3-1982

A Survey Comparing the Characteristics and Objectives of Optometric Visual Therapy and Orthoptics and Opthalmoloigcal Visual Therapy and Orthoptics

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A SURVEY

COMPARING THE CHARACTERISTICS AND OBJECTIVES OF OPTOMETRIC VISUAL THERAPY AND ORTHOPTICS AND OPTHALMOLOGICAL VISUAL THERAPY AND ORTHOPTICS

BY

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Submitted in partial fulfillment of the requirements
for the Master of Arts in Education degree
The Lindenwood Colleges
March, 1982

Accepted by the faculty of the Department of Education, The Lindenwood Colleges, in partial fulfillment of the requirements for the Master of Arts in Education degree.

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ABSTRACT

This survey was designed to study the characteristics and objectives of optometric visual therapy and orthoptics, ophthalmological visual therapy and orthoptics, and from the resulting information study the two disciplines comparatively. One hundred questionnaires were sent to a random sample of optometrists and one hundred identical questionnaires sent to a random sample of ophthalmologists. The questionnaire was designed to elicit information concerning the number of referrals for visual therapy or orthoptics made by each professional group, the types of disorders and visual disturbances recognized as legitimate objectives of visual therapy or orthoptics by each group, and the types of results each professional group hoped to achieve.

Since a great debate rages in the literature between the two groups of eye-care professionals regarding the efficacy and value of the visual therapy

offered by each, this researcher felt that before further study could answer questions for the educator regarding effects of treatment upon academic achievement, a clarification of the characteristics and desired outcomes of each type of therapy was in order.

Of the two hundred questionnaires mailed, forty-three (22%) responses were received. Using the data from these forty-three responses, three null hypotheses regarding the characteristics and objectives of ophthalmological and optometric visual training and orthoptics were tested. The X^2 technique for testing independence was applied to the data after it was categorized on contingency tables.

All three null hypotheses were rejected in favor of the following alternate hypotheses:

1. The number of referrals made for visual therapy and orthoptics is dependent upon the professional status of ophthalmologist or optometrist.
2. The type of visual disturbances recognized as legitimate objectives of visual therapy or orthoptics is dependent upon professional status.
3. The desired outcome of visual therapy or orthoptics is dependent upon professional status.

It was inferred from the data that more optometrists make referrals for visual therapy and orthoptics than do ophthalmologists. It was also concluded that while opinions vary widely regarding certain types of visual disturbances recognized as legitimate objectives of therapy, there is agreement between the two professions that fusion and fusional vergence is a legitimate objective. It was further concluded that the two professions are in significant disagreement regarding academic improvement as a desired outcome of visual therapy or orthoptics.

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CHAPTER I

INTRODUCTION

Purpose of the Study

For several years the merits of Visual Training, Developmental Visual Training, and Orthoptics, as practiced by optometrists, and the effects of such training upon academic achievement of school-age children has been debated. William L. Swanson, optometrist, reported in the Journal of Learning Disabilities that out of 100 cases of learning disorders treated in his office with visual therapy and orthoptics, improvement was recorded in over 90% of the cases.[1] Many other optometrists make more conservative claims of 75 to 80% in improvement rate. Parents are vocally claiming that dramatic improvement in academic achievement, especially reading, occurs after several months of intensive visual training by an optometrist. According to Mrs. Marcia Kamien in Women's Day, her twelve-year-old daughter, Sarah, was treated at the State University of New York's Optometric Center by Dr. Nathan Flax. After once-a-week training for four months, Mrs. Kamien reported

results that were extremely positive. Dr. Robert A. Draskin, a Washington, D. C. optometrist, treated the late president Johnson's daughter, Luci, with such dramatic results that today she is working with vision problems as president of Volunteers for Vision, Inc., a group headquartered in Austin, Texas.[2] Despite these seemingly near miraculous results, the medical professionals, namely the ophthalmologists, view these findings with extreme skepticism. In fact, The American Academy of Pediatrics, The American Academy of Ophthalmology and Otolaryngology, and The American Association of Ophthalmology issued a joint organizational statement titled "The Eye and Learning Disabilities" in which they voiced their opposition to optometric visual training programs in the strongest of manners. This paper, published in the February, 1972, issue of the Pediatric News, concluded that no known scientific evidence supported claims for improving academic abilities using visual training or orthoptics. Furthermore, the paper stated, such training frequently results in unwarranted expense and has delayed proper instruction for the child.[3]

Dr. Curtis D. Benton, Jr., Ophthalmologist, states in the Journal of Learning Disabilities that although most optometrists report a 75% improvement rate with children they treat, he has found no evidence that

optometric treatment is of specific value for children with reading disabilities. He concluded that programs of visual training, perception training, eye exercises and other "ocular gymnastics" are an unnecessary waste of time and money.[4]

Despite all this adamant opposition from the medical eye specialists concerning optometric visual training and orthoptics, some ophthalmologists do refer patients to a certified orthoptist who administers to these patients eye exercises especially designed to straighten the eyes. According to the booklet, Your Child's Eyes, orthoptics are special eye exercises designed to teach, or to provide the opportunity for, the two eyes to function together normally, to work together as a team. The orthoptist is a certified technician who has been trained particularly in this field by taking a special course at medical school, interning under another technician for a year, passing national oral and written exams, and being certified by the American Orthoptic Council.[5]

In searching the literature, abundant material concerning optometric visual therapy and orthoptics, its content, techniques, and purposes was found. Many articles proclaimed the uses and abuses of optometric visual therapy programs, many expounded upon the successes of the programs in relation to

improved academic success, while almost as many attacked the training as a cruel hoax and a waste of time and money for children and their parents who were desperately in need of help.

In my work in a Learning Disability Resource Room I came in contact with a sixth grade boy with an "average" IQ score, but with severe academic problems that had persisted throughtout his elementary school years. There appeared to be no answers that would help this seemingly bright boy learn to read and to do basic math. During the one year I worked with him, he was diagnosed as being severely visually disabled with major disturbances in binocular vision and fusional vergence. An extended period of optometric visual training and orthoptics was recommended by a St. Louis optometrist. I became extremely interested in the case and the nature of the treatment being recommended. I also wondered if there was an alternative method that might be more reliable and less costly and time consuming. At this point I became aware of the eye training available under the auspices of the medical eye specialist, the ophthalmologist. However, when trying to compare the merits of the two types of treatment I found it very difficult to obtain information concerning the ophthalmological program and its proposed relationship to

academic improvement, if any. This project was conceived in order that the two treatments might be comparatively studied. The project also proposes to study the relationship the practitioners of each method believe his work to have to the act of learning, especially learning to read. The project will also attempt to address the question regarding frequency of referral by both professional groups.

In order that these aspects of visual therapy and orthoptics be studied from both the standpoint of the ophthalmologist and the optometrist, a questionnaire was designed and mailed to a random sample of each professional group. The questionnaire was contrived to elicit information from both the ophthalmologist and the optometrist regarding the types of visual disturbances recognized as legitimate objectives of therapy, the desired outcomes of therapy, and the frequency of recommendation or referral for therapy. The data were then analyzed by the use of contingency tables and the three null hypotheses of independence were tested employing a two-way chi-square test of independence.

