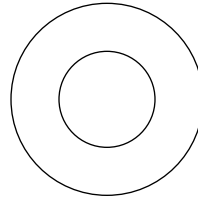
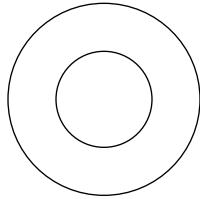


Who Needs Vision Therapy?

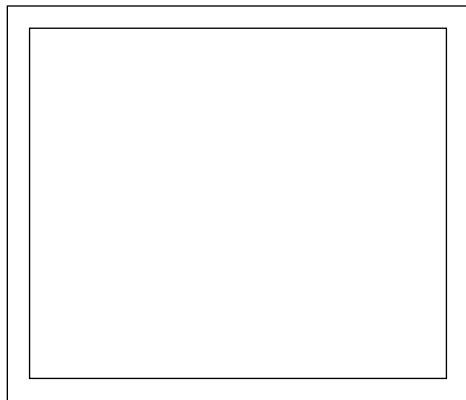
Can you fuse the rings?
2nd Degree Fusion.

Stuart Young, OD, FCOVD



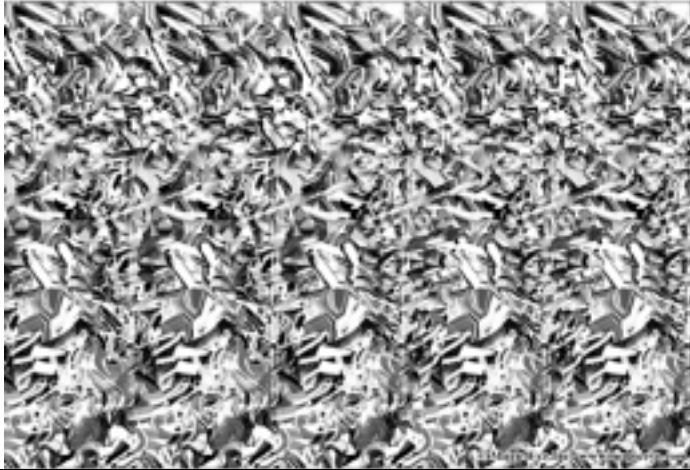
Financial Disclosures

- I have no financial disclosures. What degree of fusion? 1st Degree.



To Complete the Trifecta...

- What degree of fusion? 3rd Degree.



My Story...Educator + VT Doctor + VT Parent

- B.S. Biology Education and History Education – Brigham Young University -Idaho
 - Taught Middle School Life Science in Idaho
- Optometric Degree from Indiana University School of Optometry
- Residency in Pediatrics, Binocular Vision and Vision Therapy – Bowersox Vision Center
- Optometrist at Bowersox Vision Center
- FCOVD – Fellow of the College of Optometrists in Vision Development
- 2 of my children have completed vision therapy

My Goals for this Presentation...

- **#1 Provide some case reports to demonstrate what diagnoses can and can't be treated with vision therapy**
- **#2 Teach some clinical pearls to more easily diagnose and treat or diagnose and refer binocular vision problems.**

Vision Therapy Services in Kentucky

- **2Eyes Vision Development Center (Crestwood) – Daniel Tew**
- **Advanced Vision of Louisville - Dan Weinberg**
- **Advantage Eye Care (Owensboro)**
- **Associates in Eye Care (Somerset)**
 - **Gary Upchurch**
 - **Katy Wilson**
- **Bowersox Vision Center (Louisville and Shelbyville)**
 - **Dan Bowersox**
 - **Lauren McKinch Bowling**
 - **Stuart Young**
 - **Taylor Greif (Resident)**
- **Bluegrass Vision Group (Mt. Sterling) - Justin Coleman**

Vision Therapy Services in Kentucky

- **Garbig Family Eye Care (Wilder) – Kris Garbig**
- **Family Eyecare Associates (Versailles) - Rick Graebe**
- **Insight Eye Care (Florence) - Lauren Spencer**
- **Kentucky College of Optometry (Pikeville)**
- **Leadingham Eye Care Center (Ashland) – William Leadingham**
- **Mooney Eye Care (Mt. Washington, Taylorsville) - Ryan McGiffen**
- **Opticare (Florence)**
 - **Josiah Young**
 - **Kristin Gunn**
- **Vision Source of Bowling Green - Laura Compton**

Case Report #1: 10 yo Female Convergence Insufficiency Saccadic Dysfunction Vision Information Processing Disorder

Case VP: 9yo/10yo Female (3rd Grade)

