

# Behavioral Optometry

Robert Kraskin

## Foreshadowing of 1985 and Developmental Optometry

Micky Weinstein

Eastern States Congress, Nevele Hotel

# Nevele Hotel Lobby





# Birth of Developmental Optometry

Page 6

VISIONS

Volum.

## "BEHAVIORAL" VS. "DEVELOPMENTAL" OPTOMETRY: Part 2 . . . by Toni Bristol\*

Last month's article suggested that "Developmental" Optometry should be used in place of "Behavioral" to help gain wider acceptance and to provide a more unified message to the public. It received a number of very interesting responses that I would like to share with you.

**The Staff and Parent Perspective** One office manager decided to survey two of her staff to see what they thought. Both felt that "Developmental" was a better description of what the office did. They said it communicated that "vision is developed and can be altered and changed" and added that "Behavioral" sounded more like "Pavlov's dog".

The office manager then went on to ask a parent what "Behavioral Optometry" meant to her. After what seemed like 5 minutes of silence, there was still no answer. She then asked, "What does Developmental Optometry mean to you?" The parent instantly replied that it was developing vision by "starting at the beginning and moving forward through a progression."

Then the office manager asked the parent how come she paused on "Behavioral Optometry". The parent replied, "I was trying to figure out some way to describe it that wasn't negative." (This is a parent of a child that was not only in VT, but having great success!)

**The Confusion** I recently received a call from Theresa Krejci, Director of Support Services for OEP/BABO which further demonstrates the need to have one broad public name for the field. Upon arrival in the office that morning, Theresa was greeted by a voice mail message from a woman who was frantically trying to find a "developmental" optometrist. She called the woman back

and found out she had been to a lecture given by Temple Grandin, Ph.D. (author of Thinking in Pictures: And Other Reports from My Life With Autism). In the lecture, Dr. Grandin had recommended "developmental" optometrists as a resource for children with autism. In her search, she only found "behavioral" optometrists in her area and was very confused. She called the Baltimore Academy for Behavioral Optometry hoping that someone there might help her. Once Theresa assured her that a behavioral optometrist was the same as a developmental optometrist, the woman was happy and went on her way.

Fortunately, this woman called BABO. But what about those parents who get confused and just give up?

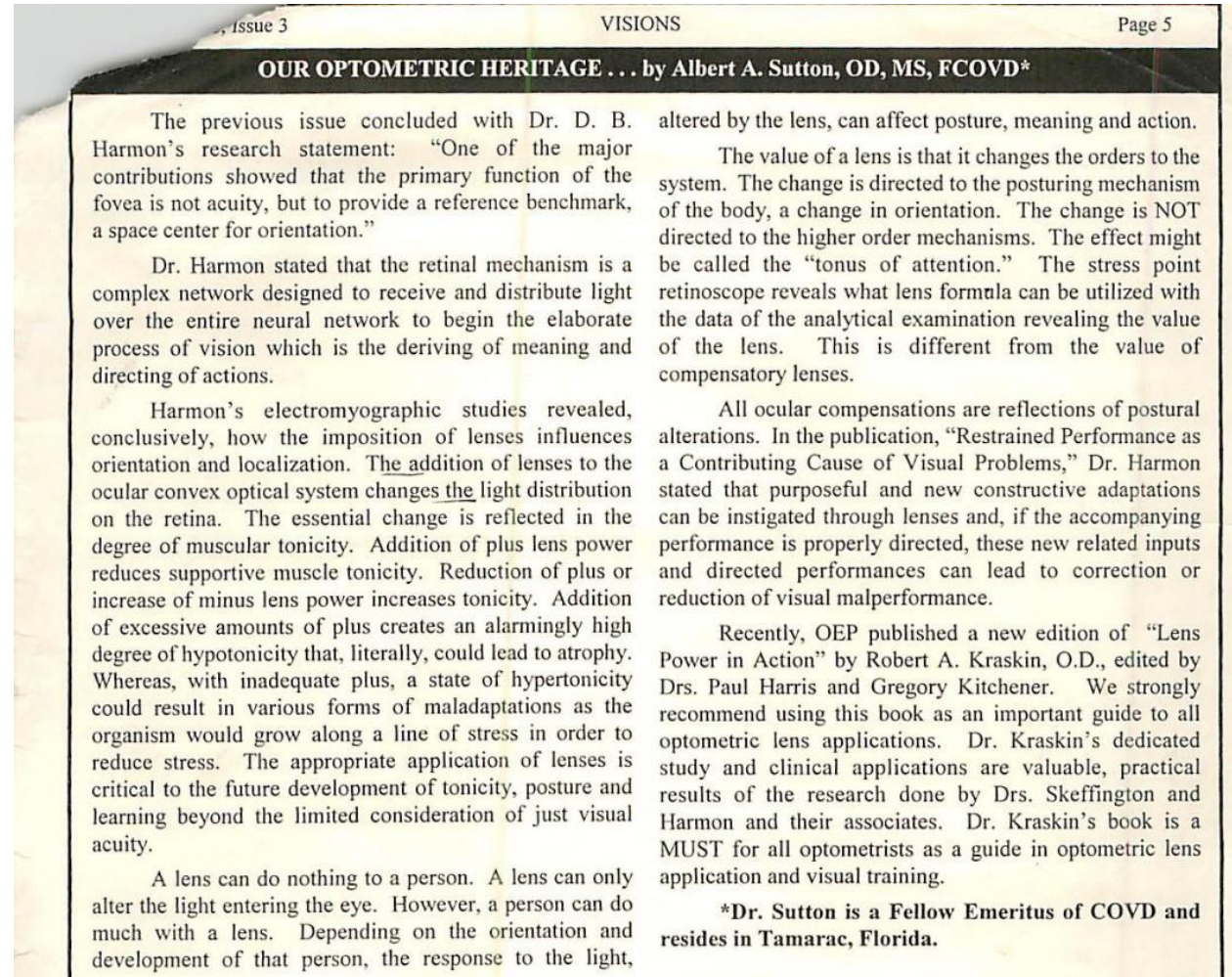
**The Clinical Concern** In response to the article, a couple of doctors voiced concern that "developmental" was not encompassing enough. I definitely understand this concern and want to clarify I am not suggesting that anything in the professional literature or curriculum be changed.

