

The Impact of Vision Care on Learning and Behavior

All Children's Health Initiative for Eye and Vision Excellence
(A.C.H.I.E.V.E.)

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**National Center
for Children's Vision
and Eye Health**

Prevent Blindness



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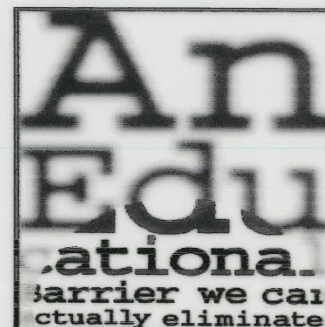
How Vision Impacts Literacy: An Educational Problem That Can Be Solved

Harvard Graduate
School of Education
April 17, 2001

by Kathleen Gillespie

"Although our nation's school systems are no longer physically segregated, inequalities still exist which have been created by poverty's continuous assault on neurological integrity and development and the barriers it creates to academic achievement."

—Rochelle Mozlin, Associate Clinical Professor of Optometry, State University of New York



On Tuesday, April 4, 2001, optometrists and educators came together at HGSE to share their findings on how visual problems associated with poverty affect children's ability to read, and to discuss solutions.

A day-long conference on Visual Problems of Children in Poverty and Their Interference with Learning was capped off by an Askwith Education Forum focused on the policy implications of research on vision problems in poor children and adolescents. "It's time we had a discussion between people concerned about vision and people concerned about education," said moderator **Gary Orfield**, Professor of Education and Social Policy at Harvard University.

An Epidemic of Vision Problems

Antonia Orfield, an optometrist specializing in vision therapy at the Harvard University Health Services Eye Clinic and chief investigator of the Boston Mather School Inner-City Vision and Learning Project, led off by



Vision

- “Vision is our most dominant sense, and this is reflected in our own internal hardware, since more of the brain is devoted to processing vision than all the other senses put together”.
Robert Omstein, PhD
- Eyes don’t tell people what to see...people tell eyes what to look for”
Lawrence MacDonald, OD
- “Vision is the brain’s way of touching the world.”

Merleau-Ponty

Vision is defined as

- “The global ability of the brain to extract, process and act on information presented.”
Stephen Cool, PhD

20/20 Eyesight is Not Enough

Facts and Figures

- "National PTA recognizes: Early diagnosis and treatment of children's vision problems is a necessary component to school readiness and academic learning; and that vision screening is not a substitute for a complete eye and vision evaluation by an eye doctor. Comprehensive eye and vision examinations by an optometrist or ophthalmologist are important for all children first entering school and regularly throughout their school-aged years to ensure healthy eyes and adequate vision skills essential for successful academic achievement;"

(Former Resolution Adopted at the National PTA Convention, June 1999)

- Up to 25% of all school age children have vision problems significant enough to impair academic performance. The rate may be as high as 60% for those children labeled as having learning problems.

(American Foundation for Vision Awareness)

20/20 Eyesight is Not Enough

- **Facts and Figures**

- An evaluation of the visual efficiency of beginning readers in a public school found that visual factors were the primary cause of reading failure and that most current school screenings are inadequate to detect these problems.

(Journal of Optometry and Vision Development)

- A Study of inner-city youths found that poor vision is related to academic and behavior problems among at-risk children.

(Journal of Behavioral Optometry)

20/20 Eyesight is Not Enough

- **Facts and Figures**

- Vision problems are often tragically misdiagnosed as learning disabilities or ADD/ADHD leading to special education intervention and unnecessary drug treatment of school children.

(OptometristsNetwork>add-adhd.org)

- Thorough vision examinations measure eye teaming (how eyes work together), focusing (ease in sustaining focus for up-close work and tracking skills (how accurately and smoothly eyes move together across a page of print as well as visual information processing abilities.

