

Pacific University

## CommonKnowledge

---

College of Optometry

Theses, Dissertations and Capstone Projects

---

5-1997

### 20/20 eyesight: Is it enough for your child?

Stacy M. Bell

*Pacific University*

Stacie J.A. Eskew

*Pacific University*

#### Recommended Citation

Bell, Stacy M. and Eskew, Stacie J.A., "20/20 eyesight: Is it enough for your child?" (1997). *College of Optometry*. 107.

<https://commons.pacificu.edu/opt/107>

This Thesis is brought to you for free and open access by the Theses, Dissertations and Capstone Projects at CommonKnowledge. It has been accepted for inclusion in College of Optometry by an authorized administrator of CommonKnowledge. For more information, please contact [CommonKnowledge@pacificu.edu](mailto:CommonKnowledge@pacificu.edu).

---

## 20/20 eyesight: Is it enough for your child?

### Abstract

Early detection and correction of a vision problem is particularly important for elementary school children who are learning to read and write. After all, vision accounts for 80% of learning in the first twelve years of life. Currently most schools limit their vision screening to a basic Snellen Acuity Test. Although this test accurately assesses distance visual acuity, it does not identify the visual skills necessary for successful learning and development. This ten minute videotape was produced to educate parents and teachers on the importance of a comprehensive vision evaluation. The videotape illustrates the abilities necessary for an efficient visual system: eye health, distance and near acuities, eye tracking, focusing ability, depth perception, eye-hand coordination, eye teaming ability and visual perception.

### Degree Type

Thesis

### Degree Name

Master of Science in Vision Science

### Committee Chair

Paul Kohl

### Subject Categories

Optometry

## Copyright and terms of use

If you have downloaded this document directly from the web or from CommonKnowledge, see the "Rights" section on the previous page for the terms of use.

**If you have received this document through an interlibrary loan/document delivery service, the following terms of use apply:**

Copyright in this work is held by the author(s). You may download or print any portion of this document for personal use only, or for any use that is allowed by fair use (Title 17, §107 U.S.C.). Except for personal or fair use, you or your borrowing library may not reproduce, remix, republish, post, transmit, or distribute this document, or any portion thereof, without the permission of the copyright owner. [Note: If this document is licensed under a Creative Commons license (see "Rights" on the previous page) which allows broader usage rights, your use is governed by the terms of that license.]

Inquiries regarding further use of these materials should be addressed to: CommonKnowledge Rights, Pacific University Library, 2043 College Way, Forest Grove, OR 97116, (503) 352-7209. Email inquiries may be directed to: [copyright@pacificu.edu](mailto:copyright@pacificu.edu)

# 20/20 EYESIGHT: IS IT ENOUGH FOR YOUR CHILD?

By

STACY M. BELL  
STACIE J.A. ESKEW

A thesis submitted to the faculty of the  
School of Education  
Pacific University  
Forest Grove, Oregon  
for the degree of  
Masters of Education in Visual Function in Learning  
May, 1997

Advisors:

Paul Kohl, O.D.  
Anita McClain, Ed.D.

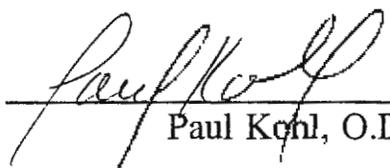
## SIGNATURE PAGE

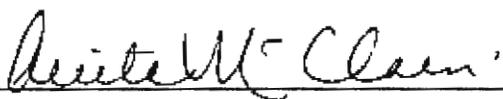
Authors:

  
\_\_\_\_\_  
Stacy M. Bell

  
\_\_\_\_\_  
Stacie J.A. Eskew

Advisors:

  
\_\_\_\_\_  
Paul Kohl, O.D.

  
\_\_\_\_\_  
Anita McClain, Ed.D.

