VISION AND LEARNING

PaTTAN
Educational Video Series
Vision Topics
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GOALS

• Vision Statistics
• What Vision Skills Are Involved in Learning
• Signs and Symptoms to Look For
• What Can Be Done???
VISION ►►►►► (leading to) ►►►►►
LEARNING
Learning is accomplished through complex and interrelated processes - one of which is VISION
STATISTICS
AND
STATEMENTS
IMPORTANCE OF VISION
80% of what children learn is acquired through the visual processing of information

(Journal of Behavioral Optometry, Visual Screening of Adjudicated Adolescents, Vol. 10, No. 1, 1999)
Vision problems affect 1 in 20 preschoolers and 1 in 4 school-aged children

(Prevent Blindness America - Website - February 2011)
National Society for the Prevention of Blindness (Prevent Blindness America) states that an estimated 10 million children below 10 years of age have vision problems which affect their ability to learn (also noted by National PTA in their Vision Resolution of 1999)
Vision & Learning

It is reported that children with reading problems exhibit a greater than 50% prevalence of visual deficiencies in focusing or eye alignment as compared to normal achieving peers.

(Grisham, JD, Computerized Visual Therapy - Year 1 Report, Palo Alto, American Institutes for Research, 1986)
Among children who are reading disabled, as many as 80% show a deficiency in one or more basic vision skills.

Vision, Learning & Behavior

Children with vision related learning problems revealed that they were experiencing feelings such as a lack of direction, a sense of not belonging, an inadequate sense of self-assurance and a feeling of insecurity, inadequacy and inferiority.

(Zaba, JN, Vision’s Relationship to Delinquency, Illiteracy and Learning Problems, 2001)
ADHD

- Study at the Children’s Eye Center-University of San Diego
- Uncovered a relationship between CI and ADHD
- Patients Dx with ADHD should also be evaluated for CI and Tx accordingly

(Sources - interviews with David Granet, M.D. and Maria Lymberis, M.D.
STATS

• As many as 2%-5% of preschool children, amounting to nearly 1 million children nationwide, are estimated to have impaired vision

(Maternal and Child Health Improvement Project Summary, American Academy of Pediatrics, August 2001)
STATS

• Of the 74 million children in America, only 14% have had an eye exam by the age of 6 years

STATS

- 75,000 3 year olds develop amblyopia EACH YEAR, but $\frac{1}{2}$ of children are diagnosed after age 5
STATS

- American Public Health Association encourages regular comprehensive eye examinations scheduled at approximately 6 months of age, 2 years, and 4 years.

(American Public Health Association, “Improving Early Childhood Eyecare,” Policy Number 2001-1)
NEUROSENSORY RESEARCH

• Dr. Drake Duane
• International Authority on Dyslexia and Learning Disorders
• Arizona State University
Dr. Duane's Research

- His research suggests that dyslexia may not be a malfunction in the way people understand language but rather a brain abnormality that involves the sense of VISION and perhaps also hearing and touch

(NYTimes - September 15, 1991 - Sandra Blakesless)
NATIONAL
PTA
VISION RESOLUTION
NATIONAL PTA

• Resolution adopted at the National PTA Convention - June 1999
National PTA Resolution

• WHEREAS, It is estimated that more than 10 million children (ages 0-10) suffer from vision problems; and

• WHEREAS, Many visual skills are necessary for successful learning in the modern classroom; and skill deficiencies may contribute to poor academic performance; and
National PTA Resolution

• WHEREAS, Typical “vision” evaluations/screenings only test for a few of the necessary learning related visual skills (distance acuity, i.e. 20/20 eyesight, stereo vision, and muscle balance), leaving most visual skill deficiencies undiagnosed; and
National PTA Resolution

• WHEREAS, Learning related vision problems, when accurately diagnosed, can be treated successfully and permanently; and
National PTA Resolution

• WHEREAS, Knowledge regarding the relationship between poorly developed visual skills and poor academic performance is not widely held among students, parents, teachers, administrators and public health officials; now therefore be it
RESOLVED, That the National PTA through its constituent organizations, provide information to educate members, educators, administrators, public health officials and the public at large about learning related visual problems and the need for more comprehensive visual skill tests in school vision screening programs performed by qualified and trained personnel; and be it further
National PTA Resolution

• RESOLVED, That the National PTA, through its constituent organizations, urge schools to include in their vision screening programs tests for learning related visual skills necessary for success in the classroom.
People at risk for learning-related vision problems should receive a comprehensive optometric examination. It should be conducted as part of a multi-disciplinary approach in which all appropriate areas of function are evaluated and managed.