20/20 Eyesight is not Enough

- **Facts And Figures**

- Studies have shown that the correction of vision problems with vision therapy leads to significant reduction in visual symptoms and improvements in reading performance
(www.covd.org)
- NAACP Passes Resolution on Vision, Learning, and High-Risk Populations at its 100th Anniversary National Convention, in New York in 2009
- The NAACP national resolution calls for its members and units to educate the community, elected officials and correctional facilities about the merits of optometric vision therapy in helping to reduce the recidivism rate in some prisoners thereby increasing opportunities for persons reentering society

Etiology of Visual Problems

- Inadequate development of the necessary visual abilities
- May result from deprivation, inadequate experience or interference with the normal sequence of growth and development
- Optimal visual development requires the appropriate experience at the appropriate time in development.
- May result from a deterioration or breakdown of previously developed visual abilities.
- Caused by internal or external stress and the individual's reaction to the stress

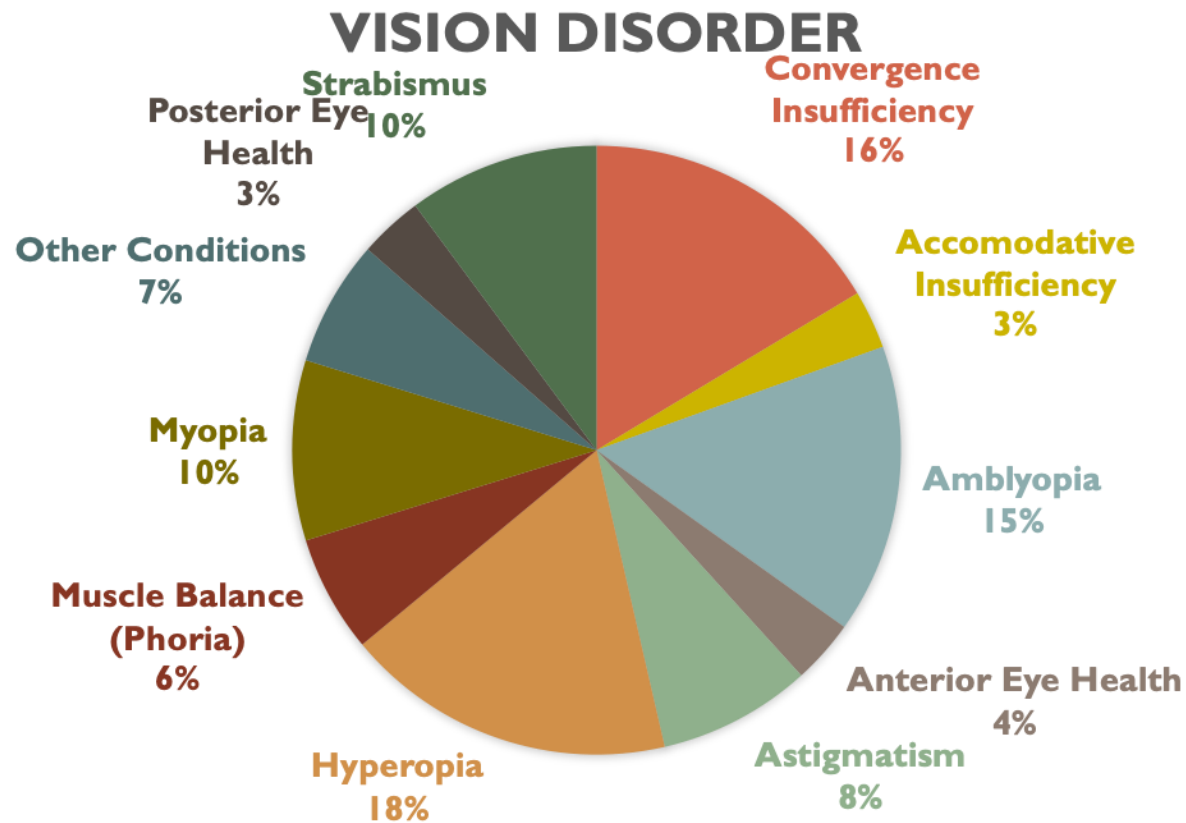
Visual Impairment Defined per IDEA

- The federal law governing special education, the Individuals with Disabilities Education Act (IDEA) defines “visual impairment” as :
 - ...an impairment in vision that, even with correction, adversely affects a child’s educational performance. The term includes
both partial sight and blindness.

Visual Impairment or Vision Disorder?

