

WHAT YOU NEED TO KNOW ABOUT AUTISM



As an optometrist, you'll inevitably encounter a patient with autism spectrum disorder. Educating yourself about their condition and needs will go a long way in providing successful and compassionate treatment.

BY CECELIA KOETTING, OD, FAAO, DIPL ABO

Approximately one in 44 US children 8 years of age have been identified with autism spectrum disorder (ASD).¹ Studies have shown that children with ASD have a higher rate of vision problems, indicating that eye care professionals should be on the team of physicians diagnosing and treating these patients.^{2,3} Therefore, it is important that we be aware of ASD (see *What Is ASD?*) and know how best to approach patients with ASD when they are in our chairs so they feel safe and comfortable and so we can effectively meet their eye care needs.

AUDITORY AND VISUAL STIMULATION IN ASD

Sensory symptoms are more common in children with ASD than in

those with other developmental disorders and typically lessen with age.⁴ It has been noted that the intensity of sensory symptoms correlate with that of social symptoms.⁴ This can include all senses: sight, sound, smell, taste, touch, vestibular, proprioception, and interoception.⁵ Many may associate individuals with ASD as experiencing hypersensitivity, but they can also have *hyposensitivity*, or a combination of both.⁵

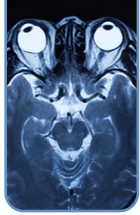
Hypersensitivity can lead to stimuli avoidance and result in an individual pulling away from touch, loud noises, and certain textures. Hyposensitivity may lead to stimuli-seeking behavior, where they activate their senses by making loud noises, touching people, or rocking back and forth.⁵

Within the visual world, ASD can

manifest itself in behavior such as focusing on dust particles, avoidance or attraction to light or dark, looking intensely at objects or people, looking down a majority of the time, fascination with reflections, or moving fingers or objects in front of the eyes (see *ASD Predictive Repetitive Behavior in Infants*).⁴

OCULAR CONDITIONS IN ASD

Some ophthalmic disorders have been noted in higher incidence in patients with ASD. One retrospective study of charts between 1998 and 2006 looked at 154 children diagnosed with ASD who had a comprehensive eye examination found that 40% of the children had ocular pathology; 29% had significant refractive error, 21% had strabismus, and 10% had



WHAT IS ASD?

Over the past 10 or more years, our understanding of ASD has changed significantly. In 2013, the American Psychiatric Association merged four distinct autism diagnoses, including Asperger syndrome, under the general term ASD.¹ Individuals with ASD often have challenges with social skills, repetitive behaviors, and speech and nonverbal communication.¹ As broad as the presentation is, the understanding of the cause, being a combination of genetic and environmental factors, is just as wide-ranging. Often, patients with ASD will have other challenges, such as sensory sensitivities (visual and auditory); concomitant medical gastrointestinal disorder; seizures; sleep disorders; and mental health struggles, including anxiety, depression, or attention-deficit/hyperactivity disorder.

There is no “one type” of autism, but, just as the name implies, it is a spectrum of how the condition presents as well as its severity. It is important when treating patients to be aware of their strengths and possible areas of difficulties in order to better assist them in improving their eye health as well as their overall health. The earlier the diagnosis, the sooner adaptations and changes to environment, type of interaction, and learning styles can be addressed to help the overall development of the child.

1. What is autism? Autism speaks. www.autismspeaks.org/what-autism. Accessed May 12, 2022.

amblyopia (see *Common Ocular Findings in Patients with ASD*).⁶

Another retrospective study reviewed 380 charts of children with ASD who had been seen for an eye examination between 2007 and 2017.² This study found that 71% of the children had an ophthalmic diagnosis; 42% had significant refractive error, 32% had strabismus, 22% had amblyopia, and 4% had optic neuropathy.² Those who had cerebral palsy, in conjunction with diagnosed ASD, had a significantly higher risk of ocular complications.²

These studies indicate that it is important for children and adults with or suspected of having ASD to see an optometrist for a comprehensive eye examination. The levels of ophthalmic disorders found is above that in a general pediatric population.² A retrospective study of 10 million children found only 3.5% of typically developing children had an ophthalmic disorder versus 12.5% in children with ASD.³ Visual problems in a child without ASD are known to effect development; now imagine how these problems, especially when left untreated, could

have an even more profound effect on this population. As optometrists, we can help by correcting any refractive problems with glasses, utilizing prism, referring for vision therapy, or referring for surgery when needed.

