Do you see what I see?
The importance of vision development in early childhood.

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Thank You!

About Me

- Graduated from Illinois College of Optometry in 2009
- Board Certified in Vision Development in 2014
- In practice with Drs. Kellye Knueppel and Heather Navarro at The Vision Therapy Center in Brookfield and Madison, Wisconsin

My Model of Vision

What is Vision?

- Vision is a set of learned and developed skills used to make sense of our environment.
- 20/20 Vision

“When vision is working well, it guides and leads. When vision is not working well, it interferes.”

John Streff, OD
Dr. Streff on Vision Development
“The utilization of vision is learned.”

First Interactions with Visual Space

Eye Movements (Tracking)
“Ocular movement and control [are] mechanisms to help define an experienced environment.”

Dr. John Streff

Development and Vision
• Infants use their vision to explore the world.
• Vision develops from near to far.
• Control of eye movements is a critical component in this exploration.
• Demonstration

Vision and Movement
• How difficult was it to identify the object when you could not use movement to explore it?
• Our eyes are not like cameras on tripods; they need to move in order to effectively explore our environment!

Vision and Movement
Eye-Body Coordination
Eye-Hand Coordination
Eye-Body Coordination

Orientation

Body Awareness

Primitive Reflexes

Orientation

“Eye-body control which is essential to our knowing where we are in relation to other people and to our surroundings.”

- John Streff, OD

Body Awareness

Mental Map

Laterality/Directionality

Primitive Reflexes

• Survival and Early Development

• Reflexive Movement Patterns vs Cortical Control of Movement

Functional Impact

Poor Eye-Body Coordination
Orientation – Fidgeting, Clumsy
Body Awareness – Reversals, Poor Gross Motor Control
Primitive Reflexes – Difficulty with Complex Motor Demands, Poor Fine Motor Development

Eye-Hand Coordination

Is where the person perceives the object and where the object actually is the same place?

Is it close enough to be able to accurately manipulate (i.e. catch/hit/kick) it?

Demonstration: Pen and Cap
Functional Impact

Poor Eye-Hand Coordination
Poor Performance in Ball Sports
Impedes Vision Development
Handwriting
Poor Self Image

Meaningful Visual Experiences

• Get them moving!
• NOT TV, tablets and smart phones

Visual Skill Development

Throughout early childhood, activities that promote eye-body and eye-hand coordination help the child develop the visual skills that they will need for school.

Visual Skills

• Eye Movements (Ocular Motor)
• Focusing (Accommodation)
• Eye Teaming (Vergences)
• Processing (Visual Perception)

Vision Problems in the Center or Classroom

• 25% of school-age children have vision that is not working well and this can interfere with reading and learning.
• How do we identify these children?

Eye Movements

• Demonstration: Pursuits and Saccades
Eye Movements and Reading

- When the child is having difficulty organizing and directing their eye movements it interferes with reading.

Signs of Poor Eye Movements

- Loses place frequently
- Omits words
- Slow reading speed/poor fluency
- Poor reading comprehension
- Skips/rereads lines
- Uses finger to keep place

Focusing

- Demonstration: focusing from near to far, far to near.

Focusing and Reading

- Focusing (accommodation) needs to be working well in order to keep the words on the page clear.

Signs of Poor Focusing

- Rubbing eyes
- Excessive blinking
- Squinting
- Frontal headaches
- Eyes hurting, itching or stinging when reading

Signs of Poor Focusing (continued)

- Excessive fatigue toward end of day
- Holds book close to face
- Fatigue with near work
- Intermittent blurry vision
- Blur at distance after looking near
Eye Teaming

Demonstration: Convergence, divergence.

Eye Teaming and Reading

• Each eye sees a slightly different image.
• Both eyes should point in the same spot for single, clear binocular vision.

What would the text look like if both eyes are not pointed in the same spot?