My hope is you can appreciate that success in marketing and public relations depends on perception – how do people perceive you, your office, your title; etc.

**Summary** I believe that our common goal is for vision therapy to become a household word. In order to help the word spread quickly, we need to use terms which gain acceptance with the largest audience.

\*Toni Bristol is an Affiliate member and a Practice Management consultant in Montrose, CA (877-248-3823 or email [ToniBristolVT@aol.com](mailto:ToniBristolVT@aol.com)).

# Birth of Behavioral Optometry



# Re-alignment Imagery

Standing straight

Appropriate relative position

- Feet shoulder width apart
- Nose pointed straight ahead
- Nostrils level
- Shoulders slightly rolled back
- Above hips – Center of Gravity
- Above ankles

# Philosophy

Vision is Motor – Visualizing the Message

- Response
- Action
- Behavior

The response to light altered by a lens can affect posture, meaning and action

Sutton

Mr. Miyagi

# Vision

Emergent  
Skeffington

## Four Circles

4 interlocking subcomponent circles

Skeffington

- Centering – motor component Convergence - Board
- Identification – motor component Accommodation - Kruger
- Anti-gravity – Vestibular/Proprioception – Bottom up Processing/YP
- Speech/Language- Cognitive translation – Sequential Processing



# Vision and Behavior

Awareness of Body in Space

Kraskin

Three levels...body awareness in Space

Kraskin

- Level One...Where am I – egocentric process...body in balance with gravity and spatial surround
- Level Two...Where is it – eye coordination
- Level Three...What is it – focus/identification/language

A lens can do nothing to a person a person can do much with a lens

Kraskin



# Vision and Behavior

Convergence

Skeffington

- Convergence...primary visual component  
skeffington

It is necessary that the Refractionist understand that his work has it's bearing, not on the eye itself, as an optical instrument, but

- **entirely on the Motivation from the Brain,**
- **utilizing the function of the eye to Secure Single Binocular Vision**

to the individual with a

- **maximum of comfort and a minimum expenditure of energy and disturbance in the central nervous system**

A person inefficient in their visual space world is unstable in their ego

Skeffington

# Vision and Behavior

Adapted Convergence Insufficiency (ACI)

Francke Warshowsky

- Reduced Base-In Recovery @ distance...pathonuemonic of ACI –  
Based on Motivation

Francke

Adapted (ACI) diagnosis'

- CI - AE/S – DI – AI/I – CE – FD – OMI

Warshowsky

# Vision and Behavior

Lenses

Francke Streff

A lens is an Optometrists most powerful tool

Music being played

Francke

Use the smallest amount of lens power to achieve desired symmetry...+.12 vs +.25

Streff

The value of a lens is founded in its ability to change orders to a system

Skeffington

Captain Sully Sullenberger

# Symmetry

- Symmetry is a flow...movement from one point in space to another point



# Symmetry

- The ease with which you maneuver the movement of your eyes creates efficiency in it's function

# Symmetry

- Our responsibility is to affect that process

# Symmetry


- With due diligence and respect

# Symmetry

- Symmetry is a flow...Movement from one point in space to another point
- The ease with which you learn to maneuver the movement of your eyes creates efficiency in function
- Our responsibility is to affect that process
- With due diligence and respect