It is hoped that this research will lend insight to teachers dealing with students suspected of having visual problems and will offer them information regarding the two types of visual therapy that are available.

A Basis for Further Study

Results of the project may be useful in a sense that it supplies background information for further study into the actual effects of visual therapy and orthoptics upon the academic performance of students with learning difficulties who have been diagnosed as visually disabled as well.

Statement of Problem

There exists today great descrepancy in opinion between the two eye specialists, the ophthalmologist and the optometrist, regarding the care of the eyes when this care involves an "eye exercise" or visual therapy approach. The average layman is confused concerning the characteristics, techniques, and purposes of each type of therapy. He is also unclear as to why each faction is so adamantly opposed to the treatment administered by the other.

Problem statement: Are the characteristics and objectives of optometric visual therapy and orthoptics and ophthalmological visual therapy and orthoptics the same?

Statement of Specific Hypotheses

The underlying hypothesis directing this project contends that responses of the participants regarding

the characteristics and objectives of visual therapy and orthoptics are not affected by a person's professional status as ophthalmologist or optometrist. The three specific research hypotheses to be tested are:

1. There is no difference in the number of ophthalmologists who recommend visual therapy or orthoptics and the number of optometrists who recommend visual therapy or orthoptics.

2. There is no difference in the types of visual disturbances recognized as legitimate objectives of visual therapy or orthoptics by ophthalmologists and those recognized by optometrists.

3. There is no difference in the objectives of ophthalmological visual therapy and orthoptics and the objectives of optometric visual therapy and orthoptics.

Definition of Terms

In order to clarify certain concepts that may cause confusion to the reader, the following terms are defined.

Developmental Visual Therapy

Therapy designed to re-educate and improve visual perception. This therapy is usually justified on the basis of reduced academic performance in children with normal to above average IQ. (i.e., children with learning disabilities who also display disturbances in visual perception may benefit academically from this therapy).[6]

Visual Perception

The identification, organization, and interpretation of sensory data received by the individual through the eye.

Visual Therapy (Non-strabismic orthoptics)

A series of exercises designed to improve binocular vision. This therapy is designed to treat disturbances in accommodation, fusional vergence, ocular pursuit, and saccades. The exercises are designed to correct faulty fusion and eliminate suppression.[7]

Orthoptics

A series of exercises designed to teach the two eyes to work together properly and to treat the disturbances of muscle imbalance (i.e., strabismus and amblyopia).[8]

Ocular Pursuit

The ability to follow a moving object, using both eyes, smoothly and accurately.

Saccades

The ability to change fixation quickly and accurately, using both eyes, on a series of fixed objects.

Eye-Hand Coordination

The ability to control movements of the hand through the coordination of the eye, hand, and

brain, which operate in concert with each other at the automatic level of functioning.

Accommodation

The ability to change focus, quickly and without blur, from near to far.

Fusional Vergence

The ability to align the eyes, without changing the accommodative response, so that the eyes are aimed at the same visual target.[9]

Strabismus

An error in eye alignment such that both eyes are not simultaneously at the same visual target.

Suppression

A condition in which the image of an object formed upon the retina is perceived but is mentally ignored or neglected either partially or completely.[10]

Limitations

The low response rate of 22% (43/200) responses) may not be representative of all optometrists and ophthalmologists.

According to Mason and Bramble, the X^2 technique has some important limitations. When the number in the sample is less than 10, caution should be exercised in interpreting the results.[11] Although

the sample size was significantly greater than 10 in this project, it was still relatively small and should be considered as limiting the generalizability of this study.

Footnotes

[1]William L. Swanson, "Optometric Vision Therapy--How Successful is it in the Treatment of Learning Disorders," Journal of Learning Disabilities 5 (May 1972): 286.

[2]Marcia Kamien, "When A Bright Child Has Trouble Reading," Woman's Day, April 1980, p. 122.

[3]"The Eye and Learning Disabilities," Pediatric News, February 1972, p. 1.

[4]Curtis D. Benton, Jr., M.D., "The Eye and Learning Disabilities." Journal of Learning Disabilities 6 (May 1973): 334.

[5]Mary Wackerhagen, B.A., Certified Orthoptist, Dale Alford, M.D., F.A.C.S., Your Child's Eyes. p. 8.

[6]Interview with David Davidson, O.D., Associate Dean, University of Missouri School of Optometry, St. Louis, Missouri, July 1981.

[7]Ibid.

[8]Mary Wackerhagen, B.A., Certified Orthoptist, Dale Alford, M.D., F.A.C.S., Your Child's Eyes. p. 23.

[9]Interview with David Davidson, O.D., Associate Dean, University of Missouri School of Optometry, St. Louis, Missouri, July 1981.

[10]Jane Hurtt, R.N., A.A., C.O., Antonia Rasicovici, B.A., C.O., Charles E. Windsor, M.D., Comprehensive Review of Orthoptics and Ocular Motility. p. 286.

[11]Emanuel Mason, William Bramble, Understanding and Conducting Research. (New York: McGraw-Hill, 1978), p. 210.

CHAPTER II

REVIEW OF THE LITERATURE

Theoretical Formulation

Confusion involving the ambiguity of terms, namely the term "vision" adds to some of the controversy between the ophthalmologist and the optometrist. Clearly defining the term vision, as used by each professional group, lays the groundwork for identifying the therories underlying the work of each.

According to Dreby, vision can be defined in two ways: physical process vision and mental process vision. Physical process vision is the pure physical act of sight with the two eyes coordinating to form a single image. Ophthalmologists and physicians use the term "vision" in this sense. The term "visual acuity" is often used synonymously with the term "physical process vision". Visual perception is not a useful term for the medical professions in relationship to vision because they believe perception to be a mental act and, since it takes place in the brain and not in the eye, they separate it from "vision". Their view of vision is too narrow for perception to

be a part of it.[1] Their view of the term "vision" forms the basis for their theories concerning how treatment of the eye should stop when the eyes are healthy, 20/20 vision is attained, and both eyes are functioning together.

