

# THE INTERFACE BETWEEN OPHTHALMOLOGY & OPTOMETRIC VISION THERAPY

■ Leonard J. Press, O.D.

## Abstract

*Considerable disparity lies between ophthalmologic impressions of optometric vision therapy, and the reality of optometric vision therapy as practiced in the United States. The viewpoint shared by ophthalmology in particular, and the medical field in general, is one that is filtered through organizational policy statements and the isolated experiences of influential individual practitioners. This has resulted in a skewed portrayal of optometric vision therapy. The purpose of this paper is to present a balanced perspective on this subject, and one that should be of assistance in creating an interface between ophthalmology and optometry that better serves the public.*

## Editor's note

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## Introduction

**T**he impetus for this paper stems in part from a meeting that I attended on March 21, 2001, in Orlando, Florida. Reviewed in a prior issue of this journal, the meeting entitled "Why Can't EYE Learn?" was jointly sponsored by Jefferson Medical College and the Section on Ophthalmology of the American Academy of Pediatrics (AAP).<sup>1</sup> The subtitle of this meeting was: "Learning Differences and Visual Perception from a Pediatric Ophthalmology and Neuro-psychology Perspective."

My participation during this meeting was serendipitous. Dr. Harold Koller, who I had known from my days in the Philadelphia area, was the Chair of the meeting. During his presentation, Dr. Koller made several passing references to Optometry and vision therapy. Following his invitation to me to give a short [impromptu] presentation on the subject, I joined the group on the podium for a panel discussion. The questions to me from the audience touched on six areas of concern that I will address at the end of this paper.

## The evolution of optometric vision therapy

To appreciate the science and substance of optometric vision therapy, it is insightful to consider vision therapy as an outgrowth of orthoptics. This evolution has been chronicled in detail elsewhere,<sup>2</sup> and several points need to be elaborated. Although ophthalmologists pioneered orthoptics, it was neither cost-effective nor time-effective in their hands.

Orthoptics had its heyday from early to mid-20th century, but was gradually transformed from an active therapeutic service into a marginal service. The number of certified orthoptists in the United States dwindled, and those remaining progressively engaged in assisting with pre and post strabismus surgical measurements and monitoring rather than in performing non-surgical therapeutic services. The service itself was diluted from an active approach to amblyopia and strabismus therapy to a passive approach for a handful of convergence problems.

This raises an obvious question. Why, if orthoptics was efficacious for a broad spectrum of binocular applications, was the field virtually vacated by ophthalmology? The answer, to be succinct, is that orthoptics was more than most ophthalmologists could manage. This belief is supported by an authoritative textbook on Orthoptics from 1949 by Mary Everist Kramer, supervisor of the Orthoptics Department at the George Washington University Hospital in Washington, DC.<sup>3</sup> The text was edited by Ernest A. W. Shepard, M.D., Professor of Ophthalmology at the George Washington University School of Medicine. In the Preface, we find the following candid observation:

"When ophthalmologists discuss or write about orthoptics, their views are generally based upon the work of an orthoptic technician, the results of whose work they have observed. Since few ophthalmologists have had the opportunity to observe good orthoptists, there is a wide variance of opinion regarding the role of orthoptics in the treatment of ocular imbalances."

Consider the following guidelines for successful orthoptic treatment as outlined by Kramer and Shepard (pp. 154-169):

- Necessitates frequent office visits at first, with gradual reduction as the training is carried out at home.
- Approximate length of time of treatment is usually from two months to two years.
- If surgery is indicated the ophthalmologist may prefer to give orthoptic training before surgery, or institute surgery before orthoptic training. The decision rests upon the type of case, the age, the physical and mental development of the patient, the cooperation of the patient and parents, and the ease or difficulty of making weekly visits to the doctor's office.
- The training must be intensive to be effective. Breaks in training should be given when the child reaches a point of saturation after intensive training.
- More than treating "a pair of eyes", orthoptics consists of treating the person as a whole, since much of the success of restoring normal binocular vision depends upon the personality, cooperation, and enthusiasm of the child.
- Training should be adapted to a child's mental capacities as well as to his ocular skills. Some children learn faster than others, some retain knowledge better than others, some have greater concentration ability than others, some are more attentive than others.
- Causes for failure in orthoptics include inexperience or poor judgement on the part of the ophthalmologist or orthoptist, and termination of orthoptic training before establishment of good binocular stability.
- Success in administering orthoptics hinges on a personality profile of dignity without arrogance, humility without subservience, mental alertness without perceptive tension, and necessary forcefulness without aggressiveness.
- The ability to impart knowledge is the essence of orthoptic training, for in reality it is a course of instruction which the orthoptist gives to the patient. A good orthoptist possesses an artistic temperament and intelligence with all the virtues. She is teacher, nurse, friend, confidante, advisor, and healer to the patient. Her enthusiasm and genuine interest can make the difficult seem easy. These qualities are the piece de resis-

tance in the accomplishment of a rapid and lasting cure for her patients.

