

Historical and Current Perspectives on Learning Disabilities in the United States

Paige Cullen Pullen

University of Virginia

Learning disabilities is the most common type of disability accounting for approximately 50% of all students receiving special education in the United States. As a field, the area of learning disabilities has evolved from its early days when Sam Kirk coined the term for learning disabilities at a parent meeting. Since that time, controversy has surrounded the field in terms of the name, etiology, and identification. The purpose of this paper is to look at the field of disabilities in the United States from a historical perspective. I address historical issues as well as contemporary issues in the way individuals are identified and provided services from childhood through adulthood.

Keywords: learning disabilities, United States, etiology and identification of academic failure, strategy instruction.

HISTORICAL AND CURRENT PERSPECTIVES ON LEARNING DISABILITIES IN THE UNITED STATES

Learning disabilities was not recognized officially by the United States Department of Education until 1975, with the passage of the Education for All Handicapped Children Act (EACHA). This official recognition in the United States in the late 20th Century, which enabled students to be identified for special education services in public schools as learning disabled, however, was preceded by scholarly writings traversing at least two centuries (beginning with 19th Century), two continents (Europe and United States), a plethora of symptoms (e.g., reading disabilities/dyslexia, math disabilities, such as dyscalculia, spelling disorders, executive function problems), and disciplines (e.g., neurology, psychology, genetics, education, speech pathology) (Hallahan & Mercer, 2002; Hallahan, Pullen, & Mock, 2013).

A BRIEF SYNOPSIS OF THE RESEARCH ORIGINS OF LEARNING DISABILITIES

European Research

In the middle 19th century, European neurologists established connections between injuries to specific areas of the brain and specific behaviors. Performing autopsies, Pierre Paul Broca concluded that speech functions reside in the inferior left frontal lobe, an area that would later be named Broca's area (Broca, 1861a, b, c). A few years later, Carl Wernicke reported on 10 case studies of brain-injured patients with language disorders (Wernicke, 1874). Although their speech was fluent, it did not make sense logically. Furthermore, the patients had problems recognizing and comprehending words. Also located in the left temporal lobe, this area has been named Wernicke's area.

Brain function and reading disorders. Whereas the work of Broca and Wernicke involved primarily adults with language impairments, Sir William Broad-

*Please send correspondence to: Paige C. Pullen, Ph.D., University of Virginia, Curry School of Education and Department of Pediatrics, School of Medicine, 417 Emmet Street South, Box 400273, Charlottesville, VA 22903, Email: pcp4k@virginia.edu.

bent can be credited as the first researcher to also tackle the issue of reading disorders. Broadbent's (1872) report on the case histories of six patients supported the idea that speech and language are linked to the left frontal lobe. In addition, one of the cases with left frontal lobe injury was an intelligent adult who lost the ability to read and name familiar objects while retaining the ability to write and converse. A few years later, Adolph Kussmaul (1877) introduced the label "word-blindness" to refer to reading disabilities.

Reading disorders in children and coining of term "Dyslexia." Rudolph Berlin, W. Pringle Morgan, and John Hinshelwood were among the first to report on reading disabilities in children. In the 1880s, Berlin, a German ophthalmologist, introduced the term, "dyslexia," stating that "dyslexia" was preferable to "word blindness" for a condition of neurological origin (Berlin, 1884, cited in Anderson & Meier-Hedde, 2001). "Dys" meaning abnormal, "lexia" meaning "words" or "language". Berlin proposed the term, "dyslexia," when referring to a boy who had severe reading and writing problems in spite of having normal intellectual ability. In 1896, Morgan, an English physician, published a case history of a child with reading disorders, which he named, congenital word-blindness (Morgan, 1896). Hinshelwood, in 1917, published *Congenital word-blindness*, a volume in which he noted the disproportionate number of males with this disorder and posited the potential heritability of congenital word-blindness (Hinshelwood, 1917). Additionally, Hinshelwood asserted that the primary area of disability was faulty visual memory for words and letters.