Impairment	Disorder
Reduced visual acuity 20/70 or worse, with best possible correction	Visual acuity in the normal range, 20/20-20/70
Permanent condition, generally not correctable with glasses, surgery, or therapy	Condition can improve through wearing glasses, surgery, and/or vision therapy
Needs services from a certified teacher of students with visual disabilities for access to the core curriculum and instruction in the expanded core curriculum	Needs vision therapy and/or minimal accommodations (short rest breaks, minimal extended time, preferential seating)
Needs IEP	May need 504 plan
VI teacher provides service	Classroom teacher/school-based staff will monitor

Vision Disorders 2018-2019



Vision Totals 2017-2018 and 2018-2019

Academic Year	Number of students receiving an comprehensive eye exam	Number of students receiving a pair of glasses	Number of Referrals
2018-2019	47,496	27,338	5860
Percentage		58%	12%

Neurology of the Visual System

- 70% of sensory information to the brain is visual.
- There is more area of the brain dedicated to the processing of visual information than all the other sense modalities combined.
- There are 11 separate branches of the optic nerve (currently known) that carry messages from the eye to the brain

Below is a story that was copied by Donte', age 7. The one on the left was done prior to the beginning of his therapy in November, 1986. It took him two (2) hours and 45 minutes to complete the assignment. The second one was done in May, 1987 - after only three (3) months of therapy. It took him twenty-two (22) minutes to complete the assignment.

There once was a turkey
 named Goon who thought he was
 born on the moon. He floated in the
 air without ever coming from
 anywhere until a day when he
 suddenly he'd landed on the
 ground without a gobble.
 And he'd let out a gobble. For
 the air he would leave with
 a bound.
 But then one November he
 blew it. He came to earth
 before he knew it. And the
 feathered beast was the
 Thanksgiving feast. And tho
 it was all there was to it!

Behavioral Signs of Visual Problems

- **A. Eye movement Abilities (Ocular Motility)**
 - Loses place often during reading
 - Head turns when reading across page
 - Needs fingers or marker to keep place
 - Frequently omits, rereads, or skips lines
 - Displays short attention span in reading and copying
 - Writes up or down hill on paper

Eye Movements in Reading

- Accurate reading movements

Mark had a new bike. The bike was red. One day Mark rode his bike to the park. Mark left his new bike by a tree. Mark played on the slide. He played on the

- Poor reading movements

Finally it was time for Mark to go home. Mark went to the tree to get his bike. His bike was gone! Mark called to Jack. They looked for the bike beside the slide. They looked by the swings and bars. They could not find the bike. Then Jack started to laugh. He pointed under a

Behavioral Signs of Visual Problems

- **B. Eye teaming Abilities (binocularity)**
 - Repeats letters within words
 - Complains of seeing double
 - Misaligns digits in number columns
 - Head extremely tilted while working at desk
 - Consistently shows gross postural deviations at all desk activities

