

Chapter Two

A BRIEF HISTORY OF DYSLLEXIA

Every child would read if it were in his power to do so.

—Betts, 1936, p. 5

As noted by Betts in 1936, all children want to learn to read; for some, however, learning to read is a daunting task that requires years of carefully crafted interventions. Physicians and educators have attempted to understand for well over a century why reading is so difficult for some individuals, and most importantly, what can be done to resolve these difficulties. Dyslexia is often described as the most common learning disability. In fact, reading is the primary problem for approximately 80% of the individuals identified as having learning disabilities (U.S. Department of Education, 2006). Although some people think that learning disability is a new category, the conceptual foundations of learning disability are nearly as longstanding as many of the other disability categories, and the roots can be traced back to at least the early 1800s (Hallahan & Mercer, 2002; Wiederholt, 1974). In fact, the systematic investigation of learning disabilities began around 1800 with Gall's examination of adults who had lost the capacity to speak (Hammill, 1993). Interestingly, many of the conclusions that were drawn in the late 1800s regarding the existence and persistence of this disorder are still pertinent today.

Initially, dyslexia was considered to be one of the aphasias, which included losses to some aspects of language including reading and writing. It was first referred to as *word blindness*, a label selected to describe individuals who were not physically blind, but seemed to have limited ability to recall the visual images of words necessary for reading and spelling. The individual could actually see the letters and words, but could not pronounce the words or interpret their meanings when reading. Over the next few decades of the 1920s and 1930s, the term *word blindness* would be replaced by *dyslexia*, *developmental dyslexia*, or *specific reading disability*. In this chapter we begin with a brief review of the earliest descriptions

of dyslexia, and then we highlight the particular contributions of a few of the early pioneers, including Drs. James Hinshelwood, Grace Fernald, Samuel Orton, Norman Geschwind, Albert Galaburda, Marion Monroe, Samuel Kirk, Helmer Myklebust, and Doris Johnson. Figure 2.1 presents a timeline of these contributions.

EARLY CASE STUDIES AND INVESTIGATIONS BY PHYSICIANS

The first case studies of individuals who had lost the power to read—usually because of a stroke or brain injury—were adults. These patients were described by physicians from the United Kingdom, Germany, and the United States who attempted to identify the characteristics, etiology, and methods that would be most effective for treating these reading disorders (Anderson & Meier-Hedde, 2001). Word blindness was described as being either *acquired* or *congenital*. Acquired word blindness resulted from trauma after the person had already learned to read, whereas congenital word blindness was present before the person had learned to read (Pickle, 1998).

EXAMPLES OF THE EARLIEST REPORTS

In 1872, Sir William Broadbent described the cortical damage present in an autopsy of an individual who had speech disturbances and reading disabilities.

DON'T FORGET

Acquired word blindness resulted from some type of trauma to the brain, whereas congenital word blindness was present from birth.

Five years later, Kussmaul, a German neurologist, described an adult patient with severe reading disabilities and noted that “. . . a complete text blindness may exist although the power of sight, the intellect, and the powers of speech are intact” (1877a, p. 595). Thus, the term *word blindness* was first applied

to individuals with aphasia who had lost the ability to read (Kussmaul, 1877b). By emphasizing the specificity of the reading disability, Kussmaul gave birth to the idea of dyslexia or specific reading disability (Hallahan & Mercer, 2002). Kussmaul (1877c) also introduced the term *word deafness* to describe individuals whose hearing was perfect, but who had trouble understanding words that were heard. Kussmaul (1877c) believed that some of the cases that had been recorded as aphasia could be more aptly described as *word blindness* or *word deafness* as the patients were still able to express their thoughts in speaking or writing (p. 770).