- Referral from an OD for VT Eval “because the child was having trouble reading”
- Previously Dx with a Learning Disability
- Previously Dx with ADHD
- 3 years of Occupational Therapy
- 1-2 years of Speech Therapy
- Still had Letter Reversals
- Diagnosed with:
 - Convergence Insufficiency
 - Saccadic Dysfunction
 - Vision Information Processing Disorder
- Vision Therapy Ordered

Case VP: Developmental Vision Evaluation Overview and Parent Consult Discussion

Pre VT

The form includes the following sections and data:

- Visual Memory:** 2/11, 2/11
- BEA:** % Correct: 17.5, Avg. Time: 1.0, Goal: 30, EOT: 30, Pass: 30, Fail: 30
- Parade:** % Correct: 11.1, Avg. Time: 1.5, Goal: 30, EOT: 30, Pass: 30, Fail: 30
- Word & Digit:** % Correct: 10.4, Avg. Time: 1.5, Goal: 30, EOT: 30, Pass: 30, Fail: 30
- Prevision Strip:** 30/30
- Postural Range:**

| SI Book | SI Summary | SI Book | SI Summary | Pass | Fail |
|---------|------------|---------|------------|------|------|
| 110 | 30 | 30 | 30 | | |
- Word Book:** 0.5, 0.5, 0.5, 0.5
- Yng. Field:** 1.0, 1.0, 1.0, 1.0
- Convergence:** 1.0, 1.0, 1.0, 1.0
- DEK:** 16, 17.5, 18, 19
- Word Invention:** 1.0, 1.0, 1.0, 1.0
- Prevision:** 1.0, 1.0, 1.0, 1.0
- Prevision Strip:** 1.0, 1.0, 1.0, 1.0
- Quality of Life:** 1.0, 1.0, 1.0, 1.0
- Global Score:** 1.0, 1.0, 1.0, 1.0
- WIP:** 1.0, 1.0, 1.0, 1.0
- AC Check (Book/Book):** [Redacted]
- Classroom:** Yes
- Positive Referral:** Yes

Post VT

The form includes the following sections and data:

- Visual Memory:** 2/11, 2/11
- BEA:** % Correct: 17.5, Avg. Time: 1.0, Goal: 30, EOT: 30, Pass: 30, Fail: 30
- Parade:** % Correct: 11.1, Avg. Time: 1.5, Goal: 30, EOT: 30, Pass: 30, Fail: 30
- Word & Digit:** % Correct: 10.4, Avg. Time: 1.5, Goal: 30, EOT: 30, Pass: 30, Fail: 30
- Prevision Strip:** 30/30
- Postural Range:**

| SI Book | SI Summary | SI Book | SI Summary | Pass | Fail |
|---------|------------|---------|------------|------|------|
| 110 | 30 | 30 | 30 | | |
- Word Book:** 0.5, 0.5, 0.5, 0.5
- Yng. Field:** 1.0, 1.0, 1.0, 1.0
- Convergence:** 1.0, 1.0, 1.0, 1.0
- DEK:** 16, 17.5, 18, 19
- Word Invention:** 1.0, 1.0, 1.0, 1.0
- Prevision:** 1.0, 1.0, 1.0, 1.0
- Prevision Strip:** 1.0, 1.0, 1.0, 1.0
- Quality of Life:** 1.0, 1.0, 1.0, 1.0
- Global Score:** 1.0, 1.0, 1.0, 1.0
- WIP:** 1.0, 1.0, 1.0, 1.0
- AC Check (Book/Book):** [Redacted]
- Classroom:** Yes
- Positive Referral:** Yes

Case VP: Developmental Eye Movement Test (Saccadic Dysfunction)

Pre VT

NUMBER KNOWLEDGE PRE TEST: 100

00 = OMISSION ERROR
01 = ADDITION ERROR
02 = TRANSPOSITION ERROR

| TEST A | TEST B | TEST C |
|--------|--------|--------|
| 1 | 1 | 1 |
| 2 | 2 | 2 |
| 3 | 3 | 3 |
| 4 | 4 | 4 |
| 5 | 5 | 5 |
| 6 | 6 | 6 |
| 7 | 7 | 7 |
| 8 | 8 | 8 |
| 9 | 9 | 9 |
| 0 | 0 | 0 |

TIME: 1:15.00 SEC

VERTICAL TIME = 1:15 SEC
HORIZONTAL TIME = 1:10 SEC
RATIO = 1.25

PERCENTILE RANK: 10
STANDARD SCORE: 25

Post VT

NUMBER KNOWLEDGE PRE TEST: 100

00 = OMISSION ERROR
01 = ADDITION ERROR
02 = TRANSPOSITION ERROR

| TEST A | TEST B | TEST C |
|--------|--------|--------|
| 1 | 1 | 1 |
| 2 | 2 | 2 |
| 3 | 3 | 3 |
| 4 | 4 | 4 |
| 5 | 5 | 5 |
| 6 | 6 | 6 |
| 7 | 7 | 7 |
| 8 | 8 | 8 |
| 9 | 9 | 9 |
| 0 | 0 | 0 |

TIME: 41.88 SEC

VERTICAL TIME = 30 SEC
HORIZONTAL TIME = 9.10 SEC
RATIO = 1.00

PERCENTILE RANK: 90
STANDARD SCORE: 75

Case VP: Wold Sentence Copy (Visual Motor)

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.

