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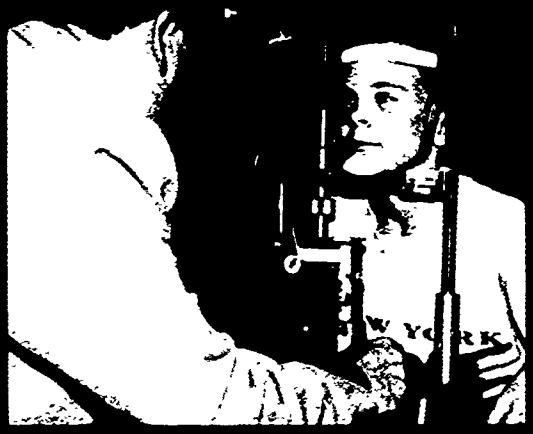
ABSTRACT

Part of a series of booklets designed to provide practical ideas parents can use to help their children become readers, this booklet focuses on children's eyesight. The booklet's seven sections are as follows: (1) How Does Vision Affect Children's Progress in School? (2) What Kinds of Problems Affect These Demands for Vision? (3) How Can I Spot Vision Problems? (4) Doesn't the School Screen for Vision Problems? (5) What Do I Do If I Suspect a Problem? (6) What Should I Do Once a Problem Is Diagnosed? and (7) Conclusion. The booklet concludes with short lists of recommended reading for parents and for children, and a list of resources from the International Reading Association for parents. (SR)

Your Child's Vision Is Important

Caroline Beverstock



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Your Child's Vision Is Important

Our language is filled with indications of how important we think vision is. We link vision directly to understanding and knowing. "I *see*," we tell people to let them know we understand what they've told us. "Did I make that *clear*?" we ask to find out if a message makes sense. "That's your *point of view*," we may say; "But the way I *see* it is...."

People correctly believe that vision is vital to reading, learning, and understanding. For students, who are expected to do all of these things both in and out of school, being able to see well is especially important. Students are constantly reading a wide variety of materials in different printed and written forms from a range of distances; when they are not reading, they are often watching or visually noting the things they pass or that are shown to them. How well they see is therefore one important factor affecting how much they learn, both in and out of the classroom.

How Does Vision Affect Children's Progress in School?

Researchers have spent years studying the many influences that affect how much and how well students read and learn. What we have learned is that all these factors interact in predictably complicated ways. Vision is only one of the factors, but it is a very important one. When students are doing poorly in school, we naturally hope that a single, easily fixed problem is the cause. More often than not, however, several problems together result in poor progress in school. For example, some children may have trouble connecting with the curriculum, the teacher, or the other students. Children may have problems outside of school that distract them and affect their achievement in school. Some students may not understand the basic words or concepts in a lesson. Materials may be either too difficult or so easy that the student is bored. It is also possible that some students have never been given reading materials that match their interest and reading proficiencies. Finally, if reading has been presented in a way that makes little sense to students, they may associate reading with frustrating nonsense and choose, in effect, not to be readers.

In addition to all these other factors, children who complain about and avoid reading may well have a vision problem that makes reading difficult and unpleasant. Similarly, students who appear to have trouble with writing may have one or more of the problems listed earlier, or they may simply have trouble seeing the page and forming letters.

Students Use Vision in Many Ways

Think of how continuously, and of how many different ways, students must use their vision in various learning situations in school.

Far-point vision: Distance (far-point) vision is required during many class activities, including copying from the board, consulting maps and charts on the wall, and taking

notes during demonstrations. Students also use far-point vision while watching films, videotapes, TV, or plays, and when attending assemblies. Participating in sports—even playing games at recess—requires the same type of vision. People whose far-point vision is good but who cannot see adequately close up are said to be "farsighted."

Near-point vision: Close-up (near-point) vision is required for reading books and other materials, writing (including taking notes and completing workbook assignments), working puzzles, drawing, painting, and making all kinds of art projects. People who can see clearly close up but who cannot focus clearly on objects farther off are said to be "nearsighted."