Across the Atlantic to the United States

By the early 1900s, researchers and practitioners in the U.S. were focusing their attention on reading disabilities, especially from an educational perspective. Grace Fernald, Samuel Orton, and Marion Monroe were among the most influential scholars during this time. Fernald advocated for an emphasis on teaching the reading and writing of words as wholes using a technique that integrated several sensory modalities including: visual, auditory, kinesthetic and tactile (VAKT) (Fernald & Keller, 1921).

Orton, a neuropathologist, while working in a clinic for children with reading disorders, noted that many of them had normal intelligence, thus providing the germ of the idea that a child's learning problems could be specific to reading. Like Fernald, Orton (1937) favored using a multisensory approach to reading. Orton, along with Anna Gillingham, promoted explicit phonics and blended instruction using a multi-sensory approach (Gillingham & Stillman, 1936). The Orton-Gillingham approach, or parts of it, remain popular today.

Marion Monroe, who had been Orton's research associate, developed a synthetic phonetic approach to the teaching of reading (Monroe, 1932). She kept alive Orton's notion of a discrepancy, calculating a reading index, the discrepancy between actual and expected level of reading achievement for a student. Notably, Monroe collected detailed data on children within order to decide on remedial prescriptions.

DEFINING "LEARNING DISABILITIES"

Samuel Kirk is usually credited as the originator of the term, "learning disabilities." He first used it in 1962 in a textbook (Kirk, 1962), but his use of "learning

disabilities” made its biggest impact in 1963. For some time, parents of children with normal intelligence but low achievement had been organizing and lobbying for services for their children. At a meeting of these parents, Kirk (1963) proposed the term “learning disabilities”. The parents, who were searching for a name for a proposed national organization, then formed the Association for Children with Learning Disabilities (ACLD), now known as the LD Association of America (LDA).

Since Kirk’s introduction of the term, there have been no fewer than 11 definitions of learning disabilities seriously considered by national organization and the federal government. However, the current federal definition, formerly presented in 1975, has stood the test of time and is the most popular:

GENERAL—The term “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 disorder may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

DISORDERS INCLUDED—Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

DISORDERS NOT INCLUDED—Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage (IDEA, Amendments of 1997, Sec. 602(26), p. 13).

CHARACTERISTICS OF STUDENTS WITH LEARNING DISABILITIES

In considering how best to identify and educate students with learning disabilities in the United States, professionals generally agree on several child characteristics that need to be addressed. The most obvious general characteristic of students with learning disabilities is, by definition, they have difficulties in *academic achievement*. In addition to achievement problems, they often exhibit deficits in *psychological/behavioral characteristics*.

Academic Achievement Problems

Students with learning disabilities can have problems in all areas of academics, but they most often have problems in reading and/or math.

Reading disabilities. Reading disabilities (sometimes referred to as “dyslexia.”) is usually cited as the most prevalent characteristic of students with learning disabilities (Hallahan, Kauffman, Pullen, 2015; Pullen, Lane, Ashworth, & Lovelace, 2011). All of the major areas of reading (phonological awareness, decoding, fluency, vocabulary, and comprehension) may be affected; however, most have problems in the early stages—phonemic awareness and decoding (Mercer, Mercer, & Pullen, 2011). Phonemic awareness and decoding deficits, then, usually result in fluency and comprehension problems.

Mathematics disabilities. Disabilities in mathematics, often referred to as “dyscalculia,” include difficulties with computation of mathematics facts as well as word problems (Fuchs et al., 2011). Research suggests that working memory and

retrieval from long-term memory deficits are connected to mathematics disability (Geary, Hoard, Nugent, & Baily, 2012). Unlike reading, what contributes to acquisition of mathematics ability has been more difficult to pin down, with many possible complex psychological processes possibly involved (Karagiannakis, Baccaglioni-Frank, & Papadatos, 2014).

Memory problems. Research has shown that students with learning disabilities tend to have deficits in working memory (Swanson, Kehler, & Jerman, 2010; Swanson, Zheng, & Jerman, 2009) and long-term memory (Prevatt, Welles, Li, & Proctor, 2010). Working memory consists of remembering information for a short period of time in order to use it to solve a problem that relies on that information. It is easy to see how this ability is a part of performing mathematical calculations. An example of long-term memory deficits contributing to mathematics problems is a student who has difficulty retrieving mathematics facts, e.g., “times tables”— 2×1 through 10, 11, . . . = ?; 3×1 through 10, 11, etc. = ?; 4×1 through 10, . . . ; etc. Sometimes, the student may know the “fact” in question but have problems in retrieving it quickly enough, thus further adding to his or her working memory problems.