Ophthalmologic practice drifted from the holistic attributes required for success as outlined by Kramer. As ophthalmology was becoming an increasingly medical and surgical practice, optometry in mid-century was rendering vision therapy services well-suited to these attributes for orthoptic success. Another text published in 1949 is essential in understanding the pivotal role that Optometry was about to play. Entitled *Vision: its Development in Infant and Child*, this text represented a fusion of Optometry, Ophthalmology, Orthoptics and Psychology.<sup>4</sup>

Pediatric ophthalmologists should be conversant with the collaboration that took place among these fields at the Yale Clinic of Child Development. Arnold Gesell, M.D., and Frances Ilg, M.D., were substantially aided by Vivienne Ilg, O.D. and Gerald Getman, O.D., in this effort. Their work was unparalleled in the field of child development. The melding of orthoptics with an optometric perspective served to broaden the basis for optometric vision therapy as practiced in the second half of the 20th century. Permit me to quote from the preface of this text:

*The authors have attempted to achieve a closer acquaintance with the interrelations of the visual system per se and the total action system of the child. This finally entailed the use of the retinoscope and of analytic optometry at early age levels where these technical procedures are ordinarily not applied. The examinations of the visual functions and of visual skills were really conducted as behavior tests, not only to determine the refractive status of the eyes, but also to determine the reactions of the child as an organism to specific and total test situations.*

Although the Yale physicians anticipated ophthalmologic interest in their work, that was not to be the case. The Optometric Extension Program, and the optometrist A.M. Skeffington in particular, proved to be influential in post-graduate studies in vision development and vision therapy. They are acknowledged by Gesell et al in the preface to their text. In contrast, one is hard-pressed to find reference to the work done at the Yale Institute of Child Development in tradi-

tional ophthalmologic sources. This is not as much as oversight as it is evidence of the disinterest of ophthalmology in visual development from a behavioral perspective.

### **Ophthalmologic initiatives to discredit vision therapy**

Nature abhors a vacuum and, as optometrists began to improve patient's performance through vision therapy programs, ophthalmologists found themselves having to address inquiries about how a child's vision might be influencing behavior, development, or school performance. In 1972, the American Academy of Pediatrics, the American Academy of Ophthalmology and Otolaryngology, and the American Association of Ophthalmology issued a policy statement entitled "The Eye and Learning Disabilities", which denied any relationship between vision and learning. The inaccuracies in this policy statement were swiftly pointed out in an article in the Journal of the American Optometric Association by Flax.<sup>5</sup>

Despite Flax's scholarly refutation of the points raised in the 1972 paper, an ad hoc working group of the American Association for Pediatric Ophthalmology and Strabismus, and the American Academy of Ophthalmology, issued a policy statement in 1981 entitled "Learning Disabilities, Dyslexia, and Vision" offering conclusions similar to those in the 1972. Again Flax, this time with two associates, authored a scholarly rebuttal.<sup>6</sup> Their article unmasked the sweeping negative generalizations aimed at optometry with no conclusive supporting documentation. It points out how the references offered are misconstrued, nonapplicable, and grossly distorted.

Organized ophthalmology not only chose to ignore the legitimate critiques of its policy statement, but conscripted the American Academy of Pediatrics in its efforts. As recently as 1998, a subject review of this area chose to depict visual training as controversial, unscientific and virtually irrelevant to learning.<sup>7</sup> Published in the journal, Pediatrics, this joint policy statement was the latest in an effort to ensure that as many parents as possible would be dissuaded from undertaking vision therapy. It is important to note that the pediatric/ophthalmologic policy statements overlooked a landmark paper pub-

lished in the Journal of the American Optometric Association on the efficacy of optometric vision therapy, including over 200 references.<sup>8</sup> More recently, a Joint Policy Statement was issued by the American Academy of Optometry and the American Optometric Association, pinpointing flaws in the criticisms of Ophthalmology and Pediatrics against optometric vision therapy.<sup>9</sup>

