



## CHILDREN'S VISION SERVICES

### **Vision is more than just sight.**

Often it is not until children begin to read that we first notice they have a visual problem. It is at this time that they are now using their visual system more intensively to tune in to small detail. The extra effort required can cause blurriness and discomfort with some children whose focusing skills are not yet fully robust or mature.

Vision can affect learning in many ways. Vision is the dominant sense. Approximately 80% of learning information is presented visually. A problem with a child's vision can seriously reduce their ability to achieve to his or her potential. Thus our objective is always to enhance and optimise visual performance.

Learning related vision problems represent deficits in two broad visual system components – **visual efficiency** and **visual information processing**.

**Visual efficiency** involves the physiology of the eye; eye health; visual acuity and refractive error; accommodation; vergence and ocular motility. It is related to learning due to discomfort, distraction, inattention, avoidance in tasks that are visually based. Blurred or distorted text will decrease word processing speed and efficiency, reducing reading rate and comprehension. It is important to note that increased computer use in the school and home setting has created a greater demand on visual efficiency in learning.

**Visual Information Processing** involves higher brain functions such as visual perception, cognition and their integration into motor, auditory, language and attention systems. Visual information processing skills interpret, organize and give meaning to what is seen visually.

Prevalence of learning problems among school aged children range from between 2 and 10%. Learning difficulties account for nearly half of all children receiving special educational services. Of that number 20% have difficulty with visual information processing. Accommodative dysfunctions have been reported to occur in 60-80% of individuals with vision efficiency problems

**Timing and Identification.** During Kindy through to pre-primary there is a greater demand on a child's developing visual information processing skills. This includes emphasis on recognition, matching and recall. All of these skills are necessary for pre-writing and reading skills. Then as a child progresses to Year 2/3 reading demands increase. The font size decreases, there is less pictorial prompts in reading books etc and there is a requirement for an increase in visual processing speed and fluency. Then as a child progresses through primary school, they are further challenged through higher demands of reading and the need for comprehension of text and also writing proficiency.

Early screening of developmental milestones is key. Delays in gross/fine motor development, visual information processing and receptive or expressive language may be an antecedent to learning problems. Early intervention in these areas is key to identify these children who may be at risk of learning difficulties. With early diagnoses and appropriate comprehensive intervention, the prognosis is good in a majority of cases.

Optometric eye examinations are recommended at the commencement of Kindy, Year 1 and Year 3.

## Our Service.

At Midwest Optical, assessment of children's vision may involve one or all of the following.

### 1 Completion of Welcome to the Practice Form

This is mandatory. This form is completed by the parent, about the child, prior to the eye examination. Information is obtained on developmental milestones as well as parental and teacher concerns or observations. This information assists in conducting the comprehensive eye examination.

### 2 Comprehensive Eye Examination

This includes assessment of sight, the health of the eyes and the ability of the eyes to move focus and work together easily and efficiently. It includes assessment of the physical health of the eye, visual acuity, refraction, pursuits, accommodative – vergence function and ocular motility and alignment and completion of the Developmental Eye Movement Test and Jordan Left Right Reversal Test.

**Signs of ocular motility dysfunction** can present as –

- *Moving head excessively when reading, skipping lines when reading*
- ***Omitting words and transposing words when reading***
- *Losing place when reading*
- ***Requiring finger or marker to keep place when reading***
- *Experiencing confusion during the return sweep phase of reading*
- ***Experiencing illusory text movement***
- *Having deficient ball-playing skills*

**Accommodative – vergence function** is the ability of the eye to focus between near and far distances (eg the board to the workbook). Symptoms of dysfunction can include –

- *Eye strain when reading or writing*
- ***Headaches associated with near visual tasks***
- *Blurred vision at distance or near*
- ***Double vision at distance or near***
- *Decreased attention for near visual tasks*
- ***Holds work very close to face***
- *Overlapping letters/words in reading*
- ***Burning sensations or tearing of the eyes during near visual tasks***

This examination is conducted by our Optometrist Scott Dennett and is bulk billed to Medicare. Scott is a member of the Australasian College of Behavioural Optometrists [www.acbo.org.au](http://www.acbo.org.au).

Results of the assessment are discussed with the parent. Indications from the assessment may or may not include recommendation for spectacles, further Visual Information Processing Assessment and/or Vision Therapy.

### 3 Occupational Therapy Assessment with special focus on Visual Information Processing Skills

*It is important for parents to realise that children with excellent clarity of eyesight as measured on a letter chart can still have significant visually related learning difficulties.*

In order to read comfortably and with good comprehension, the visual system needs to perform several functions other than just making sure that the letters are clear. Visual Information Processing is how your brain interprets and understands what is seen through the eyes.