# Cognitive Retinoscopy




## Article

### BEHAVIORAL RETINOSCOPY\*

**John W. Streff, O.D.**  
FCOVD, Lancaster, OH

*Dr. John W. Streff was a charter member of COVD and was a speaker at the first annual meeting. Dr. Streff currently is engaged in the private practice of behavioral optometry in Lancaster, Ohio. He formerly practiced in Minnesota and was on the staff during which time he served as director of vision research at the Gesell Institute, in New Haven, Connecticut. After Gesell, Dr. Streff served as a professor at the Southern College of Optometry before he took over the position of director of Optometry at the s.a. NOEL Center. His special interest is the relationship of vision and behavior. Among his writings are papers on juvenile functional amblyopia (the Streff Syndrome) and dynamic retinoscopy.*



**ABSTRACT:** Retinoscopy is a basic and universal procedure in vision care. Since optometry's earliest days, its members have been interested in retinoscopy. Dynamic retinoscopy was developed by optometry. This development led to other forms of retinoscopy to evaluate near-point performance. There is a need to develop the procedure to give greater insight and relationship of vision and behavior. This presentation is an effort to start such a development.

**KEY WORDS:** Retinoscopy, reflex patterns, intensive, extensive, behavior.

#### INTRODUCTION

Retinoscopy was developed in the latter half of the nineteenth century. It became a popular technique because it was simple, practical, and a convenient method of making visual observations and measurements, including the manifest refractive characteristics of the eyes. From optometry's earliest years, members of the profession have been keenly interested in retinoscopy. Dynamic retinoscopy was developed primarily by optometry in the early part of the twentieth century. The introduction of dynamic retinoscopy is credited by Pascal<sup>1</sup> to Greef (1895), Axenfeld, Heine, and Hess (1898). Credit for the introduction

of the theory and practice of dynamic retinoscopy is given to A.J. Cross.<sup>2</sup> Significant early contributions were made by Pascal,<sup>3</sup> Sheard,<sup>4,5</sup> Bestor,<sup>6</sup> Nott,<sup>7</sup> Tait,<sup>8</sup> Fry,<sup>9</sup> and Skeffington.<sup>10</sup>

#### BACKGROUND

Dynamic retinoscopy was important in the development of many of the behavioral optometric concepts. In 1928, Skeffington was concerned with the "tremendous amount of misconstruction placed on its (retinoscopy) findings throughout the history of its availability. The greatest handicap of its entire comprehension has been the over enthusiasm of its adherents. The continuous statement that *with the retinoscope the exact refraction of the eye may be obtained* has done infinite harm to a proper appreciation of the diagnostic value of this instrument." (The italics are that of the author and not Skeffington). Skeffington stressed the need to compare retinoscopy findings taken at different distances. In 1928, he stressed that the retinoscope as used in *modern refractive* procedures is an instrument for the determination of muscular activities and coordination.

The term *dynamic retinoscopy* defines a concept, a specialized use of the retinoscope to evaluate the dynamic aspect of a patient's visual system. The procedure is not confined to near testing distances. Dynamic retinoscopy can be done at any distance. The more commonly recognized dynamic procedures are *book retinoscopy*, *bell retinoscopy*, *MEM (monocular estimate method)*, *stress point retinoscopy*, and *problem solving*

\*Presented at the 33rd Annual Invitational Skeffington Symposium on Vision, Washington, D.C., January, 1988.

# Color Brightness Center/Periphery

retinoscopy.

At times, some of the dynamic procedures are labeled as *cognitive retinoscopy*.

There are significant differences in the observations depending upon use of a spot or a streak retinoscope. To clarify my position, I am specifically referring to the use of a spot retinoscope. The advantage of the spot retinoscope is that it allows the optometrist to observe and evaluate the various relative components of the reflex in one look. This is not available with the streak retinoscope for it expands the qualities in one meridian and restricts them in the opposite. All descriptions which follow are based upon observations with a spot retinoscope.

After learning to use a spot retinoscope, I have prided myself upon my retinoscopy observations. I have previously written and reported on retinoscopy.<sup>11,12,13,14</sup> At this time, I feel a need to reorganize my thinking about retinoscopy into a behavioral orientation. (i.e., *behavioral retinoscopy*).

I am not reviewing the areas of book, bell, stress point, and MEM retinoscopy. These were each discussed at the annual meeting of the College of Optometrists in Vision Development (COVD) in Philadelphia in November, 1987. This need to reorganize was brought into focus in reaction to the presentations on retinoscopy at the COVD meeting. At this meeting, attendees had the privilege of hearing presentations by Getman, Apell, Kraskin, and Haynes. The discussed procedures were to arrive at an end point, often an attempt to define a lens prescription. While there was much to learn from this illustrious quartet, I came away with a question. The question was, *Should not the retinoscopy procedure be capable of being used and developed to give greater insight and relationship of vision and behavior?*

In my previous attempts to structure observations, I and others have come up with many bits and pieces. Some of these are obvious, such as motion, color, brightness. Some are less obvious and include pattern configuration, variability, interferences, and identification of where the reflex and/or interference patterns seem to be localized. These raw data have been important in gaining an understanding as well as a perspective in the spectrum of retinoscopy.