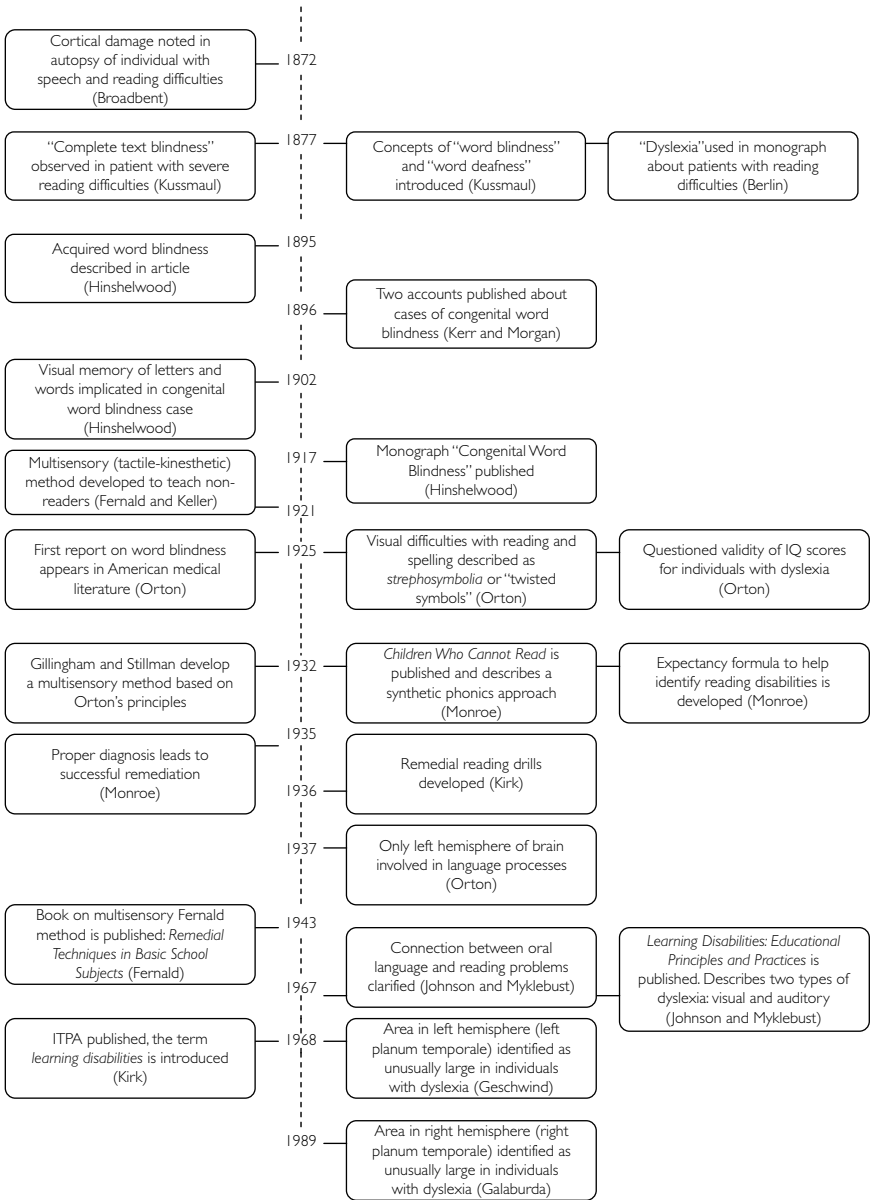


Figure 2.1 Timeline of Contributions by Highlighted Early Pioneers

Although some online sources, such as *Wikipedia*, note that dyslexia was first described by Oswald Berkhan in 1885, it appears that the first physician to actually write using the term *dyslexia*, was Rudolph Berlin, a German ophthalmologist, who used the word to describe reading problems that were a result of cerebral disease (Richardson, 1992; Wagner, 1973). Berlin described several of his patients who had difficulty reading printed words and complained of headaches when reading. In 1884, Berlin wrote a monograph on dyslexia that described this condition as belonging to a group of aphasia and being related to Kussmaul's word blindness, although not as severe. In postmortem dissections of six cases, Berlin found anatomical lesions in the left hemisphere (Wagner, 1973). Although the term *dyslexia* had been introduced, the term *word blindness* was used more frequently during this time period.

In 1896, two more accounts of congenital word blindness were published. James Kerr, a health officer, wrote the first account in which he described a boy of average intelligence who suffered from word blindness despite being able to spell the separate letters (cited in Critchley, 1964). Pringle Morgan (1896) wrote the second article that described the characteristics of an intelligent 14-year-old boy with "congenital word blindness" who excelled in arithmetic but could not read. Morgan provided the following description:

His greatest difficulty has been—and is now—his inability to learn to read. This inability is so remarkable, and so pronounced, that I have no doubt it is due to some congenital defect . . . The following is the result of an examination I made a short time since. He knows all his letters and can write them and read them. In writing from dictation, he comes to grief over any but the simplest words. For instance, I dictated the following sentence: "Now, you watch me while I spin it." He wrote, "Now you word me wale I spin it" and again, "Carefully winding the string round the peg" was written "culfully winder the sturng rond the pag." In writing his own name, he made a mistake, putting "Precy" for "Percy," and he did not notice the mistake until his attention was called to it more than once . . . I then asked him to read me a sentence out of an easy child's book without spelling the words. The result was curious. He did not read a single word correctly, with the exception of "and," "the," "of," "that," etc.; the other words seemed to be quite unknown to him, and he could not even make an attempt to pronounce them . . . He seems to have no power of preserving and storing up the visual impression produced by words—hence the

words, though seen, have no significance for him. His visual memory for words is defective or absent, which is equivalent to saying that he is what Kussmaul has termed “word blind.” I may add that the boy is bright and of average intelligence in conversation . . . his eyesight is good. The schoolmaster who has taught him for some years says that he would be the smartest lad in the school if the instruction were entirely oral. (1896, p. 94)

Both Pringle Morgan and James Hinshelwood extended the work on acquired word-blindness in adults to congenital word-blindness in children (Hallahan & Mercer, 2002).

DR. JAMES HINSHELWOOD

In 1895, James Hinshelwood, an ophthalmologist and surgeon at the Glasgow Eye Infirmary, wrote an article that described acquired word blindness. In 1902, he provided a detailed description of a case of congenital word-blindness where the reading problem was attributed to a defect in the visual memory of letters and words. He described a 10-year-old boy with adequate visual acuity who could not learn words by sight but instead spelled out words letter by letter. Hinshelwood observed that since this boy had trouble learning to read by sight alone, he would benefit from a multisensory teaching method. Hinshelwood further noted that the diagnosis of word blindness is easy to make because the features of the disorder are distinct and easily understood. Over a century later, Shaywitz (2003) concurred that the diagnosis of dyslexia is as precise and accurate as any known medical condition.

In 1917, Hinshelwood reviewed the articles that were written by Kerr and Morgan in his seminal monograph entitled *Congenital Word-Blindness*. Within this monograph, Hinshelwood attempted to clarify a distinction between word blindness and more generalized developmental delays by summarizing:

When I see it stated that congenital word-blindness may be combined with any amount of other mental defects from mere dullness to low-grade mental defects, imbecility, or idiocy, I can understand how confusion has arisen from the loose application of the term congenital word-blindness to all conditions in which there is defective development of the visual memory center, quite independently of any consideration as to whether it is a strict local defect or only a symptom of a general cerebral degeneration. It is a great injustice to the children affected with the pure type of congenital

word-blindness, a strict local affection [*sic*], to be placed in the same category as others suffering from generalized cerebral defects, as the former can be successfully dealt with, while the latter are practically irremediable. (1917, pp. 93–94)

Because Hinshelwood believed that word blindness was caused by a defect in the part of the brain that stored the visual images of words, he speculated that the cause of the problem could be found in the angular and supramarginal gyri of the left or dominant side of the brain, specifically the left angular gyrus. Hinshelwood believed that the deficit was confined to the visual memory center in an otherwise normal and healthy brain (Hinshelwood, 1917). Hinshelwood also attempted to develop specific procedures for teaching children with word blindness. He believed that “. . . the child must have personal instruction and be taught alone” (p. 99). Rapid Reference 2.1 provides a summary of Hinshelwood’s major conclusions, many of which are still relevant today. Although Hinshelwood noted that many of his cases were highly intelligent, with the advent of intelligence tests, Samuel Orton was able to provide a certain degree of objectivity to support this notion (Hallahan & Mercer, 2002).

DR. SAMUEL ORTON

Dr. Samuel Orton, a psychiatrist and neuropathologist, is credited with the first report on word blindness that appeared in the American medical literature.

Rapid Reference 2.1

Hinshelwood’s Conclusions Regarding Word Blindness

- Particular areas of the brain are involved.
- The children often have average or above intelligence and good memory in other respects.
- The problem with reading is localized, not generalized to all areas of performance.
- The children do not learn to read with the same ease as other children.
- The children require individualized instruction.
- The earlier the problem is identified, the better so as not to waste valuable time.
- The children must be taught by special methods to help them overcome their difficulties.
- The sense of touch helps children retain the visual impressions of letters and words.
- Persistent and persevering attempts will help children improve their reading.