Dreby further states that educators and optometrists tend to define vision in a much broader sense. They use vision to include not only the physical act of seeing, but also the ability of the mind to sort out the visual images and associate meaning to them. This "mental process vision" has been called visual perception in the field of education for several years.[2] Ritty, a remedial reading instructor, has also recognized the descrepancy in the use of the term "vision". He believes perceptual vision to be the ability to perceive properly what is presented to one and functional vision to be synonymous with visual acuity. He further believes both functional and perceptual vision to be related and important to the act of reading.[3]

According to Koegh, optometric developmental visual training or therapy represents an approach to perceptual training that incorporates and often expands much of the traditional perceptual training that is associated with the field of education, especially the early childhood and learning disability programs. Programs of this sort resemble those developed by

Frostig, Kephart, and Barch. Dr. Koegh does state, however, that not all optometrists are involved with "total child" training as are those involved in developmental visual training; but rather, the work of optometrists can be viewed as falling on a continuum from "total child" involvement to specific acuity and more conventional eye care.[4]

In a personal interview Dr. Lawrence Jehling, a St. Louis optometrist, explained that the concern of optometrists is often divided into four areas:

1. Eye health or freedom from disease.
2. Eye sight or visual acuity.
3. Eye teaming which includes adequate accommodation and convergence skills and freedom of strabismus and amblyopia. These areas are treated using visual therapy and orthoptics.
4. Visual development which comprises form perception, figure ground, gross motor, eye-hand coordination, and spatial orientation skill. Disorders in this area are treated using developmental visual therapy.[5]

Dr. Jehling feels that the last area can best be left to special educators while he personally concentrates upon the first three. He stated further that many optometrists only concern themselves with the first two areas.[6]

Many optometrists are, however, heavily into the developmental area of visual therapy. While working on this project the researcher visited one such office

in the St. Louis area and spoke several times with the optometrist. He was very emphatic concerning the necessity of developmental training in conjunction with non-strabismic visual therapy.

According to R. Wold, a distinction has been made further in the general area of developmental visual training between "vision therapy", in which prisms, lenses, and specific eye activities enhance efficient use of the eyes and what he terms "vision training", in which vision therapy techniques, plus gross motor and sensory motor activities are used together in an attempt to increase learning and educational achievement. Optometrists involved in the latter type of training are the most deeply involved with the child with learning difficulties.[7] According to Keogh, developmental vision training is based on the assumption that vision is learned; that vision has motoric and sensory bases; that problems in learning are due, at least partially, to disturbances of underfunctions in terms of visual efficiency and sensory motor organization; that vision and visual organization can be trained; and importantly, that vision training will affect educational performance. Leaders in the organized program of developmental vision training are men like Getman, Skeffington and Harmon.[8]

Ophthalmologists hold to the theory that the

visual training methods used in their profession are only to correct problems that may occur in purely physical process vision and that the correction of distortions in mental process vision should be left solely in the hands of educators, pediatricians, and educational psychologists. They further appear to theorize that problems in visual perception are not the cause, but only symptoms of a learning disorder. Correcting the learning disorder is the acceptable way to go about correcting the distortion in mental process vision or visual perception.

In cases of strabismus and amblyopia, many ophthalmologists will perform surgery to correct the muscle imbalance with no visual therapy recommended, prior to or following the surgery. There appears to be a difference of opinion, however, within the profession since some ophthalmologists do recommend visual therapy and orthoptics to precede or follow surgery in order that the problem be corrected functionally, as well as cosmetically.

Regarding surgery to correct strabismus and eliminate amblyopia, optometrist Nathan Flax contends that in many instances it is aimed at cosmetic alignment of the eyes and really does little to relieve amblyopia. He further states that unless surgery results in total and complete alignment and full utilization of the two

eyes in binocular vision, it is to the advantage of the patient to retain amblyopia in order that confusion and double vision not be present. He feels there is always opportunity for cosmetic surgery should it prove impossible for visual therapy and orthoptics to restore normal binocular function.[9] The optometrist feels that, in most cases, visual therapy and orthoptics can restore the cosmetic alignment of the eyes as well as their appropriate function of working together. On the opposing side, the ophthalmologist will sometimes recommend surgery alone to straighten the eyes and, in some instances surgery in combination with visual therapy and orthoptics.

Another point of theoretical difference concerns the proper age for successful strabismic surgery. Ophthalmologists insist that surgery should be done as soon as possible and that unless it is done before age six the amblylopia is likely to be permanent. Optometrists feel that age does not matter to this degree and that surgery can be done successfully at any time in life as a last resort if visual therapy and orthoptics fail to restore alignment and proper function of the eyes.[10]

From the Optometric Viewpoint

The most comprehensive review of the professional research literature regarding the effects of optometric visual therapy was done by Dr. Barbara Keogh and published in April, 1974. According to Koegh, a few studies have been done to assess how training that utilizes visual, sensory-motor, and motor activities enhance a child's prereading abilities if he has not started to read, or his reading abilities if he has started reading instruction and is experiencing difficulty. She feels, however, that rather than research in the traditional experimental sense, these studies are more properly described as program development and the majority suffer from loose methodology, but are important to consider.[11] This review will include the major studies reported in Dr. Koegh's article.

The Winterhaven, Florida, visual perception training program involved gross and fine motor activities, an extensive physical educational program, work with templates and many other visual perception techniques. An independent evaluator of the Winterhaven program observed that children in the special program performed better than control children on some, but not all academic tasks. While the efforts

of the program appeared to enrich and individualize the school experience for many children, it was concluded that it was impossible to assess in a systematic way the independent effects of the vision training. The project was complicated by variables in terms of personnel, sampling, and changes in programming and it was impossible to make a definitive statement as to which, if any, influences were directly related to development and school achievement.[12]

A two-part study by Coleman was based on optometric visual testing of 4,685 school children in kindergarten through grade six. Two intervention programs were developed; one for children repeating grade one, and the second for entering grade one pupils viewed as high risk. The repeaters and high-risk pupils were put into an extensive and intensive program heavily weighted in perceptual and sensory-motor activities. Pre and post tests revealed significant differences in performances between experimental and control groups on motor tasks, although no differences in IQ were reported. There were some differences in achievement measures favoring the experimental groups. Coleman concluded that the vision therapy program had beneficial effects in school learning.[13]

Ewalt, Swanson, Sherman, Dilbard and Swartwout have all reported positive effects of optometric

treatment of educable mentally retarded children as well as learning disabled students.[14] Many of these are single case studies and while they are of clinical interest, provide limited data from which to draw major inferences in regard to training effectiveness.[15]

In general, Koegh made the following conclusions and generalizations concerning the effectiveness of vision training on academic achievement:

1. Most programs have mixed together so many techniques that particular influences of a specific method are not retrievable from the data.

2. The literature is spotty and often exhortative. Success of training programs may be highly related to investigator expectancy, since the same person was the planner, trainer, data collector, and data evaluator.

3. Most research is based on a small number of cases and these are single research efforts. Few longitudial or follow-up studies are available to determine the effects of the various special training programs.

4. Lack of adequate research design, analyses, and interpretation make most studies unique.

5. Vision training programs, like many other remedial efforts are only sometimes successful. We do not know why or for what reasons failure or success occur.[16]

Since one of the primary objectives of optometric visual training is to enable the patient to attain good binocular vision, a study done by Brod and Hamilton is of importance and worth mentioning here.

