**Special Article: Oculo-Visual Problems of Patients with Special Needs**

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**By: Dominick M. Maino, OD, MEd, FAAO, FCOVD-A**



Individuals with special needs often have numerous undiagnosed and untreated oculo-visual problems. The World Health Organization has noted that the number one cause of treatable visual impairment in the world is uncorrected refractive error (nearsightedness, farsightedness, astigmatism and presbyopia) (see side bar). This is also true for those with developmental, physical, genetically induced and psychiatric disability, as well as those with acquired and traumatic brain injury. This paper briefly reviews the frequently encounter disabilities and their associated oculo-visual problems.

**Down Syndrome**
Those with Down Syndrome (DS) exhibit high amounts of refractive error. This is usually hyperopia, but if myopia is present very high amounts are often encountered. They may also have significant amounts of astigmatism which could lead to a considerable steeping of the cornea and the development of keratoconus. Accommodative esotropia (an eye turn inward due to excessive focusing) is frequently noted. Conversely accommodative insufficiency (lack of focusing ability) is often present as well. Both of these focusing problems can be treated with multi-focal lenses (bifocals) very successfully. The vision problems associated with accommodation and eye teaming have a functional etiology and can be treated with lenses, prisms, and optometric vision therapy. Those with DS also have eye health anomalies such as cataract and blepharitis.

**Cerebral Palsy**
Patients with Cerebral Palsy (CP) have many vision problems. They often show hyperopia, but if myopia is present if is significant. Strabismus, nystagmus, focusing problems and vision information/visual perceptual anomalies are often seen. Optic nerve atrophy is common as well and can lead to severe vision loss. Individuals with CP often have a much greater reduction in visual acuity than those with other forms of disability. Individuals with CP often need multifocal lenses because of the frequently encountered focusing dysfunctions.

**Fragile X Syndrome**
There seems to be few pathological eye problems noted for this syndrome. This is a higher incidence of strabismus and other oculo-motor dysfunctions. Vision information processing abilities are often affected as well. A great deal of additional research into the eye and vision problems associated with Fra X is desperately needed.

**Autism**
Those within the Autism Spectrum Disorder (ADS) have a higher incidence of strabismus and vision information processing disorders. Sensory integration problems are also frequently seen in individuals with ASD. In particular, vision is usually affected with visual symptoms being pervasive and severe. These visual symptoms are due to the individual’s unique, often maladaptive style of overall sensory-processing.

**Acquired/Traumatic Brain Injury**
Those with acquired and/ or traumatic brain injury (A/TBI) have a much higher incidence of binocular vision dysfunction and accommodative disorders, as well as issues of balance and a host of perceptual anomalies including a shifted concept of midline. Convergence insufficiency, exoptropia, accommodative insufficiency and various oculomotor anomalies are often seen. Post Trauma Vision Syndrome, for instance, can include strabismus, convergence insufficiency, focusing problems, oculomotor anomalies and an increase in myopia. Symptoms noted include diplopia, blurred vision, asthenopia, headache and photophobia.

**Attention Deficit Hyperactivity Disorder (ADHD)**
Is it ADHD or convergence insufficiency (CI)? At least one study suggests that the two have much in common. Unfortunately, if we misdiagnose a child with ADHD, this results in a delay of appropriate treatment and rehabilitation. ADHD and CI can also co-occur as well.

**Learning Disabilities**
The American Optometric Association notes that:

*Vision is a fundamental factor in the learning process. The three interrelated areas of visual function are:*

1. Visual pathway integrity including eye health, visual acuity, and refractive status;
2. Visual efficiency including accommodation (focusing), binocular vision (eye teaming), and eye movements;
3. Visual information processing including identification and discrimination, spatial awareness, memory, and integration with other senses

*To identify learning-related vision problems, each of these interrelated areas must be fully evaluated.*

Despite the ridiculous assertion by some that vision has nothing to do with learning, research generally supports appropriately function vision as being an integral part of the learning process.