My approach in the past was an attempt to organize the reflex patterns into *types*. This primarily was done by relating the relative distribution of light in the observed pupillary reflex. The first step was a description of an *ideal reflex* as a reflex with a fully lighted pupil which was bright throughout the distribution, but with a slight increase in central intensity. From this starting point, bidirectional changes were described. These were 1) a shift towards central peaking of brightness with a fall-off of light towards pupil edge and 2) a shift toward a peripheral peaking of brightness and an accompanying central dulling.

As a result of the interaction at the National Optometry Education Learning Center (NOEL), there is a constant search to relate observations to behavior and basic scientific concepts. Because the retinoscope is a universal technique and utilizes the observation of light patterns, the principle information of vision, it seems a likely area to make an effort along these lines. Accordingly, the remainder of this presentation is to try to share a possible start in this direction. I hope this start will trigger thought and discussion.

Within retinoscopy reflexes, one should be able to interpret the patient's visual reaction of the past, present, and probable future. The orientation of viewing should contain the following: 1) What has gone on, 2) What is going on now, and 3) What is the flexibility for future development. Optical neutralization

is mainly oriented to dealing with the results of the past (what has gone on). Most dynamic techniques have been oriented to get bits and pieces about the present (what is going on now). It is only as the optometrist develops the relative insights and learns to relate observations and raw data to behavior that he or she may be able to arrive at some semblance of a prediction for the future.

With the aforementioned in mind, I want to simplify my approach by using two parameters as a starting place: the resulting reflex illumination pattern and the relative distribution of light.

My first hypothesis is: There is a relationship between the efficiency of the individual's visual operation and the amount of light reflected in the reflex. In general, the more efficient the visual operation, the greater the percentage of reflected light (less of the light has been spent). My second hypothesis is: The relative distribution of light across the pupil as seen in the reflex relates to the individual's direction of visual processing (centrifugal or extensive vs. centripetal or intensive) and bias in loading (central vs. peripheral) of information.

## BEHAVIORAL RETINOSCOPY

The starting place for this theoretical consideration is similar to the *ideal reflex* in my previous type descriptions. The *ideal reflex* was described as an observation of a fully lighted pupil which was bright throughout but with a slight increase in central intensity. From this starting place, there are two possible shifts in distribution. A description to define these shifts can be made in terms of directionality; i.e., intensive or afferent and extensive or efferent. These terms will be used to describe both vision processing and patient behavior. The most desirable pattern should show a balance with a flexibility to shift in either direction.

The retinoscopy observations which are associated with the identified directional shifts are as follows: A a shift in light gradient to increase the central brightness as related to the peripheral, and B a shift in the light gradient to increase the peripheral brightness as related to the central.

The A pattern, a shift in the pupillary light gradient with an increased central brightness and a relative peripheral dulling, is a comparative peaking of the reflex pattern. The processing is more in the intensive direction. The bias is toward a more central loading (this may differ from awareness). When extended through time, one can anticipate a possible increase in with motion or in plus. Most retinoscopists when seeing a pronounced centripetal distribution (bright center with a fall-off of light towards periphery) spontaneously think of plus or hyperopia.

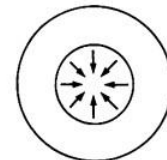
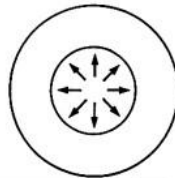


Figure 1 A Pattern: Diagrammatic Schema of the observed pupillary reflex with an increase in central brightness.

# Movement

To relate this retinoscopy pattern to behavior, the most critical comparison is in the direction of the behavior. Specific behaviors or a one-to-one correlation should not be expected. The direction of behavior should have centripetal or intensive characteristics with more peaking in function. Specifics and detail are of greater concern. The processing is more afferent and subtractive in quality.

The B pattern, a shift in the pupillary light gradient with an increase in intensity in the periphery and a dulling of the center, indicates a searching for an organization, a framework, within which to structure and organize the many bits. The processing is more centrifugal or extensive with the loading more towards a spread in discrimination and less attention to detail. The search is outward; the movement is toward compression. When extended through time, one can anticipate a possible shift into minus or myopia. This reflex light distribution is generally associated with myopia.



**Figure 2; B Pattern:** Diagrammatic Schema of the observed pupillary reflex with an increase in peripheral brightness.

The direction of behavior is likewise centrifugal or extensive. The attempt is to try and find an organization, a set where the bits and pieces can become more meaningful. The process is more efferent and additive in quality. There is a quality to the scan which has been described as fanlike.

With further restriction and stress, pattern A is more likely to manifest a relative constriction of the pupil (with a relative magnification of a restricted attentional volume) and a shift to the red end of the color spectrum. On the other hand, pattern B is more prone to manifest a dilation of the pupil (with a reduction in the attentional volume) and a shift towards the blue end of the color spectrum.