Insufficient use of learning strategies. Beginning in the 1970s and early 1980s, researchers determined that many students with learning disabilities do not use strategies for learning that most non-disabled students use as a matter of course (Deshler, Alley, Warner, & Schumaker, 1981; Hallahan et al., 1983). Don Deshler and his colleagues developed, and continue to develop, several learning strategies for use with adolescents. The University of Kansas Center for Research on Learning (<http://www.kucrl.org>) has developed several strategies to help students organize and learn subject matter (e.g., science, history) more efficiently. Hallahan and colleagues introduced the idea of having students monitor their own performance, especially on-task behavior, in order for them to increase their academic productivity (e.g., Hallahan, Lloyd, Kosewicz, Kauffman, & Graves, 1979), a technique still used today. Self-monitoring usually consists of two components: self-evaluation and self-recording.

Among others who have developed instructional techniques based on the notion of strategy deficits pioneered by Deshler and colleagues and Hallahan and colleagues, are the teams of Karen Harris and Steve Graham, and Margo Mastropieri and Tom Scuggs. Much of Graham and Harris’s work has focused on providing learning disabled students with strategies for improving written expression. Scuggs and Mastropieri’s work has focused primarily on remembering information in content areas, such as history and science.

Harris and Graham often implement self-instruction as a way of combating strategy deficits. For example, in one study, the teacher instructed students on a three-step strategy for writing: saying aloud or to themselves: (1) *Think*—“Who will read this?”; (2) *Plan*—what to say with respect to topic sentence, reasons for writing the piece; and (3) Write more about the topic (Sexton, Harris, & Graham, 1998).

Scuggs and Mastropieri are best known for their development of mnemonic strategies students can use to remember important subject matter content. For example, in order for a student to remember that Monroe was the *fifth* president, they had students focus on a picture of a “hive” to link to “five” (Mastropieri & Scuggs, 1998).

Learning disabled students as “inactive learners” with meta-cognitive deficits. Hand in hand with students with learning disabilities’ inefficient use of

learning strategies is the notion of their being inactive learners (Torgesen, 1977). Joe Torgesen was the first to offer the notion of students with learning disabilities as inactive learners. In a now classic paper, he noted:

One of the common ways in which learning disabled children are described by clinicians and researchers is their developmental immaturity. The kinds of variables associated with increasing personal maturity, such as increasing sense of independence and responsibility for one's actions, an awareness of oneself as a separate individual, and a realistic assessment of one's strengths and weaknesses, are also associated with the ability to assume an active and efficient approach to learning school material. (Torgesen, 1977, p. 37)

Rather than being primed to attack academic tasks, they often appear at a loss as to how to proceed proactively. A major reason for this is that they have poor metacognitive skills, lacking awareness of what strategies are available to them for problem solving (Hallahan & Bryan, 1981; Hallahan, Lloyd, Kneidler, & Marshall, 1982):

An important role of metacognition in learning is the ability to determine when you understand what is being taught or read and when you are struggling. Individuals with good metacognitive skills know when they are struggling and use "fix-up" strategies, while individuals with poor metacognitive skills may not even realize that they lack understanding (Hallahan, Kauffman, & Pullen, 2015).

Social-Emotional Problems. Persons with learning disabilities tend to be at-risk for depression, social rejection, suicidal thoughts, and loneliness (Al-Yagon, 2007; Bryan, Burstein, & Ergul, 2004; Daniel et al., 2006; Maag & Reid, 2006; Margalit, 2006). Some have conjectured that this is due to their poor skills in reading social cues, similar to those with Asperger syndrome. Furthermore, students with learning disabilities often face repeated failure in academics, which in turn affects their self-esteem, self-concept, and motivation (Pullen et al., 2011).

DIAGNOSTIC CRITERIA FOR LEARNING DISABILITIES

In the U. S., the criteria practitioners use to identify students as having learning disabilities have been historically, as well as currently, contentious. To simplify a complicated topic, one can breakdown two general methods of diagnosing learning disabilities: IQ-achievement discrepancy (Discrepancy) and response to intervention (RTI).