Pre VT

24 sec.
18.75 LPM

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 cloud.

Post VT

9 minutes
20.5 LPM
85 LPM

Case VP: Gardner Reversal (Letter Reversals)

Pre VT

Pre VT

Case VP: 9yo/10yo Female

| Testing | Pre VT Testing | Post VT Testing |
|---|---|--|
| Visual Memory Sequential Memory | 63 rd Percentile 2 nd Percentile | 75 th Percentile 75 th Percentile |
| Fusional Ranges (Convergence Insufficiency) | Base Ranges: Passed Base Out Ranges: Failed | Base Ranges: Passed Base Out Ranges: Passed |
| Developmental Eye Movement (Saccadic Dysfunction) | 1 st Percentile | 50 th Percentile |
| Wold Sentence Copy | (See Visual) | (See Visual) |
| Gardner Letter Reversal Test | Missed 17 (See Visual) | Missed 5 |
| Quality of Life | 38 | 5 |

Case VP: 9yo/10yo Female (3rd Grade)

- **Following Vision Therapy, the patient became a confident and accurate reader and school became much easier**

Case Report #2:

10 yo Female

**Consecutive Constant Left EXOtropia
(Strabismus Surgery for ESOtropia,
became a Constant EXOtropia after
Surgery)**

Case PM: 9 YO Female PRE Vision Therapy

- Consecutive Exotropia OS
 - Strabismus Surgery for Esotropia and now is a 10pd Constant Left Exotropia with severe Amblyopia
 - OD: 20/20 +3.75 -2.50 x 002
 - OS: 20/150 +4.25 -2.50 x 180
- Failing school and hated sports
- Referred by local OD's office
- Can Vision Therapy "Fix" this?

Case PM: Developmental Vision Exam

| Pre VT | | | | | | |
|------------------------------|---------|-----------|--------|----|------------------------|---------|
| Visual Memory | 37% | | | | | |
| Seq. Memory | 47% | | | | | |
| IXYS | N.Score | Exp. Time | Goal | FF | Fix | Initial |
| Narrates | 88.7 | 2.32 | 1.2 | F | (+Signs Head Movement) | |
| Parrots | 79.7 | 1.25 | 1.2 | F | | |
| Word 4 Disc | 3 | red | | F | | |
| Fixation Disp. | F | | | F | | |
| Functional Ranges | ANA | | | | | |
| Goals | 30 | 6 | 20 | 25 | | |
| Word Back | 20/30 | on Y | on ANA | | | |
| Word Facility | 100 | | | | | |
| Guidance Reversal | 100 | | | | | |
| OD: V: 10/20 c/c 0/10 | | | | | | |
| OS: V: ANA | | | | | | |
| DEM: H: ANA | | | | | | |
| Word Reversal | 30 | 100 | 8 | 10 | # see word | |
| Fluency | 14 | | | | | |
| Full Mirror OS (w/ includes) | | | | | | |
| Quality of Life | 62 | | | | | |

| Post VT | | | | | | |
|------------------------------|---------|-----------|--------|----|------------|---------|
| Visual Memory | 91 | | | | | |
| Seq. Memory | 90 | | | | | |
| IXYS | N.Score | Exp. Time | Goal | FF | Fix | Initial |
| Narrates | 96.05 | 1.19 | 1.2 | F | | |
| Parrots | 95.16 | 1.17 | 1.2 | F | | |
| Word 4 Disc | 4 | red | | F | | |
| Fixation Disp. | F | | | F | | |
| Functional Ranges | ANA | | | | | |
| Goals | 30 | 6 | 20 | 30 | | |
| Word Back | 20/30 | on H | on ANA | | | |
| Word Facility | 100 | | | | | |
| Guidance Reversal | 100 | | | | | |
| OD: V: 10/20 c/c 0/10 | | | | | | |
| OS: V: ANA | | | | | | |
| DEM: H: ANA | | | | | | |
| Word Reversal | 100 | 100 | 10 | 10 | # see word | |
| Fluency | 14 | | | | | |
| Full Mirror OS (w/ includes) | | | | | | |
| Quality of Life | 74 | | | | | |