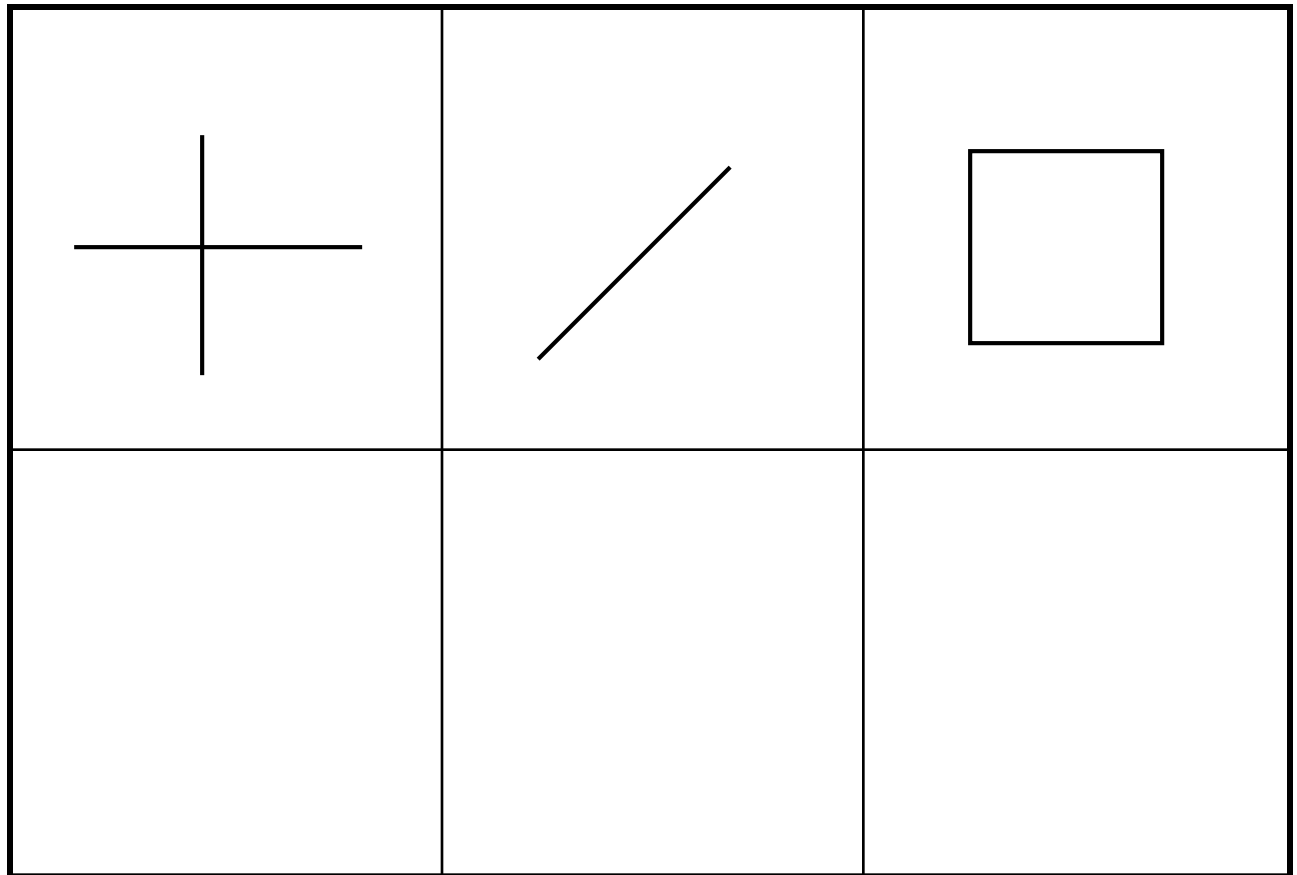
Behavioral Signs of Visual Problems

- **C. Eye-Hand Coordination Abilities**
 - Must feel things to assist in any interpretation required
 - Eyes not used to “steer” hand movements
 - Writes crookedly; letters poorly spaced
 - Misaligns both horizontal and vertical series of numbers
 - Repeatedly confuses left-right directions

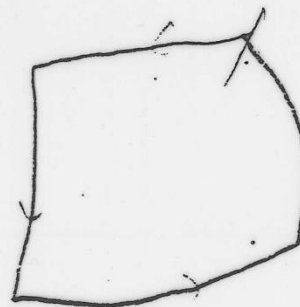
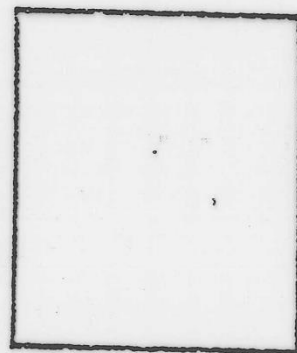
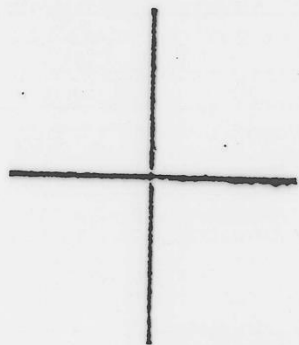


VMI Templates

- VMI Berry

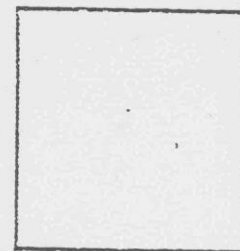


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5BD

Carletta



Behavioral Signs of Visual Problems

- **D.** Visual Form Perception (Visual Comparison, Visual Imagery, Visualization)
 - Fails to recognize same word in next or same sentence
 - Reverses letters and or words in writing and copying
 - Repeatedly confuses similar beginnings and endings of words
 - Confuses likenesses and minor differences
 - Fails to visualize what is read either silently or orally

Visual Information Processing Skills

- “Higher level” vision
- Not just seeing but also processing and understanding
- Extract visual information from environment
- Ability to organize information



What are Behavioral Signs of Visual Problems?