## ABOUT THE AUTHORS

Stacy M. Bell was born and raised in Merced, California. She studied molecular biology and biochemistry at San Jose State University before transferring to Pacific University where she graduated with a Bachelor's Degree in Visual Science in 1994. While in optometry school, Stacy was president of the local Student Optometric Association and an active member of Optometric Extension Program, Beta Sigma Kappa International Honor Society, and American Academy of Optometry. During her second year, she was selected for the Army Health Professions Scholarship. Stacy is a candidate to receive her Doctorate of Optometry Degree and Masters Degree in Education, Visual Function in Learning in May 1997. After fulfilling her military obligation, Stacy plans to pursue a career in private practice specializing in pediatric optometry and vision therapy.

Stacie J. A. Eskew was born in Green River, Wyoming. She was later raised in Chandler, Arizona and graduated from Chandler High School in 1989. She received her Associates of Arts degree in General Studies from Mesa Community College, Mesa, Arizona before transferring to Pacific University where she received her Bachelor's Degree in Visual Science in 1994. While attending Pacific University she was an active member of the American Optometric Student Association, Optometric Extension Program, and Beta Sigma Kappa International Honor Society. Stacie is a candidate to receive her Doctorate of Optometry Degree in May 1997. She plans to join an associateship specializing in vision therapy and visual learning disorders.

## ABSTRACT

Early detection and correction of a vision problem is particularly important for elementary school children who are learning to read and write. After all, vision accounts for 80% of learning in the first twelve years of life. Currently most schools limit their vision screening to a basic Snellen Acuity Test. Although this test accurately assesses distance visual acuity, it does not identify the visual skills necessary for successful learning and development.

This ten minute videotape was produced to educate parents and teachers on the importance of a comprehensive vision evaluation. The videotape illustrates the abilities necessary for an efficient visual system: eye health, distance and near acuities, eye tracking, focusing ability, depth perception, eye-hand coordination, eye teaming ability and visual perception.

## ACKNOWLEDGMENTS

We would like to acknowledge the cast and crew for their countless hours of dedication in making this video possible. We thank Paul Kohl, O.D. and Anita McClain, Ed.D. for their advisement and review of this project. We also thank Pacific University for providing equipment, materials and facilities. A special thank you to our husbands, David and Jeff for their support, patience, and encouragement throughout the last four years of school.

Elementary school is a child's first connection to knowledge through reading.

*shot of children reading together*

Every school-age child will face a mountain of books and other tasks that require intensive use of vision, especially vision at less than an arms length from the eyes.

*shot of a child reading at a desk looking a bit overwhelmed with several books stacked*

It takes well developed visual abilities to cope with hours and hours of near vision work required in a classroom.

*shot of a computer room with a child typing on the computer*

According to the Better Vision Institute, 80% of all classroom learning comes via the visual system, yet only 14% of children entering first grade have had a comprehensive vision exam.

*shot of a child cutting out a picture, coloring etc.*

A comprehensive vision exam includes an assessment of eye health as well as an evaluation of the visual system and its components:

*in the exam room, OD performing a slit lamp examination*

Distance and Near Acuties

*still shot of a child with occluder and near point card*

## Eye Tracking

*still shot of OD doing bead skills with a child*

## Focusing Ability

*still shot of OD with flippers as child is looking at a near point card*

## Depth Perception

*still shot of a child with Polaroid glasses looking at a stereo butterfly*

## Eye-Hand Coordination

*still shot of a child doing the Wayne Saccadic Fixator*

## Eye Teaming Ability

*still shot of OD doing a near point of convergence on a child*

## Visual Perception

*still shot of a child doing an MVPT*

School vision screenings provide a valuable service, but many times give parents and teachers a false sense of security that a child's eyes are functioning properly.

*shot of a teacher pointing to the chalkboard- a child reading with his finger*

The Snellen eye chart, the test generally used in school screenings, detects only 20-30% of vision problems in children.

*shot of Snellen eye chart- a child squinting to see the chart*

It tests only distance acuity, the ability to see objects clearly at twenty feet.

