Colorimetry – moving beyond overlays

Noakes Habermehl & Kerr **OPTICIANS**

Introduction

As teachers and learning support specialists you will know that solving undiagnosed reading difficulties is time consuming and often frustrating, especially when conventional therapies fail to yield the results you had hoped for.

It is often assumed a child or young adult is simply dyslexic, but are they?

There is an increasing body of evidence that suggests some children and young adults may be experiencing a form of visual disturbance caused by the way their brain processes visual information.

- Losing track while reading
- Becoming very tired
- Showing fear or reluctance to read

Over the last three decades a form of Therapeutic Optometry, commonly known as Colorimetry, has been developed to offer relief with some undiagnosed reading difficulties.

This booklet is intended to offer you an insight into Colorimetry; it's potential, the assessment process and the services we offer at Noakes Habermehl & Kerr Opticians.

We hope you find it informative . . .

Colorimetry explained . . .

Origins

In 1964 respected neurologist MacDonald Critchley[1] cited the case of a dyslexic child who was unable to read words on white paper but could read when the words were printed onto coloured paper. In 1980, New Zealand teacher Olive Mears described symptoms (visual perceptual distortions, eyestrain and headaches) that some people experienced when reading that could be alleviated by using coloured card or coloured filters[2].

In the early 1980s Helen Irlen developed a proprietary treatment system for this syndrome[3], which later became known as Meares-Irlen Syndrome or Visual Stress. Her work suggested that each person required a unique and very precise colour.

In the late 1980's Dr Arnold Wilkins of The University of Essex developed the Intuitive Colorimeter[4], an instrument that performed randomised controlled trials in the use of precision tinted lenses in Meares-Irlen Syndrome[5]. These trials, funded by the Medical Research Council, demonstrated that sufferers do indeed require a unique and very precise colour. A later Australian study by Robinson and Foreman[6],[7], independent of the MRC study, confirmed that precise coloured filters do help people with visual stress.

Theory

From a neurological standpoint it is thought that some people have hypersensitive photo receptors, visual pathways or processing systems that react inappropriately to certain wavelengths of light and the spatial frequencies of striped patterns causing discomfort and visual stress.

Lines of text can have a spatial frequency within the range that causes discomfort[8] with individual words also forming striped patterns because of the neighbouring letter strokes.

People who dislike stripes tend to have frequent headaches. They see many perceptual distortions involving motion, shape and colour. Migraine sufferers are particularly affected[9],[10]. Some people see distortions not only in stripes but also in text[11]. It is now widely recognised that sensitivity to striped patterns (susceptibility to pattern glare) seems to play a key role in producing these symptoms, and that coloured filters can reduce the distortions and increase reading speed[12-15].

Research

The efficacy of colored overlays and colorimetry has been the subject of over 200 research studies encompassing the disciplines of education, psychology and medicine. To date, more than half of these studies, published in peer-reviewed academic and scientific journals across the world, support the use of colored overlays and lenses to treat the perceptual processing difficulties associated with Mears-Irlen Syndrome and visual stress.

Demographics

Incidence studies suggest that 46% of those identified with reading difficulties, dyslexia, attention deficit disorder and other learning difficulties may also suffer from Meares-Irlen Syndrome.

Progress in the UK

In the UK assessments initially started being carried in eye hospitals and later by Opticians in private practice employing a technique using the Intuitive Colorimeter instrument. Today, the assessment and recommended solutions to those with Meres-Irlen Syndrome or Visual Stress is collectively referred to as Colorimetry and can be considered as form of Therapeutic Optometry.

Effectiveness

Six studies of normal unselected children in mainstream schools found about 20% used a coloured overlay long-term[13]. Those that used overlays also read faster with them: 5% read more than 25% faster[13-15]. Having provided Colorimetry assessments, coloured overlays and Colorimetry glasses for many years we know that although it doesn't prove beneficial in every case, for those that it does, the improvement can be dramatic.

Scope

It's important to understand that Colorimetry should never be considered as a stand-alone solution for undiagnosed reading difficulties but rather as just one piece of a complex solution puzzle.

Patients, especially children and young adults, requesting a coloured overlay or colorimetry assessment to help with reading difficulties should first be fully assessed by education and learning support specialists to ensure all other avenues have been explored.

There is also some evidence to suggest that people suffering with photosensitive epilepsy[17], migraine[16], autism[18] and multiple sclerosis[19] may benefit from Colorimetry.

What to expect . . .