Orton agreed with Hinshelwood that word blindness: (a) was not related to mental retardation, (b) ranged from mild to severe, and (c) was caused by differences within the brain. Orton surmised that the left hemisphere was the only side of the brain that was involved in language processes and described the right side of the brain “. . . as either useless or unused” (S. T. Orton, 1937, p. 13). Orton also questioned the validity of intelligence test scores for children with word blindness. Because these tests often measured aspects of the disability, Orton (1925) surmised that “. . . it seems probable that psychometric tests as ordinarily employed give an entirely erroneous and unfair estimate of the intellectual capacity of these children” (p. 582).

DON'T FORGET

Orton was the first to suggest that word blindness may be due to brain differences rather than brain damage.

One specific characteristic that Orton observed in the children he studied was the poor recall of both the orientation and sequencing or ordering of the letters when reading and spelling. To describe this phenomenon, Orton coined the term *strepbosymbolia*, which means “twisted symbols” (J. Orton, 1966; S. T. Orton, 1925, 1937). Orton hypothesized that the reversal errors that were common in children with reading disabilities could be attributed to a lack of cerebral dominance in the left hemisphere. Essentially, he speculated that the images recorded in the dominant left hemisphere of the brain (e.g., *on*) were stored as mirror images in the nondominant right hemisphere (e.g., *no*). For individuals with dominant left hemispheres, this mirror image would be suppressed, but for children with mixed dominance, the image would not be suppressed and would, therefore, contribute to the reversals of letters and transpositions of words (e.g., *was* for *saw*). Although the theory regarding mixed cerebral dominance as Orton described it is unsupported today, some evidence suggests that children with dyslexia do in fact activate some right hemisphere portions of the brain to compensate for deficiencies in the left hemisphere. Specifically, as children with dyslexia learn to read, they fail to make good sound-symbol associations in the left hemisphere of the brain; therefore, they rely on memorization of words, a function that takes place in the right hemisphere (S. E. Shaywitz & B. A. Shaywitz, 2008). Regardless of the inaccuracy of his theory, Orton had an enduring impact on the development and use of remedial interventions through his observation that multisensory phonics instruction is essential.

Orton (1925) addressed the type of remedial instruction that would be most beneficial for these children, stating: “. . . the logical training for these children would be that of extremely thorough repetitive drill on the fundamentals of phonic association with letter forms, both visually presented and produced

in writing, until the correct associations were built up and the permanent elision of the reversed images and reversals in direction were assured. The flash method would seem from this point of view not only to be inadequate to correct early mistakes in orientation, but also to put these children under an unnecessary and unjust handicap, at least until they had acquired the fundamentals in readily available form. The child has no opportunity to puzzle out whether a symbol means *p* or *q* by the flash method, and many such errors might well be perpetuated” (p. 614).

Orton also developed an educational approach for teaching children with reading disabilities. Between 1932 and 1936, he directed the Language Research

DON'T FORGET

Orton (1925) indicated that a sight word (or look-say) approach to reading would not be beneficial for children with dyslexia. Instead, these children required a multisensory, structured phonics approach.

Project of the Neurological Institute of New York. One of his associates was Anna Gillingham, a psychologist, who with the assistance of Bessie Stillman, an educator, organized Orton's principles into a remedial, multisensory approach to alphabetic phonics that was designed to teach the English language structure, including phonemes, morphemes, and spelling rules.

This became known as the Orton-Gillingham approach when June Orton in 1966 used this term in a book chapter. Today, the Orton-Gillingham approach is the basis for many of the current remedial reading approaches, including the Wilson Reading System. Orton was one of the first pioneers to recognize the importance of sound blending to the application of phonics. He observed: “It is this process of synthesizing the word as a spoken unit from its component sounds that often makes much more difficulty for the strephosymbolic child than do the static reversals and letter confusions” (S. T. Orton, 1937, p. 162). Orton also believed that tracing could help build up the associations between letters and sounds and eliminate the tendency of children to reverse and transpose letter sequences when reading and spelling. Thus, the alphabetic methodology that Orton and Gillingham developed is referred to as multisensory in nature, a visual-auditory-kinesthetic-tactile (VAKT) approach, as many senses are employed when teaching the structure of written English. Emphasis is placed on how a letter looks, sounds, and feels (J. Orton, 1966). Within this approach, the teacher provides training in both reading and spelling. The teacher shows a letter, the child produces the sound, the teacher says the sound, and the child names and writes the letter. Rapid Reference 2.2 summarizes the major principles underlying the Orton-Gillingham methodology. Rapid