*shot of a child riding his bicycle in the park*

A child may pass the screening test with 20/20 eyesight, but may still have a vision disorder that impairs learning. The Better Vision Institute states that as many as 25% of school age children have vision problems that may lead to poor grades, low self esteem, or a negative school experience.

*shot of a child reading and then covering her eye*

At this point, it is important to distinguish between sight and vision.

Sight is the ability to see an object clearly at a specific distance; whereas, vision is a dynamic process of organizing, interpreting and understanding the images you see.

*shot of a baby playing with plastic rings*

Here is an example, what do you see in this picture now that the image is clear?

*shot of an image so blurred that it looks uniform gray- the camera slowly clears up the image so the picture becomes distinguishable.*

Do you see a rabbit or a duck?

*shot of an optical illusion*

Well you should be able to see both! It depends on whether your eye first catches the duck's bill or the rabbit's ear.

This illusion illustrates that while everyone may see the same image, we interpret the information differently.

Children use their vision during every stage of development from learning to tie their shoes to hitting the winning run in a baseball game.

*sequence of 3 still shots: shot of a baby playing with plastic rings, shot of a younger child trying to tie his shoe, shot of an older child anticipating the baseball*

This video presentation will describe the visual abilities necessary for successful learning and help you as parents and teachers take an active role in your child's visual development through close observation and regular optometric care.

*a montage of shots - kids interacting in the environment ( a child on monkey bars, a child playing jacks, a child walking across a play bridge, children playing Scrabble)*

Of course, it is important that a child **see clearly at all distances.**

*4 still shots that are fused in four corners of screen 1-classroom 2- the computer*

*3- playground 4- child riding bicycle*

A child may need to wear contact lenses or glasses for sports in order to see the ball clearly. She may also have a separate prescription for reading glasses that are just to be worn while in the classroom.

*shot of a child putting on a contact lens- a child reading with glasses*

Since a large portion of a school day is spent looking at a book, computer screen, or paper, it is very important to have your child's near vision thoroughly examined.

*shot of children working on computers*

For a child to be successful in school and in sports, both eyes should be working together. One important component is **eye tracking**, the ability to move the eyes smoothly and accurately along a line of print.

*a continuation of the still shot showing a child doing pursuits with a bead*

Eye movements require the highest level of movement precision in the human body, but we are not born with these skills any more than people are born able to jump rope or play the piano.

*OD now starts to do saccade bead skills with a child*

Each child must develop these skills as he grows.

*shot of a toddler tracking a bubble floating in the air*

Some children's eye movements are jerky or inaccurate.

*shot of a different child with poor eye movements - the child's eyes are jerky and he moves his head instead of only using his eyes*

Imagine trying to read when your eyes are unable to move accurately from one word to the next, but instead jump around like when you try and read in a bumpy car.

*a computer generated illustration*

Children unable to coordinate their eye movements may have to rely on their finger to guide their visual system.

*shot of a child very slowly reading with his finger*

Using your finger to read is very inefficient because your eyes are designed to move almost three times as fast as your finger can. Reading would be slow and uncomfortable.

*shot of a child reading slowly*

Jumbled words, skipped lines and loss of place are all signs that a child may be having difficulty with his eye movements.

*a computer generated list of signs*

Eye tracking is also important in sports. The ability to dribble a basketball or catch a baseball requires accuracy and timing.

*shot of a child dribbling the basket ball*

Imagine being picked last for a baseball team because you can't catch.

*shot of a child missing the ground ball and then looking for the ball*

Rapid automatic **focusing ability** is essential to efficient visual function.

*shot of OD doing flippers while the child is reading*

Children are constantly focusing their eyes from far to near when they look from the chalkboard to their books.

*shot of a child looking back and forth to and from the chalkboard*

This task should be quick and automatic but many children have a delay of momentary blur.

*a computer generated illustration*

Poor eye focusing may cause slow copying skills, reduced comprehension, or avoidance of near work.

*a computer generated list of signs*

Knowing when to swing the bat, kick the ball, or slide into home plate relies on **depth perception** and **eye-hand coordination**.