Case PM: DEM Amblyopic Eye

Pre VT

(S) = SUBSTITUTION ERROR
 (I) = ADDITION ERROR
 (D) = DELETION ERROR
 (T) = TRANSPOSITION ERROR

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 |
| 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 |
| 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 |
| 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

TIME: _____ SEC
 1 ERROR _____ 0 ERRORS _____
 2 ERRORS _____ 3 ERRORS _____
 ERRORS (S+I+D+T) = _____
 HORIZONTAL TIME = _____ SEC
 ADJUSTED TIME = _____ SEC
 RATIO = _____
 VERTICAL TIME _____
 HORIZONTAL TIME _____
 RATIO _____
 ERRORS _____

Post VT

(S) = SUBSTITUTION ERROR
 (I) = ADDITION ERROR
 (D) = DELETION ERROR
 (T) = TRANSPOSITION ERROR

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 |
| 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 |
| 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 |
| 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

TIME: 66 SEC
 1 ERROR 1 0 ERRORS 1
 2 ERRORS 7 3 ERRORS 7
 ERRORS (S+I+D+T) = 9
 HORIZONTAL TIME = 64
 ADJUSTED TIME = _____ SEC
 RATIO = 1.06
 VERTICAL TIME _____
 HORIZONTAL TIME _____
 RATIO _____
 ERRORS _____

Case PM: DEM Non-Amblyopic Eye

Pre VT

(S) = SUBSTITUTION ERROR
 (I) = ADDITION ERROR
 (D) = DELETION ERROR
 (T) = TRANSPOSITION ERROR

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 |
| 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 |
| 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 |
| 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

TIME: 110 SEC
 1 ERROR 3 0 ERRORS _____
 2 ERRORS 14 3 ERRORS _____
 ERRORS (S+I+D+T) = 17
 HORIZONTAL TIME = 134.2
 ADJUSTED TIME = _____ SEC
 RATIO = 1.67
 VERTICAL TIME _____
 HORIZONTAL TIME _____
 RATIO _____
 ERRORS _____

Post VT

(S) = SUBSTITUTION ERROR
 (I) = ADDITION ERROR
 (D) = DELETION ERROR
 (T) = TRANSPOSITION ERROR

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 |
| 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 |
| 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 |
| 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

TIME: 51 SEC
 1 ERROR 1 0 ERRORS 1
 2 ERRORS 1 3 ERRORS 1
 ERRORS (S+I+D+T) = 0
 HORIZONTAL TIME = 51
 ADJUSTED TIME = _____ SEC
 RATIO = 1.31
 VERTICAL TIME _____
 HORIZONTAL TIME _____
 RATIO _____
 ERRORS _____

Case PM: Wold Sentence Copy

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.

3:33
213 seconds
SCORE: 30/100 @ 8/10

Pre VT

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

106/100
98/100
100/100 @ 7/10

Post VT

Case PM: Gardner Reversal Test

③ 52 ⑥ 24 25 ⑧ 77 -2
 17 ⑩ 11 12 13 14 15 -2
 16 17 18 19 20 21 22 23 24 -2
 ② ④ ⑤ ⑦ ⑨ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ -4
 ⑳ ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ -11
 ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿ -12
 -41

Pre VT

③ 52 ⑥ 24 25 ⑧ 77 -2
 17 ⑩ 11 12 13 14 15 -2
 16 17 18 19 20 21 22 23 24 -2
 ② ④ ⑤ ⑦ ⑨ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ -4
 ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ -11
 ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿ -12
 -41

Middle of VT

③ 52 ⑥ 24 25 ⑧ 77 -2
 17 ⑩ 11 12 13 14 15 -2
 16 17 18 19 20 21 22 23 24 -2
 ② ④ ⑤ ⑦ ⑨ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱ ⑲ -4
 ㉑ ㉒ ㉓ ㉔ ㉕ ㉖ ㉗ ㉘ ㉙ ㉚ ㉛ ㉜ ㉝ ㉞ ㉟ -11
 ㊱ ㊲ ㊳ ㊴ ㊵ ㊶ ㊷ ㊸ ㊹ ㊺ ㊻ ㊼ ㊽ ㊾ ㊿ -12
 -41