Children with various learning disabilities are not only subject to the same kinds of functional vision problems seen in non-affected children, but also seem to exhibit a propensity towards oculomotor dysfunction (pursuits, saccades), poor eye teaming, vision information processing issues and focusing problems. Various learning related vision problems could affect reading, spelling, math and other academic skills.

**Psychiatric Illness**
Those with psychiatric illnesses are often overlooked when it comes to eye and vision care. Individuals with depression, bipolar disorder, schizophrenia, anxiety and panic disorders, and obsessive-compulsive disorder, as well as those exhibiting post-traumatic stress disorder, mental illness and substance use disorder, and the dually diagnosed (mental Illness with intellectual and developmental disability); all have potentially significant sight threatening problems. These include the use of major psychotropic, neuroleptic medications that could cause a host of eye problems including glaucoma, retinal anomalies and functional vision problems. They are typically at a much higher risk for ocular trauma than the general population as well.

Optometrists Are Trained to Diagnose and Treat Individuals with Special Needs
All the schools and colleges of optometry provide didactic, laboratory and clinical education in the diagnosis and management of those with special needs. Not all doctors choose to use this training and many fiscal, provider, and various other access to health care anomalies continue to throw up barriers that make access to appropriate eye and vision care difficult. There are several organizations within optometry whose members a dedicated to serving all those noted above. Please contact these organizations to locate a doctor who can help.

(See resources).
I am also pleased to announce the publication of a new text by Lippincott (probably sometime in 2012) edited by Drs. Mark Taub, Mary Bartuccio, and myself, entitled: Visual Diagnosis and Care of the Patient with Special Needs

![[Image: mainobook.JPG]]()

Frequently Encountered Oculo-visual Problems

**Refractive Error**

* **Myopia:** Is also known as nearsightedness. This will make seeing far away very difficult. The most common symptom is squinting. This disorder is increasing exponentially especially in Asia and the Asian Pacific areas of the world.
* **Hyperopia**:Is also known as farsightedness. This can make seeing up close difficult. Symptoms often included blurred vision and headache as well as an avoidance of near tasks. This is frequently associated with problems in school performance.
* **Astigmatism:** Astigmatism makes it hard to see no matter where you look. This refractive condition can also cause many symptoms.
* **Presbyopia:** Decrease focusing ability typically due to the aging process that occurs around age 40. This will appear early in some individuals with special needs (i.e. Down Syndrome).

**Binocular Vision Problems**

* **Amblyopia:** Reduced vision usually (not caused by disease) in one eye (although sometimes it can be both eyes) due to high uncorrected refractive error or a constant strabismus that occurs early in life. Individuals with special needs may also have derivational amblyopia which can be caused by disorders such as a congenital cataract. Functional amblyopia is treatable at any age.
* **Strabismus:** Is an eye turn in, out, up or down. This can be intermittent, alternating between the two eyes or constant. Diplopia (see double) may be a symptom.
* **Convergence Insufficiency:** The two eyes have difficulty turning in together at near.
* **Convergence Excess:**  The two eyes turn in too much at near.
* **Divergence Insufficiency:**  The two eyes have difficulty turning out at distance. This may be associated with a disease process.
* **Divergence Excess:**  The eyes turn out too much at distance. Individuals usually do not have symptoms.
* **Accommodative Insufficiency:** The patient does not focus enough.
* **Accommodative Excess:**  The patient focuses too much.
* **Accommodative Infacility:** The individual cannot shift focus from near to far and back again.
* **Accommodative Instability:**  The individual has an unstable, variable focusing system.
* **Pursuit Dysfunction:**  This is an inability to accurately and efficiently following a moving target with you eyes.
* **Saccadic Dysfunction:**  This is an inability to accurately and efficiently move your eyes left to right and back again. These types of eye movements are used while reading.

