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An overview of dyslexia from the perspective of an optometry student

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Dyslexia has been a topic of much debate as to causes and possible cures. This paper explores the various areas of dyslexia and learning disability to educate the reader as to the controversy involved among professions. There exists strong opposition toward Optometric intervention in this area however, there are arguments for specific treatment approaches addressing visual problems that can coexist with dyslexia. An overview of present theories will be presented along with general recommendations the Optometrist can follow in managing the dyslexic.

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An Overview of Dyslexia
from the
Perspective of an Optometry Student

by:

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A Thesis Submitted to the Faculty
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Abstract

Dyslexia has been a topic of much debate as to causes and possible cures. This paper explores the various areas of dyslexia and learning disability to educate the reader as to the controversy involved among professions. There exists strong opposition toward Optometric intervention in this area however, there are arguments for specific treatment approaches addressing visual problems that can coexist with dyslexia. An overview of present theories will be presented along with general recommendations the Optometrist can follow in managing the dyslexic.
Introduction

As an Optometry student about to leave the formal education arena and join the ranks of practicing practitioners, there are many questions yet to be answered. The main question to be addressed in this paper is, "How is the optometrist as a primary health care practitioner going to manage the "dyslexic" patient?" The parents of these kinds of patients, including learning disabled and those with other reading problems, seek out the opinion of the Optometrist many times as the first approach in addressing their child's problem. We need to be knowledgeable in the area of dyslexia and other learning disabilities in order to properly diagnose and/or manage the specific visual problems. In addition to the visual problems, we must also be able to identify other problems that can coexist with the learning disability. Accurate identification of these other related problems facilitates effective referral to the appropriate professionals.

The intent of this paper is to explore the current literature on dyslexia for definitions, diagnosis, and management options. Analysis of this information will help to build a "philosophy" as to how the Optometrist can approach cases with learning disabilities and dyslexia.
The Optometrist is faced with this management decision many times. It is the goal of this literature review to make this management decision an easy and efficient process.

One does not have to look very far for an array of definitions of dyslexia. Crithley (1970) gives two definitions of dyslexia derived from a meeting of an international body of experts called The Research Group on Developmental Dyslexia of the World Federation of Neurology. The definitions as published read... 6

"Specific Developmental Dyslexia- a disorder manifested by the in learning to read despite conventional instruction, adequate intelligence, and sociocultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin."

"Dyslexia- a disorder in children who, despite conventional classroom experience, fail to attain the language skills of reading, writing, and spelling commensurate with their intellectual abilities." 6

Thompson (1984) cites several researchers who have subtyped dyslexics into specific groupings according to deficiencies

-2-
characteristic of each group. Boder describes three sub groups and Griffin has added four more groups to these to total seven groups as described in the Dyslexia Determination Test (DDT). (5, 11, 30)

Along with each and subgroup of dyslexia comes an assorted array of test batteries for the diagnosis. The Optometrist needs to decide which test batteries are appropriate for his /her particular practice as well as what approach will be taken after diagnosis.

**Diagnosis**

Diagnosis of the dyslexic is complicated and as diverse as the many definitions. Dobbs (1976) describes an educational test battery including ten individual tests to give quantitative as well as qualitative levels of a child's disability. Boder (1973) suggests a test battery that categorizes 3 different types of dyslexic in order of severity. (5 to be listed later) Pavlidis(1986) presents a testing technique measuring eye movements which may be used as a diagnostic tool to separate dyslexics from retarded readers. Yet another diagnostic tests are published by White(1983), Jones (1986), and Hardman(1984) to name a few. (14, 16, 31) The Optometrist needs to be aware of, and understand which of these various testing/diagnostic procedures are being utilized in his community.
in order to provide maximum assistance in the management of the child.