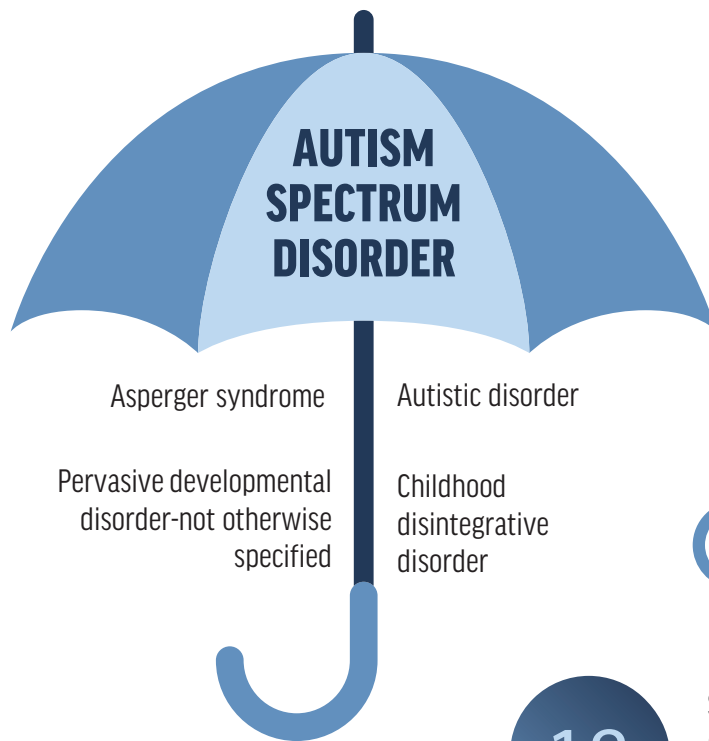
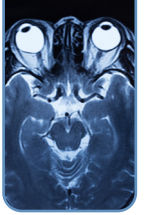
Visual Processing Disorders

Visual processing disorders have been noted in patients with ASD,

including difficulties with face perception, motion detection, and fixation stability.⁴ Face perception difficulties and the avoidance of eye contact is one of the most common social deficits of ASD.⁴ Vision therapy, in conjunction with occupational and physical therapy, has been found to be effective in helping to increase awareness of sense of self.⁷

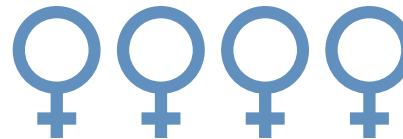
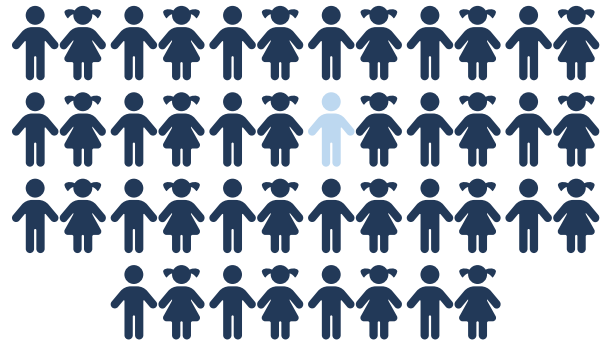
AT A GLANCE

- Autism spectrum disorder (ASD) comprises a broad range of conditions characterized by challenges with social skills, repetitive behaviors, and speech and nonverbal communication.
- ASD can manifest itself in behavior such as focusing on dust particles, avoidance or attraction to light or dark, looking intensely at objects or people, looking down a majority of the time, fascination with reflections, or moving fingers or objects in front of the eyes.
- Vision therapy, in conjunction with occupational and physical therapy, has been found to be effective in helping those with ASD.