Living with Visual Stress

It can affect many different areas, including:

- Academic performance
- Behaviour
- Attention
- Ability to sit still
- Concentration

Presents differently for each individual:

- Slow or inefficient reading
- Poor comprehension
- Eye strain
- Fatigue
- Headaches
- Difficulty copying
- Difficulty reading music
- Low motivation
- Low self-esteem

Common symptoms

Reading difficulties:

- Poor comprehension
- Misreads words
- Problems tracking from line to line
- Skips words or lines
- Reads slowly or hesitantly
- Needs to takes breaks from reading
- Loses place on the page
- Shows fear or reluctance to read

Discomfort:

- Visual strain and fatigue
- Feeling tired or sleepy after reading
- Headaches or nausea
- Eyes become watery when reading

Writing Problems:

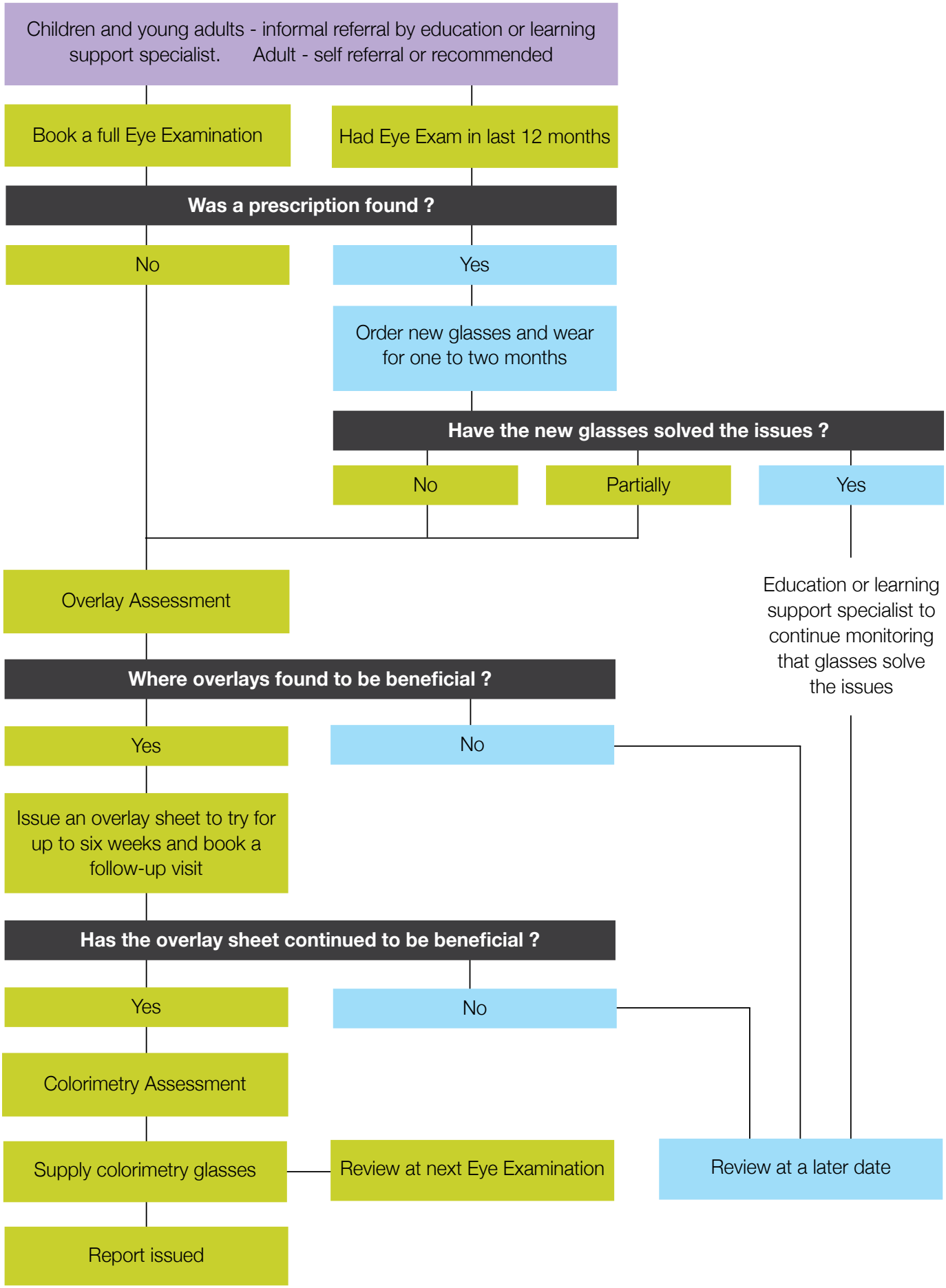
- Trouble copying
- Unequal spacing
- Unequal letter size
- Writing up or downhill

Other Characteristics:

- Strain or fatigue from computer use
- Difficulty reading music
- Misaligned numbers in columns

Distortions:

- Words on the page lack clarity or stability appearing blurry, to move or simply to disappear



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What do we offer . . .