Variable vision: In the computer and television age, we have added a new distance—variable distance. A person using a computer does not have a single visual target, the way a person reading a book does. Targets include the screen, the keyboard, and often various printed materials. A student may work alone or as part of a group; the student's distance from the computer screen will vary with the size of the group, as well as with the programs and tasks. Other group activities, such as taking notes while watching an instructional video, may also require variable vision.

To a child with an uncorrected vision problem, much of what goes on in the classroom may appear blurry.

What Kinds of Problems Affect These Demands for Vision?

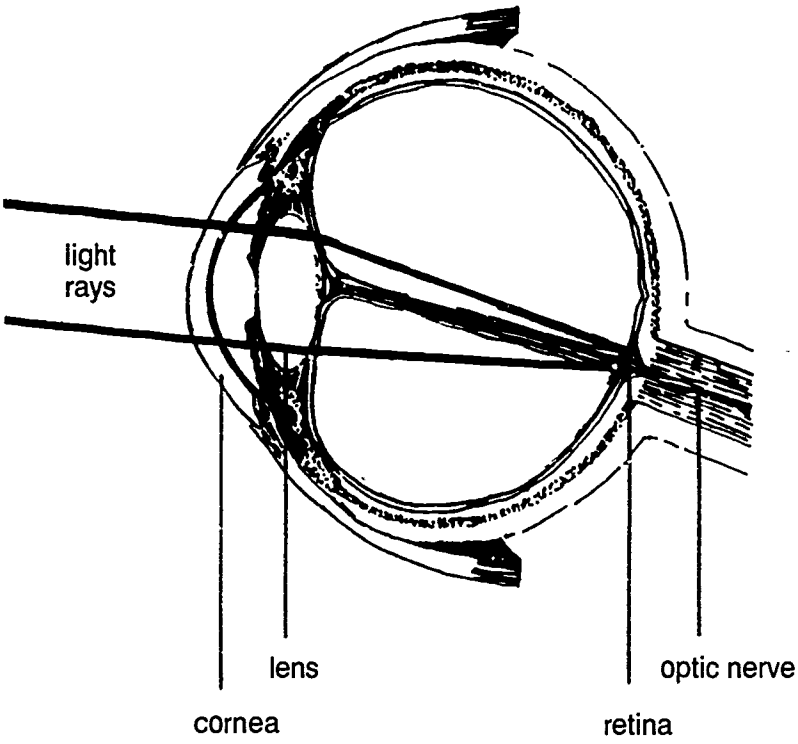
Many aspects of good vision are physical and concern the way the eyes function. The way our eyes take in images and send them to the brain is a highly technical subject that we won't discuss in detail here, but it is useful to know how different eye problems may affect your child's vision.

Seeing Clearly at All Distances

Distance is a key term in understanding the ways students must see in school. Students need to be able to move back and forth between focusing on close targets and focusing on far targets quickly and without losing their place. For example, students are frequently asked to read something the teacher has written on the board and then copy it onto their own paper. Or they may have to move from finding specific information in a textbook to locating a place on a wall map and then back again to reading papers on their desks. If students don't make these visual moves efficiently, they may lose track of the discussion and fall behind the group.

A child's ability to see clearly at all distances (*visual acuity*) depends upon how the eye focuses light rays. Light rays enter the eye through the *cornea* and the pass through the *lens*, which bends the light rays and focuses them on the *retina*. A neural signal is then carried by the *optic nerve* to the brain, which interprets the signal and forms an image. If the light rays do not come together (focus) on the retina, the image will be unclear. The technical term for this lack of focus is *refractive error*.

Refractive errors are classified into several categories. If the eyeball is too long, or if the lens bends the light rays too far, the light rays will come together in front of the retina rather than on it. The result is *nearsightedness* (also called *myopia*). Conversely, when the eyeball is too short, or when the lens doesn't bend the light rays far enough, the light rays come together beyond the retina. The result



is *farsightedness*, or *hyperopia*. A third cause of blurred images is *astigmatism*, which comes from an irregularity in the shape of the cornea. Light rays fail to meet at the back of the eye in a single focal point, so the image is fuzzy. A person can have a combination of astigmatism with either nearsighted or farsighted vision. All three problems—nearsightedness, farsightedness, and astigmatism—can often be corrected with glasses.