**Eye Disease and Pathology**

* **Blepharitis:**  This is an infection of the lids and lashes often resulting in dandruff like particles and eye irritation.
* **Cataract:**  Cataracts stop light from reaching the back of the eye because they make the lens in the eye cloudy.
* **Conjunctivitis:**  This can be caused by allergies (itching, watery eyes, and redness), bacteria (red, “goopy”, sometimes painful eyes), and viruses (watery, red and irritated eyes).
* **Corneal Abrasion:**  This occurs when the front of the eye is scratched. Corneal abrasions tend to be quite painful
* **Keratoconus:** This is a severe steeping of the front part of the eye (cornea) that can result in severe astigmatism and visual impairment. This is frequently seen in those with Down Syndrome.
* **Nystagmus:**  This is often seen as an uncontrollable back and forth movement of the eyes.
* **Retinal Problems:** Retinal detachment, holes and tears are noted with some frequency especially for those with head trauma and high myopia.

The American Optometric Association notes that: Optometric Vision Therapy is a sequence of neurosensory and neuromuscular activities individually prescribed and monitored by the doctor to develop, rehabilitate and enhance visual skills and processing. The vision therapy program is based on the results of a comprehensive eye examination or consultation, and takes into consideration the results of standardized tests, the needs of the patient, and the patient’s signs and symptoms. The use of lenses, prisms, filters, occluders, specialized instruments, and computer programs is an integral part of vision therapy. …..

**Patients with Special Needs: Resources**

* College of Optometrists in Vision Development: [http://www.covd.org](http://www.covd.org/)
* Optometric Extension Program Foundation: [http://www.oepf.org](http://www.oepf.org/)
* Neuro-Optometric Rehabilitation Association: [http://www.nora.cc](http://www.nora.cc/)
* American Optometric Association: [http://www.aoa.org](http://www.aoa.org/)
* MainosMemos: [http://www.MainosMemos.blogspot.com](http://www.mainosmemos.blogspot.com/)

**Optometry & Vision Development**

* TBI Issue: [http://www.covd.org/Home/OVDJournal/OVD4…fault.aspx](http://www.covd.org/Home/OVDJournal/OVD401/tabid/263/Default.aspx)
* Autism Issue: [http://www.covd.org/Home/OVDJournal/OVD4…fault.aspx](http://www.covd.org/Home/OVDJournal/OVD403/tabid/277/Default.aspx)

**Articles: An annotated bibliography of Special Populations**

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Lecturers/Presentations by Dr. Dominick M. Maino

[Child With Special Needs Part 1](http://www.slideshare.net/DMAINO/child-with-special-needs-part-1-9231215)

[Child with Special Needs Part 2](http://www.slideshare.net/DMAINO/child-with-special-needs-part-2)

[VOCABULARY COMPREHENSION IN FRAGILE X SYNDROME: COMPARATIVE ANALYSES](http://www.slideshare.net/DMAINO/vocabulary-comprehension-in-fragile-x-syndrome-comparative-analyses)

[Lazy Eye, Eye Turns and Other Functional Vision Disorders](http://www.slideshare.net/DMAINO/lazy-eye-eye-turns-and-other-functional-vision-disorders)

[Neuroplasticity: A Paradigm Sea Change](http://www.slideshare.net/DMAINO/neuroplasticity-a-paradigm-sea-change)

**This Week’s Featured Author:Dr. Dominick Maino, OD, MEd, FAAO, FCOVD-A**

Dr. Dominick Maino is a Professor of Pediatrics/Binocular Vision at the Illinois Eye Institute/Illinois College of Optometry in Chicago, Il and an Adjunct Professor of Pediatrics at the Centro de Optometria in Madrid, Spain and is in private practice in Harwood Heights, Il. (Northwest Optometric Associates. He currently serves as the American Optometric Association’s spokesperson on 3D Vision Syndrome and is an internationally recognized expert on eye and vision problems of children and those with developmental disability. He is the editor of Optometry & Vision Development, the official journal of the College of Optometrists in Vision Development. His other interests include music (sings tenor and plays trumpet in his church choir) and photography. He has exhibited his photography at the Cook County Treasurer’s Office Chicago, the Italian Cultural Center at Casa Italia, Nine2Five Gallery in Kansas City and the Gallery ABBA in Wisconsin. He is also the webmaster for his choir’s website, his private practice website and various blogs. His latest book on the vision problems of patients with special needs will be published by Lippincott in 2012.

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