In one of the more candid discussions to appear in print on this subject, several pediatric ophthalmologists revealed their concern about the collective insouciance of their profession. Their remarks can be found in a paper by Mazow et al on accommodative and convergence insufficiency, and its relationship to learning, published in the Transactions of the American Ophthalmological Society.<sup>10</sup> Consider the following (Dr. Leonard Apt, p.171):

*My impression is that many ophthalmologists handle this disorder poorly. Too often they consider most cases of asthenopia in young persons as instances of uncomplicated convergence insufficiency and treat these patients with simple push-up exercises. This unsophisticated approach oftentimes is not helpful and the patient leaves dissatisfied. Many ophthalmologists do not fully appreciate the role and function of the process of accommodation and convergence, their interrelationship, and how to study their dysfunctions. Thus proper treatment is not given. Many of these patients end up under the care of optometrists.*

But Optometry has clearly demonstrated its body of knowledge in this area, with notable works that summarize its clinical relevance and validity.<sup>11-13</sup> Ophthalmology has not undertaken Dr. Apt's challenge to develop a more sophisticated clinical approach to vision problems that contribute to learning difficulties. Rather than objectively evaluate ongoing optometric contributions to this field, ophthalmology collectively continues to take a simpler and less responsible approach. The quintessential low road was taken in an article published in the Review of Ophthalmology several years ago.<sup>14</sup> Dripping with innuendo, the title of the ar-

ticle, "Is vision therapy quackery?", speaks for itself.

Permit me to illustrate the sensationalism of this approach with an analogous title for a prospective article: "Is Strabismus Surgery A Hoax?" In such an article I might point out that strabismus surgery was accepted as a legitimate approach in medicine without the benefit of controlled scientific studies, and that its outcome as other than a cosmetic cure relies principally on anecdotal evidence. Even if I were to present an even-handed analysis I have successfully cast aspersions by virtue of how the question of its efficacy was couched.

The shallow intentions of the "Quackery" article, and its willful or unintended ignorance of studies that should have been evaluated, were exposed by one of the foremost optometric researchers in accommodation and convergence, Dr. Jeffrey Cooper.<sup>15</sup> However, as has been our experience in Optometry, no matter how thoughtful and scholarly our responses are to the Ophthalmologic aspersions cast on vision therapy, the negative campaign continues.

#### **Fallacies inherent in ophthalmologic critiques of vision therapy**

The picture painted thus far does not seem to bode well for bridging the gap between ophthalmologic and optometric viewpoints about vision therapy. However, several observations may serve ophthalmologists and pediatricians well in their efforts to serve as informed patient advocates. There is a common flaw that is shared by the joint organizational policy statements of Ophthalmology and Pediatrics, Koller's quackery article, and the opinions of local ophthalmologists inclined to discredit optometric vision therapy and its practitioners. It is counter-intuitive that material taught in every College of Optometry in the country, and for which there are definitive clinical practice guidelines issued by a national professional organization in existence for over 100 years,<sup>16</sup> has no basis. This was brought to the surface by Jeffrey Bauer, a Ph.D., Fulbright Scholar, and Kellogg Foundation National Fellow, who noted:<sup>17</sup>

*Regarding the related insinuation that optometrists simply do not know as much as ophthalmologists, I have*

*from firsthand experience developed considerable skepticism about the scientific base of many things done by physicians. Several years ago – which means things should have improved in the meantime – I served as an expert witness in a hearing involving the scientific validity of optometrists' use of vision training to correct strabismus (misalignment of the eyes). Ophthalmologists had charged that the optometric research on vision training did not prove that vision training worked. They were right; some optometric literature on the subject was scientifically flawed. However, I also evaluated the research that ophthalmologists used to defend their surgical approach to correcting strabismus. The literature on surgical correction was no more scientifically valid than the comparable studies on vision training. Physicians who live in glass houses should not throw stones.*

How does the public view the conflicting opinions of organized optometry and ophthalmology? They're likely reminded of the classic New Yorker cartoon that borrows a line from Gore Vidal. In the cartoon, two dogs wearing suit and tie are seated at a bar sipping martinis. One looks at the other and declares: "It's not enough that we succeed. Cats must also fail." Public savvy was the impetus leading to a resolution by the National PTA, issued at its national meeting in Oregon in 1999, urging educators, other professionals and the public to become more conversant with the role that vision plays in the learning process. Public savvy is a strong reason why The White House has issued a statement every year, for the past decade, honoring August as Vision and Learning Month.