Post VT

Case PM: 9yo/10yo Female

| Testing | Pre VT Testing | Post Vision Therapy Testing |
|--|---|--|
| Visual Memory Sequential Memory | 37 th Percentile 9 th Percentile | 91 st Percentile 50 th Percentile |
| Fusional Ranges (Convergence Insufficiency) | Base Ranges: Unable Base Out Ranges: Unable | Base Ranges: Unable Base Out Ranges: Unable |
| Developmental Eye Movement (Saccadic Dysfunction) | Non Amblyopia and Amblyopia Eyes: Attempted Not Able | Non-Ambly Eye: 50 th Percentile Amblyopic Eye: 25 th Percentile |
| Wold Sentence Gardner Letter Reversal Test | (See Visual) Missed 54 (See Visual) | (See Visual) Missed 0 |
| Word Rock (Accommodation) | OD: 8cpm OS: Attempted Not Able | OD: 20cpm OS: 11cpm |
| Quality of Life Survey | 62 | 19 |

Case PM: 9 YO Female POST Vision Therapy

- **Before VT**
 - OD: 20/20 +3.75 -2.50 x 002
 - OS: 20/150 +4.25 -2.50 x 180
- **After VT**
 - OD: 20/20 +3.75 -2.50 x 002
 - OS: 20/80 +4.25 -2.50 x 180
- **Patient still has constant Exotropia (much better control), but:**
 - Gets straight A's at a school
 - Made the All-Star Team for a traveling softball league
 - Patient is confident and happy

Case Report #3: 44 y.o. Female Intermittent Alternating Exotropia at Near Only

Case AT: 44yo Female

- Intermittent Alternating Exotropia at near
- -5.00 Rx OU with a +1.50 Add
- Referred by a local OD

- She works as a Behavioral Health Instructor for adults
- Chief Complaint:
 - “When I had to switch to teaching my lectures on Zoom during the pandemic, my eye would drift out during my lectures and my students started commenting...”

AT: Developmental Vision Exam

44yo Female

Behavioral Health Therapist

Intermittent Exotropia @ Near

Pre VT

| TYPE | Side | Dist | Initial |
|---------------|-------|------|---------|
| Visual Memory | 25/20 | | |
| Seg. Memory | 2/20 | | |

| REA | % Correct | Age-30m | Goal | ET | Dist | Initial |
|----------|-----------|---------|------|-----|------|---------|
| Saccades | 100 | | | 0/0 | | 0 |
| Pursuits | 100 | 1.21 | 12 | 0/0 | | 0 |
| Work 4.0 | 4.0 | 2.0 | 10.0 | 0/0 | | 0 |
| Fixate | 100 | 1.0 | 10.0 | 0/0 | | 0 |

| Visual Ranges | RD (Book) | HL (Screen) | RD (Book) | HL (Screen) | Dist | Initial |
|---------------|-----------|-------------|-----------|-------------|------|---------|
| 25 | 20 | 0 | 0 | | | |
| 10 | 5 | 20 | 10 | | | |
| | P | P | F | F | | |

Wood Rock: 00:5.5 on 00:00 - blurry vision

Yog. Facility: 00:00:00 - 5.5 - full out of the beginning

Gender Recital: 0/0/0/0 - none - present

DUM: V: 00:00:00 1.50
H: 00:00:00 1.50
A: 113.847%

Global Status: 250°
W: 100°

AC Check (Stab/Anby): N/A

Chiasm Gen: Yes (X)
Primitive Reflexes: Yes (X)

| Phoria | Dist | Initial |
|------------|------------|---------|
| VI: 1.46 | 0.00 P | |
| VI: Circle | disproport | |
| HI: 0.73 | 0.00 P | |
| VI: Circle | Asym | |
| HI: 0.61 | 0.00 P | |

AT: Developmental Vision Exam

44yo Female

Behavioral Health Therapist

Intermittent Exotropia @ Near

Post VT

| TYPE | Side | Dist | Initial |
|---------------|-------|------|---------|
| Visual Memory | 25/20 | | |
| Seg. Memory | 2/20 | | |

| REA | % Correct | Age-30m | Goal | ET | Dist | Initial |
|----------|-----------|---------|------|-----|------|---------|
| Saccades | 100 | | | 0/0 | | 0 |
| Pursuits | 100 | | | 0/0 | | 0 |
| Work 4.0 | 4.0 | | | 0/0 | | 0 |
| Fixate | 100 | | | 0/0 | | 0 |

| Visual Ranges | RD (Book) | HL (Screen) | RD (Book) | HL (Screen) | Dist | Initial |
|---------------|-----------|-------------|-----------|-------------|------|---------|
| 25 | 20 | 0 | 0 | | | |
| 10 | 5 | 20 | 10 | | | |
| | P | P | P | P | | |

