Vision, Learning and Dyslexia

A joint organisational policy statement of the American Academy of Optometry and the American Optometric Association

Many children and adults continue to struggle with learning in the classroom and the workplace. Advances in information technology, its expanding necessity, and its accessibility are placing greater demands on people for efficient learning and information processing.
Learning is accomplished through complex and interrelated processes, one of which is vision. Determining the relationships between vision and learning involves more than evaluating eye health and visual acuity (clarity of sight). Problems in identifying and treating people with learning-related vision problems arise when such a limited definition of vision is employed
This policy statement addresses these issues, which are important to individuals who have learning-related vision problems (such as dyslexia), their families, their teachers, the educational system and society.

Policy Statement

People at risk for learning-related vision problems should receive a comprehensive optometric evaluation. This evaluation should be conducted as part of a multidisciplinary approach in which all appropriate areas of function are evaluated and managed.

The role of the optometrist when evaluating people for learning-related vision problems (e.g., dyslexia) is to conduct a thorough assessment of eye health and visual functions. To communicate the results and recommendations, the management plan may include treatment, guidance and appropriate referral.
The expected outcome of optometric intervention is an improvement in visual function with the alleviation of associated signs and symptoms. Optometric intervention for people with learning-related vision problems consists of lenses, prisms, and vision therapy. Vision therapy does not directly treat learning disabilities or dyslexia. Vision therapy is a treatment to improve visual efficiency and visual processing, thereby allowing the person to be more responsive to educational instruction. It does not preclude any other form of treatment and should be a part of a multidisciplinary approach to learning disabilities

Pertinent Issues

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

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

To identify learning-related vision problems, each of these interrelated areas must be fully evaluated.
Educational, neuropsychological and medical research has suggested distinct subtypes of learning difficulties. Current research indicates that some people with reading difficulties (such as difficulties related to possible dyslexia) have co-existing visual and language processing deficits. For this reason, no single treatment, profession or discipline can be expected to adequately address all of their needs.

Unresolved visual deficits can impair the ability to respond fully to educational instruction. Management may require optical correction, vision therapy or a combination of both. Vision therapy, the art and science of developing and enhancing visual abilities and remediation vision dysfunctions, has a firm foundation in vision science, and both its application and efficacy have been established in the scientific literature. Some sources have erroneously associated optometric vision therapy with controversial and unfounded therapies, and equate eye defects with visual dysfunctions.

The eyes, visual pathways and brain comprise the visual system. Therefore, to understand the complexities of visual function, one must look at the total visual system. Recent research has demonstrated that some people with reading disabilities have deficits in the transmission of information to the brain through a defective visual pathway. This creates confusion and disrupts the normal visual timing functions in reading.

Visual defects, such as a restriction in the visual field, can have a substantial impact on reading performance. Eye strain and double vision resulting from convergence insufficiency can be a significant handicap to learning." There are more subtle visual defects that influence learning affecting different people to different degrees. Vision is a multifaceted process and its relationships to reading and learning are complex. Each area of visual function must be considered in the evaluation of people who are experiencing reading or other learning problems. Likewise, treatment programs for learning-related vision problems must be designed individually to meet each person's unique needs.

Summary

Vision problems can and often do interfere with learning.
People at risk for learning-related vision problems should be evaluated by an optometrist who provides diagnostic and management services in this area.
The goal of optometric intervention is to improve visual function and alleviate associated signs and symptoms.
Prompt remediation of learning-related vision problems enhances the ability of children and adults to perform to their full potential.
People with learning problems (i.e. dyslexia) require help from many disciplines to meet the learning challenges they face. Optometric involvement constitutes one aspect of the multidisciplinary management approach required to prepare the individual for lifelong learning.

This *Policy Statement was formulated by a Task Force representing the College of Optometrists in Vision Development, the American Optometric Association, and the American Academy of Optometry. The following individuals are acknowledged for their contributions:*

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Autism and Asperger's Syndrome - What is the link with vision?

