

The Eyes Have It

A Quick Look at Children's Vision Problems

In humans, the most powerful of the five senses is vision.

Annette Gonzales¹ was 4 years old when she began attending preschool in a small town in California. Every day, Annette looked forward to playing on the swings at her preschool. In the summer, her mother, Maria Gonzales, held her hand while they walked down the street to play on a new set of swings. The “big kids’ swings” were located at a school called Emerson Adventist Elementary. In two short months, Annette would be attending this school.

Before Annette could enter kindergarten, she would need to have a physical examination performed by her physician or a health clinic. In addition, the federally funded county Head Start program at her preschool was required to screen the vision and hearing of each enrolled child.

When Annette’s turn came to have her vision tested, she enjoyed matching the letters and easily passed the screening using both of her eyes together. Then the technician put a patch over Annette’s left eye. Instantly, Annette stopped pointing to the letters and pulled off the eye patch. Using an ophthalmoscope, the technician noticed a dark spot inside Annette’s right eye. He immediately notified Mrs. Gonzales that she should take Annette to an optometrist or pediatric ophthalmologist (an eye specialist) for a full diagnostic examination.

Through the use of advanced testing procedures, Annette was diagnosed with a cataract in her right eye. This was a surprise to the Gonzalez family, as Annette showed no obvious signs of having a serious visual problem. She appeared to be a normal, happy, active child.

After surgery to remove the cataract and implanting of a synthetic lens in her eye, Annette now has perfect vision and does not even have to wear glasses.

Schools can help ensure that eye problems such as Annette’s are discovered and remedied early. The

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American Academy of Optometry advocates that children have a full diagnostic eye examination prior to entering preschool or at least by 3 years of age. Additionally, teachers can become advocates for healthy vision if they are alert to the signs of vision problems in their students.

Human Vision

In humans, the most powerful of the five senses is vision. Heredity, disease, or refractive errors can significantly diminish or permanently damage the quality of human sight.⁷ The National Institutes of Health and the National Eye Institute agree that “visual impairment in children is associated with developmental delays and the need for special education, vocation, and social services that often begin in childhood and extend into adulthood. Children depend on good vision in order to successfully interact and physically navigate with full confidence within their environment.”⁸

Children’s Visual Development

Since Adventist schools do not normally enroll children younger than 3 to 5 years of age, we will begin our discussion with that group. Between the ages of 1 to 4, the dependence and demands upon the visual system significantly increase. Children’s hand-eye-body coordination is maturing, along with basic visual motor skills and refinement of depth perception. Multicolored building blocks, balls, music, and creative movement all encourage the maturation of the visual/muscular system.⁴ Coloring on paper, cut-and-paste projects, manipulating clay into animal figures, and shoe tying all help develop the fine motor skills.⁵ Proficiency in all these skills helps foster creative and divergent thinking skills, and prepares the child for the complicated task of reading.⁶

The National Institutes of Health estimates that 20 percent of U.S. preschoolers (between 3 to 5 years old) may have a vision problem that could permanently

damage their sight.⁷ Studies conducted by the National Eye Institute indicate that many vision problems could have been resolved during this age period.⁸ Older children, as well, need optimal vision in order to participate in academic and recreational activities.⁹ The following vision skills are needed for success in school:

Near vision (10-13 inches from nose).¹⁰ Near vision is primarily used for reading and fine motor skills.

Distance vision (at least 20 inches from nose). Helps students read lessons written on the chalkboard or posted on the bulletin board.

Hand-eye coordination. The ability of the eyes and hands to effortlessly work together. Soccer, playing a musical instrument, and copying notes from the

blackboard all require hand/eye coordination.

Saccadic eye movements. The ability of the eyes to move smoothly back and forth from left to right and vice versa. Learning to read requires this skill.

Multiple distance focusing. The eyes’ ability to switch focus smoothly back and forth between near and far. An example would be reading a book (a close-up skill), then switching to copying written material from the blackboard.



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Binocular vision. The ability to receive the same image in both eyes at the same time and for the brain to “see” the image in essentially the same manner.¹¹

Common Vision Problems in Children

According to Healthy People 2010, the new vision goals for the U.S. center on “improving the visual and hearing health of the nation through prevention, early detection, treatment and rehabilitation.”¹² For both children and adults, visual impairment is “one of the 10 more frequent causes of disability in America.”¹³ Early detection and treatment of visual problems are vital to successful treatment. The following is a brief list of the most common visual problems in children ages 2 to 10 years of age:¹⁴

Amblyopia. The National Eye Institute describes this condition as a “developmental abnormality of the central nervous system that causes impaired vision in one or both eyes.”¹⁵ Simply put, the child experiences a gradual reduction of vision in one or both eyes. The brain is unable to recognize, acknowledge, or process visual images. Amblyopia usually has no obvious symptoms until vision loss becomes irreversible.¹⁶ Meanwhile, the child’s behavior and performance in school can all appear quite normal. Strabismus (misaligned eyes), and refractive error (nearsightedness, farsightedness, or astigmatism) are two of the major causes of amblyopia, which is considered the leading cause of visual impairment in children. To restore usable vision, early intervention is crucial.¹⁷

Strabismus. Around four percent of young children have this condition in one or both eyes.¹⁸ Often, one eye looks perfectly normal. However, the other eye wanders, does not move in unison, or cannot look straight ahead. Children do not outgrow this condition, which, left untreated, can cause loss of vision in the turned eye. Additionally, children with crossed eyes may be teased by their peers. Whenever you see a child’s eye wandering or drifting, call the parent and recommend a professional eye examination. Again, early appropriate intervention, which may include glasses or surgery, is necessary to correct this condition.¹⁹