Wood Rock: 00:00:00 on 00:00

Yog. Facility: 0.50 - none

Gender Recital: none - present

DUM: V: 00:00:00 1.50
H: 00:00:00 1.50
A: 113.847%

Global Status: 250°
W: 100°

AC Check (Stab/Anby): N/A

Chiasm Gen: Yes (X)
Primitive Reflexes: Yes (X)

| Phoria | Dist | Initial |
|------------------|------|---------|
| VI: P | | |
| VI: 0.40 | 0.00 | |
| VI: P | | |
| VI: 0.40 | 0.00 | |
| VI: 0.70 R hyper | | |
| F | | |
| HI: 3.32 | 0.00 | |

Case AT: 44yo Female

- **Post VT Discussion (Graduates from VT in 4 weeks)**
- **Much better control of the Exotropia**
- **Reads more quickly and without hesitation and without rereading**
- **Pays bills and analyzes spreadsheets and documents more quickly**

Case Report #4: 17yo Male Constant Left Esotropia

Case IS: 17 yo male

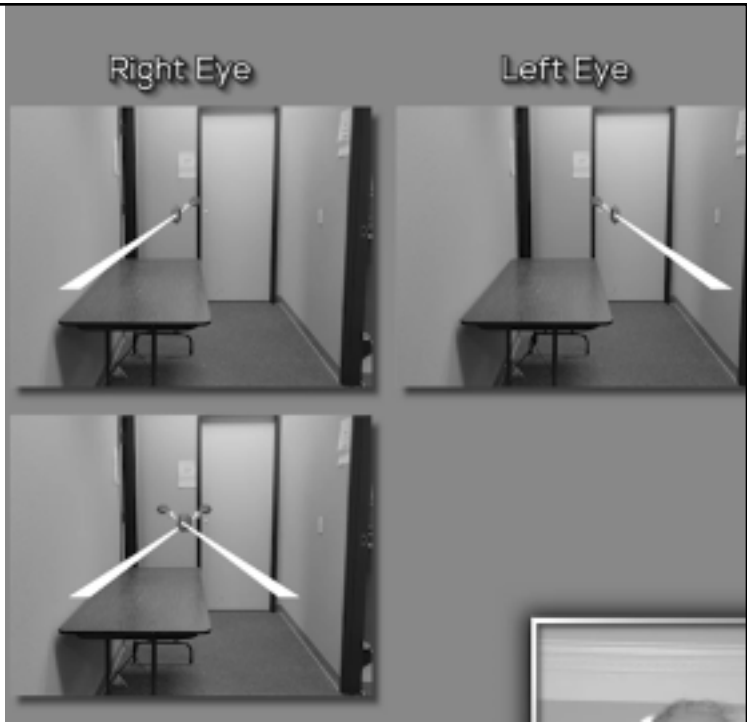
- **Pre-Vision Therapy**
 - Left Constant Esotropia/Amblyopia
 - BCVA OD: SpecRx +2.50 -1.25 x 015 20/20
 - BCVA OS: SpecRx +5.00-2.00x180 20/80
 - Patient at BVC since age 9, would not patch or do vision therapy, decided at 17 that he wanted to try it.
- **Currently in Vision Therapy (8 weeks)**
 - BCVA OD: 20/20
 - BCVA OS: 20/60
- **We are using Virtual Reality and Augmented Reality VT Equipment**

Patient IS: What's New in Vision Therapy?

- Virtual Reality (Vivid Vision, Neurotracker)