Using a sample of 162 fifth graders divided into three reading groups, good, average, and poor, he gave all subjects an oral reading test under a control condition and two conditions of binocular disturbance. Change in the number of errors from the control condition was used as a measure of disturbance of reading performance. It was concluded that the increase in number of errors for the binocular disturbance condition was significant enough to indicate that instability in binocular vision has a detrimental effect on reading performance. Efficiency in word recognition in the control situation would appear to be a link between binocularity and reading. This relationship suggests that binocular instabilities are a more serious obstacle to learning than is the lack of binocularity. It is not necessary to have binocularity in order to learn how to read; however, a monocular reader, while rarely being a poor reader is seldom a particularily excellent reader. While the monocular reader may have some reduced efficiency, he is able to develop a stable behavioral pattern for a consistent input. Instabilities, however, are a constant source of disturbance with a stress on the visual system. Adaption by the reader aimed at reducing this stress often results in a monocular reader. In summary, Brod and Hamilton feel that a disturbance in binocular functioning results in a highly significant decrement in reading performance.[17] This study seems to suggest that

visual therapy and orthoptics are justified in the case of a child with disturbed binocular vision who may be having learning difficulties.

The Coronado Program, which began in the summer of 1970 in California, has been cited in much of the literature as measurably reducing symptoms of visual inefficiency for a majority of the children of the project. In an article by Breslauer, Mack, and Wilson this project was described in great detail. According to these three, who were also involved in the teamwork of the program, it was becoming apparent to many in their school district that many children suffering from learning problems were not adequately overcoming these problems, despite the concerted efforts of various remedial programs. Teachers and parents were frustrated and concerned. They also became aware of the fact that educators cannot accept the responsibility for teaching all children to read when some of them have specific problems which were known to interfere with their ability to learn. Unless ways were made possible for these children to overcome their specific handicaps they believed failure would continue. Giving the child more of what he was already failing at seemed not to be the answer. Between 1970 and 1975, approximately 180 children with learning difficulty

had been admitted to the program.[18] With the help of Keith Wilson, an optometric consultant, John Flores, an educational consultant, and Ann H. Breslauer, a primary teacher, an extensive testing battery was planned and implemented. The activities were of two general types: (1) those perceptual training procedures currently used by education, psychology, and optometry in developing perceptual-motor skills; and (2) specifically prescribed visual development procedures based upon each child's optometric evaluation. In the visual phase, concerted use of lenses, prisms, filters, and appropriate ophthalmic instruments was made. In addition, learning lenses were supplied by the program for certain students when indicated by the optometric screening, to be used in the classroom and in training for close work.[19]

Posttest results were encouraging and confirmed some progress toward the objectives; but it was noted that the upper-elementary children, while rewarding to work with, by this age had other problems related to the perceptual dysfunctions (repeated failures, poor self-image, behavior problems, etc.), and did not make the kind of gains that were hoped for.[20]

In the summary of the results of this project, excluding 20 children with multiple problems who were receiving additional forms of remediation when dismissed

from the program, 81.1 percent of the children enrolled in the Coronado Visual Perception Program had positive posttest gain and were able to cope successfully in the classroom when dismissed from the program. A sample of 24 children who were dismissed one year previously was evaluated. According to the Spache Diagnostic Reading Scales and the Wide Range Achievement Test, 15 were working at grade level, six above grade level, and three were still below grade level. Although Optometric Developmental Visual Training was a very important part of this project, it is difficult to accurately assess how much of the success of the program can be attributed directly to the application of this particular treatment.[21]

To summarize the optometric approach and viewpoint regarding their visual therapy and orthoptic program, a statement by Koegh seems appropriate: "in the light of the many visual therapy programs now being directed at the learning disabled child and considering the controversy these programs have aroused, the sparseness and inadequacy of the literature is surprising."[22]

From the Ophthalmological Viewpoint

While the field of ophthalmology has long been concerned about and aware of the importance of healthy

eyes to a child involved in the complex act of learning to read, they hold to the position that learning is done in the mind and not in the eye and that their job ends with the assurance that the patient possesses 20/20 vision and that the two eyes are coordinating to form a single image.

Some critics complain that ophthalmological examinations do not go far enough and that no determination is made concerning how the two eyes function together. In the opinion of Harris and Sipay, noted reading authorities, it is unfortunate when this determination is not made, especially with school-age children.[23]

While there does exist a program of "eye exercises" or orthoptics that is made available upon the recommendation of an ophthalmologist, very little appears to be written that explains the content, techniques, and objectives of the program. In the booklet Your Child's Eyes, orthoptics was described as a treatment for strabismus along with glasses, patching, drops, and surgery. According to this booklet, orthoptics is to aid the child in unlearning bad visual habits and to establish normal habits of binocular cooperation. The main purposes of training include:

1. Improving the quality of vision.
2. Improving fixation and rotation defects.

3. Erasing supression.

4. Cementing the fusion process.[24]

According to this same author, orthoptics has the following aims:

1. The best possible vision in each eye.

2. The ability to use each eye to the best of its capacity.

3. The ability to use both eyes together, correctly; to have fusion and depth perception; to have eyes which are straight.[25]

Regarding the question of improved academic performance following orthoptics, the literature is again noncommittal and sparse. Speaking personally with two orthoptists while working on this project the researcher received two conflicting reports. One reported definite gains for her patients after a period of ophthalmological orthoptics while the other was hesitant to claim improvement but would not deny that possibility.

This lack of published information concerning ophthalmological visual training and orthoptics is a source of irritation to some orthoptists. Reporting in The Ophthalmologist on the CHAMPUS study, the Comptroller General of the United States was quoted as noting "widely differing opinions about the medical value of perceptual and visual training in treating visual disorders between optometrists and ophthalmologists" and advised that "officials of the National Institute

of Health's National Eye Institute said that no existing scientific evidence conclusively proves the medical value of such treatment."[26] He went on to point out "that the Institute has not funded a study to determine the effects of such training because there have been very few ideas on how to carry out a valid scientific study" and that "all previous requests to the Institute for grants to fund proposed studies have been rejected because they were not scientifically designed."[27] No mention was made that there existed a program of ophthalmological visual therapy and orthoptics. Gill Roper-Hall, D.B.O.T., Washington University School of Ophthalmology, took extreme exception to the article and requested a retractory statement because "the study was to investigate the medical value of perceptual and visual training in treating visual disorders, and really relates to optometry with no mention of visual training and orthoptics in relation to ophthalmology in the article."[28]

Although this researcher found very little published concerning what ophthalmological visual therapy and orthoptics claim to do for the patient, the ophthalmologist, in many cases, is extremely vehement in his criticism of the programs of optometric visual training and orthoptics. Some appear to be almost desperate in their attempt to

discredit the optometric visual training programs and seem to think they must inform the general public that they are being victimized and wasting valuable time and much money with such training.

Goldberg, one of the most outspoken writers in the field of ophthalmology, in 1970 stated that while investigating the eye movements of poor readers and a sufficient control group on an electronystagmograph, he found that it was the degree of comprehension that produced the ocular movements and not the eye movements that determined the degree of comprehension. Many optometrists claim the latter is true. Goldberg found that when a child had difficulty with a word, eye motility would regress and as soon as the child was able to understand the words, eye movement resumed in a normal fashion.[29] His evidence suggests that it is the amount of comprehension that determines the eye movements and not ocular motility that determines the degree of understanding. This evidence also appears to imply the futility of eye exercises designed to improve the efficiency of ocular motility; such as those used in optometric vision training programs.