Signs of Poor Eye Teaming

• Fatigue when reading
• Avoids reading/near work
• Frequently looking away from reading material, fidgeting
• Poor reading comprehension
• Words split apart and/or move on the page
Signs of Poor Eye Teaming (continued)

- Closing or covering one eye
- Head tilt or turn
- Eye pain/fatigue/discomfort
- Headaches

Visual Perception

- Understanding of space is mostly related to basic vision skills:
  - Eye Movements
  - Eye Focusing
  - Eye Teaming
- Poor visual skills interfere with the ‘input’ part of visual processing

Perceptual Motor

- Bilateral Integration
- Mental Map of Body

- Problems
  - Described as ‘clumsy’ or ‘awkward’
  - Difficulty with complex motor tasks: ball sports and riding a bike.

What to do if you suspect a vision problem

- General eye exam
  - Screenings (school, pediatrician) vs. examinations
  - If problems persist, more specific testing may be needed

Eye Care Providers: What’s the difference?

Optometrists and Ophthalmologists

Developmental Optometrists and Optometrists

What can be done?

- Diagnosis – What visual skills have not developed correctly?
- Eye exams are fun!
What do we test for?

• Initial Examination
  • Basic visual skills
  • Eye Movements
  • Eye Focusing
  • Eye Teaming
  • Prescription evaluation
  • Evaluate internal and external health

Further Testing of Visual Perceptual Skills

• Gross and fine motor development
• Auditory processing
• Laterality and directionality
• Visual attention, speed and memory
• Primitive reflex assessment

What can be done?

• Treatment – How can we improve the visual skills that have not developed correctly?
• Lenses

Importance of Lenses

Lenses change how a person perceives visual space.

Lenses can make a difficult visual task like reading less stressful.

Performance lenses vs. corrective lenses.

What can be done?

• When performance lenses alone are not enough...
• Vision Therapy

What Is Vision Therapy?

• Based on Vision Development
• Vision skills and perceptual skills are LEARNED.
• Experience vs. Genetic
• Function vs. Structure
• Correcting vision problem...not teaching reading
• Vision may be only PART of problem
What Vision Therapy Is NOT:

- Does not cure pathology
- Is not a passive process. Patients must participate.

Who Provides Vision Therapy?

Developmental/Behavioral Optometrists

Training and Credentials

Lenses in Vision Therapy

Lenses are used in therapy as tools to change how the person uses their vision.

Demonstration

Vision therapy is not just for school-age children!

- Adults
- Brain-injuries
- Infants
- Athletes

Success!

My youngest son totally stopped sitting with me to read a book and if he did he would NOT look at the book. He literally began to RUN away from me when I asked him to read with me. He could listen and answer any questions but he could not, no, WOULD NOT, read it himself. He always looked at the written word with his head tilted or covered one eye. He has 20/20 eyesite and always has, but he could not focus due to his vision. He is wearing glasses with a bifocal to help his eyes learn to focus near and far.

My son went from a child who literally RAN from the written word to a kid who said just last week, “Mommy, I want to read a book to you!” I was amazed to tears.

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.
Referring

• Parents’ familiarity with vision therapy
• Don’t be discouraged!
  – It often takes 2-3 referral sources
  – Call or visit our office if you have questions about talking to parents

Insurance

• Coverage
• Pre-authorization
• Options when there is no coverage

Most Common Symptoms

• Intermittent double vision
• Closing or covering one eye
• Head tilt or turn
• Words “move” on page
• Intermittent blurry vision
• Blur at far after looking near
• Holds book close
• Loses place frequently

Most Common Symptoms (cont.)

• Reverses letters and/or words
• Uses finger to keep place
• Holds book close
• Eye pain/fatigue/discomfort
• Headaches
• Rubs eyes/red eyes
• Avoidance of near work
• Excessive fatigue toward end of day

www.covd.org
www.thevisiontherapycenter.com

Vision Quiz

Take the Vision Quiz and Find Out if Your Child Needs a Functional Vision Exam.

