Vision Care Centre

Optometry and Eye Care

Learning and Vision

IMPORTANT FACTS

- Optometrists do not treat learning disorders. They do treat vision problems that can affect learning.
- Learning is affected by vision. NAPLAN scores for kids with vision issues are significantly lower
- In a recent study, 63% of children with specific learning disorders had vision problems. A large study in the UK showed that children with learning disorders had double the vision problems of their unaffected peers
- There are over 60,000 published scientific studies, providing evidence for behavioural optometry and associated treatments.
- The principles of Behavioural Optometry are taught in Universities all over the world, including The University of Melbourne, and the University of New South Wales.
- Behavioural Optometrists are Registered Optometrists and have the same or more qualifications as regular optometrists

DISCUSSION

Why do some children have difficulty learning to read and write, or ongoing problems reading to learn more?

Learning to read is much easier if vision and hearing are working normally. A child should also have age-normal development of vision perception and auditory processing, so they can learn to recognise and remember shapes of letters, and connect them to the matching letter sound and letter name. Then they have to learn combinations of letters (ar, sh, ea…), as well as learn to accurately and quickly recognise small, then larger "whole" words.

Over the years many theories have been suggested for learning problems. Decades ago vision was thought to be a major factor, and then phonological problems were believed to be the major issue. Recently, vision function and development of vision perception (processing) have been confirmed by research to be very important factors.

Yet learning problems are almost always due to a combination of reasons, and it is important that all possible causes be investigated, and treated where necessary. Dyslexia is the most severe learning disability, but many people have reading problems rather than severe dyslexia.

LEARNING AND VISION FUNCTION

Most children have normal **sight**, to see well on an eye chart at a distance, but many children have (often undetected) problems of **vision** involving **focusing, eye coordination, convergence, and eye movements,** necessary for reading and writing tasks at near. Unfortunately, if a child is tested only on a distance eye chart they may be wrongly assumed to have normal vision for reading and writing up close, but this is not the full story. Problems with focusing and eye coordination can significantly interfere with the child's ability to use their eyes to read fluently and accurately.

Paediatric optometrists do not treat dyslexia, dyspraxia, or ADHD. Optometrists who provide behavioural optometry care assess and treat **learning-related vision problems** of function and processing which can restrict learning capability, using proven scientific tests and management. It does not help to have reading problems or dyslexia, AND to have a vision problem.

Research of children's classroom visual demands' shows that **vision for purpose** in classrooms has less to do with sight, and more to do with visual efficiency [1] as well as strong connections between problems of visual function, visual perception [2], and learning. A recent study by researchers from the Queensland University of Technology Faculty of Education, published in the International Journal of Education Research, looked at vision screening of Grade 3 children in Australia[3]. Approximately 30% of the children tested were identified as borderline or unsatisfactory by a vision screening and were referred for a full eye examination**. Children found to have vision problems scored significantly lower on NAPLAN tests** of reading, grammar and punctuation, spelling and numeracy, when compared to their not-referred peers. In the majority of cases children had binocular vision problems (poor eye coordination), focusing errors, or a combination of the two, which can all affect a child's ability to achieve comfortable, clear, single vision for reading.

Children with uncorrected short-sightedness (myopia) and long sightedness (hyperopia) and astigmatism have been shown to have lower achievement test scores. Early detection and treatment of vision problems can help remediate the effect of learning-related vision difficulties, and once vision problems are identified and treated, reading can improve [4]. Eye movement development is important to be able to scan along words and lines of reading, and can be tested and improved, as shown by a

recently published study in which treatment of eye movements improved reading fluency and comprehension [5].

LEARNING AND VISUAL PERCEPTION DEVELOPMENT

There is growing evidence strongly suggesting that a single phonological deficit theory for severe learning problems is not true for many children with learning issues [6 7 8], and that visual cognitive weaknesses are much more prevalent in children with reading disability[9 10 11 12 13] than in normal readers [14 15 16].

In one study, some children with dyslexia were found to have either phonological or visual processing issues, some had both problems, and some had neither phonological or visual processing issues [17]. Other research has recently shown that Rapid Automatic Naming (RAN = quick recognition for words) and visual motor integration are significantly associated with reading performance [18]. In 2016 research showed the visual pathway is very important in severe learning problems, and that intervention for these issues should involve therapy for vision issues [19].

The three aspects of vision in relation to reading and writing, and the professionals involved, are simply summarised as follows:

	Involves	Professions	Implications
1. Visual Integrity	• Visual acuity • Refractive error • Ocular health	• Optometry • ophthalmology	• healthy eyes • good eyesight at distance
2. Visual efficiency	• Accommodation (focus) • Convergence • Eye movements • Binocular vision • Effect of uncorrected refractive error	• Optometry • orthoptics • (ophthalmology)	• clear and comfortable focus and binocular vision for any near (and distance) visual tasks, such as reading and computer use
3. Visual information processing	• Interpreting and integrating visual information	• Optometry • Behavioural optometry • education • psychology • occupational therapy • multidisciplinary***	• Understanding and analysing what we see

It is very important that children with reading and writing issues have a comprehensive examination with an optometrist experienced in assessing and treating problems of focusing, eye coordination and eye movements, as well as considerations of vision perceptual development to detect or rule out vision as a problem for reading.

You can find further information and research evidence of specific issues at

https://www.acbo.org.au/for-patients/evidence

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