986.

Rawson, Margaret Byrd. The Many Faces of Dyslexia. Baltimore, Md. The Orton Dyslexia Society, 1988.

Shannon, Jacqueline "Dyslexics Need the Blues". Health. Feb., 1991: 24.

Vellutino, Frank L. Dyslexia: Theory and Research. Cambridge, MA. MIT Press, 1979.

West, Thos, G. In The Minds Eye. New York, Prometheus Books, 1991.