*slow motion shot of a child kicking the soccer ball*

If both eyes are not precisely working together, a child will have poor depth perception causing him to appear more clumsy or awkward.

*shot of a child playing jacks but missing*

If you are observant you may notice a child's eye turning up, down, out, or in. This condition is termed "strabismus."

*shot of a strabismic child*

This child will have difficulty maintaining a single clear image since his eyes are pointing in different directions. Signs of strabismus include development of a head tilt, covering of an eye to avoid double vision, and avoidance of sports.

*shot of a child in the classroom covering an eye and becoming frustrated -computer generated list of signs*

Once an image is received by the eye, it must be interpreted by the brain.

*shot of a child putting together the split form board perceptual puzzle*

This interpretation is based on past visual experiences developed from infancy on.

*shot of a baby putting a square block in a circle hole*

During reading, a child must be able to distinguish between "b", "d", "p", and "q."

*a computer generated illustration*

This is a difficult concept for many children because life experiences have taught them that objects don't change just because you turn them around.

For example, a triangle is still a triangle no matter how you turn it.

Signs of **visual perception** difficulty include letter or number reversals, difficulty with distinguishing left from right, and slow copying skills.

*a computer generated list of signs*

Although vision problems are not directly the cause of learning disorders, they can interfere with your child's abilities to perform at his potential.

*shot of a family in the park on a tire swing*

Ensuring that your child has an efficient and healthy visual system paves the way for a lifetime of learning.

*shot of a family reading together*

This videotape has illustrated the visual abilities necessary for successful learning. Before referring or scheduling your child for a visual examination make sure it will consist of an evaluation in each of these areas:

Eye Health

Distance and Near Acutities

Eye Tracking

Focusing Ability  
Depth Perception  
Eye-Hand Coordination  
Eye Teaming Ability  
Visual Perception

The American Optometric Association recommends that children have a comprehensive visual examination at 6 months old, 3 years old, 5 years old, and then annually through the school years.

*still shot of a 6 month old, 5 year old, and an older child during a vision evaluation*

Early detection and treatment of a vision problem is the key to enhancing a lifetime of learning.

*shot of a graduation ceremony*

*"the end" optical illusion*

This videotape was created to fulfill the thesis requirement for Pacific University College of Optometry doctorate and masters program. Pacific University has provided equipment, materials, and facilities for this project.

We would like to acknowledge the cast and crew for their countless hours of dedication in making this video possible. A special thank you to our husbands, David and Jeff for their support and patience throughout the last four years of school.

Advisors:	Paul Kohl, O.D. Anita McClain, Ed.D.	
Filming and Editing:	Angela Willner	
Narrator:	James Peterson, O.D.	
Media Specialist:	Colin Ensminger-Stapp	
Consultants:	Suzanne Scott, O.D.	John Smith, O.D.
Cast:	Craig Bowen, O.D.	Chad Brimhall
	Courtney Brimhall	The Courser Family
	Frank Flammini	Lauren Flammini
	Danielle Greenwood	The Kelly Family
	Brad Kepp	Marcia Kepp
	Zhawn Kepp	The Klein Family
	Jesse Kohl	Daniel Perdue
	Haley Perdue	Spencer Rhoton
	The Saccareccia Family	The Sprinkle Family
	Trudy Sundstrom	Cody Willner
	Salena Willner	Tiffany Wolf

A video release was obtained prior to taping by all cast members.

Optical illusions reprinted by permission of Sterling Publishing Co., Inc. 387 Park Ave. S., NY, NY 10016 for the use of perceptual illustrations from *The Great Book of Optical Illusions* by Gyles Brandreth, Text © 1979 by Gyles Brandreth, Illustrations © 1979 by Transworld Publishers Ltd.

If you would like further information on children's vision you may contact:  
The American Optometric Association  
314-991-4100

The Better Vision Institute  
800-424-8422

The Optometric Extension Program  
714-250-8070