Another outspoken critic in the field of ophthalmology is Dr. Curtis Benton, mentioned elsewhere in this literary review. His remarks in the Journal of Learning Disabilities supporting the position taken by his profession in "The Eye and

Learning Disabilities" are typical. While he admits to finding five times as much convergence weakness in the children with reading problems as in good students, he feels that these weaknesses, as well as accommodative weaknesses, respond to simple exercises and are not causative factors in the reading problem. According to Benton, even impaired visual perception is not a cause of the reading problem, but merely a manifestation of abnormal functioning of the child's learning mechanism.[30]

According to Dr. Benton, the statement paper, "The Eye and Learning Disabilities", does not imply optometrists fail to actually find children improving while engaged in treatment programs. He merely feels that many children with learning disabilities improve under any kind of program that gives them individual attention, sympathetic understanding, increases parental involvement, etc. According to Dr. Benton, the paper does say that there is no reliable scientific evidence to indicate that the optometric visual training and orthoptics was actually the cause of the improvement that takes place.[31]

In a personal interview with an orthoptist from Washington University School of Ophthalmology, this remark was made; "These people are desperate for help and they want to believe they are improving. In many instances they only think the treatment is working

because that is what they wish to think so desperately."[32] The treatment to which she was referring was, of course, optometric visual therapy and orthoptics.

In summary, the optometrist feels very strongly that he has a program of potential help for school children who are having difficulty with academic tasks. This program of visual therapy and orthoptics attempts to correct problems of eye teaming (accommodation, convergence, strabismus, and amblyopia), and developmental vision (form perception, eye-hand coordination, figure ground, spatial relations, and gross motor). The ophthalmological programs seem only to deal with problems involving strabismus and amblyopia. Prominent in most articles related to this subject is the overriding objections and criticisms of the field of ophthalmology to the therapy offered by the field of optometry.

Footnotes

[1]Catherine Dreby, "Vision Problems and Reading Disability: A Dilemma for the Reading Specialist." The Reading Teacher 32 (April 1979): 787-794.

[2]Ibid.

[3]Michael Ritty, "Assessing and Alleviating Visual Problems in the School." The Reading Teacher 32 (April 1979): 796-802.

[4]Barbara K. Keogh, Ph. D., "Optometric Vision Training Programs for Children with Learning Disabilities: Review of the Issues and Research." Journal of Learning Disabilities 7 (April 1974): 219-228.

[5]Interview with Lawrence Jehling, O.D., St. Louis, Missouri, November 1981.

[6]Ibid.

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[13]Ibid.

[14]Ibid.

[15]Ibid.

[16]Ibid.

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[19]Ibid.

[20]Ibid.

[21]Ibid.

[22]Barbara K. Keogh, Ph. D., "Optometric Vision Training Programs for Children with Learning Disabilities: Review of the Issues and Research." Journal of Learning Disabilities 7 (April 1974): 219-228.

[23]Albert J. Harris and Edward R. Sipay, How to Increase Reading Ability. (New York: Longman, Inc.), 1975.

[24]Mary Wackerhagen, B.A., Certified Orthoptist, Dale Alford, M.D., F.A.C.S., Your Child's Eyes.

[25]Ibid.

[26]Warren McGee, General Counsel, "New Study Says Vision Therapy is Unproven in Medical Value." The Ophthalmologist, September 1979, pp. 1 - 5.

[27]Ibid.

[28]Gill Roper-Hall, D.B.O.T., Washington University School of Ophthalmology, "Letter to President of American Association of Certified Orthoptists." 1979.

[29]Herman Goldberg and William K. Arnott, "Ocular Motility in Learning Disabilities." Journal of Learning Disabilities 3 (March 1970): 160-162.

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[31] Ibid.

[32] Telephone Interview with Gill Roper-Hall, D.B.O.T., Washington University School of Ophthalmology, St. Louis, Missouri, July 1981.

CHAPTER III

METHODS AND PROCEDURES

Samples Used

The population sampled in the project was randomly selected from practicing ophthalmologists and optometrists. The ophthalmologists were chosen from the 1981 Red Book of Ophthalmology, a register including all specialists in ophthalmology practicing in the United States, Canada, Republic of Panama, Puerto Rico, and the Virgin Islands. A random sample of 100 was chosen from the roster of 11,938 names using the table of random numbers found in Survey Research Methods, Earl R. Babbie. A random sample of 100 optometrists was selected from the 1980 Blue Book of Optometrists, a complete directory of all practicing optometrists in the United States, Canada, Colombia, Mexico, Panama, Puerto Rico, and the Virgin Islands. The sample was chosen from a roster of 28,706 practicing optometrists, again using the table of random numbers found in Survey Research Methods, Earl R. Babbie. A total of 200 participants were sampled.

Procedure and Materials

Identical questionnaires were sent to each participant and were returned to the researcher by mail. A letter, appendix A, was sent with the questionnaire, which told of the project, asked recipients to participate, and informed them that results of the project would be sent to them upon request. A one-month time frame was set for return of the responses.

Instrument

A questionnaire, appendix B, was developed by the researcher after consultation with Dr. David Davidson, O.D., Associate Dean of the University of Missouri School of Optometry, Dr. Lawrence Jehling, O.D., and Ms. Gill Roper-Hall, D.B.O.T., Dept. of Ophthalmology, Washington University School of Medicine. The questionnaire contained multiple-choice questions. The instrument was designed to allow each professional group to answer questions concerning whether they did or did not offer visual therapy or orthoptics in their office and, if so, of what specific type. It was also designed to elicit information regarding the types of visual disturbances treated with therapy and what each professional group

considered to be the prime objective of visual therapy and orthoptics. The questionnaire also allowed each participant to state an opinion with regard to the relationship between visual performances and academic achievement and the percentage of patients found to improve academically after undergoing visual therapy and orthoptics.

The researcher then field tested the instrument by sending it initially to five ophthalmologists and five optometrists in the St. Louis area. These ten names were deleted from the roster as possibilities for the actual project. Four out of five optometrists answered the pilot survey without a follow-up letter or telephone call. Only one ophthalmologist answered, even after a telephone call. Comments were invited from these participants concerning the structure and wording of the instrument. The wording of three questions was modified after the initial survey was mailed.

Treatment of Data

The survey instrument allowed participants to check an answer or answers to each question; indicating a positive response with (X) and a negative reply with ( ). Data were then transfered to contingency

tables. The data were treated employing a two-way chi-square test of independence, which incorporates the Yates correction for continuity. This statistical manipulation, $X^2 = \frac{f_{..} (|f_{12} f_{21} - f_{11} f_{22}| - .5 f_{..})^2}{(f_{1.}) (f_{2.}) (f_{.1}) (f_{.2})}$, indicated the difference in observed and expected frequency of responses.[1] The two professional groups sampled, the ophthalmologist and the optometrists, served as the variable. Data were categorized on items of the survey in order to test the three research hypotheses of the project.