WHAT'S BEING DONE??
LEGISLATION
OHIO

- Enacted HB 95 in 2003
- Began in 2004-2005 school years
- Within 3 months after a student has been identified with disabilities/under IEP process
- Requires student to undergo a comprehensive eye examination
MISSOURI

• Passed April 2007/Started July 2008
• Requires children starting kindergarten or 1st grade to get a professional eye exam
ILLINOIS

• Passed October 2, 2007
• Bill introduced by the Illinois Federation of Teachers
• Requires professional eye exam prior to entering school
• Specifies minimum requirements for an eye exam
NATIONAL LEGISLATION

• Over 25 pieces of enacted legislation with regard to vision have passed between 2000-2010

• Kentucky (2000) - requires a comprehensive professional eye exam be completed prior to entering school
NATIONAL LEGISLATION

• Has been slowed secondary to the National Health Care Reform
• A children’s vision piece was included in the most recent act passed. However, we don’t know what exactly that piece will look like yet – being worked on currently (might be overturned with the entire package)
A child shouldn’t have to fail...to see.

Undiagnosed and untreated vision problems are holding back millions of school kids just when learning and healthy development are the most important.

Two-thirds of children do not receive preventative vision care before starting school.

Let’s help our schools work better for them.

Please support mandatory comprehensive eye exams for all children entering school.

Most children are covered by private insurance or existing public programs. A small cost for a parent today...a large impact on a child for a lifetime.
A small vision problem was left untreated, with big consequences.

25 percent of school kids have vision problems; many go undiagnosed and untreated. That can leave too many kids behind, wasting years of education and money. Requiring comprehensive eye exams can help more kids succeed academically and graduate.

Please support mandatory comprehensive eye exams for all children entering school.

Most children are covered by private insurance or existing public programs. A small cost for a parent today...a large impact on a child for a lifetime.
She may never recover from early vision problems.

The effect untreated vision problems will have on her learning and development will profoundly impact her education, her self-worth and what she does with her life.

Please support mandatory comprehensive eye exams for all children entering school.

Most children are covered by private insurance or existing public programs. A small cost for a parent today . . . a large impact on a child for a lifetime.
How do we choose which children are okay to miss?

The National Eye Institute found that 1/3 of children with eye or vision problems are missed even in the best vision screenings.

Our society can’t afford to have even one child—let alone thousands—slip through the cracks and never reach their full potential because of preventable and treatable vision problems.

Please support mandatory comprehensive eye exams for all children entering school.

Most children are covered by private insurance or existing public programs. A small cost for a parent today . . . a large impact on a child for a lifetime.
LETTER TO
DEAR ABBY
(April 17, 2007)
HOW ARE KIDS IDENTIFIED??
COMPREHENSIVE OPTOMETRIC EXAMINATION
The Optometric Examination should include:

• Thorough Examination of the:
  -> Eye Health
  -> Visual Functioning Skills
Optometric Intervention can.....

- Improve visual functioning
- Alleviate associated signs and symptoms
Optometric Intervention May Include:

- Lenses (eyeglasses)
- Prisms
- Vision Therapy
- (monitoring/recommendations for adaptations)
VISION THERAPY DOES NOT DIRECTLY TREAT LEARNING DISABILITIES OR DYSLEXIA

Vision Therapy is a treatment to improve visual efficiency and visual processing, thereby allowing the person to be more responsive to educational instruction.

VISION FUNCTION
3 Interrelated Areas of Vision Function

• Visual Pathway Integrity
• Visual Efficiency
• Visual Information Processing
Visual Pathway Integrity

• Eye Health Status
• Visual Acuity
• Refractive Status (myopia, hyperopia, astigmatism)
EYE HEALTH STATUS
VISUAL ACUITY
REFRACTIVE PROBLEMS

• MYOPIA
• HYPEROPIA
• ASTIGMATISM
MYOPIA
aka
NEARSIGHTEDNESS
Myopia

Myopia corrected

Minus lens
See On-Line Presentation for Video
HYPEROPIA
aka
FARSIGHTEDNESS
Hyperopia

Hyperopia corrected

Plus lens
See On-Line Presentation for Video
ASTIGMATISM
“football shape”
See On-Line Presentation for Video
Visual Efficiency

• Accommodation (focusing)
• Binocular Vision (eye teaming)
• Eye Movements (visual tracking)
ACCOMMODATIVE PROBLEMS (focusing difficulties)
Henry looked to the right. He looked to the left. He looked up, and he looked down. Where had Frog gone? Henry did not like being alone in the forest. "Frog, where are you?" Henry called. "Please come back!"
BINOCULAR VISION
(Eye Teaming Difficulties)
When the eyes team and aim together normally, print on the page is single and clear.

The dog chased the cat.