Dr. Andrea Wright, OD, and Dr. Jon Wright OD, VTS have developed a vision assessment tool for children and adults.

More Information

The Optometric Extension Program
www.oepf.org

Vision Therapy Parents Unite
www.facebook.com/groups/VTparentsunite/

What You Can Do

Simple vision activities can have a BIG impact on how your students use their vision!

Making it Happen

Schedule vision activities into the day.

Not a huge time commitment, but doing it EVERY DAY is critical.

It may take more time initially.

You will see results!

List of Activities

Basic Eye Exercises
Eye Spy
Four Corner Fixations
Pursuits
Localization
Can do all every day or alternate.
List of Activities
Motor Exercises
  - Balancing
  - Skipping
  - Galloping
  - Jumping Jacks
  - Marching
  - Scissors

Eye Spy
Activity to improve control of fixation.
Materials: fixation target (thumb, sticker)
Procedure: hold target 16" from face, keep eyes focused on target for 5 seconds without talking or moving. Work until all can do 15 seconds.

Eye Spy Modifications
Lying down
Seated
Standing with Support
Standing without Support

Four Corner Fixations
Activity to improve control of eye movements.
Materials: four large fixation targets.
Procedure: teacher calls out which target to look at, students move their eyes to look at target without moving their heads.
10 times, look at each target for 3 seconds. Work up to 30 times.

Pursuits
Activity to control smooth eye movements.
Materials: fixation target.
Procedure: teacher holds target at 16" and moves it in random directions while the student keeps their head still and eyes on the target.
Pursuits

Start with 15 seconds, with a goal of 30 seconds.

Lying down, seated, standing with support, standing without support.

Localization Activity

Activity to improve depth perception and fixation.

Materials: toilet paper tube, straw.

Procedure: Hold the tube 16” away and slowly move it up, down, right and left.

Localization Activity

Procedure continued: Every 5 seconds, have the child poke the straw into the tube for a total of 30 seconds.

Laterality

Use ‘right’ and ‘left’ as much as possible to get it into the children’s vocabulary.

They may not be consistent with it until age 5 or 6, but this is still very helpful.

If they are not consistent with it beyond age 6 it is abnormal and may lead to letter and number reversals.

Balancing, Skipping Galloping

Balancing: work for 5 seconds on each leg.

Skipping: work for 5 skips without errors.

Galloping: work for 5 gallops with right leg leading, 5 gallops with left leg leading.

Jumping Jacks

Arms straight, legs straight then arms out legs out for 10 repetitions.

Arms out, legs straight then arms straight, legs out for 10 repetitions.
Arms straight, legs straight then arms out, legs out for 10 repetitions.

Jumping Jacks

Arms out, legs straight then arms straight, legs out for 10 repetitions.

Jumping Jacks

Arm and leg on same side

Jumping Jacks

Arm and leg on opposite side.

Jumping Jacks

Arms and legs form a 90 degree angle.

Same side for 10 repetitions, then opposite sides for 10 repetitions.

Marching

Arms and legs forward and back.

Same side for 10 repetitions, then opposite sides for 10 repetitions.

Scissors
Modifications

• Make larger print available.
• Allow for visual breaks during sustained near point work.
• Whenever possible, be sure learning materials are well-spaced and well-organized on the page.
• In the event that something needs to be copied from the board, move student closer to the chalkboard or place material to be copied on his/her desk.

• If possible, make use of natural lighting and full spectrum bulbs.
• Provide highlighters to help with reading.
• Make more time available for timed tests.
• Allow students to have the option about reading aloud to a group.
• Allow students to verbally give answers to tests.
• Furnish a slanted reading and writing surface.

Questions?

• Chair should be at a height that allows the child to put their feet on the floor, ideally knees at a 90 degree angle.
• Avoid sensory overload in the classroom or center.

Thank you!