The symbols in the X^2 formula represented the frequencies in the following sample table:

	Ophthalmologists	Optometrists	Total
Yes	(f_{11})	(f_{12})	($f_{1.}$)
No	(f_{21})	(f_{22})	($f_{2.}$)
Total	($f_{.1}$)	($f_{.2}$)	($f_{..}$)

To test each hypothesis, a significance level was set at $p \leq .05$. Using the formula df = (rows-1) (columns-1), the chi-square distribution appropriate for each hypothesis was found to have 1 degree of freedom.[2] From table B.4, appendix B, Understanding and Conducting Research, Mason and Bramble, the critical value of X^2 was found to be 3.84 for a two-tailed test.[3]

Footnotes

[1]Jon Marshall and Loyde W. Hals, Research Designs and Statistics For Education. St. Louis: (University of Missouri, 1980).

[2]*Emanuel Mason and William Bramble, Understanding* and Conducting Research. New York: (McGraw-Hill, 1978).

[3]Ibid.

CHAPTER IV

ANALYSIS OF DATA

Analysis of Data for Hypothesis One

Hypothesis number one which states, "there is no difference in the number of optometrists who recommend visual therapy or orthoptics and the number of ophthalmologists who recommend visual therapy or orthoptics," was tested with question two and three of the questionnaire. In table 1, an analysis of the data regarding this hypothesis, revealed fifteen of the twenty-one responding ophthalmologists do offer some form of visual therapy or orthoptics in their offices or do make outside referrals to facilities where these services were available. All twenty-two of the responding optometrists either offered visual therapy or orthoptics in their offices or referred patients to facilities where these services were available.

Testing hypothesis one, the X^2 value obtained in the sample was 5.12, which exceeded the critical value of 3.84 and this null hypothesis of independence

TABLE 1

Do you offer any type of visual therapy or orthoptics in your office or do you refer patients to facilities where these services are provided?

	Ophthalmologists	Optometrists	Total
Yes	15	22	37
No	6	0	6
Total	21	22	43

$X^2=5.12$ $p \leq .05$
df=1
Critical value of $X^2=3.84$

was rejected in favor of the following alternate hypothesis: the offering of visual therapy or orthoptics or referral for such services is dependent upon professional status. In accepting this alternate hypothesis one can infer that the number of optometrists is significantly greater than the number of opthalmologists who offer visual therapy or orthoptics in their offices or refer patients where such services are offered.

Referring to table 1, five of the six ophthalmologists answering "no" did so because they considered any visual therapy or orthoptics to be an invalid treatment and one answered "no" because facilities for such services were unavailable in the area. Of the fifteen ophthalmologists representing the "yes" answers in table 1, seven offered therapy in their offices while eight made outside referrals to nearby facilities. Of the seven offering therapy in their offices, two offered only orthoptics designed to treat strabismus and amblyopia, one offered only non-strabismic visual therapy designed to treat problems in fusional vergence, accommodation, and disturbances in binocular vision and four offered both orthoptics and non-strabismic visual therapy. None offered developmental visual therapy designed

to treat disturbances in visual perception, learning disabilities, and other perceptual or perceptual-motor disabilities.

Looking again at table 1, of the twenty-two optometrists who responded to the survey, seventeen offered some type of visual therapy or orthoptics in their office while five made referrals to other facilities. The types of services offered through their offices were varied. Six of the twenty-two optometrists offered only non-strabismic visual therapy designed to treat problems in fusional vergence, accommodation, and binocular vision. Four offered non-strabismic visual therapy along with orthoptics designed to treat strabismus and amblyopia. One optometrist offered non-strabismic therapy along with developmental visual therapy. Six of the responding optometrists offered all three types of therapy; non-strabismic visual therapy, orthoptics and developmental visual therapy.

Analysis of Data for Hypothesis Two

Hypothesis number two which states, "There is no

difference in the types of visual disturbances recognized by ophthalmologists and those recognized by optometrists" was tested with question five of the survey. This data were then transferred to tables 2, 3, 4, 5, 6, 7, and 8. The information shown in these tables reveal widely differing opinions among the professionals regarding the visual disturbances recognized as legitimate objectives of visual therapy or orthoptics.

Comparing the critical value of X^2 with the value of X^2 that was obtained in each of these seven tables, one can see that the critical value is exceeded on five of the seven items, rendering hypothesis two, the null hypothesis of independence, unacceptable in favor of the following alternate hypothesis: the types of visual distrubances recognized as legitimate objectives of visual therapy or orthoptics are dependent upon professional status.

From the data in these tables one can infer that a significant number of both ophthalmologists and optometrists recognize disturbances in fusion and fusional vergence as legitimate objectives of therapy. One can also infer that the number of optometrists recognizing disturbances in accommodation, saccades, eye-hand coordination, visual perception, and ocular

TABLE 2

Do you recognize disturbances in accommodation as a legitimate objective of visual therapy or orthoptics?

	Ophthalmologists	Optometrists	Total
Yes	6	20	26
No	15	2	17
Total	21	22	43

$X^2=15.95$ $p \leq .05$
df=1
Critical value of $X^2=3.84$

TABLE 3

Do you recognize disturbances in fusion as a legitimate objective of visual therapy or orthoptics?

	Ophthalmologists	Optometrists	Total
Yes	19	22	41
No	2	0	2
Total	21	22	43

X^2=.57 $p > .05$
df=1
Critical value of X^2=3.84

TABLE 4

Do you recognize disturbances in saccades as a legitimate objective of visual therapy or orthoptics?

	Ophthalmologists	Optometrists	Total
Yes	0	18	18
No	21	4	25
Total	21	22	43

$X^2=26.29$ $p \leq .05$
df=1
Critical value of $X^2=3.84$

TABLE 5

Do you recognize disturbances in eye-hand coordination as a legitimate objective of visual therapy or orthoptics?

	Ophthalmologists	Optometrists	Total
Yes	0	18	18
No	21	4	25
Total	21	22	43

$X^2=26.29$ $p \leq .05$
df=1
Critical value of $X^2=3.84$

TABLE 6

Do you recognize disturbances in fusional vergence as a legitimate objective of visual therapy or orthoptics?

	Ophthalmologists	Optometrists	Total
Yes	18	20	38
No	3	2	5
Total	21	22	43

$X^2 = .003$ $p > .05$
df=1
Critical value of $X^2 = 3.84$

TABLE 7

Do you recognize disturbances in visual perception as a legitimate objective of visual therapy or orthoptics?

	Ophthalmologists	Optometrists	Total
Yes	2	15	17
No	19	7	26
Total	21	22	43

$X^2=13.11$ $p \leq .05$
df=1
Critical value of $X^2=3.84$

TABLE 8

Do you recognize disturbances in ocular pursuit as a legitimate objective of visual therapy or orthoptics?

	Ophthalmologists	Optometrists	Total
Yes	0	17	17
No	21	5	26
Total	21	22	43

$X^2=23.70$ $p \leq .05$
df=1
Critical value of $X^2=3.84$

pursuit is significantly greater than the number of ophthalmologists who recognize these disturbances as objectives of therapy.