Seeing One Clear Image

In addition to seeing clearly, students also need to see a single image at all distances. Double vision can result either from eye fatigue or from differences between the way each eye focuses light. Eye fatigue occurs when the muscles

in and around the eyes are strained. The muscles surrounding the eyes control sideways movement and alignment. They turn the eyes inward and outward during reading or writing at close distance. The muscles inside the eye focus the eye's lens. When a person looks at something close up, these muscles contract so that the lens becomes almost round like a ball; when the person looks at something far away, the muscles relax again and the lens becomes less ball-shaped. When a person has to make an effort to refocus back and forth (to *accommodate*), the muscles that control the eye can become tired. This is one potential source of eye fatigue.

Another concern is whether the two eyes work together to produce a single clear image. If the eyes do not work together, it may be because the muscles controlling one eye are out of coordination with those controlling the other. This causes blurring or double vision. Refractive differences between the eyes (for instance, if one eye is much more nearsighted or farsighted than the other) may also cause this problem. When this happens, the brain may ignore one set of information and accept the information being taken in by only one of the eyes. Early signs of this problem are wall-eyedness (one eye turned outward) or cross-eyedness (one eye turned inward). These problems should be treated early in order to retain as much vision as possible in the weaker eye.

Seeing All the Colors

Color perception is important to students because much of early instruction uses colors. Color blindness can involve pairs of opposite colors, such as red and green; groups of colors in the same family, such as reds and browns; or, more rarely, all colors, so the person sees only shades of black and white.

How Can I Spot Vision Problems?

The way the eye adjusts for all the tasks required of it demonstrates how complicated and remarkable it is. Each part needs to function and interact effectively for good vision. When that fails to happen, only a qualified examiner can determine what is amiss and what might be done to correct the problem.

But parents do not need to be specialists to be able to watch for signs of vision problems in their children. Some of these signs are described in the following checklist. The list does not contain every possible problem, and a child who has one of the symptoms on the list does not necessarily have eye trouble, but using this list may help you spot a problem early.

Teachers, of course, also have opportunities to watch for signs of vision problems, but they may not always immediately suspect that vision is the source of the difficulty. If you suspect a problem, confer with your child's teacher; you can use this list to compare notes. Then follow up by making an appointment for a vision professional to examine your child's eyes.

Checklist for Possible Eye Problems

You may notice one of these general signs in your child:

- an eye that turns in or out and does not seem to be in alignment with the other
- red eyes or lids, frequent tearing, or encrusted eyelids
- frequent squinting at either close or distant targets

Your child may complain of one or more of the following:

- headaches, especially in the forehead or the eyes
- print blurring after a short period of time

- a burning or itching sensation in the eyes after reading or writing
- double vision

While reading, your child may:

- skip or reread lines repeatedly
- frequently leave words out
- often use a finger to keep his or her place in the material

While writing, your child may:

- frequently repeat letters within words
- become frustrated when copying material from a book or a chalkboard

Physical signs of problems during reading or writing include:

- closing or covering of one eye
- rubbing of the eyes
- excessive blinking while writing or reading but not at other times
- awkward reading or writing posture—your child may slump over, nose nearly touching the page; frequently change the distance between his or her eyes and the page; or turn his or her head while reading across the page

Young children write or draw all over the page while they are developing motor control and mastering the conventions of writing, but an older child who does one or more of the following may have an eye problem:

- goes over the lines when writing on a lined page
- writes with a ragged left margin
- writes, draws, or does math problems crookedly on the page

Children may simply be expressing themselves when they write or color outside the lines. The conventionality of children's writing depends on many factors, including years in school, relative emphasis on neatness and writing conventions, number of opportunities to write, kind of instruction, and student interest. Our concern is with poor spatial alignment caused by vision problems.

Above all, you may notice that your child avoids reading and writing as much as possible.

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Doesn't the School Screen for Vision Problems?