## SUMMARY

I realize this presentation is only a start, an attempt to relate clinical retinoscopy measurements and observations to patient behavior. There is a need to further develop such an orientation

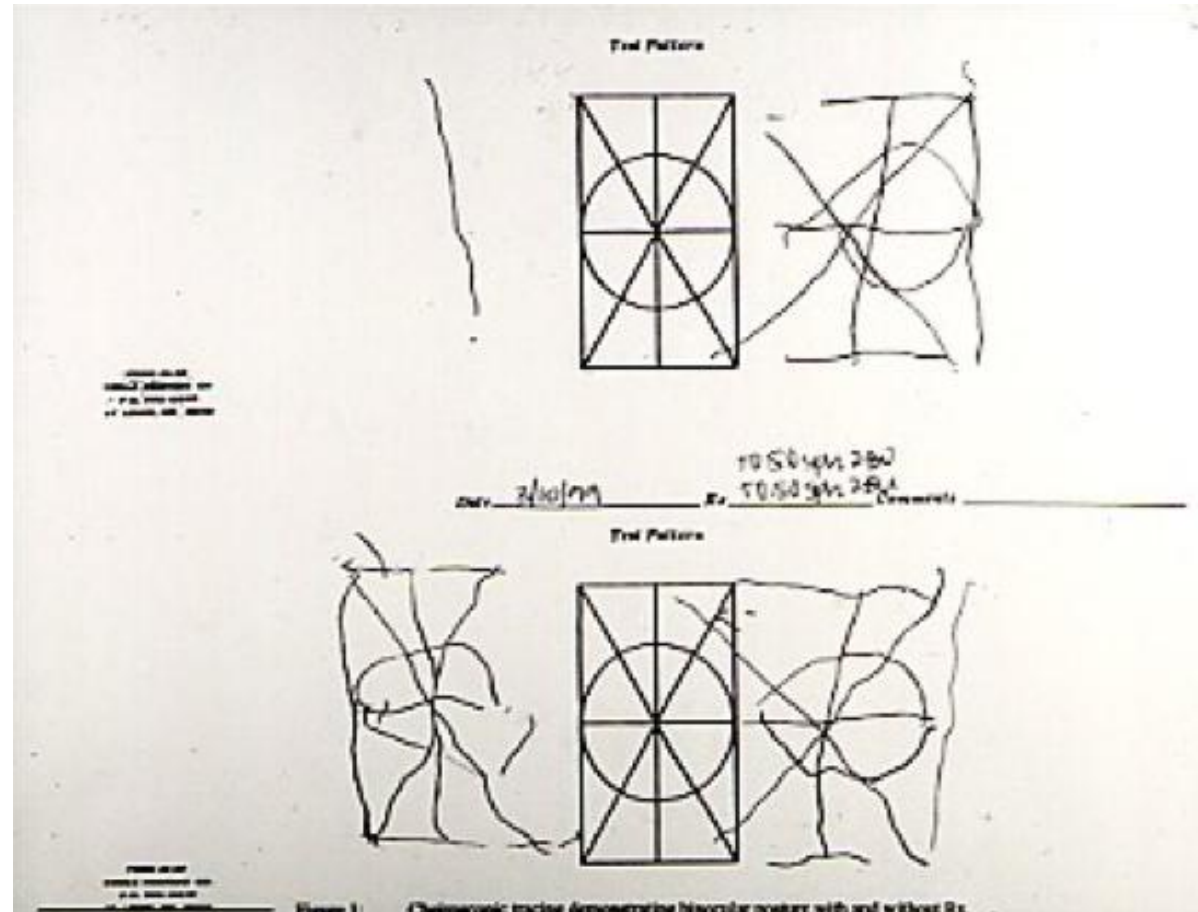
in behavioral optometry. I have chosen retinoscopy because it is a basic procedure with a great potential, is of special interest to me, and is common at some level to all behavioral optometrists.

I present this not as a finished product, but rather as a stimulant for a possible new generation in the development of retinoscopy. One can identify two previous generations in dealing with retinoscopy. There is the generation which is more closely related to the past...*optical neutralization*. There also is the generation which seems more closely related to the present...*dynamic retinoscopy*. Can we make this the time to assist in the birth of a new generation? A generation that includes the past and present, but is visually centered on the future...*behavioral retinoscopy*.