Despite the variety and direction of philosophies of the different disciplines, there are a few basic ideas that most of the authors agree upon. In order to develop a successful program of remediation for the dyslexic an early diagnosis of the disorder is critical.\(^{(8, 15, 18)}\) Remediation must also be multifaceted in order to develop and enrich all the patients' assets to include: auditory, kinesthetic and visual, etc skills.\(^{(2, 8)}\)

Boder\(^{(1973)}\) has noted the variability in diagnosis of the dyslexic according to the different professions. She describes three general methods basic to most diagnostic formats.\(^{5}\) These methods include:

1. process of exclusion\(^{*}\) - disadvantage of this method rests on the nature of the developmental dyslexic.\(^{5}\) As various other disorders are ruled out, the developmental dyslexic (DD), which may coexist with one of these disorders, may be ruled out as well.\(^{1}\)

\(^{*}\)Note: the exclusion criteria contributes to a later diagnosis of dyslexia because/it is based partly on a child's failure in school for a period of 2 yrs.\(^{23}\)
2. indirect diagnostic approach- this method also tends to mask the DD which also coexists with the one or more disorders elicited in this technique and therefore can easily be overlooked.5

3. direct diagnostic approach- analyses the quality of errors in reading and spelling which are characteristically seen with dyslexia.5 This method also may miss the DD because of the random occurrence of the dyslexic errors.18

Boder (1973) has also observed consistencies in these various methods as far as placement of the dyslexia into distinct sub groupings. She also presents an alternative diagnostic approach based on the above "direct" approach which analyses reading and spelling patterns and places the dyslexic into 3 distinct categories.5

1. Dyseidetic- which is primarily a visual anomaly
2. Dysphonetic- which is mixture of a visual-auditory anomaly associated along with other articulation problems.
3. Mixed Diseidetic-dysphonetic- represents a combination of the first three sub groups.

Griffin and Walton (1981) expanded upon Boders subgroups to come with a total of seven groups each with a specific set of signs and characteristic performance modes. The Dyslexia Determination
Test (DDT) differentiates the dyslexic child from those who are behind in reading and spelling due to other causes. The DDT places the dyslexic into one of the seven categories mentioned above. Each category has a different prognosis for treatment along with suggested approaches for the actual intervention. The types of dyslexia as given by the DDT are:

1. **Dysnemkinetic** - Deficit in the ability to develop motor gestalts for written symbols.

2. **Dysphonetic** - Deficit in symbol sound, and the ability to develop phonetic word analysis synthesis skills.

3. **Dyseidetic** - Deficit in the ability to perceive whole words as visual gestalts.

4. **Dysphonoidetic** - Deficit in grapheme phoneme integration and in the ability to perceive whole words as visual gestalts, and match with auditory gestalts.

5. **Dysnemkinphonetic** - Deficit in the ability to develop motor gestalts for written symbols and in grapheme-phoneme integration.

6. **Dysnemkineidetic** - Deficit in the ability to develop motor gestalts for written symbols and in the ability to perceive whole words as visual gestalts and match with auditory...
7. Disnemkinphoneidetic- Deficit in the ability to develop motor gestalts for written symbols, grapheme-phoneme integration and in perceiving whole words as visual gestalts and matching auditory gestalts.11

There has been much debate over the use of eye movement recordings and their diagnostic significance in dyslexia.21,22 Pavlidis (1986) has noted that since learning disabled and dyslexics manifest many of the same types of reading/spelling symptoms, it is important to differentiate the two disorders.23 In the search for an objective test of diagnostic validity through eye movement recordings, researchers have come up with a number of differences in overall research design and procedures.25 Because of these major inconsistencies, Pavlidis (1985) proposed to establish a Research Diagnostic Criteria for Dyslexia (RDCD) in order to make it possible to effectively compare the results of the various research groups. The RDCD would make it possible to better understand dyslexia and provide the practitioner with sound information on which to base diagnosis and treatment.22
Controversy in Optometry

In 1972 the American Academy of Pediatricians, The American Academy of Ophthalmology and Otolarangology, and The American Association of Ophthalmology issued a joint statement titled, "Eye and Learning Disabilities". The statement addressed areas such as vision training, and prescribing glasses for the learning disabled. A rebuttal to the above statement by Nathan Flax (1973) points out the inappropriate use and misinterpretation of the references cited. In conclusion of the paper Flax relates,