IQ-Achievement Discrepancy (Discrepancy Approach)

Shortly after presenting its definition in the mid-1970s, the federal government published regulations on how students should be identified as learning disabled by the schools. Because of earlier influences (Ysseldyke, Alogozzine, & Epps, 1983), they mandated the need for a substantial discrepancy between a child's achievement level and his or her potential for achievement, leaving it for each state to decide how to determine whether a student had a severe discrepancy. Most states adopted a discrepancy approach—the difference between scores on standardized intelligence versus achievement tests. A variety of methods for determining a discrepancy have been adopted, ranging from simple standard-score comparisons to elaborate formulas.

Response to Intervention (RTI)

Criticisms of the discrepancy method appeared immediately. Many objections were based on relatively nuanced statistical arguments. However, the criticism that struck a chord with most practitioners and scholars was that, because students are not yet old enough to obtain meaningful and reliable reading and math scores until third and fourth grade, it is difficult to find a discrepancy. This situation has resulted in the IQ-achievement approach being labeled a “wait-to-fail” model (Hallahan, Kauffman, & Pullen, 2015; Kavale, 2005; Pullen & Mercer, 2009; Shaywitz & Shaywitz, 2009). In its place, policy makers have proposed what is referred to as a response to intervention (RTI) approach.

Variations exist, but RTI usually consists of three tiers of instruction. Tier 1 is typical instruction (with the important provision that it be evidence-based) delivered in the general education classroom. Students not doing well in Tier 1 are provided more intensive instruction in small groups several times a week (Tier 2) (See Pullen & Hallahan, 2015 for a description of intensive instruction). Those who are still struggling following Tier 2 interventions are referred for special education evaluation, with special education being Tier 3.

Many policy makers, researchers, and practitioners believe RTI makes theoretical sense, and it is fast overtaking IQ-achievement as the preferred method of identification of learning disabilities. However, given the complexity involved in implanting RTI, it is not surprising that questions still remain regarding its effectiveness (O'Connor & Sanchez, 2011). Just as one example, RTI assumes effective instruction in Tier 1, but this cannot always be guaranteed. Another potential problem, which is ironic given the assumption that RTI would address IQ-achievement's criticism as being a wait to fail model, is the possibility of a recycling between Tiers 1 and 2. Given more intensive instruction in Tier 2, a student might do substantially well to return to Tier 1, but again do poorly with reduced instructional intensity and need to return to Tier 2. This bouncing between Tiers 1 and 2 might delay what the student actually needs—Tier 3. In a recent longitudinal study, O'Connor and her research team found that one-third of the students in the study were not identified as learning disabled until the fourth grade (O'Connor, Bocian, Beach, Sanchez, & Flynn, 2013).

Although many issues remain regarding the implementation and effectiveness of RTI, the current special education Zeitgeist favors its use for identifying students with learning disabilities. Its appeal to common sense and logic contributes to its irresistibility as a method of identification *if implemented appropriately*. However, the jury is still out on the proper implementation and the scientific evidence base of RTI. Many variations in the implementation of RTI make it very difficult to study and validate what is appropriate and to determine the efficacy of RTI as the primary means for identifying individuals as LD (Berkley, Bender, Peaster, & Saunders, 2009; Fuchs & Fuchs, 2006; McKenzie, 2014).

EPIDEMIOLOGY OF LEARNING DISABILITIES

When the U. S. Federal Government officially recognized children with learning disabilities as qualified for identification and provision of special education in 1975, it mandated that states report annually a variety of demographics of all the students identified for special education, including those with learning disabilities.

Beginning in the 1970s, the prevalence of learning disabilities as a percentage of the population between 6 and 17 years of age increased steadily from about 2 or 3% to its asymptote of 5.59% in 2001. Since then, the prevalence has decreased steadily. As of 2011 (the most current figures available), 4.39% of students 6 to 17 years were identified as learning disabled. Although no definitive analyses are available, some speculate that this decrease in the early 2000s was due to the replacement of IQ-achievement discrepancy by RTI as a method of identification as learning disabled.