All this begs an obvious question: If vision therapy is unsubstantiated and misguided, how does it survive in the marketplace? Consider the following: Optometrists are rarely, if ever, the first professionals consulted when parents find their children struggling to learn. Optometrists who practice vision therapy are therefore seeing a skewed population, typically of children who are not performing to levels of realistic expectation in

school. More than likely, they have been through a number of assessments and interventions prior to coming to our offices. Physicians harbor the notion, evident in the language of organizational policy statements, that a proposed course of vision therapy when indicated somehow deters unsuspecting parents from pursuing necessary and proven courses of action. On the contrary, this fallacy is actually the basis for success of many patients in optometric vision therapy.

In many instances, optometric vision therapy is successful in helping patients precisely because they have had other interventions which have ignored pertinent visual abilities. In other instances visual problems trivialized by other professionals, or the effective sensory integration of visual abilities to facilitate motor planning and multi-tasking, is lacking. If optometric vision therapy were principally “tender, loving care,” or a Hawthorne effect, then the prior interventions the child had would have already supplied that effect. Why would vision therapy supply more of a Hawthorne effect than occupational therapy, or remedial reading, or music lessons, or the myriad activities in which today’s parents engage their children? It is more likely that vision therapy is helping the patient develop abilities that were a legitimate missing link in the learning process. In acquiring improved visual processing abilities, the patient is in a better position to benefit from traditional educational interventions.

### **Improving the interface to better serve the public**

Answers to the questions posed to me during the panel discussion of “Why Can’t EYE Learn?” will not immediately bridge the chasm between ophthalmologic and optometric points of view, but are important steps in the right direction. Close inspection of these answers may influence ophthalmology and pediatrics to channel its efforts in patient advocacy toward interventions that truly warrant skepticism. Optometric vision therapy has stood the test of time and the metric of clinical science to the point where the practice of deterring patients from seeking this service becomes questionable.

#### **QUESTION 1:**

Where is the scientific basis for Optometric Vision Therapy?

#### **ANSWER 1:**

As mentioned, Dr. Cooper’s scholarly article provides references that clearly substantiate the scientific basis of vision therapy. Clinical Practice Guidelines are available from the American Optometric Association on the Care of the Patient with Learning Related Vision Problems, Accommodative and Vergence Dysfunction, Amblyopia, and Strabismus. Each of these has references incorporating scientific method. The research presented is commensurate with clinical research in fields such as occupational therapy, and is equal to or better than research traditionally presented for clinical methods in pediatric ophthalmology.

#### **QUESTION 2:**

How do optometrists know which patients might benefit from vision therapy?

#### **ANSWER 2:**

The Four Clinical Practice Guidelines from the AOA mentioned above provide clear guidelines for differential diagnoses. Textbooks referenced in this article, in addition to others available, provide this as well.

#### **QUESTION 3:**

Is it true that vision therapy patients are “in for life?”

#### **ANSWER 3:**

Nothing could be further from the truth. The clinical practice guidelines above, in addition to guidelines issued by the College of Optometrists in Vision Development (COVD)<sup>18</sup> based on ICD codes for various conditions, are proof that this is not the case.

#### **QUESTION 4:**

How might I judge if a patient is in need of vision therapy, or if a person I am referring the patient to is a credible provider?

#### **ANSWER 4:**

All optometrists receive graduate education in and are licensed to practice vision therapy. The Optometric Extension Program (OEP) provides post-graduate education in the areas encompassing vision therapy. The College of Optometrists in Vision Development (COVD) provides a board certification process, and has a national directory of providers. The American

Academy of Optometry (AAO) has a diplomate program in binocular vision and perception as well as in pediatric optometry.

#### **QUESTION 5:**

Why is vision therapy so expensive?

#### **ANSWER 5:**

It is intriguing that physicians don’t ask the same questions regarding the expense, scientific underpinnings, and pertinence to learning of occupational therapy, which they endorse far less critically, despite the obvious parallels between the two fields.<sup>19</sup> To answer the question directly, the fees for vision therapy services are commensurate with other therapy procedures involving similar bodies of knowledge and time expended. Aside from the doctor’s time in evaluating the patient, there are often prior reports to read that are pertinent to decisions about optometric intervention, time spent programming and sequencing activities to strike an effective balance between office and home therapy, and time spent with therapists to discuss ongoing progress.

