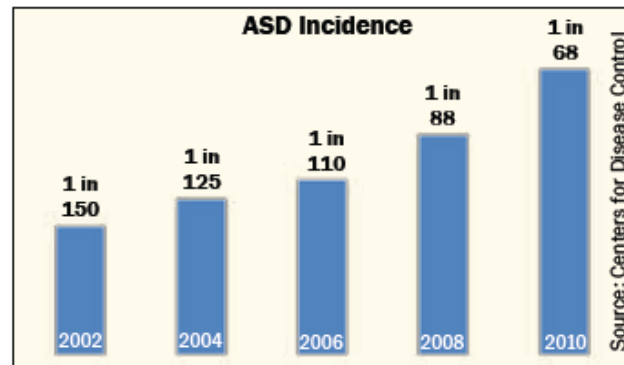


## Why Do Developmental Optometrists Collaborate with Speech/Language Pathologists?

# Vision Problems in Children with Autism Spectrum Disorder

By Lynn Hellerstein, O.D., FCOVD, FAAO, and Linda Hodgdon, M.Ed., CCC-SLP

Autism is the fastest-growing developmental disability in the U.S. Autism spectrum disorders (ASDs) are a group of disabilities characterized by significant impairments in social interaction and communication, and a tendency to engage in repetitive behaviors. People with ASDs have difficulty processing and responding to information from their senses.



Most students on the autism spectrum, as well as many students with other special needs or learning challenges, have been described as being visual learners, meaning that they understand what they see better than what they *hear*. Researchers have found that the majority of children with ASDs are stronger in visual-spatial abilities than in auditory processing abilities (Greenspan & Wieder, 1997). Vision may be their learning strength — as compared to their ability to re-

spond to auditory information — and it can be related, at least in part, to their challenges in establishing and maintaining the attention needed to process auditory information.

Having visual learning strength doesn't mean that children with ASD have perfect vision, however. Even if they are tested at 20/20 eyesight, these children can, and often do, experience vision problems, described later in this article, that affect their learning and participation in school and other activities. Visual symptoms in people with ASD are linked to underlying differences in the central nervous system, including the visual system.

### What these Children Need

Identifying visual processing problems in children with ASDs is not always easy. The typical vision screening tests that students commonly receive are not designed to identify these kinds of problems. Furthermore, a number of behaviors that children with autism may demonstrate — those that parents and teachers may call "autistic behaviors" — can actually be symptoms of visual processing difficulties. Here are some of the visual behaviors that children with ASDs may exhibit (Coulter, 2009):

- Peering at an object while tilting their head
- Looking out of the corner of their eye
- Poor eye contact
- Being attracted to shiny surfaces or mirrors
- Squinting

- Not following where someone else is looking
- Staring into space
- Poor spatial awareness
- Light sensitivity
- Fixating on light patterns, windows, or blinds
- Averting their gaze
- Difficulty processing faces (which may explain gaze aversion)
- Hand flapping and finger flicking (possible compensations for poor visual-spatial skills, especially skills related to knowing where their body parts are in space).

Children with ASDs may show additional signs as well, for example:

- Academic struggles
  - Poor tracking with reading
  - Losing their place or needing a finger/marker when reading
  - Difficulty with handwriting
- Movement or sports difficulties
  - Poor balance and coordination
  - Poor eye-hand coordination
- Physical symptoms
  - Headaches in the forehead or temple
  - Closing or covering an eye
  - Having an unnatural posture when reading.



## Vision Problems in Children with ASD, continued

### How the Vision of Children with Autism Differs

Research has shown that the visual symptoms experienced by children with ASDs are more severe and complex than those found in children who develop normally. Some of the studies comparing visual problems in groups diagnosed with ASDs with normally developing patients show a general trend of more difficulty with the following:

- Visual acuity (eyesight)
- Stereoacuity (depth perception)
- Eye alignment (crossed or lazy eyes, eye coordination problems)
- Eye movement control (tracking, quick eye jumps, convergence issues).

In general, children with autism are plagued by neural noise in the visual signals transmitted to the brain. This noise makes it more difficult to integrate their vision with other sensory systems such as receptive and expressive language.

### Getting the Right Evaluation

Parents may start with a vision evaluation done by their family optometrist. This evaluation may be challenging for both the child with ASD and the doctor; however, with time, patience, and special tools, a good eye doctor can obtain a great deal of visual information.

Selecting the right optometrist for your ASD child is an important decision. For some common vision problems, eyeglasses, contact lenses, medication, or surgery may be necessary. These are typical treatments in which optometrists are uniquely skilled, with surgery more in the domain of ophthalmology.

Other treatment options may be necessary when basic visual skills are problematic, for example when there are issues with visual eye focusing, eye coordination, eye movements, and visual perception. Not all optometrists provide in-depth testing and treatment for these types of developmental and functional vision problems. Those who do are called *developmental* (or *behavioral*) optometrists.