1 IN 44

The number of US children 8 years of age identified with ASD.



Boys are four times more likely to be diagnosed with ASD than girls.

18

Signs of ASD can develop in a child as early as 18 months of age.

4

Most children are diagnosed after the age of 4.

Source: What is autism? Autism speaks. www.autismspeaks.org/what-autism. Accessed May 12, 2022.

What Can Help?

There are phone applications, such as Look At Me by Samsung (available for Android) and Look in My Eyes Train Engineer by Fizzbrain (available for iPhone) to help encourage eye contact in children with ASD. Using a phone app and Bluetooth, eye contact duration, frequency, and latency are all measured and tracked.⁸ More recently, a pair of smart glasses have been developed to measure eye contact behavior by having the child and instructor wear the glasses.⁸ Another type of smart glasses uses augmented reality and artificial intelligence as a social communication aid to help give the patient feedback in learning social and emotional cues and skills.⁹

Studies investigating electroretinogram (ERG) as a possible diagnostic tool for ASD have been performed. ERG shape is known to be altered in some neurologic diseases, such as schizophrenia and bipolar disorder.¹⁰ One study performed an undilated, light-adapted

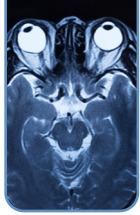
ERG with the handheld RETeval (LKC Technologies) on 97 patients with ASD and 90 control patients and found a reduction in the b-wave amplitude in patients with ASD.¹⁰ Further investigation is needed to understand if this is specific to ASD or a general marker for atypical neurodevelopment.

FOOD FOR THOUGHT

Extending into the later life of our patients with ASD, we should turn our attention to ocular diseases that affect the eye and how to best treat them. Symptoms of ASD tend to improve with age and adaptation, but not in all patients. In those with glaucoma and ASD, how will they be with medication compliance and using drops? Is it better to consider microinvasive glaucoma surgery earlier or selective laser trabeculoplasty as first-line treatment? Can these patients withstand these procedures? Can patients with

ASD adapt to technology, such as premium IOLs? What about the injections for wet macular degeneration? Many of the answers are going to be patient-dependent, but they should be considered when discussing options and making clinical decisions with our patients.¹⁰

When examining a patient with ASD, take the time to consider their needs and what may be a trigger or stimulus. For children, ask the parents or guardian. For new adult patients, take a few minutes to discuss their areas of difficulty for the examination. Don't forget to take into account any refractive or drug prescriptions they may be taking. When discussing types of refractive error treatment, think about how well your patient will adapt to the options. Some may have trouble using bifocals or progressive lenses, and some may do better with contact lenses because they don't do well with constant eyeglass frame awareness.



COMMON OCULAR FINDINGS IN PATIENTS WITH ASD

- Strabismus
- Amblyopia
- Refractive error
- Optic neuropathy
- Visual processing disorder
- Decreased stereopsis
- Atypical optokinetic nystagmus response
- Decreased ocular pursuits

Source: Chang MY, Gandhi N, O'Hara M. Ophthalmologic disorders and risk factors in children with autism spectrum disorder. *J AAPOS*. 2019;23(6):337.e1-337.e6.

At the end of the day, we are here to help our patients. Being aware of the social interaction differences they may have, as well as the increased risk of ocular conditions, is key. ■

ASD PREDICTIVE REPETITIVE BEHAVIOR IN INFANTS

- Looking out of the corners of the eyes
- Holding an object very close to the face
- Looking with one eye closed
- Staring at an object uninterrupted for more than 10 seconds

Source: Miller M, Sun S, Iosif AM, et al. Repetitive behavior with objects in infants developing autism predicts diagnosis and later social behavior as early as 9 months. *J Abnorm Psychol*. 2021;130(6):665-675.

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