## REFERENCES

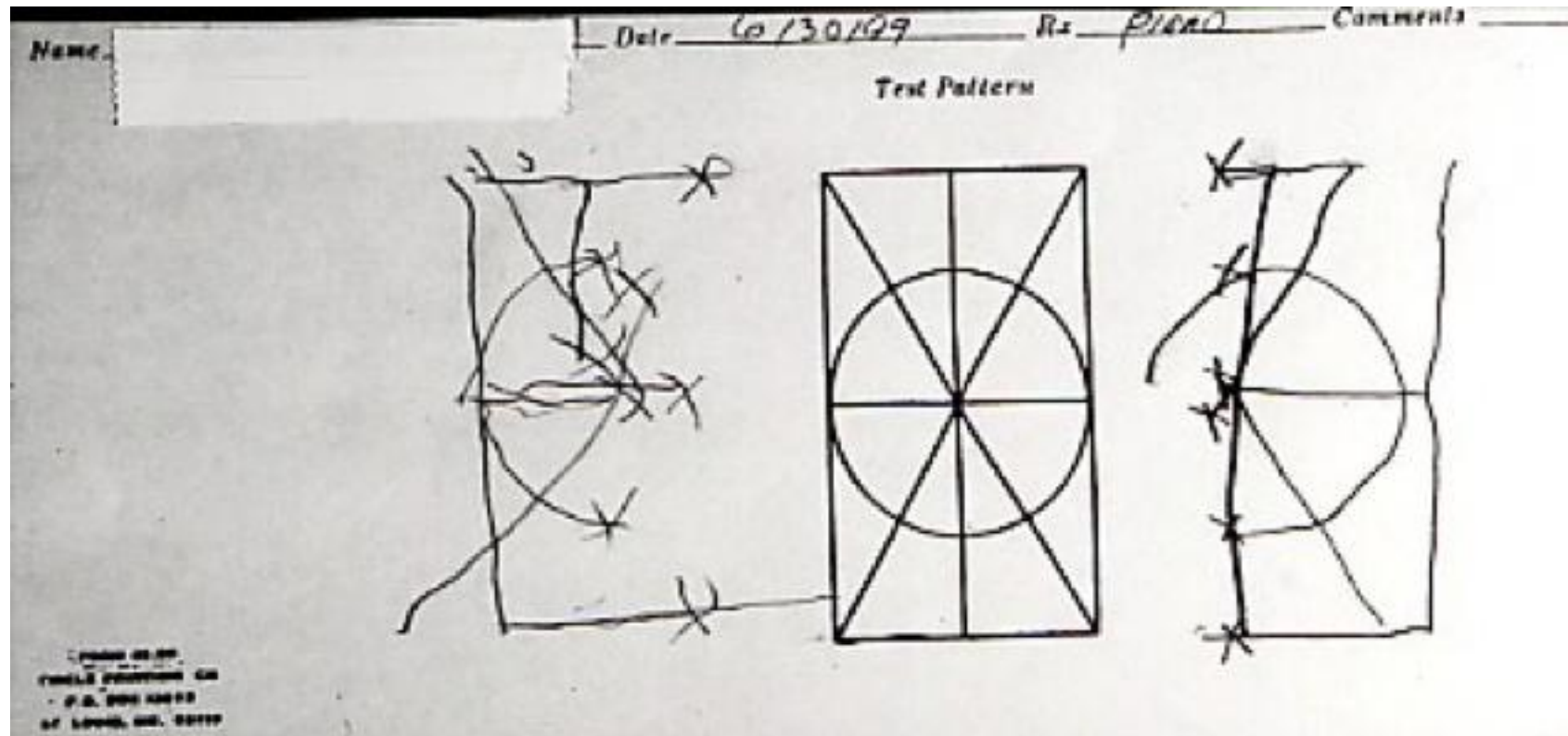
- <sup>1</sup>Pascal JJ. Modern retinoscopy. London: Hatton Press, 1930.
- <sup>2</sup>Cross AJ. Dynamic skiametry in theory and practice. New York: A. Jay Cross Optical Co., 1911.
- <sup>3</sup>Pascal JJ. Dynamic retinoscopy. Am J Optom 1931 May; 8(5):143-45.
- <sup>4</sup>Sheard C. Dynamic skiametry. Chicago: Cleveland Press, 1920.
- <sup>5</sup>Sheard C. Dynamic skiametry. Am J Optom 1929 Nov; 8(1):609-623.
- <sup>6</sup>Bestor HM. The interpretation of dynamic skiametric findings. Am J Physiol Opt 1920 Jul; 1(3):223-33.
- <sup>7</sup>Nott IS. Dynamic skiametry, accommodation and convergence. Am J Physiol Opt 1925 Oct; 6(4):490-530.
- <sup>8</sup>Tait EF. A quantitative system of dynamic skiametry. Am J Optom 1929 Dec; 6(12):669-93.
- <sup>9</sup>Fry GA. Skiametric determination of the near-point Rx. Optom Wkly 1950 Oct; 41:1469-72.
- <sup>10</sup>Skeffington AM. Procedure in ocular examination. Chicago: AJ Cox & Co., 1928.
- <sup>11</sup>Streff JW. Some early observations with a bright bell and retinoscope. Eastern States VT Conference, 1962.
- <sup>12</sup>Streff JW, Claussen VE. Retinoscopy measurement differences as a variable of technique. Am J Optom Arch Am Acad Opt 1971 Aug; 48(8):671-76.
- <sup>13</sup>Streff JW. Cognitive retinoscopy. Societe D'Optometrie D'Europe 1987 (French and Italian versions).
- <sup>14</sup>Streff JW. Cognitive retinoscopy. J Aust Col Behav Optom 1988; 1(1):14-20.