- **E.** Refractive Status Nearsightedness, Farsightedness, Focus problems, etc.
 - Comprehension reduces and fatigue increases as reading continues
 - Blinks excessively at desk tasks and /or reading
 - Holds face too close to desk surface
 - Complains of discomfort in tasks that demand visual interpretations
 - Makes errors in copying
 - Squints to see chalkboard

Vision and Learning

- It is estimated that as much as 80% of a child's learning occurs through their eyes
- 1/10 children are at risk of an undiagnosed vision problem
- Will affect ALL aspects of a child's development
 - Academic
 - Social
 - Athletic
 - Future

Vision and Learning

- Inadequate vision can lead to poor academic performance
- It can be manifest in a variety of ways:
 - Slow learning
 - Performing below age/grade level
 - Acting out / behavior problems
 - Poor self esteem
- Often go undetected and thus untreated!

Types of Vision Problems

- Common Visual Problems in Children
 - Uncorrected refractive error (prescription)
 - Eye Turn (Strabismus)
 - Decreased visual acuity (Amblyopia)
 - ↓ Accommodation (focusing system)
 - Limited vergence ranges (eye teaming skills, convergence insufficiency)
 - Deficient ocular motility (eye tracking skills)
 - Poor visual information processing

Who would benefit from a VIP assessment?

- Children with academic difficulties
 - Children with learning disabilities
 - Children performing below potential
 - Children labeled as reading at least 1 year below expected levels
-
- Treatment is Vision Therapy – retrain the visual system

What is Vision Therapy?

- Program of Visually Directed techniques practiced under controlled conditions using special equipment, computers and procedures.
- It is used to correct visual problems and improve visual abilities.

Observation

Always observe your student to look for anything unusual.

Eye turn

Excess eye rubbing

Squinting

Head tilt

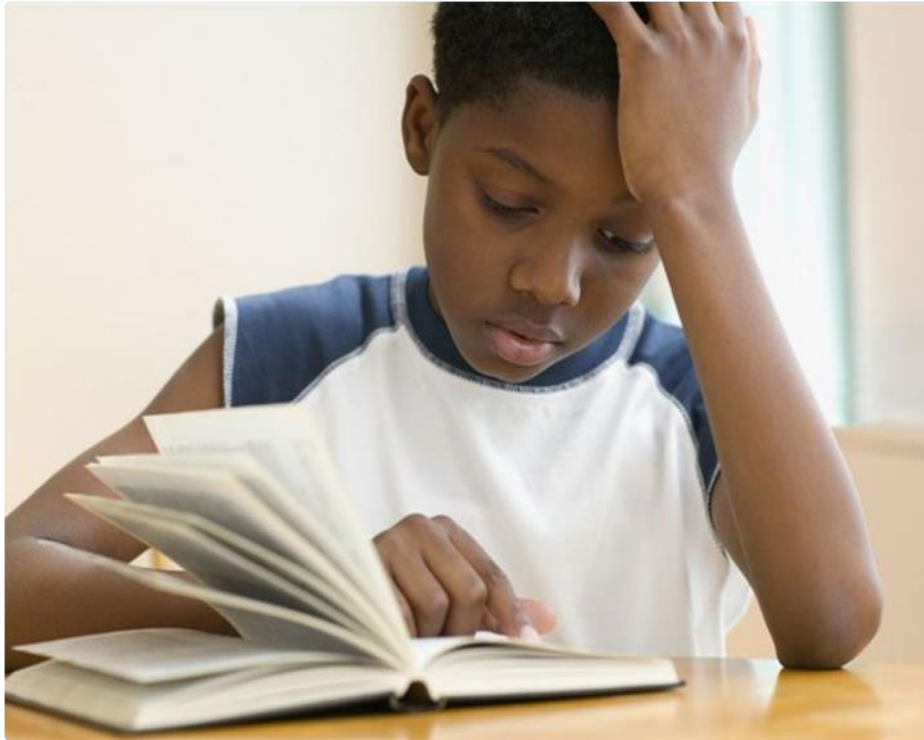
Excess tearing

Sitting Close to

Television

Losing place while reading/using finger to read

Covering an eye



What can parents and educators do?

Summary

Unless a child is visually “ready” he/she cannot be taught effectively how to read, write, or “learn”. He/she may be destined for disappointment, frustration and failure in school, college and in his/her subsequent business and professional life.

The awareness of the impact of vision care on learning and behavior is important

Vision examination is essential to determine visual problems in children to prevent an “educational barrier we can actually eliminate”



**“TO KNOW A CHILD YOU
KNOW THE CHILD’S
VISION TO KNOW HIS
VISION YOU KNOW THE
CHILD”.
(GESSELL)**