Augmented Reality Holo Lens (HTS) Brock String Example



Case IS: Developmental Vision Exam

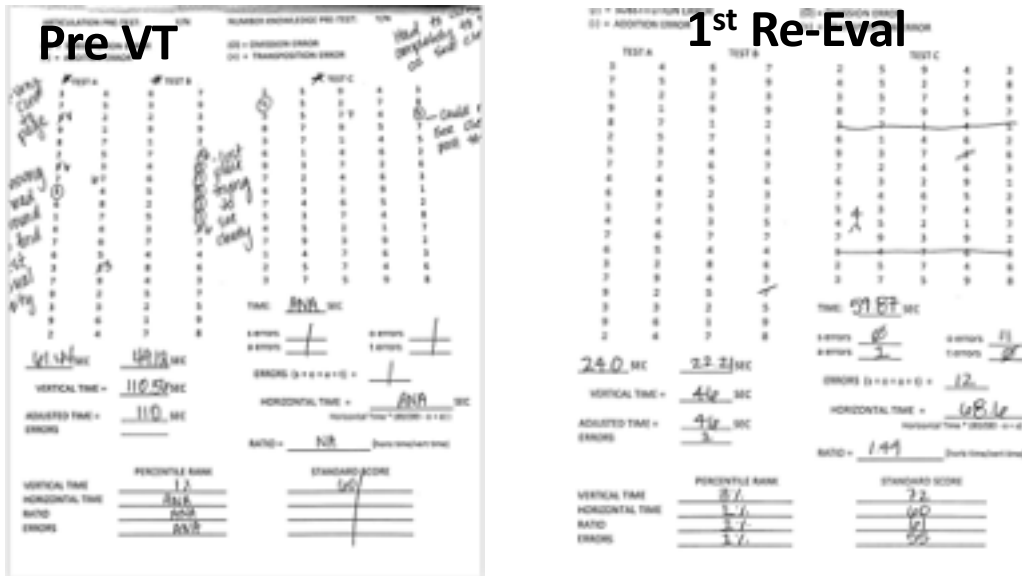
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|----------------------|------------|------|-------|
| DATE | 11/27/2011 | TIME | 14:15 |
| Visual Memory | 11/27/2011 | | |
| Visual Memory | 11/27/2011 | | |
| REA | 11/27/2011 | | |
| ✓ Distance | 11/27/2011 | | |
| ✓ Precision | 11/27/2011 | | |
| ✓ Worth of Use | 11/27/2011 | | |
| ✓ Position Map | 11/27/2011 | | |
| ✓ Positional Range | 11/27/2011 | | |
| Goals | 11/27/2011 | | |
| ✓ Word Bank | 11/27/2011 | | |
| ✓ Temp. Facility | 11/27/2011 | | |
| ✓ Executive Function | 11/27/2011 | | |
| ✓ DEM | 11/27/2011 | | |
| ✓ Visual Attention | 11/27/2011 | | |
| ✓ Finger | 11/27/2011 | | |
| ✓ Pals Mirror | 11/27/2011 | | |
| Quality of Life | 11/27/2011 | | |

Pre VT

| | | | |
|----------------------|------------|------|-------|
| DATE | 11/27/2011 | TIME | 14:15 |
| Visual Memory | 11/27/2011 | | |
| Visual Memory | 11/27/2011 | | |
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1st Re-Eval

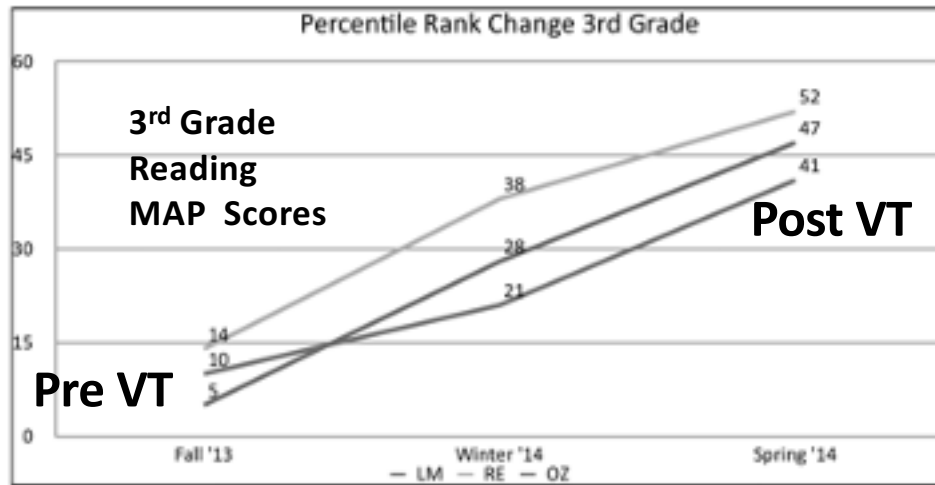
Case IS: DEM Amblyopic Eye



Southside Elementary School – Shelbyville

- Study performed by Dr. Dan Bowersox, FCOVD and Dr. Ashley Gentrup, FCOVD (prior resident at Bowersox Vision Center) in 2013
- Three 3rd Graders from below the 15th Percentile in MAP Reading scores were part invited to part of a study at Bowersox Vision Center

Southside Elementary School - Shelbyville



Clinical Pearls Binocular Vision Cases

Easy Questions to Ask During the History

- **Does your child skip words or lines when they read?**
 - Saccadic Dysfunction
- **Does your child use their finger to keep their place (3rd Grade)?**
 - Saccadic Dysfunction
- **Does your child give up with school work after a few minutes of reading?**
 - Avoidance could be a symptom of convergence insufficiency
 - Avoidance could be a symptom of accommodative dysfunction
 - Avoidance could be a symptom of saccadic dysfunction