Vision screening in one form or another is required in the public schools. In some areas, the screening is limited to checking distance vision with an eye chart (usually the Snellen Visual Acuity Chart or one of its variants). Elsewhere, vision professionals come into the school to conduct screenings; and in some cases, trained paraprofessionals do initial screenings.

All this variation means that parents need to be aware of what kind of testing is routinely available in the school in order to supplement children's vision checkups as needed. You should follow up on concerns even if your child has passed a school screening. Vision can change, or the screening may not have been thorough enough to reveal a problem. Also, the kind of information parents receive from a school screening varies from highly technical reports to no report at all.

Vision professionals agree on a single standard for testing distance vision. The familiar Snellen chart uses the standard testing distance of 20 feet and lettering of specific sizes. But the test of distance vision may also be conducted with a *stereoscope*, an instrument that simulates the distance.

The stereoscope consists of a frame supporting two side-by-side lenses with pictures that can be viewed at two distances. The stereoscope allows testing for both distance vision and near vision as well as for cross-eyedness and wall-eyedness. The tester measures the vision of both eyes together and then the vision of each eye separately. Unlike tests of far-point vision, tests of near-point vision do not have a standard distance. The distance used is often equivalent to 16 inches, but the targets can vary.

One of the difficulties in screening children's vision in school is that the test may result in students being referred for further testing either too much or too little. Sometimes screening sends children for further testing who turn out

to have normal vision. Some parents may see this as a waste of time and money; others look on it as a sensible and cautious followup. A more serious problem is that some students who pass the initial screening actually have a problem and should be referred for further examination and treatment.

Several factors contribute to this difficulty. One is that eye specialists have not agreed on a single standard for a child's passing or failing an eye exam. A score that one eye specialist judges a failure may be considered a pass by another. Another problem is that some of the functions of the eye are difficult to test accurately. For example, measuring whether a child has problems with keeping one or both eyes in alignment is difficult because different methods of testing produce different results.

The results of an eye screening can also depend on how well a younger child understands the examiner's directions. For example, when a screener asks a child to use the right or left eye alone or to move the eye up and down, whether the child follows the directions properly will affect the results. Additional complications can come from how the screening is set up. It is best to screen students one at a time. This method prevents the students who are standing in line from memorizing the chart by listening to their classmates ahead of them.

What Do I Do If I Suspect a Problem?

Parents and teachers also need to understand that vision screenings are just a starting place in determining whether a child has an eye problem. If your child fails a vision screening at school, or if you or your child's teacher has noticed possible signs of vision problems, it is important to follow up with a professional examination.

You have several decisions to make. First you must decide which vision professional to see. In talking with the professional, you can then decide what kind of treatment to use. The treatment may be as simple as a pair of glasses, but it may include other courses of action, from simple exercises to strengthen eye muscles to surgery in extreme cases. Once those decisions have been made, you, your child's teachers, and your child have to decide over time if the treatment is working. Don't forget to talk with your child about any vision problems and treatments. Explain what is happening and listen carefully to what your child

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says about his or her own vision. They are your child's eyes, after all, and people—even children—know about their own bodies in ways that others do not. Watch, listen, and learn.

You can call on a specialist in one of several professions for further screening and advice. The two major groups are ophthalmologists and optometrists. While their work overlaps considerably, these groups received different training and focus on different aspects of vision. In either case, you can reassure your child that the exam won't hurt.

Ophthalmologists are medical doctors who specialize in the diseases of the eye. They tend to place more emphasis on measuring far-point vision than on measuring near-point vision. They usually paralyze the focusing muscles of the eye temporarily in order to test the clarity of the eye's vision. They are likely to put greater emphasis on the structure of the eye and on any physical defects that may be present.

Optometrists are not medical doctors, but they do study and train for four years after college. They place more emphasis on measuring near-point vision and on the relationship between near- and far-point vision. They examine the clarity of vision by having patients actively focus their eyes and checking how the eyes work together. They emphasize the functioning of the eye and functioning disorders.