An important demographic is that males are more likely than females by 3 to 1 to be identified as learning disabled (Cortiella, 2009). Various theories have been promoted to explain this difference. Some have suggested that it might be due to males' greater biological vulnerability (e.g., infant mortality rate for males is higher and they are at risk for a variety of biological abnormalities). Some have pointed to referral bias, suggesting that boys are more likely to be referred for special education when they do have academic problems because of other behaviors that bother teachers, such as hyperactivity, but research outcomes on this issue are mixed (Clarizio & Phillips, 1986; Leinhardt, Seewald, & Zigmond, 1982; S. E. Shaywitz, Shaywitz, Fletcher, & Escobar, 1990).

ETIOLOGY OF LEARNING DISABILITIES

Researchers have documented neurological dysfunction as a probable cause of learning disabilities using neuroimaging techniques such as magnetic resonance imaging (MRI), functional magnetic resonance imaging (fMRI), functional magnetic resonance spectroscopy (fMRS), and positron-emission tomography (PET) scans. Several researchers have found structural and functional differences in the left temporal lobe of those with and without reading disabilities (Gabrieli, 2009). Of note, these are in the same general vicinity as Broca's area and Wernicke's area, which in the nineteenth Century were found to be responsible for expressive and receptive language abilities (Broca, 1861a, b, c; Wernicke, 1874).

Research strongly suggests that the neurological differences in individuals with learning disabilities are due to genetic factors. It has long been known that reading disabilities tend to run in families (Hallgren, 1950; Pennington, 1990). Strengthening these studies of familiarity have been several twin studies. Making a convincing case for the heritability of learning disabilities are several studies that show that if a biological twin has a learning disability the odds are much higher that the other twin will also have a learning disability than if the twins are fraternal (DeFries, Gillis, & Wadsworth, 1993; DeThorne et al., 2006; Lewis & Thompson, 1992; Reynolds et al., 1996; Shalev, 2004).

MEETING THE NEEDS OF STUDENTS AND ADULTS WITH LEARNING DISABILITIES

In the US, individual states are responsible for determining how the needs of individuals with learning disabilities are met. The federal laws, i.e., the Individuals with Disabilities Education Act (IDEA) and the Americans with Disability Act (ADA) provide guidelines to states. A state may go beyond what is required in the federal regulations, but they must meet those guidelines as a minimum.

Instruction in School Settings

Citing U. S. Federal law, Pullen and Hallahan (2015) assert *individualization* as the cornerstone of special education:

Special education means specially designed instruction to meet the unique needs of a child with a disability,

Specially designed instruction means adapting, as appropriate to the needs of an eligible child under this part, the content, methodology, or delivery of instruction--

To address the unique needs of the child that result from the child's disability (Sec. 300.39 Special Education, <http://idea.ed.gov/>)

The primary instrument used to prescribe the individualized instruction is the individualized education program (IEP). The IEP is a legal document that spells out the basic features of the student's instructional needs and how they shall be addressed. In sum, it includes (a) present levels of academic achievement and functional performance; (b) measurable annual academic and functional goals; (c) description of how progress will be measured; (d) any needed related services and supplementary aids; and (e) any individual appropriate accommodations necessary to measure academic achievement and functional behavior.

Explicit, Systematic, and Intensive Instruction. In order to carry out such individualized instruction, Pullen and Hallahan (2015) have recommended that the instruction be (a) explicit, (b) systematic, and (c) intensive, with (d) corrective feedback and (e) positive reinforcement. Explicit instruction involves the teacher providing a clear explanation of and modeling of the skills or concepts being taught (Mercer & Pullen, 2009). Systematic instruction involves sequencing instruction such that one concept builds upon another, ensuring the student knows a set of skills before moving on to more difficult concepts, and separating strategies and information that students are likely to confuse (Carnine, Silbert, Kamé enui, Tarver, & Jungjohann, 2006). Intensity of instruction is dependent on frequency (how often it occurs) and duration (the amount of time it entails). Given that time is a zero-sum commodity, the teacher needs to prioritize what areas (e.g., vocabulary building, phonemic segmenting) need more time than others (Zigmond & Pullen, 2012).