When seeking a developmental optometrist, ask the doctor these two questions before making an appointment:

1. Do you work with children and adults who have special needs?
2. Do you provide vision therapy or refer to a doctor who does?

If the doctor's office doesn't quickly understand and respond to your questions, then you are probably not at the right office for the type of evaluation and treatment we're discussing.

The evaluation methods a doctor uses vary, depending on the child's levels of intellectual, emotional, and physical development. Testing often involves asking the patient to perform specific activities while wearing special lenses. For example, the doctor may ask the patient to sit, walk, stand, and catch and throw a ball while the doctor observes any postural adaptations and compensations the child may be making. Such tests help to determine how the ASD student is seeing and how he or she can be helped.

### Treating Children with ASD

Depending on the results of testing, a developmental optometrist may prescribe treatments such as these:

- Tinted lenses, different colored lenses prescribed to specifically address an individual's light, color, and contrast sensitivity
- Prism glasses, glasses with lenses that change the direction of light and are often used to help a person with eye coordination difficulties. In the child with ASD, prism glasses are commonly prescribed to help with spatial localization and movement.
- Vision therapy, a process of training the eyes and brain to work together more effectively and of integrating these abilities with the rest of the body. Vision therapy enhances the brain's ability to control eye alignment, tracking, eye teaming, focusing, eye movement, visual processing, and visual-spatial skills.

Many vision therapy activities are aimed at stimulating general visual arousal, eye movements, and the central visual system. Some, such as visualization or visual imagery strategies, may be useful for relaxation and reduction of anxiety, more successful learning, and improved sports performance.

The goals of vision therapy treatment may be to help the child with ASD organize visual space and gain peripheral stability. Attaining these goals can help the child better attend to and appreciate central vision and gain more efficient eye coordination and visual information processing.





## Vision Problems in Children with ASD, continued

### Other Ways to Provide Support

While receiving the proper evaluation and treatment are essential for children with ASDs who have visual processing problems, other forms of support can benefit them as well. In school, for example, it is considered a best practice when teaching these students — and many others with related learning needs — to use visual supports (also called visual tools or visual strategies). Examples of visual supports are images, choice boards, calendars, visual schedules, and social stories (stories with a particular style and format used to help people with ASD improve their social skills). Visual supports can be in the low-tech format of printed pictures or photos, as shown below, or displayed electronically on high-tech devices like smart phones or tablets.



An example of visual supports

Visual supports often prove to be more successful than verbal directions or explanations for teaching learning and communication skills. For example, if a student is upset because of a problem with another student, writing a little story to explain how to handle the situation can be more effective than just telling the student what to do. Or using a timer to signal that it's time to move from one activity to another often works better than giving a student verbal directions.

Developing visual supports for a child is often the job of a speech-language pathologist. The pathologist will usually conduct an evaluation to identify the student's specific learning, communication, and social skill needs and then develop the appropriate visual supports.

A common misconception is that visual supports are only appropriate for lower skilled or non-verbal students. In fact, they can also benefit verbal students with high-functioning autism or Asperger's. When these students talk (and many of them talk a lot), people presume competence that may not be there. These children with high-functioning autism or Asperger's can actually have significant difficulty understanding language that others use, managing social situations, and coping with many of the "invisible" rules necessary to function successfully at home, in school, and in the community. With the help of visual supports, these students can improve their communication, demonstrate appropriate behavior, and participate successfully in social and learning opportunities.

### Finding a Developmental Optometrist for Your ASD Child

To find a developmental optometrist, check the listing at the website of the College of Optometrists in Vision Development (COVD), at [www.COVD.org](http://www.COVD.org). Optometrists who are members of COVD emphasize an expanded functional and behavioral approach to patient evaluations. Their approach to vision care is directed at correcting existing vision problems and enhancing visual abilities to allow individuals to see clearly and comfortably. Fortunately, there are

well-qualified COVD members located in large cities and small towns throughout the United States as well as in many countries throughout the world. Once you've located an optometrist who provides vision therapy, an important question to ask is: Do you see many patients who are labeled as gifted or twice exceptional, or who are on the autism spectrum?

—LH and LH

## Vision Problems in Children with ASD, continued

### Getting Results from Treatment and Visual Supports

#### Melissa

Melissa is a bright five-year-old on the autism spectrum. Before glasses, she wouldn't look at objects and had poor eye contact. An optometrist diagnosed her with extreme farsightedness and prescribed glasses with yoked prisms. These lenses were designed to help with spatial awareness and localization.

Since Melissa began wearing these glasses, she has become much more aware, paying better attention to what goes on around her and showing more interest in interacting with her family. Some of her other behaviors have changed as well. In the past, Melissa showed many of the typical autistic characteristics while watching TV: hand flapping, squinting, and staring into space. Now, with her new glasses, those behaviors have stopped; plus, she is beginning to point to objects and communicate better using visual supports.