Autism and Vision - Taken from the College of Optometrist in Vision Development (COVD) website www.covd.org

What is Autism?

Autism is a neurobiological disorder. People with autism have difficulty processing and responding to information from their senses. They also have difficulties with communication and social interaction. Symptoms of autism can include lack of reciprocal social interaction, delays in development, and inappropriate response to sensory information.

Visual Problems Are Common

Visual problems are very common in individuals with autism. Visual symptoms of autism can include lack of eye contact, staring at spinning objects or light, fleeting peripheral glances, side viewing, and difficulty attending visually.

Autistic people often use visual information inefficiently. They have problems coordinating their central and peripheral vision. For example, when asked to follow an object with their eyes, they usually do not look directly at the object. Instead, they will scan or look off to the side of the object. Autistic individuals might also have difficulty maintaining visual attention. Eye movement disorders and crossed eyes are common in the autistic spectrum.

Hypersensitive Touch and Vision

Many people with autism are tactually or visually defensive. Tactually defensive people are easily over-stimulated by input through touch. They are always moving and wiggling. They avoid contact with specific textures. Visually defensive persons avoid contact with specific visual input and might have hypersensitive vision. They have difficulty with visually "holding still" and frequently rely on a constant scanning of visual information in an attempt to gain meaning.

Poor Integration of Central and Peripheral Vision

Autistic individuals can also ignore peripheral vision (side vision) and remain fixated on a central point of focus for excessive periods of time. Poor integration of central and peripheral vision can lead to difficulties in processing and integrating visual information in autistic individuals. Motor, cognitive, speech, and perceptual abilities can also be affected when visual processing is interrupted.

Vision Exams for Autistic Patients

Methods for evaluating the vision of people with autism will vary depending on individual levels of emotional and physical development Testing is often done while the patient is asked to perform specific activities while wearing special lenses. For example, observations of the patient's postural adaptations and compensations will be made as he or she sits, walks, stands, catches and throws a ball, etc. Such tests help to determine how the autistic person is seeing and how he or she can be helped.

Treatment of Visual Problems Associated with Autism

Depending on the results of testing, lenses to compensate for nearsightedness, farsightedness, and astigmatism (with or without prism) may be prescribed. Vision Therapy activities can be used to stimulate general visual arousal, eye movements, and the central visual system. The goals of treatment may be to help the autistic patient organize visual space and gain peripheral stability so that he or she can better attend to and appreciate central vision and to gain more efficient eye coordination (eye teaming) and visual information processing.

Attention Deficit Disorder and Hyperactivity

What is the link with vision?

Some children with learning difficulties exhibit specific behaviours of impulsivity, hyperactivity, and distractibility. A common term used to describe children who exhibit such behaviours is ***"Attention Deficit Hyperactivity Disorder" (ADHD).***

Undetected and untreated vision problems can elicit some of the very same signs and symptoms that are commonly attributed to ADHD. Due to these similarities, some children with vision problems are mislabelled as having ADHD.

A recent study by researchers at the Children's Eye Centre, University of San Diego, uncovered a relationship between a common vision disorder, convergence insufficiency, and ADHD. The study "showed that children with convergence insufficiency are three times more likely to be diagnosed with ADHD than children without the disorder." Dr. Granet of the Children's Eye Centre commented, "We don't know if convergence insufficiency makes ADHD worse or if convergence insufficiency is misdiagnosed as ADHD. What we do know is that more research must be done on this subject and that patients diagnosed with ADHD should also be evaluated for convergence insufficiency and treated accordingly."

This new research appears to support what COVD optometrists have known for some time — a significant percentage of children with learning disabilities have some type of vision problem. One study found that 13% of children between nine and thirteen years of age suffer from moderate to marked convergence insufficiency, and as many as one in four, or 25%, of school age children may have a vision problem that can affect learning.