#### **QUESTION 6:**

Why does vision therapy work when it does? Eye problems shouldn’t have anything to do with LD or ADD since these are CNS or brain problems.

#### **ANSWER 6:**

The retina is brain tissue. Dissociating the role of the eye in visual processing from brain function is an artificial distinction. With regard to learning and attention systems, principles of cognitive neuroscience substantiate that interventions directed toward sensory and motor eye functions have a salutary and pervasive effect on central processes of the brain.

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**APPENDIX 1  
PRIMARY DIAGNOSTIC CONDITIONS  
AMENABLE TO  
OPTOMETRIC VISION THERAPY\***

<b>Diagnostic Condition</b>	<b>ICD-9-CM CODE</b>
Accommodative excess	367.53
Accommodative insufficiency	367.50
Accommodative infacility	367.50
Amblyopia	368.01
Convergence excess	378.84
Convergence insufficiency	378.83
Divergence excess (DE)	378.24
Divergence insufficiency (DI)	378.85
Esotropia	378.35
Exotropia	378.15
Intermittent exotropia (DE or basic)	378.23
Intermittent esotropia (DI or basic)	378.21
Vertical deviations	378.43
Visual processing deficit(s)	315.90

\*The clinical practice guidelines delineating these diagnoses can be found in the following monographs published by the American Optometric Association (St. Louis):

1. Care of the Patient with Strabismus: Esotropia and Exotropia (1995)
2. Care of the Patient with Accommodative and Vergence Dysfunction (1998)
3. Care of the Patient with Learning Related Vision Problems (2000)

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**APPENDIX 2  
SAMPLE METHODS FOR OPTOMETRIC VISION THERAPY**

**AMBLYOPIA**

- Sequence:
1. Appropriate Rx
  2. Occlusion therapy
  3. Eye-hand coordination
  4. Ocular motor accuracy
  5. Accommodative therapy
  6. Fusion enhancement
- Methodology:
- For 1) and 2) standard approaches  
 For 3) letter tracking sheets; pointer-in-straw  
 For 4) Haidinger Brush device (foveal fixation)  
 For 5) loose lens accommodative rock  
 For 6) Polaroid vectrograms

**ACCOMMODATION**

- Sequence
1. Appropriate Rx
  2. Monocular accommodative stimulation
  3. Monocular accommodative relaxation
  4. Binocular accommodative stimulation
  5. Binocular accommodative relaxation
- Methodology
- For 1) standard approach including multifocal if indicated  
 For 2) through 5) loose lens and lens flippers  
 For 2) through 5) letter charts of various sizes utilized at appropriate dioptric demand distances

**VERGENCE**

- Sequence
1. Appropriate Rx
  2. Monocular accommodative and ocular motor activities if evidence of inequality OD vs. OS
  3. Bi-ocular phase of 2) if suppression evident
  4. Physiological diplopia therapy if spatial localization deficient
  5. Expansion of fusional vergence ranges
  6. Integration of accommodative and fusional vergence ranges
- Methodology
- For 1) standard approach using prism if indicated  
 For 2) amblyopia and accommodation above  
 For 3) septum or prism dissociation  
 For 4) Brock string (beads)  
 For 5) Computerized random dot stereograms/adapted stereoscopes  
 For 6) Stereoscopes; orthopic and chiascopic fusion/lens flippers

**STRABISMUS**

- Sequence
1. Appropriate Rx
  2. Monocular accommodative and ocular motor phase
  3. Monocular activities in a binocular field
  4. Anti-surppresion; bi-ocularity
  5. First, second, third degree fusion (select free space or instrument stimuli based on correspondence and depth of suppression)
  6. Integration of fusion with vestibular-motor feedback
  7. Integrate sensorimotor functions including accommodation (including AC/A and CA/C effects)
- Methodology
- For 1) standard approach using multifocals and prism if indicated  
 For 2) anaglyphic or polaroid targets  
 For 4) anaglyphic, septum, or prismatic dissociation targets  
 For 5) major amblyoscope; adapted mirror stereoscopes; computerized vergence stimuli  
 For 6) egocentric/oculocentric balance activities (may precede anti-suppression when indicated by clinical assessment)  
 For 7) orthopic and chiascopic free space fusion stimuli with lens flippers and variable viewing distances and angles

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