There are a number of visual abilities that are **needed in order to achieve developmental age appropriate levels of reading and writing skills**. These visual abilities that are tested include:

- **Visual spatial development** – the ability to recognise how things go together in space. This includes puzzle skills and construction skills as well as how things are put in order. It incorporates problem solving skills, mathematical skills and organisation of one's own environment. Visual spatial development is the ability to distinguish differences among similar shapes and forms. This skill helps children in understanding relationships and recognizing underlying concepts, and is closely related to the problem solving and conceptual skills required for higher-level science and math. Visual spatial orientation is helpful with letter reversals. While some parents and educators consider letter reversals after age seven to be a symptom of dyslexia, the most common cause of reversals in older children is a lack of visual spatial development, or consistently knowing left from right, either in relationship to their own bodies or to the world around them. Children with poor visual processing have not developed adequate skills in visual perception and spatial orientation, such as laterality and directionality.
- **Visual discrimination** – the ability to spot similarities and differences. It is the ability of the child to be aware of the distinctive features of forms including shape, orientation, size, and colour. It is the ability to distinguish similarities and differences between objects like letters (d, b) or shapes. In reading, this skill helps children distinguish between similarly spelled words, such as was/saw, then/when, on/one, or run/ran.
- **Visual memory** - is the ability to recall characteristics of what is or has been seen. This skill helps children remember what they read and see by processing information through their short-term memory and filtering that information into their long-term memory. Children with poor visual memory may struggle with comprehension. They often talk aloud, or softly whisper to themselves, as they read in order to help compensate. They may have difficulty remembering what a word looks like or fail to recognize the same word on a different page. They may also take longer copying from the board because they must frequently review the text.
- **Visual sequencing** - or visual sequential memory, is the ability to determine or remember the order of symbols, words, or objects. This skill is particularly important for spelling. A child who struggles with visual sequencing may omit, add or transpose letters within words. He or she talk aloud while writing. Recognizing and remembering patterns may also prove difficult.
- **Visual motor integration** - Visual motor integration (VMI) consists of coordinating visual perceptual skills together with gross-motor movement and fine-motor movement. It is the ability to integrate visual input with motor output. This is how individuals plan, execute and monitor motor tasks, such as threading a needle, tying shoe laces, catching or hitting a ball. It is also essential in academic performance. It is commonly referred to as eye hand co-ordination.

- **Visual closure** - is the ability to know what an object is when only parts of it are visible. This skill helps children read and comprehend; their eyes don't have to individually process every letter in a word for them to quickly recognize the word by sight. This skill can also help children recognize inferences and predict outcomes. Children with poor visual closure may have difficulty completing a thought. They may also confuse similar objects or words, especially words with close beginning or endings.

This assessment usually takes about one hour and is performed by our Occupational Therapist Narelle Dennett. It also includes assessment of motor planning, laterality, bilateral integration, fine motor skills, attention, concentration and numeracy skills. The fee for this assessment is \$199 and includes preparation of a detailed report and/or home program. The report and program will also include recommendations for the classroom and a copy can be provided to the teacher upon parent consent. This fee is not covered by Medicare but is rebatable through private health insurance.

#### 4 **Discussion of Results**

The results of assessments are discussed by the optometrist and/or occupational therapist with parents at a separate visit and treatment options considered and planned. Recommendations for referral to other appropriate specialists will be discussed at this time.

In many cases informal recommendations regarding appropriate strategies and activities is all that is needed. However, should significant deficits be found in any of the visual perceptual skill areas outline above then a **Vision Therapy** Program may be recommended, as research and experience shows that appropriate daily Vision Therapy activities can help to develop and enhance visual perceptual skills.

It must, however, be realised by parents that providing appropriate vision care, including developmental Vision Therapy, does not 'cure' learning problems, but it does provide a solid foundation of visual abilities that a learning team can build upon. It will make it easier for the child to learn visually, and thus the child's attention and concentration may also improve, *but the child may still need education remediation to catch up in areas where they are academically behind*. Essentially it is a combination of methods to assist your child reach their learning potential.

#### 5 **Vision Therapy**

Sometimes training is necessary to help children to learn how to use their eyes comfortably and effectively. Should Vision Therapy be recommended, the scope and practice of this therapy intervention is discussed with parents and progress regularly reviewed. Appropriate Vision Therapy exercises can help to improve co-ordination and control of eye alignment, eye movements (eye-tracking) and eye focusing.

Further information can be found on our website  
[www.midwestoptical.com.au](http://www.midwestoptical.com.au)