Common Complaints to Listen For

- **“My child is struggling to read, we want to know if they need glasses.”**
- **“Mary is struggling in school, we thought we’d get her eyes checked.”**
- **“Johnny just got diagnosed with ADHD and is on medication, we have tried tutoring, he is still struggling, so we wanted to get his eyes checked.”**
- **“Sarah just got diagnosed with dyslexia, we were sent to see if she also needs glasses.”**

Diagnoses that can be improved with VT

Non-Strabismus

- **Convergence Insufficiency**
- **Saccadic Dysfunction**
- **Accommodative Disorders**
- **Refractive Amblyopia**
- **Vision Information Processing Disorders**
- **Vertical Phorias**

Strabismus

- **Esotropia**
- **Exotropia**
- **Strabismic Amblyopia**
- **Nerve Palsies (3rd, 4th, 6th) – Will most likely need prism to resolve diplopia and then can utilize Vision Therapy to improve function.**

Clinical Pearls – Things to Remember...

- **Convergence Insufficiency**
 - **Exophoric posture**
 - **Reduced NPC: Ask the patient..."As the target gets closer tell me when it blurs", if it happens greater than 7cm or 3 inches from their nose, NPC is probably reduced. If the child backs their head away at 6 inches, it's probably reduced. Make a Referral!**
 - **Definitely needs vision therapy!**
 - **Low plus prescriptions generally make it worse.**
 - **Base-in prism in the long run makes it worse.**

Clinical Pearls – Things to Remember...

- **Saccadic Dysfunction**
 - Definitely needs vision therapy!
 - Have the patient stand up
 - Use two targets 12 inches apart: light and ink pen
 - Tell them: “When I say pen, look at the pen, when I say light, look at the light.”
 - Watch for head or even whole body movement (trusts the neck, more than the eyes). Watch for the eyes making multiple saccades to get to the appropriate target.
 - Ask them to do simple math (loading the task) while tracking.

Clinical Pearls – Things to Remember...

- **Esophoria**
 - Usually does with low powered reading glasses
 - If it doesn't solve the problem, they may have Saccadic Dysfunction or poor vergence ranges (divergence and convergence). Refer for Vision Therapy.

Clinical Pearls – Things to Remember...

- **Refractive Amblyopia**
 - **Prescription that provides the best binocularity**
 - **Active Patching (with activities) or Red/Green Tranaglyph Activities and red acetate filter to improve acuity**
 - **Vision Therapy to improve the rest of the visual skills used in school**

Clinical Pearls – Things to Remember...

- **Exotropia with or without Amblyopia**
 - **Intermittent Alternating Exotropia – Vision Therapy**
 - **Intermittent Unilateral Exotropia – Vision Therapy**
 - **Constant Alternating Exotropia – Vision Therapy and/or Strabismus Surgery**
 - **Constant Unilateral Exotropia – Vision Therapy and/or Strabismus Surgery**
 - **Active Patching (with activities) or Red/Green Tranaglyph Activities and red acetate filter to improve acuity**

Clinical Pearls – Things to Remember...

- **Esotropia with or without Amblyopia**
 - Intermittent Alternating Esotropia – Vision Therapy
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Clinical Pearls – Things to Remember...

- **Items to consider when referring for vision therapy or strabismus surgery:**
 - Constant or Intermittent
 - Unilateral or Alternating
 - Presence of stereopsis
 - Severity of amblyopia
 - Measured angle of strabismus
 - Age of patient
 - Prior Treatment: prior strabismus surgery or vision therapy TX
 - Goals of the patient/parent

Clinical Pearls – Things to Remember...

- **Alternative treatments to strabismus surgery**
 - Vision Therapy
 - Binasal Occlusion (usually best for esotropia) (can use tape or polish)
 - Monocular Fixation in Binocular Field Activities (MFBF Red/Green Glasses). Example red acetate goes over the eyepad. Red lens over amblyopic eye.
 - Spectacle Correction
- If vision therapy doesn't improve strabismic angle or the goals of the patient or parent, then refer for strabismus surgery.
- Vision Therapy may be indicated after strabismus surgery to improve the other visual skills not treated with surgery.

Clinical Pearls – Things to Remember...

- **Adults and Vision Therapy**
 - Many adult strabismic and amblyopia patients are motivated to improve functionality or control
 - Presbyopia increases symptoms of convergence insufficiency or exotropia at near
 - Prism often works better in adults, but many still may need therapy to improve functionality
 - Mild amounts of vertical heterophoria (0.25-0.50) can cause binocularity difficulties. Prescribe prism in these cases.

Thank you!

Stuart Young, OD, FCOVD

Bowersox Vision Center

Cell: (502) 780-2815

Email: dr.sbyoung@gmail.com

Questions?