Reading requires the eyes to aim in together at the same point on the page. Vision is clear, single, and comfortable as long as both eyes are aiming at the same point.
When eye teaming breaks down, the eyes aim independently, and print doubles.

Children with eye teaming problems find it difficult to maintain the inward eye aim required for reading. As the eyes tire, they move in or out and end up pointing at different places on the page. The result is blurred or double print.
EYE MOVEMENT
(Visual Tracking Skills)
Henry looked to the right. He looked to the left. He looked up, and he looked down. Where had Frog gone? Henry did not like being alone in the forest. "Frog, where are you?" Henry called. "Please come back!"
Henry looked to the right. He looked to the left. He looked up, and he looked down. Where had the Frog gone? Henry did not like being alone in the forest. “Frog, where are you?” Henry called. “Please come back!”
Visual Information Processing

• Identification
• Discrimination
• Spatial Awareness
• Integration with other senses

(just to mention a few)
VISUAL DISCRIMINATION

• Ability to determine exact characteristics and distinctive features

• In reading – distinguishing similarly spelled words – was/saw; then/when; on/no; run/ran
Example 1-8
Item 3
VISUAL MEMORY

- Ability to recognize and recall visually presented information.
- In reading – comprehension; difficulty remembering what a word looks like or fail to recognize the same word on another page; also takes longer to copy assignments – must frequently look back at the text.
LATERALITY/DIRECTIONALITY

• Reversals – lack of visual spatial development or difficulties in visual form constancy
VISUAL CLOSURE

• Ability to visualize a complete picture/idea when given incomplete information or a partial picture

• Helps with reading and comprehending quickly – may have difficulty completing a thought; confuse similar objects or words
VISUAL FIGURE GROUND

• Perceive and locate forms or objects within a busy field without getting confused by the extra visual information.

• Will become easily confused - affects concentration and attention; have difficulty scanning text to locate specific information.
Example 9-13
VISUAL MOTOR INTEGRATION

• Eye-hand coordination/eye-body coordination
• May have poor handwriting and take longer to complete written assignments
• May have difficulty in such areas as sports, learning to ride a bike, or demonstrate general clumsiness
Research has demonstrated that some people with reading disabilities have deficits in the transmission of information to the brain through a defective visual pathway.

This can create confusion and disrupts the normal visual timing functions in reading

THINGS TO LOOK FOR THAT COULD INDICATE A VISUAL FUNCTIONING PROBLEM
I.E.
WHEN TO CONSIDER REFERRING FOR A PROFESSIONAL EYE EXAMINATION
REFERRAL

• Child seems bright, but struggles with reading
• Fatigues quickly when reading with frequent signs of frustration
• Is unable to sit still; cannot stay on task for any length of time
REFERRAL

• Frequently loses his/her place, skips words or whole lines of text
• Has poor reading comprehension
• Has difficulty copying from the board or a book
• Has sloppy handwriting
REFERRAL

• Medication or tutoring has not been successful in improving school performance
• Has been labeled LD, ADD, ADHD, or dyslexic
REFERRAL

• Frequent rubbing of eyes, blinking or headaches
• Squinting, tilting head or covering one eye; eye turn noted
• Dislike or avoidance of close work
• Blurred vision at any distance
SUMMARY

• Vision problems can and often do interfere with learning
• People at risk for learning-related vision problems should be examined
SUMMARY

• The goal of optometric intervention is to improve visual function and alleviate associated signs and symptoms.

• Prompt remediation of learning-related vision problems enhances the ability of children to perform to their full potential.
SUMMARY

• People with learning problems require help from many disciplines to meet the learning challenges they face.

• Optometric involvement constitutes one aspect of the multidisciplinary management approach required to prepare the individual for learning.
WEBSITES FOR MORE INFORMATION

- www.aoa.org = American Optometric Association
- www.pavevision.org = Parents Active for Vision Education
- www.poaeyes.org = Pennsylvania Optometric Association
WEBSITES FOR MORE INFORMATION

• www.allaboutvision.com
• www.childrensvision.com
• www.add-adhd.org
• www.lidaamerica.org
ADDITIONAL ITEMS
SCHOOL VISION SCREENING

• PA Dept of Health - School Health Division

• Adopted new guidelines 2002

• Introduced for 2003-2004

• Standardizes Vision Screening Process
SCHOOL VISION SCREENING

• TESTS
  -> Far Visual Acuity
  -> Near Visual Acuity **
  -> Plus Lens Test
  -> Color Vision Test
  -> Stereo/Depth Perception Test **
SCHOOL VISION SCREENING

• “Vision Screening Tests for Students with Special Health Care Needs”
• Near Point of Convergence Test (extra - in appendix - G)
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