# Cortical Binocularity

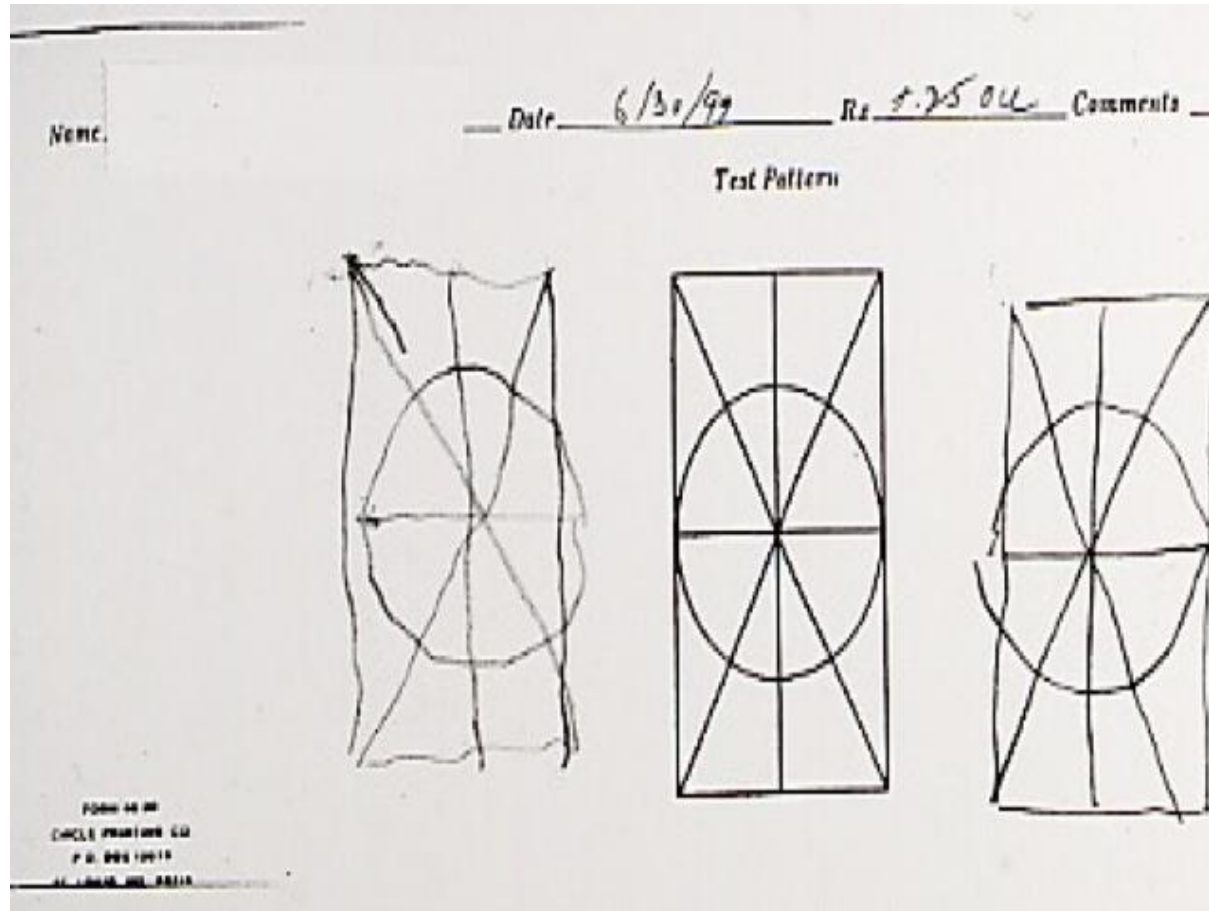




# Cortical Binocularity



# Cortical Binocularity



# Wold Sentence Copy Test

Age 7 3/4

Wold Sentence Copying Test

2x: name \_\_\_\_\_

Time 20 seconds

Four men and a jelly boy came out  
of the black and pink house quickly to  
see the bright violet sun, but the sun  
was hidden behind a cloud.

Four men and a jelly boy came out  
of the black and pink house quickly to  
see the bright violet sun, but the sun  
was hidden behind a cloud.

