ASPECTS IN MANAGEMENT OF DYSLEXIA BY BEHAVIORAL OPTOMETRISTS

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Abstract
Optometric management of reading dysfunction is important in both primary eye and vision care practice as well as the more specialized areas of pediatric care and vision therapy. The role of vision therapy in the treatment of visually-related learning problems is emphasized in the context of understanding the nature of reading dysfunction and dyslexia in particular. This leads to a differential diagnosis that encourages a better understanding of the entire therapy approach and is vital for prognostic purposes. Certain principles, and a rationale for incorporating dyslexia testing procedures into the optometric evaluation of the patient with reading dysfunction are discussed. Finally, therapy procedures are presented which include multisensory language techniques. The practitioner is enlightened as to the benefit of conventional optometric vision therapy in a management plan where it serves as a foundation for multisensory language techniques for individuals with dyslexia.

Key Words
dyslexia, vision therapy, multisensory language therapy, dyseidesia, dysphonesia, reading disability, learning disability

The issue of "dyslexia" has beleaguered eye care professionals since the late 1800s when this type of reading problem was studied by James Hinshelwood, a Scottish ophthalmologist. He observed patients who, in spite of apparent normal intelligence, had great difficulty visually processing written language required for good reading, writing, and spelling. For many years since then, little information was forthcoming as to the nature of dyslexia. In fact so much confusion abounded in the field that in 1970 Critchley stated, "the term dyslexia has come to have so many connotations that it has lost all value for educators; it is just a fancy term for a reading problem."[1]

It is within this "definitional void" that research and clinical studies have been done to define dyslexia in neurological-behavioral terms. Dyslexia is now generally accepted to be neurologically based and the behavioral correlates are poor decoding (word recognition) and poor encoding (orthographic spelling and writing of words). Behavioral optometry has evolved with its beneficial functional approaches. The remediation of visual information processing (e.g., visual- perceptual-motor) skills in children with learning difficulties is a field that has paralleled the kind of work done by others, such as occupational therapists, in attempting to identify fundamental skills necessary for particular psychomotor tasks (e.g., dexterity skills and motor planning for buttoning a shirt in the case of a convalescing stroke patient). Behavioral optometry pioneered the identification and remediation of visually-related learning skills. These skills were determined to include vision efficiency skills (e.g., oculomotor function, accommodation, vergence and fusion) and visual processing skills (e.g., laterality/directionality, motor-free visual perception, visual-motor integration, and auditory-visual integration).[2] This optometric approach has been beneficial for many patients, particularly children, with visual developmental deficits (e.g., letter reversals, poor sequencing, poor ability to organize written tasks on paper) that contributed to their reading dysfunction.

Flax[3,4] outlined issues of visual function and their relevance to reading. A key point was the fact that very different visual skills were required for "learning to read" versus those needed for sustained reading as in the process of "reading to learn." His writings gave credence to the management of vision problems in children with reading dysfunction. Visual processing skills were emphasized as important factors underlying reading "readiness" in the early grades. Additionally, the critical nature of accommodative and binocular anomalies as they relate to older children and adults (who are "reading to learn") was underscored. Asthenopia, headaches, nearpoint inefficiency and other symptoms become prevalent as the reading demand increases. It seems that visual information processing skills are particularly vital in "learning to read" and that vision efficiency skills are particularly vital in "reading to learn."

Using multivariate analysis, Solan and Mozlin[5] demonstrated the relation between visual processing skills and reading achievement in the early grades (kindergarten through second grade). They pointed out that in the later grades, particularly above second, visual processing factors were not as highly correlated with reading and that linguistic factors became increasingly more important.

A clinical dilemma occurs when the behavioral optometrist is confronted by one of those patients whose struggles are embodied in the group that Solan and Mozlin found to be more impacted by linguistic factors. How can the clinician determine which patients fall into that category? What can be done to address these patients' concerns as a part of the overall management? Should vision therapy be a part of their treatment?

In the search for answers to these questions, a reliable method of directly diagnosing dyslexia was developed by two optometrists.[6] One of the outcomes of their research was the Dyslexia Determination Test (DDT). This test allows for clarification of the confusion which has abounded as a result of the nebulous defining of dyslexia and the problems inherent in merely trying to diagnose by "exclusion." As a result of the exclusion diagnosis, dyslexia had become a "wastebasket" term, in our opinion. A neurobehavioral model of dyslexia, however, clarifies the definition of dyslexia.[7,8] This model addresses the clinical issues, noted above, when factors other than, or in addition to, vision problems are prominent in a patient with reading dysfunction. Dyslexia can be assessed directly instead of being indirectly presumed as in the process of exclusion. We point out, however, that direct testing as with the DDT must also include the accounting for "exclusionary" factors (e.g., Attention Deficit Hyperactivity Disorder (ADHD), IQ, primary emotional problems, and neurological handicaps).