Refractive Errors. There are three primary types of

refractive errors: Myopia (nearsightedness) is the most common in school-aged children.²⁰ This condition makes it difficult to focus on distant objects, such as assignments written on a chalkboard. In most cases, myopia can be treated with glasses or contact lenses.²¹

By contrast, hyperopia (farsightedness) makes it impossible to see clearly up close.²² Mild hyperopia is very common in preschool-aged children and infants. However, severe hyperopia can

produce eye strain, amblyopia (loss of vision in one or both eyes), and may in some cases make it impossible for children to learn to read. Glasses or contact lenses are the usual mode of treatment for farsightedness.²³

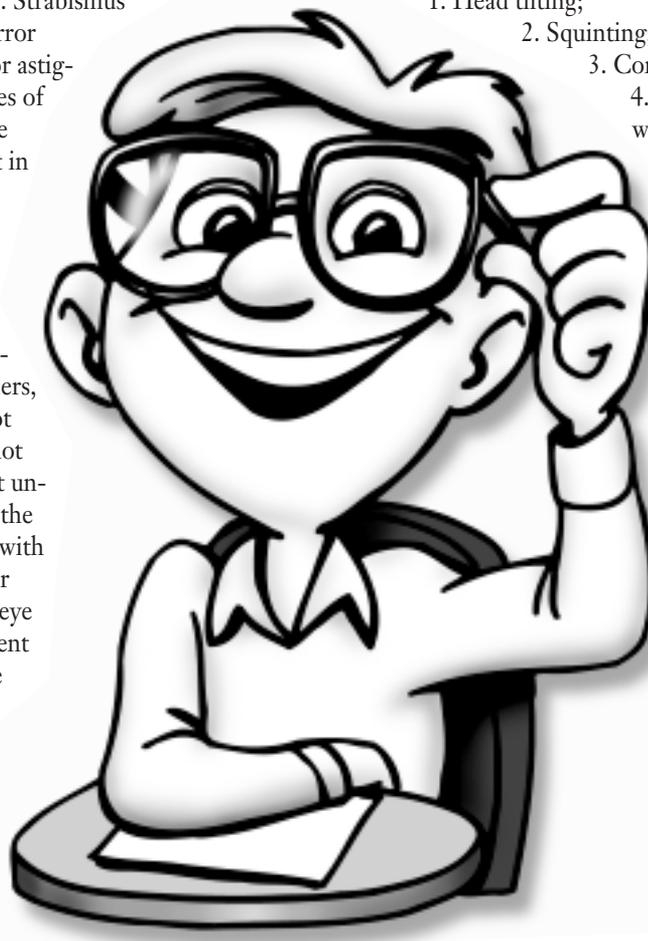
Astigmatism causes squinting, eyestrain, and blurred vision.²⁴ It results from elongation of the clear front portion of the eye (cornea) or the curvature of the eye. Glasses and contacts can correct for astigmatism.²⁵

Signs and Symptoms of Visual Problems in Children

Some childhood vision problems lack obvious physical warning signs.²⁶ Teachers and parents should be alert to the following symptoms, which may indicate the need for a professional eye examination:

1. Head tilting;
2. Squinting;
3. Constant rubbing of the eyes;
4. Eye(s) that look crossed or wander;
5. Evading work that requires close vision (reading, coloring);
6. Problems with beginning reading skills (also requires close vision);
7. Problems reading the blackboard (requires distance vision); and
8. School performance that is consistently below normal.²⁷

It is impossible to overstate the importance of early detection of children’s visual problems in order to ensure successful treatment and to prevent blindness or permanent impairment.²⁸ Thus, the American Optometric Association recommends that children have a professional eye ex-



amination before entering kindergarten and every two years thereafter.²⁹

Healthy People 2010

For the first time, the United States has set objectives that pertain exclusively to vision issues. One of the primary objectives of Healthy People 2010 is to “reduce blindness and visual impairment in children and adolescents.” The following resources, information, and materials are available for teachers and parents:

1. 2003 Resource Guide;
2. Calendar with vision facts;
3. Activity books for children 6-9 years old and 10-12 years of age; and
4. Eye-record cards to help parents keep track of their children’s eye care needs and appointments.

All of the above-mentioned materials are available on the Internet. Check out the Healthy People 2010 Web site at <http://www.healthyvision2010.org/hvm2003>.

Conclusion

Early detection of visual problems and eye ailments is vital. Often, such problems are not discovered until children have suffered through many years of poor school performance, repeated discipline problems, feelings of poor self-worth, and numerous other difficulties. Children do not recognize that their vision is the problem when they cannot read the chalkboard or keep up with reading assignments, or when their eyes feel tired and sore.

Be sure to observe your students for the warning signs listed in this article, and notify the parents of any child who shows symptoms of poor eyesight or eyestrain that they should take the child to a vision professional.

It is also prudent for schools to provide yearly vision screening for their students. If cost is a factor, the school can contact a medical professional in the community or one of the local churches to ask whether he or she could perform the service free or for a small fee. The U.S. Government also has free programs aimed at preventing blindness and visual impairment in children and adolescents. Check out <http://www.healthyvision2010.org/hvm2003>.

The school should include a space on its admissions form to ensure that enrolling students have had their eyes tested, and require all students to have regular medical check-ups that include eye exams. ✍

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NOTES AND REFERENCES

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