© 1967

Wold Sentence Copying Test

Reprinted from Academic Therapy Publications, 20 Commercial Boulevard, Broomfield, CO 80020

# Wold Sentence Copy Test

**Wold Sentence Copying Test**

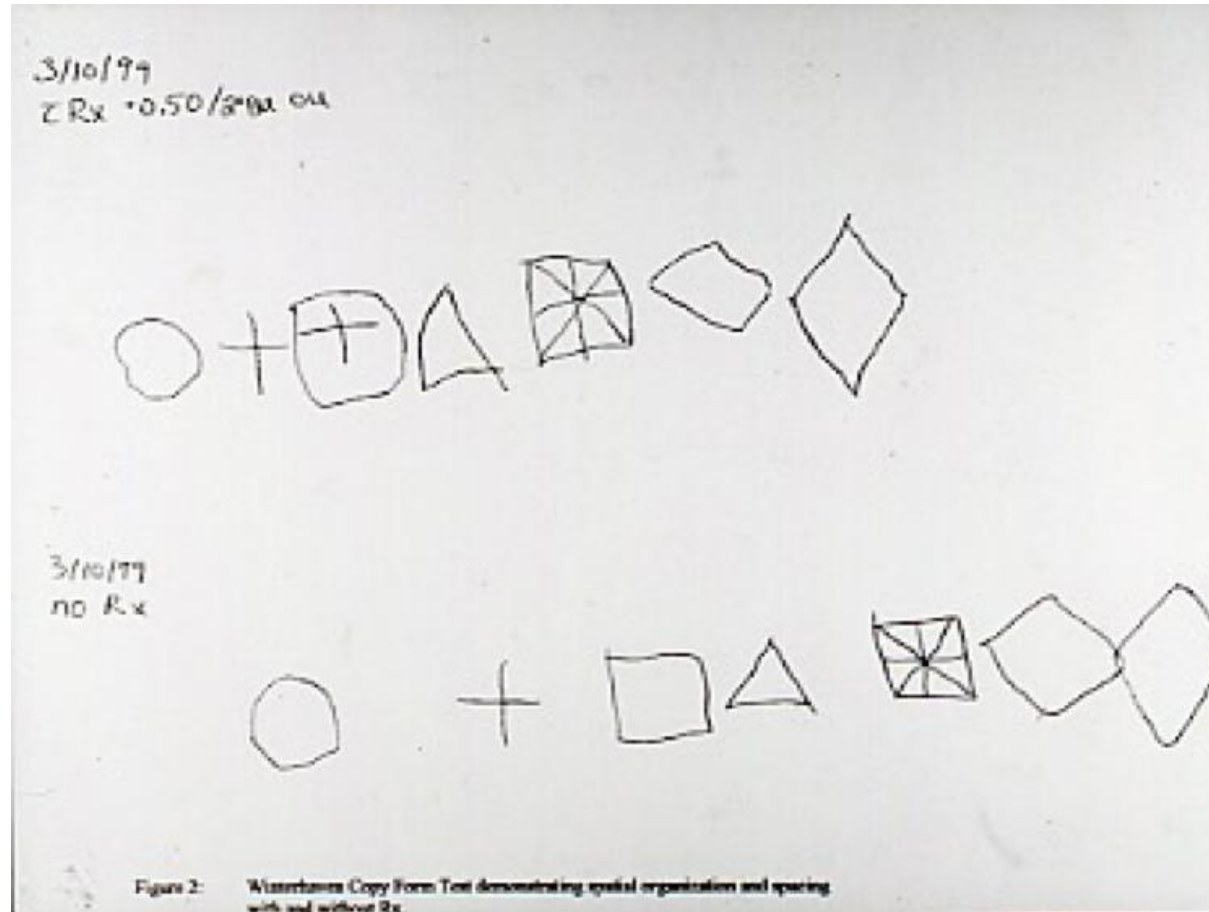
S-19-20 R  
3 min 17 sec

Four men and a jolly boy came out  
of the black and pink house quickly to  
see the bright violet sun but the sun  
was hidden behind a cloud.

four men and a jolly boy came out  
of the black and pink house quickly to  
see the bright violet sun but the sun was  
hidden behind a cloud.

© 1967

# ORGANIZATIONAL SECURITY



# Vision and Behavior

Prism

Kraskin Warshowsky

## Parameters of Vertical Yoked Prism

- Oculomotor – Convergence
- Proprioception – Egocentric Process
- Vestibular – Center of Gravity

Prescribing for the Base is academic the amount is clinical

Kraskin

Behavioral affect...spatial awareness through re-orientation of one's body within space

Warshowsky

# Vision and behavior

Critical Empathy - Stress Point

MacDonald Wolff Pepper

Visual function disequilibrium...affect on behavior

- Vision Therapy 'Stress Point'
- Reorder/Match visual space
- Reorganizing visual space...attaining individual goals

When Optometrists are attempting to develop modification of visual behavior they become aware that what appears to be a minor modification of visual habits may in fact have deeper underlying implications in terms of total behavior

MacDonald

# Visual Function

Past Present Future

Sutton

- Past - Experience and learning
- Present
- Future – Ideal meets motivation



# Foreshadowing of 1985

Toni Bristol

- Symmetry – a unified whole

Behavioral and Developmental Optometry

two parts of a unified whole of Optometry

Behavioral Optometry

Putting all the pieces together...Forming the whole!

Skeffington