Corrective Feedback and Positive Reinforcement. Teachers are sometimes reluctant to correct students when they make errors, thinking that it might lead to negative self-concepts. However, an overwhelming number of articles, including several research syntheses (Brosvic, Dihoff, Epstein, & Cook, 2006; Chard, Vaughn, & Tyler, 2012; Kouri, Selle, & Riley, 2006; Wanzek et al., 2006), have documented the positive impact of corrective feedback on the academic performance of learning disabled students. Many of these studies have also included teachers modeling the correct performance. Those favoring correction point out that it only hurts to let students continue to make errors.

Pullen and Hallahan (2015) have lamented the seeming decline in the popularity of research on positive reinforcement for students with learning disabilities performance. They conjecture that its earliest connection to operant conditioning, with its reliance on strict behavioral principles, might have caused it to be viewed as squelching teachers' creativity and students' intrinsic motivation. However, Pullen and Hallahan recognize:

the important role of intrinsic reinforcement, such as a student's feeling positive because of having completed a task or of having straightforwardly been given feedback on, for example, the number of problems solved correctly. However, for our purposes we focus more on extrinsic reinforcement—teacher behaviors associated with reinforcement. And we consider extrinsic reinforcement as being on a continuum from more to less overtly extrinsic, e.g., free time on playground, tokens that can be used to “buy” free time on the playground, social praise (p. 41).

Secondary School, Post-Secondary School and Transition to Adulthood

Unfortunately, the U. S. secondary school dropout rate of 25% for students with learning disabilities is two to three times that of non-disabled students. (Cortiella, 2009; Rojewski & Gregg, 2011). Also, they experience a high rate of problems in learning, socializing, holding jobs, and living independently (Scanlon, Patton, & Raskind, 2011).

Secondary School. Secondary school programming is usually focused on preparing students with learning disabilities for the world of work and/or for post-secondary school. Those preparing for work are taught basic reading and math skills, as well as functional skills, such as on-the-job behavior and balancing a checkbook. Internships and paid work experiences is associated with successful employment upon graduation (Rojewski & Gregg, 2011).

For those preparing for post-secondary school, the emphasis is focused more on academic skills. Many students with learning disabilities attend the same classes in the sciences, social studies, math, and foreign language alongside students without disabilities. The role of the special education teacher, then, is often to recommend strategies to learn the content provided by the general education teacher (Deshler et al., 2001).

Post-Secondary School. Section 504 of the Vocational Rehabilitation Act of 1973 (Public Law 93–112) requires that colleges make reasonable accommodations for students with disabilities. Some typical accommodations are extended time on exams, taking exams in a distraction-free setting, using volunteer note takers for lectures. Reading Ally, formerly known as Recordings for the Blind and Dyslexic, produces and maintains a library of educational audiobooks.

Adults with Learning Disabilities: Overall Conclusions. Much remains to be done to improve outcomes for adults with learning disabilities. However, their fortune has improved dramatically in just the past few decades. Although as noted earlier, about 25 percent of secondary school students drop out, dropout rate is down 40% since 1997. Furthermore, the number of students with learning disabilities graduating with a regular high school diploma is up 20% (Cortiella, 2009).

Researchers are making progress in determining the factors that make for a successful experience in adulthood. In addition to exposure to good instruction and programming starting in elementary school and continuing through post-secondary school and beyond, several personal characteristics should be nurtured. Adults with learning disabilities who are more successful possess an extraordinary amount of perseverance, are able to set goals for themselves, have a realistic evaluation of their

strengths and weaknesses, a strong social network, and are able to take control of their lives despite their disabilities (Bear, Kortering, & Braziel, 2006; Lindstrom & Benz, 2002; M. H. Raskind, Rojewski & Gregg, 2011).

FINAL THOUGHTS

The field of LD in the United States has had a tumultuous history. Controversy has surrounded issues related to definition, identification, and the provision of services. Despite these controversies, research has provided a solid understanding of the challenges individuals with LDs face and interventions to improve their academic and life outcomes. Professionals in the field of LD must continue to conduct research on best practices for identification, supports, and interventions. Perhaps most important, we must demand excellence in the field and advocate for individuals with LDs to ensure that they have an opportunity for success in school and in life.

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