Analysis of Data for Hypothesis Three

Hypothesis number three which states, "There is no difference in the objectives of ophthalmological visual therapy and orthoptics and optometric visual therapy and orthoptics," was tested using question seven of the questionnaire. The results are shown in tables 9, 10, and 11. The X^2 value failed to exceed the critical value in tables 9 and 10; however, the critical value was exceeded in table 11 causing hypothesis three, a null hypothesis of independence, to be rejected in favor of the following alternate hypothesis: the objectives of visual therapy or orthoptics are dependent upon professional status.

Since question seven was worded to exclude those respondents who were not actually engaged in the practice of visual therapy or orthoptics from answering, the N on these three tables decreased to twenty-five.

Looking at tables 9 and 10, there appears to exist no significant disagreement between the two professions regarding functional correction of

TABLE 9

If you are engaged in the practive of visual therapy or orthoptics, is functional correction of strabismus and elimination of amblyopia a result you hope to achieve?

	Ophthalmologists	Optometrists	Total
Yes	9	12	21
No	0	4	4
Total	9	16	25

$X^2=1.14$ $p > .05$
df=1
Critical value of $X^2=3.841$

TABLE 10

If you are engeged in the practice of visual therapy or orthoptics, is cosmetic correction of strabismus a result you hope to achieve?

	Ophthalmologists	Optometrists	Total
Yes	4	8	12
No	5	8	13
Total	9	16	25

$X^2 = .02$ $p > .05$
df=1
Critical value of $X^2 = 3.84$

TABLE 11

If you are engaged in the practice of visual therapy or orthoptics, is improved academic achievement a result you hope to achieve?

	Ophthalmologists	Optometrists	Total
Yes	0	14	14
No	9	2	11
Total	9	16	25

$X^2=14.52$ $p \leq .05$
df=1
Critical value of $X^2=3.84$

strabismus and elimination of amblyopia and the cosmetic correction of strabismus as desired outcomes of therapy. From table 9, one could infer that it is the opinion of a significant number of both ophthalmologists and optometrists that functional correction of strabismus and elimination of amblyopia is a desired outcome of therapy. From table 10, one can see that while there exists no significant disagreement between professions regarding cosmetic correction of strabismus as a desired outcome of therapy, there is a difference of opinion within each professional group regarding this question.

Referring to table 11, one can readily see that the significant disagreement between professions occurs regarding the question of academic improvement as a desired result of visual therapy or orthoptics. One could infer from the data of table 11 that a significantly greater number of optometrists hope to achieve academic improvement as a result of their therapy.

Analysis of Untreated Data

Besides the data used to test the three null hypotheses of independence, other data from the survey were categorized, however, the results were not treated statistically. Tables 12, 13, and 14

show these results.

TABLE 12

Which of the following visual performances do you feel to be significantly related to academic achievement? (Numbers represents positive responses.)

	Ophthalmologists	Optometrists
Accommodation	9	19
Fusion	7	20
Fusional Vergence	6	18
Visual Perception	6	21
Saccades	2	16
Eye-Hand Coordination	2	17
Ocular Pursuit	1	14

Looking at table 12 one can see that optometrists feel more strongly regarding the significance of specific visual performance in relation to academic performance. Using the information from the survey, it was noted that all twenty-two of the responding optometrists felt at least some of the seven named specific visual performances to be related to academic

achievement, while nine of the twenty-one responding ophthalmologists felt none of the specific visual performances to be significantly related to academic achievement. Of the twenty-one responding ophthalmologists two felt some visual performances to be related to academic achievement, however, stated emphatically that academic goals belonged in education; not in ophthalmology.

Table 13 presents the data found in question nine regarding perceived percentages of academic improvement made by patients undergoing visual therapy or orthoptics. Only two ophthalmologists and fourteen optometrists answered this question.

TABLE 13

If the intended outcome of your program of visual therapy or orthoptics is academic improvement, what percentage of your patients do you feel achieve significant improvement?

	Ophthalmologists	Optometrists
Less than 10%	0	0
10% to 25%	0	3
25% to 50%	2	1
50% to 75%	0	5
75% to 90%	0	5
Above 90%	0	0

One can infer from this data that optometrists feel more positive than ophthalmologists regarding the academic improvement made by their visual therapy patients.

Table 14 presents the data obtained from question ten.

TABLE 14

If the intended outcome of your program of visual therapy or orthoptics is academic improvement, what methods were used to determine such improvement?

	Ophthalmologists	Optometrists
Parent Reports	1	13
Patient Reports	1	6
Teacher Reports	0	12
Other	0	0

Due to their negative perceptions regarding the relationship of visual therapy to academic improvement, all but one ophthalmologist failed to answer question ten. Of the optometrists answering question ten, the data implies their primary reliance is upon teacher and parent reports to determine academic improvement.

CHAPTER V

SUMMARY AND CONCLUSIONS

Title I remedial reading and special education programs under PL 94-142 are making it possible to offer improved and more specialized remediation techniques to disabled readers each year. Despite all the special help and attention problem readers are receiving in public schools today, they have not disappeared from the school scene.

With the exception of blind subjects, who learn to read primarily through the kinesthetic and tactile modalities, reading is principally a visual act. It would seem to follow logically that any visual disturbance would adversely affect a child's reading progress. For this reason, a thorough teacher usually recommends a complete visual examination soon after a reading difficulty is discovered.

For many of these children with academic difficulty, some form of visual therapy or orthoptics may be recommended at some time in their school life by either an ophthalmologist or an optometrist. Upon speaking with several colleagues in the field of

education and with many parents of children with reading problems it became apparent that the theory, techniques, and objectives of each type of therapy was not completely clear and widely known. After searching the literature it also became obvious that while both an opthalmologist and an optometrist would sometimes recommend a program of visual therapy or orthoptics, there was extreme disagreement regarding the types of therapy offered and the desired outcomes of each. Since educators are daily confronted with an increasing number of reading disabilities and children who might possibly, at some time, be potential candidates for visual therapy or orthoptics, it should be their concern to become aware and informed as to the exact nature and the desired outcomes of the therapy offered by each eye-care professional.

It was in no way the intention of this project to make a judgment regarding desirability or superiority of eye-care, as practiced by either the ophthalmologist or the optometrist. The sole purpose of the project was to test the three specific research hypotheses concerning the frequency of referral for visual therapy, the types of visual disturbances recognized and treated with therapy, and the desired outcomes of therapy. It was also

the desire of the researcher to clarify each group's position regarding how therapy was perceived to be related to academic achievement.

The professionals are not in agreement when therapy should be recommended and for what reasons. This leads to confusion on the part of teachers and parents who desperately desire to help their children become better students and especially better readers.

This paper presented ten questions to two hundred professionals for their consideration. Of these 200, only twenty-one ophthalmologists and twenty-two optometrists answered the survey (22%). An examination of the data leaves the reader with little conclusive information. Overall, the three specific null hypotheses of independence were rejected.