Opticians make and sell glasses and contact lenses based on prescriptions written by either ophthalmologists or optometrists. They are technical, rather than medical, specialists who do not have training in giving eye examinations.

It is best to select a vision professional who specializes in children's vision and who has an awareness of the demands that reading and other school activities place on vision. In practice, there may be little difference between the exams and prescriptions given by ophthalmologists and optometrists.

If you decide to seek professional help for your child's vision problem, you need to know ahead of time that eye

specialists, educators, and psychologists disagree about some aspects of vision. One of these disagreements involves *visual perception*—the interpretation the brain makes of the visual signals it receives. Visual perception is important in learning to read and write, but people disagree about the cause and treatment of perception problems. Many reading professionals, psychologists, and medical doctors believe that visual perception happens in the brain, but others think it is a function of eye movements or coordination.

Some optometrists believe that *vision training* exercises can teach greater visual perception. Although some ophthalmologists prescribe these exercises for some conditions, the American Academy of Ophthalmology and Otolaryngology and the American Association of Ophthalmology have issued a policy statement asserting that vision training is not effective. Perception is a function of the brain, they reason, not of the eyes.

This opinion is echoed in a review of vision and perception research by Renee Casbergue and Jane Fell Greene in the December 1988 issue of the *Journal of Reading:*

> Although visual and auditory screenings conducted in schools to identify vision and hearing problems in children are clearly beneficial, the administration of sensory perception screening has been shown to have no measurable benefit.... Parents must not be misled into believing that perceptual training programs will have any influence on their children's reading achievement (p. 202).

Evaluate any course of treatment recommended by an eye specialist for your child, and seek a second opinion if you are uncomfortable with a recommendation.

What Should I Do Once a Problem Is Diagnosed?

If an eye specialist confirms that your child has a vision problem, the child will need some emotional support and understanding to adjust to the treatment prescribed. This treatment can affect students both socially and psychologically.

Social concerns related to vision become important when corrections of vision make a child "look funny." What child wants to be called "four-eyes" or be teased for wearing an eye patch and looking like a pirate? Even children who understand that the glasses or patch will help them may be afraid that their friends will consider them different or less attractive. It can be very frustrating for parents who have made sure their child has the needed glasses or eye patch to discover that the child is not wearing the glasses or is removing the patch.

You can help your child accept vision treatment by focusing on the positive and offering support. For instance, you can show your child magazine photos of models or well-known actors wearing attractive glasses.

In choosing glasses or contact lenses, you should consider one or two practical matters: How strong do the frames need to be to withstand the knocks and bustle of your child's daily routine? Is your child old enough to care for contact lenses? Ideally, after making the price range clear, you should let your child take an active role in selecting the frames and other features of the glasses. Take ad-

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vantage of any expertise that is available where you are buying the glasses. Make sure that someone explains to both you and your child how to care for the glasses properly. This, of course, is easier said than done.

Be sure to talk with your child about using and taking care of the glasses. Before doing this, think about the situations your child will face daily. For example, will your child wear the glasses during gym class and while performing other physical activities? If so, will the glasses stay on? Are they shatterproof? Encourage your child to help you list ideas to make sure that the glasses will be available and in

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the proper working order when needed and where to put them when they aren't being worn. Don't hesitate to discuss these matters with your child's teachers. The physical education teacher will be glad to talk things over with you if you are uncertain about glasses on the playing field. All teachers need to know if one of their students is supposed to be wearing glasses and whether they are to be worn for all tasks or just for some.

Your child may find the physical adjustment to wearing glasses somewhat frustrating. The new look that the world takes on when seen through new glasses may be upsetting. More concretely, new glasses can temporarily disturb distance perception and lead to halting steps or misjudgment in reaching for objects. The resulting disorientation and tension can cause headaches and embarrassment. Headaches that persist for more than a few days, however, may indicate that the prescription is not correct or that it was not accurately filled. Make sure your child knows that these effects are temporary; the embarrassment goes away when the ground no longer seems to be coming up at you and you stop stumbling on the stairs!