"The dissemination of this statement as a conclusion of The American Academy of Pediatricians, The American Academy of Ophthalmology and Otolarangology and The American Association of Ophthalmology does a disservice to the public and represents an affront to the academic community. The position paper attempts to discredit vision training and the use of glasses in cases of dyslexia. Almost all the references offered had nothing to do with the topic. The few which are germane actually support a positive relationship between vision and learning disabilities. At the very least, better scholarship and intellectual honesty is to be
expected of these organizations

In 1981 The American Academy of Ophthalmology, supported by The American Academy of Pediatricians, The American Academy of Ophthalmology, and The American Association for Pediatric Ophthalmology and Strabismus, published another statement quite synonymous to the preceding statement of 1972. Part 4 of the most recent statement is of particular importance to the Optometrist. It reads,

"4. Correctable ocular defects should be treated appropriately. However, no known scientific evidence supports claims for improving the academic abilities of the dyslexic or learning disabled children with treatment based on: (a) visual training, including muscle exercises, ocular pursuits or tracking exercises, or glasses (with or without bifocals or prisms) (b) neurological organizational training (lateral training, balance board, perceptual training) Furthermore such training frequently yield deleterious effects a false sense of security is created which may delay or prevent proper instruction or remediation."

Flax et al (1984) again examine this statement and the poor interpretation of the references. A closing statement says,
"Evolution of the learning disabled child is traditionally multi-disciplinary. It is important to deal with any defect or problem that may be either causal or contributory to the child’s problem. The policy statement itself supports the intervention necessary to correct any such problem. It is therefore illogical for the ad hoc committee not to endorse vision training as a necessity in those cases where defects in visual function such as binocular fusion, accommodation, and ocular motor deficiencies interfere with the ability to respond to educational remediation."

Treatment

Diagnosis and treatment of a visual perceptual problem are usually directed and carried out by the educational community. However, optometrists, who support and follow the concepts of the CEP, COVD, and other such disciplines related to Behavioral Optometric training, are also qualified to help children improve visual perception. The role of the Optometrist is to respond within the limits of his expertise and knowledge when managing the child
who has a learning deficit. Efficient diagnosis, treatment, and/or referral depends on expedient decision making. Silver (1987) has reviewed the current treatments available for the patient diagnosed as learning disabled or dyslexic. Therapies which are presently available include:

**Generally accepted**
- Special Education
- Medication
- Psychological

**Controversial**
- Neurophysiological Retraining
  a. patterning
  b. Optometric Vision Training
- Vestibular Dysfunction
- Applied Kinesiology
  a. cranial faults
  b. cloacal reflexes
  c. ocular lock
- Orthomolecular medicine
  a. megavitamins
  b. trace elements
  c. hypoglycemia
d. food additives/preservatives

e. refined sugars

Again we see Optometric intervention falling under the category of "controversial". Supporters of the statement by the American Academy of Ophthalmology (1981) disclaiming vision training as a viable option to the treatment of dyslexia, include Metzger an Werner (1984) who also conclude that reading disabilities are not effected by problems in the visual system.(10, 19)

However, it is the opinion of several authors that the purpose of the optometrist or the eye care professional is to rule out the visual problems of the learning disabled and refer to the other appropriate professionals for care.(1, 4, 13)

Vision Training

Learning disabilities and dyslexia are not one one dimensional school problems and most often they require a multidisciplinary approach to treatment.26 Research supports a potential role for optometrists in treating the processing, perceptual, and eye movement deficits present in some subgroups of dyslexia.(26, 12)

Seiderman (1980) investigated the effect of Optometric Vision
Training on children identified as having learning disabilities with accompanying visual problems and found that appropriately applied vision training enabled the children in this particular study to respond more effectively to reading instruction and school learning. However, there is a strong opposition to the use of vision training in the treatment of dyslexia as presented earlier by the statement of the American Academy of Ophthalmology (1981).