The first hypothesis stating no difference in the number of ophthalmologists and the number of optometrists making recommendations for visual therapy or orthoptics was rejected in favor of the alternate hypothesis. The alternate hypothesis would lead us to conclude that a significantly greater number of recommendations for visual therapy or orthoptics are made by optometrists than by ophthalmologists.

From the data one can also infer that most

ophthalmological referrals are made for orthoptics designed to treat strabismus and amblyopia and a limited number are made for non-strabismic visual therapy designed to treat problems in fusional vergence, accommodation, and disturbances in binocular vision. No referrals appear to be made by ophthalmologists for developmental visual therapy.

Regarding optometric referrals, a wider range of possibilities appear to be offered. It appears from the data that the therapy most often recommended is non-strabismic visual therapy with a significant number of optometrists offering all three kinds: orthoptics, non-strabismis therapy, and developmental visual therapy.

Hypothesis number two, which stated no difference in the types of visual disturbances recognized by each professional group, was tested using question five of the survey. This question gave respondents an opportunity to react positively or negatively to seven specific visual performances as legitimate objectives of visual therapy or orthoptics. This null hypothesis of independence was again rendered unacceptable in favor of the alternate hypothesis. The alternate hypothesis would lead us to infer that there is a difference in the types of visual disturbances recognized as legitimate objectives of

visual therapy or orthoptics and the disturbances recognized are dependent upon professional status of ophthalmologist or optometrist. While the hypothesis was rendered unacceptable and there were widely differing opinions between professions regarding the acceptance of accommodation, saccades, eye-hand coordination, visual perception, and ocular pursuit as objectives of therapy, the professions were very close in their opinion concerning fusion and fusional vergence. Overwhelmingly, both professions appear to recognize disturbances in fusion and fusional vergence as legitimate objectives of therapy.

Hypothesis three, which stated no difference regarding the objectives or the desired outcomes of visual therapy and orthoptics, was also rejected as respondents were presented with the opportunity to react positively or negatively to three possible desired outcomes. Since only the professionals practicing visual therapy or orthoptics in their offices were asked to answer this question, twelve ophthalmologists and six optometrists were excluded. This hypothesis also failed to be accepted; however, there appears from the data to be no significant disagreement between professions regarding functional correction of strabismus and elimination of amblyopia

and cosmetic correction of strabismus as a desired outcome of therapy. There does appear to be disagreement within the professions on the question of cosmetic correction of strabismus. Regarding academic improvement as a desired outcome, the strong division between the two professional groups became quite clear. From the data one can conclude that optometrists feel overwhelmingly that academic improvement is a desired outcome while ophthalmologists feel just as adamantly that academic improvement should not be the objective of ophthalmology.

Besides the rejection of the three research hypotheses, other conclusions were drawn from the untreated data.

Optometrists feel specific visual performances to be more directly related to academic achievement than do ophthalmologists.

Optometrists feel a greater percentage of their patients who have undergone visual therapy or orthoptics actually do make academic improvement as a result of therapy than do ophthalmologists.

Question ten of the survey revealed most of the perceived academic improvements to be determined by parent and teacher reports.

The extreme disagreement and strong feelings, as indicated in Chapter II, was evidenced in the research as inflammatory remarks were made on two of the questionnaires. The term "hogwash" was used by one ophthalmologist to describe developmental visual training. On the other anonymous response, this type of term was used to describe all forms of therapy.

Recommendations

Based upon the findings of this project, recommendations for future research include the following:

1. A more descriptive analysis of the actual techniques involved in ophthalmological and optometric visual therapy and orthoptics, and a comparison of the two.
2. Scientific research into the relationship of visual therapy and orthoptics upon the academic improvement of children experiencing learning difficulty. Methodology must be designed so that this research is executed on a true experimental basis.

APPENDIX A

October 28, 1981

TO WHOM IT MAY CONCERN:

This survey is being sent to you as part of a study designed to compare the characteristics and objectives of ophthalmological visual therapy and orthoptics and optometric visual therapy and orthoptics. You have been randomly selected to participate.

The study is part of work being completed to satisfy the requirements for a master's program. Your help and cooperation in completing the enclosed questionnaire will be deeply appreciated.

A self-addressed stamped envelope is enclosed for your convenience. If you would like to see the results of the project, please indicate on the back of the questionnaire.

Thank you in advance for your time.

Sincerely,

Wanda Bueneman
Graduate Student
Lindenwood College
St. Charles, Missouri 63390

APPENDIX B

This questionnaire has been prepared to obtain information concerning the characteristics and objectives of both optometric and ophthalmological visual therapy and orthoptics. Please indicate your responses by placing an X to the left of each appropriate reply.

1. I am a member of the following professional group.

   (___) Ophthalmology (___) Optometry

2. Check below those forms of visual therapy or orthoptics which you provide in your office:

   (___) Non-strabismic visual therapy designed to treat problems in fusional vergence, accommodation, and disturbances in binocular vision.

   (___) Orthoptics designed to treat strabismus and amblyopia.

   (___) Developmental visual therapy designed to treat disturbances in visual perception, learning disabilities, and other perceptual or perceptual-motor disabilities.

   (___) Other (explain)

   (___) I do not offer any visual therapy or orthoptic services.

3. If your office does not provide a program of visual therapy or orthoptics, do you refer patients to other facilities where such therapy is provided?

   (___) Yes (___) No

4. If your answer to question #3 was No, why do you not refer patients for such therapy?

(___) Therapy not available in the area.

(___) I do not consider such therapy a valid treatment.

5. Disturbances in which of the following visual performances do you recognize as legitimate objectives of visual therapy or orthoptics?

(___) Accommodation (___) Fusional Vergence

(___) Fusion (___) Visual Perception

(___) Saccades (___) Ocular Pursuit

(___) Eye-hand Coordination (___) Other (explain)

6. Disturbances in which of the following visual performances do you attempt to treat with visual therapy of orthoptics?

(___) Accommodation (___) Fusional Vergence

(___) Fusion (___) Visual Perception

(___) Saccades (___) Ocular Pursuit

(___) Eye-hand Coordination (___) Other (explain)

7. If you are engaged in the practice of visual therapy or orthoptics, which of the following objectives do you hope to achieve?

(___) Functional correction of strabismus and elimination of amblyopia.

(___) Cosmetic correction of strabismus.

(___) Improved academic achievement.

(___) Other (explain)

8. Check the following visual performances you feel to be significantly related to academic achievement.

(___) Accommodation (___) Fusional Vergence

(___) Fusion (___) Visual Perception

(___) Saccades (___) Ocular Pursuit

(___) Eye-hand Coordination (___) Other (explain)

9. *If the intended outcome of your program of visual* therapy or orthoptics is academic improvement, what percentage of your patients do you feel achieve significant improvement?

(___) Less than 10% (___) 10% to 25%

(___) 25% to 50% (___) 50% to 75%

(___) 75% to 90% (___) Above 90%

10. If the intended outcome of your program of visual therapy or orthoptics is academic improvement, what methods were used to determine such improvements?

(___) Parent reports (___) Teacher reports

(___) Patient reports (___) Other (explain)

Signed _____

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