One challenge in detecting and correcting vision difficulties has to do with the way each of us sees the world. Our unique viewpoint is natural to each of us. We all assume that the world looks and is the way we see it. Because we see what we expect to see, we may fail to realize that we have a vision problem. This can lead us to resist having eye examinations and taking corrective actions such as wearing glasses. Your child may need to see an improvement in order to be willing to take the trouble.

Unfortunately, untreated visual difficulties can lead a student to avoid school tasks. A child with an eye problem may assume that the other children at school are smarter, since the work seems easier for them. A student who frequently gets a headache when trying to read may wrongly conclude that reading is painful and unpleasant.

Conclusion

If you suspect that your child has a vision problem, careful monitoring can contribute to his or her success in school. Monitoring does not guarantee a child's success, but if vision problems are left unattended, they will make school achievement more difficult. Follow up on vision screenings at school. Talk over any concerns you have about your child's eyes and vision both with your child's teacher and with your child. Take your child to a vision professional, if it seems necessary. And, finally, make new glasses as fun and easy for your child as you can. Once your child *sees* how much better it is to see better, the problems will fade away.

Recommended Reading for Parents

Casbergue, R.M., & Greene, J.F. Persistent misconceptions about sensory perception and reading disability. *Journal of Reading 32*(3), December 1988, 196-203.

Hutchinson, R.A. *Computer eye stress: How to avoid it, how to alleviate it*. New York: M. Evans, 1985.

Recommended Reading for Children

Fiction

Arthur's Eyes. Written and illustrated by Marc Brown. Little, Brown, 1979 (grades ps-3).

Cromwell's Glasses. Written and illustrated by Holly Keller. Greenwillow, 1982 (grades k-3).

Katie's Magic Glasses. Written by Jane Goodsell and illustrated by Barbara Cooney. Houghton Mifflin, 1965 (grades 2-4).

Mom, I Need Glasses. Written by Angelika Wolff and illustrated by Dorothy Hill. Lion Books, 1971 (grades k-3).

Spectacles. Written by Ellen Raskin. Macmillan, 1972 (grades k-4).

Nonfiction

The Eye and Sight. Written by Brian Ward, Franklin Watts, 1981 (grades 4 and up).

Resources from IRA for Parents

Parent Booklets

Beginning Literacy and Your Child. Steven B. Silvern and Linda R. Silvern. No. 164.

Creating Readers and Writers. Susan Mandel Glazer. No. 165.

Helping Your Child Become a Reader. Nancy L. Roser. No. 161.

How Can I Prepare My Young Child for Reading? Paula C. Grinnell. No. 163.

Your Child's Vision Is Important. Caroline Beverstock. No. 167.

You Can Encourage Your High School Student to Read. Jamie Myers. No. 162.

You Can Help Your Young Child with Writing. Marcia Baghban. No. 160.

Single copies of these parent booklets are available at a cost of US$1.75 each, prepaid only. Send your check to the International Reading Association, 800 Barksdale Road, PO Box 8139, Newark, DE 19714-8139, USA. Please specify both title and publication number when ordering.

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Parent Brochures

IRA has available 10 brochures covering a variety of topics pertaining to ways in which parents can help children of all ages become readers. To receive single copies of all 10 brochures, send a self-addressed envelope stamped with first class postage for *three* ounces to Parent Brochures at the address listed earlier. The brochures are available in bulk quantities also, and ordering information appears in each brochure. (Requests from outside the USA should include a self-addressed envelope, but postage is not required.)

Children's Choices

Children's Choices is a yearly list of books that children identify as their favorites. To receive a single copy, send a self-addressed envelope stamped with first class postage for *four* ounces to Children's Choices at the address listed earlier.

About This Series

This booklet is part of a series designed to provide practical ideas parents can use to help their children become readers. Many of the booklets are being copublished by IRA and the ERIC Clearinghouse on Reading and Communication Skills.

ERIC/RCS Information Services

For more information on the development of reading and other language skills, write or call: ERIC/RCS, Smith Research Center, Suite 150, Indiana University, Bloomington, IN 47408, USA. Telephone: (812) 855-5847.

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