Metzger (1984) has examined the ophthalmological, optometry, and psychological literature on the effects of vision training on the learning disabled. In his concluding statements he states... "There is no general agreement on the causal factors in reading disabilities, it is clear that ocular factors are, at best, minimally related. It is possible that even the original theories are incorrect, that visual-perceptual training might still help poor readers read better. However, when this possibility was analyzed, it was found that visual-perceptual training programs produce no further improvement in reading ability for the affected children when compared with reading ability of children control groups."
Keogh (1985) addresses the questions about the efficacy of vision training on learning disabled and notes the existence of Optometric literature that successfully links vision with academic performance. She also cites the work of researchers in other disciplines that contradicts the Optometric reviews. The author asks, "...for whom is vision training?" 17

The Dyslexia Determination Test 11 enables a number of practitioners to differentiate the child who presents with dyslexia from those children who are behind in reading, writing, and spelling due to causes other than dyslexia. 12 Prognosis of intervention can also be determined according to the category to which the child has been assigned. The seven dyslexic patterns are each assigned specific training techniques and the professional who would be the most appropriate to carry out the therapies. Griffin consolidates suggested training areas as follows: 11

<table>
<thead>
<tr>
<th>DYSNEMKINESIA</th>
<th>DYSPHONESIA</th>
<th>DYSEIDESIA</th>
<th>DYSPHONEIDESIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Laterality</td>
<td>Develop grapheme-phoneme integration (matching visual components of words with appropriate sounds).</td>
<td>Develop integration of visual and auditory gestalts. (matching of vision configurations of words with total sound patterns).</td>
<td>Develop grapheme and phoneme integration and integration of visual and auditory gestalts by memory of movement training (writing).</td>
</tr>
<tr>
<td>B. Directionality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Memory of Movement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Vision Perception</td>
<td>1. numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. letters</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The remaining sub groups of dysnemkinphonesia, disnemkineidesia, and dysnemkinphoneidesia are patterns that represent combinations of the other four groups and should be managed accordingly.

Conclusion

We have merely skimmed the surface of the very controversial topic of dyslexia and the role of Optometry. Philosophies on defining, diagnosing, and treating the problem are variable and many times inconsistent when comparing across professions. Optometric intervention is not excluded from a possible approach to aiding the dyslexic patient however, the Optometrist needs to decide where his or her limits are with this intervention. How involved does the Optometrist become when presented with the dyslexic or possible dyslexic patient? Recommendations of this author based on information gathered from the literature include...

1. The Optometrist needs to make the decision as to the extent of diagnosis, intervention, and or referrals when dealing with the dyslexic patient based on the scope of that particular practice. Adler (1985) said, "It is important that professional skills are used to their fullest but care must be exercised to avoid straying into areas where a full and
proper training course has not been undertaken. This will
avoid offering inappropriate and conflicting advice and applies
as much to Optometrists as it does to teachers, psychologists
etc. 

2. The Optometrist needs to find out the general community
philosophies of the various area education, psychological, and
medical specialists on the management of the dyslexic patient
to determine what role Optometry plays in the scheme of
things.

3. Educate the public and other professionals as to the services that can be provided by the Optometrist in the
management of dyslexia and the learning disabled.

4. Develop a multidisciplinary scheme with the other professionals in the area that will provide the most efficient
care system for early intervention.

5. If the Optometrist decides to manage dyslexic cases that require vision training in any form should work in close
contact with the other disciplines to fashion the therapy
procedures for maximum return.

6. Probably most important, the Optometrist as well as, the other professions need to keep abreast of current research for

-16-
new developments on dyslexia in order to keep the treatment program as efficient as possible.

Closing Remarks

It was not the intent of the author to present specific diagnostic and treatment procedures for dyslexia. There are several techniques available and it is up to the practitioner as to which of these will be used if at all. There references provided in the appendices to help the professional in making these sort of decisions along with some background information on dyslexia itself.
References


-18-


23. Pavlidis, G.T., Eye Movements: The Diagnostic Key To Dyslexia?, Contemporary Optometry, Vol. 5, #2, April 1986


Appendix


Ritty, M.J., Assessing and alleviating visual problems in the schools., The Reading Teacher, April 1979.