Referrals

We generally prefer to see patients that are informally referred to us by an education or learning support specialist after all other avenues have been explored. This ensures assessments are not used as an alternative to traditionally accepted solutions but rather as an additional supplement.

The Eye Examination

Due to the complexity of our visual systems there are many minor disorders and conditions that may affect a patient's vision and present similar symptoms. These must firstly be ruled out with any refractive error (prescription) also determined prior to assessment.

Reading speed

The main technique used in Colorimetry is to measure reading speed quickly and efficiently using the Wilkins Rate of Reading Test, in which randomly ordered common words are read aloud for one minute[20] with and without colorimetry assistance. Although an immediate improvement in reading speed can indicate a benefit from colorimetry, the clinician is also looking at other indicators such as improved comprehension, ease in tracking line changes and ability to maintain their place on the page.

Coloured overlays

The first step into colorimetry is with the use of coloured overlay sheets. These provide an easy and affordable early indication of any likely benefit. Occasionally the Optician may carry out an Overlay assessment at the same time as an Eye Examination but more often than not, a separate appointment is required.

Colorimetry - moving beyond overlays

Once coloured overlays have proven beneficial, a more detailed assessment using the Intuitive Colorimeter is recommended. This utilises the same Rate of Reading Test but builds on the initial overlay result; for example a light green or dark green overlay sheet, by further defining the precise hue and saturation of colour required. By fine-tuning the colour specifically to the individual it's effectiveness is greatly improved.

Glasses

The Intuitive Colorimeter assessment produces a unique and highly accurate pure precision tint specification that can be applied to ophthalmic quality spectacle lenses. The resulting colorimetry glasses offer a far more convenient solution for long-term use with the added advantage of any prescribed prescription also being incorporated into the glasses.

Availability

Coloured overlay assessments are available at all of our practices.

For Intuitive Colorimeter assessments, we offer three clinic locations - South West Devon, Plymouth and South East Cornwall. Details are included in the back of this booklet.

Fees and charges

Despite submissions from our profession, the NHS currently do not to offer support towards colorimetry. The provision of these services is therefore offered strictly on a private basis. National institutions like Student Finance England can provide financial assistance for assessments and colorimetry glasses to university students that qualify for additional learning support. Some local colleges may also help out with fees and charges.

A copy of our fees and charges is available upon request.

Where to go . . .

Noakes Habermehl & Kerr **OPTICIANS**

6 Fore Street Ivybridge Devon PL21 9AB

01752 892185

email: ivybridge@nhkopticians.co.uk

With easy access from the A38, plenty of parking and a large, quiet practice ideal for those traveling down from Devon or Somerset.

Detailed directions are also available for those coming from further afield.

Noakes Habermehl & Kerr **OPTICIANS**

Chy-An-Gweal St Ives Road, Carbis Bay Cornwall TR26 2RS

GPS 50.197017, - 5.47184882

01736 798495

email: carbis@nhkopticians.co.uk

On the main road between Hayle and St. Ives

Detailed directions are also available for those coming from further afield.

Noakes Habermehl & Kerr **OPTICIANS**

49 Fore Street Callington Cornwall PL17 7AQ

01579 382345

email: recep-callington@nhkopticians.co.uk

Situated midway between the A30 and A38 the practice is ideally suited to those traveling up from Cornwall. The town has excellent car parking and easy access.

Detailed directions are also available for those coming from further afield.

To book an appointment or request further information simply contact one of the above practices or visit our website at **www.nhkopticians.co.uk**

You can also speak to our colorimetry coordinator Carol James F.B.D.O.
via email: colorimetry@nhkopticians.co.uk

Further reading

You can also get information from:

The Rose Report – 'Identifying and Teaching Children and Young People with Dyslexia and Literacy Difficulties'
www.education.gov.uk/publications/standard/publicationdetail/page1/DCSF-00659-2009

The Dyslexia Friendly Guidelines (3) available from
www.swindon.gov.uk/dyslexia

Cornwall Dyslexia Association - Helpline: 01872 274827
www.cornwalldyslexia.org.uk

DAiSi – Dyslexia Awareness Information and Support Initiative. Telephone: 01872 222911

British Dyslexia Association - National Helpline: 0845 251 9002
www.bdadyslexia.org.uk

Accreditation

Members of:

The International Institute of Colorimetry
Cornwall Dyslexia Association
General Optical Council
Association of Optometrists
Association for Independent Optometrists and Dispensing Opticians
Association of British Dispensing Opticians

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