#### Joshua

Joshua, a twice-exceptional 12-year-old, knew how to read, but resisted reading. He showed classical ASD behaviors: eye poking, finger flicking, awkward head tilting, and gazing out of the corner of his eyes. His parents and teachers attributed these behaviors to being on the autism spectrum.

Vision evaluation revealed convergence insufficiency (a problem with coordinating the eyes inward to look at close objects). Convergence insufficiency can cause various problems such as double or blurred vision at near distance, letters moving on the page, eye strain, headaches, closing or covering an eye, and dizziness.

### How the Visual Process Works

To better understand the vision difficulties that children with ASDs may experience, it's necessary to know more about how the visual process works. A vision acuity screening test measures what size letter or picture you can see at 20 feet. For example, a person with 20/20 vision can see a letter about one inch high. But vision is much more than 20/20 eyesight. A person with double vision, for example, could pass the vision acuity screening test. There are more skills necessary for us to be able to see, process, integrate, and respond to visual information. The developmental model below shows the overall complexity of vision.

The outermost circle represents life activities important to an individual. The innermost circle, the core, should provide a strong foundation upon which to build. Included in the core are the components that comprise the structural integrity of the vision system: the physical

health of the eyes, the visual pathways, and eyesight.

The first concentric circle outside of the core represents visual efficiency, which includes how well the eyes fixate (look), follow (track), fuse (coordinate together), and focus (make objects clear). These visual skills are movement-based.

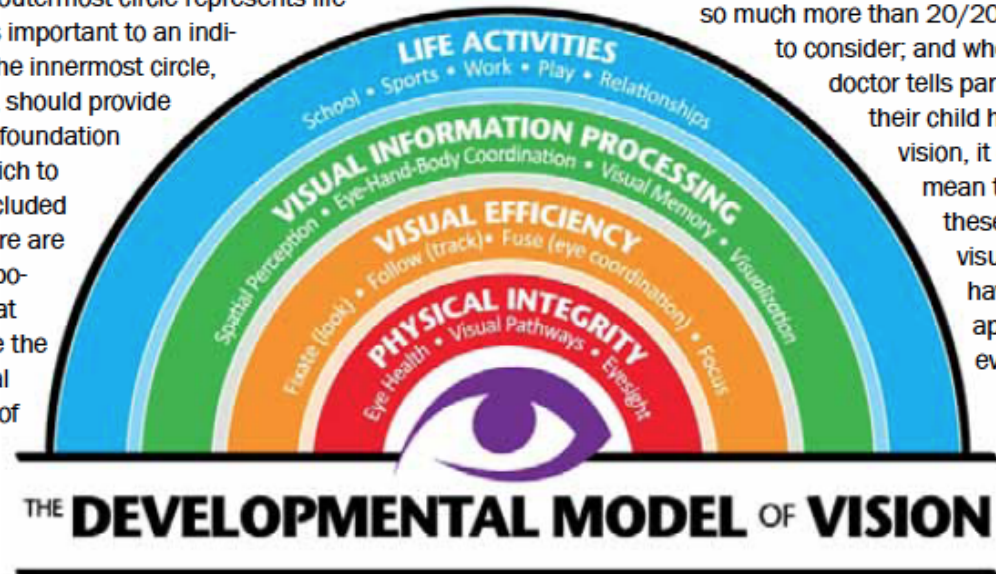
The second concentric circle out from the core represents visual information processing. This aspect of vision refers to understanding what we see, where things are in space, integrating visual information with other senses, eye-hand-body coordination, and visual memory.

This model of vision represents the basis for thoroughly evaluating vision and determining a treatment program. As you can easily see, there's

so much more than 20/20 eyesight to consider; and when an eye doctor tells parents that their child has 20/20

vision, it doesn't mean that all of these other visual skills have been appropriately evaluated.

—LH and LH



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## Vision Problems in Children with ASD, concluded

Joshua was prescribed glasses with a special tint for light sensitivity and attended 20 sessions of vision therapy. He responded beautifully, with all of his symptoms disappearing. He now can read comfortably for hours.

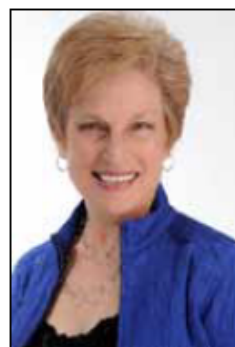
### Conclusion

Many children with ASD are visual learners. Improving their visual skills with the help of a developmental optometrist and the right treatment, and providing the support of a speech-language pathologist and visual strategies, can help these children become more successful in communication, school, sports, and life.

### References

- Coulter R.A. (2009). Understanding the visual symptoms of individuals with autism spectrum disorder. *Optometry & Vision Development*, 40(3), 164-175.
- Greenspan, S. I., & Wieder, S. (1997). Developmental patterns and outcomes in infants and children with disorders in relating and communicating: A chart review of 200 cases of children with autistic spectrum diagnoses. *The Journal of Developmental & Learning Disorders*, 1(1), 87-141.

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