Understanding the neurobehavioral model of dyslexia and using direct testing for dyslexia offers the clinician a differential diagnostic model upon which to base decisions for management of reading dysfunction. For example, when a reading dysfunction exists with visual information processing problems and without dyslexia,[6-8] then the approach of vision therapy is likely to be strongly indicated. Enhancement of sequential/simultaneous processing can be recommended with a strong expectation of significant improvement in reading and academic performance.[9] However, when dyslexia can be directly determined by testing with the DDT, then a different prognostic picture may arise. Especially consider a patient who manifests a markedly severe combined pattern of dysphoneidetic dyslexia.[6-8] This patient will not likely show significant improvement in reading with vision therapy alone. Vision therapy may well be indicated, depending on the case findings, but most assuredly multisensory-phonetic-language therapy will be integrally important in achieving full literacy potential for this patient. Details on the types of dyslexia, optometric management, and educational strategies are covered elsewhere.[7,8,10]

One treatment method worth mentioning is a pioneering effort by Halapin,[11] who developed a unique multisensory method of language instruction while collaborating to some degree with a behavioral optometrist, Dr. Richard Apell. The principles utilized in training of written language are a natural extension of the conventional visual-perceptual-motor therapy strategies. A child's sequential and simultaneous visual processing skills are maximized to allow for integrated perceptual-motor function as a basis for learning the structure of language. For example, long and short vowel sounds are taught using a floor map that utilizes kinesthetic input with visual and auditory reinforcement. This method serves as a basis for learning the concepts of open and closed syllable construction and how the long and short vowel sounds are incorporated into syllables and words. Once this foundation is developed the child is ready to progress to other phonetic concepts such as consonant-vowel-consonant ("cut"), vowel-consonant-e ("cute") for short and long vowel sounds, respectively.

There is overlap between the fundamental aspects of the above language program and the goals of visual processing therapy. Recognition and recommendation of this multisensory language approach does not represent a departure from current and conventional optometric intervention, but only a modification for improving management outcomes in cases of reading dysfunction.

Some clinicians have spoken to us with the concern that the approach we are presenting is conflicting with their concept of care for visually-related-learning problems.[12] This concern is hopefully allayed in this article. Granted there is some skepticism about optometric involvement in the area of language-based functions, as in testing with the DDT. At issue is whether detection of dyslexia is a function to be performed by optometry. In a rhetorical pose, is detecting hypertension, diabetes, and high serum cholesterol within the purview of optometry? Certainly the role of the optometrist in primary care is one of gathering the data necessary to make management decisions. In recent years this role, along with the expanding scope of practice, has meant that optometrists are involved in performing diagnostic and management services that would have been difficult to imagine not so many years in the past. Witness the advent of optometric tests such as blood sugar testing, gonioscopy, visually-evoked cortical potentials, threshold visual fields, ordering tests such as blood panels to rule out systemic disease and, most recently, laser refractive surgery. In the field of pediatric care and vision therapy, it is not only appropriate to use direct testing for dyslexia, but it may one day be malpractice to conduct vision therapy without having those test results. As an analogy, would an optometrist be at risk for malpractice if he/she conducted exhaustive patching therapy for amblyopia to improve visual acuity if the patient had optic atrophy? Similarly, reading dysfunction may be completely due to dyslexia; vision therapy would have a minimal effect on reading and spelling in such a case.

The field of caring for individuals with dyslexia has been fraught with confusion and much publicized, ill-founded cures.[13] Often there is discouragement and disillusionment for individuals who suffer with reading dysfunction. Using the direct diagnostic method of diagnosing dyslexia, at least 10 % of the population has one of the several types of dyslexia.[14] In a private practice with emphasis in pediatrics and vision therapy, there was a prevalence of 50% among those seeking care for visually-related learning problems.[10] We believe that this is a representative sample of most optometric offices treating children with reading problems. As behavioral optometrists we must make a choice in terms of care as a member of the multidisciplinary team involved with reading dysfunction. We can offer clarification. Confusion occurs when we ignore the direct methods of detecting dyslexic patterns when managing cases of reading dysfunction.

One of us (Dr. Christenson) was involved in a study of 14 elementary school children with the mixed pattern of dyslexia, dysphoneidesia. The study showed that one year of multisensory language therapy in special education (and vision therapy in some cases) resulted in significant improvement in decoding skills, as measured by grade level (p=.001).[10] However, none of the cases showed that dyslexia had been cured. This persistence of dyslexia is consistent with the high prevalence of dyslexia among adults in literacy programs.[14] Dyslexia is usually not cured by vision therapy or by other current therapies. However, progress can be made to help individuals with reading dysfunction if appropriate management plans are carried out. Behavioral optometrists have the knowledge and clinical tools to work in the multidisciplinary team and help patients with reading dysfunction. Sound scientific principles of diagnosis and treatment of reading dysfunction accrue to the benefit of patients who seek our care for the main purpose of improving their ability to read, write, and spell.

ANSWERS TO ACRONYM QUIZ (from page 114)

1. Anterior Ischemic Optic Neuropathy
2. Afferent Pupillary Defect or Relative Afferent Pupillary Defect
3. Against-the-Rule Astigmatism
4. Anomalous Retinal Correspondence or Anomalous Correspondence
5. Auditory Visual Integration Test (Birch Belmont)
6. Background Diabetic Retinopathy
7. Base-In with Minus
8. Base-Out with Plus
9. Branch Retinal Vein Occlusion
10. Convergent Accommodation to Convergence (ratio)
11. Convergence Insufficiency
12. (Optic) Cup to Disc (ratio)
13. Cerebral Vascular Accident
14. Developmental Eye Movement (test)
15. Divergence Excess
16. Intermittent Esotropia at Near
17. Giant Papillary Conjunctivitis
18. Monocular Accommodative Rock
19. Monocular Estimate Method (retinoscopy)
20. Monocular Training in a Binocular Field
21. Polymethylmethacrolate
22. Primary Open Angle Glaucoma
23. Recurrent Corneal Erosion
24. Retinitis Pigmentosa
25. Retinopathy of Prematurity
26. Subjective, Objective, Assessment, Plan
27. Superficial Punctate Keratitis
28. Short Wave Automated Perimetry
29. Traumatic Brain Injury
30. Tear Break Up Time or Break Up Time
31. Transient Ischemic Attack
32. Test of Visual Perceptual Skills
33. Visual Motor Integration
34. Exophoria at Distance

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Date accepted for publication:
July 20, 1996