

# VISUAL STRESS

Distressing symptoms that interrupt reading and that may be relieved by the use of colour are referred to as 'visual stress'. Visual stress may be caused by a neurological condition and in this case it is known as Meares-Irlen Syndrome (MIS). The relationship of MIS to other neurological conditions and neuro-diversities is, as yet, unclear. Another cause of visual stress may be defective eyesight. Diagnosis of visual stress relies on a description of the symptoms by the sufferer, the sustained voluntary use of an overlay and/or immediate improvement in reading speed when using the overlay.

## **Incidence**

There have been claims that visual stress occurs in:

at least 20% children in general

65% children with dyslexia.

There are similar estimates for Further and Higher Education.

## **Symptoms:**

Individuals tend to be consistent with their descriptions of the symptoms and may have more than one symptom. Few would have all.

- page too bright
- print moving vibration, shifting side to side or up and down, words breaking up, words joining up, letters muddling, three dimensional movement, movement of words around the word the individual is attending to movement of words at the beginning and end of lines, words falling off the page.

- print changing in size or blurring. Doubling of letters, extra letters appearing at the ends of words. Letters fading or becoming darker.
- illusions of shape and patterns and motion appearing in the dark print or in the white spaces, sometimes described as 'worms', 'rivers' or 'waterfalls'.
- illusions of colour – blobs of colour moving across the page, distracting the reader or obscuring words, highlights of colour around the word or letters (sometimes auras of light or rainbows round people or objects).
- more general - eyes tired and sore, nausea, dizziness, discomfort or pain from glare, headaches, photophobia, asthenopia (weakness or fatigue of the eyes, usually accompanied by headache and dimming of vision)
- there may be a sensitivity to fluorescent lighting and flicker on computer monitors.

## **Consequences**

Visual stress can discourage reading and impair comprehension.

## **Triggers**

A striped pattern (such as text) can induce visual disturbances or there can be uncomfortable glare from the white page.

## **Evaluation**

### Questioning

Mode of questioning about the symptoms is important because the investigator does not want to suggest the problem. 'When you read do the letters do anything they should not do?' Or a question involving alternatives: 'do the letters stay still or do they move?'

### Observation

When the person is reading obvious physical signs of stress can be:

- Frequent change of head and body position in relation to the page (also moving closer or further apart)
- Frequent looking away from the page
- Yawning
- Tracking with finger
- Rubbing eyes
- Blinking excessively or strangely
- Reading slowly and haltingly.

#### Response to overlays

Improvement in reading and sustained use of overlay.

**These signs are not exclusive to visual stress from Meares-Irlen Syndrome and can indicate difficulties with reading from other causes, conventional eyesight problems, e.g. refractive error, adjusting focus, coordination of two eyes to give binocular vision. Hence students with visual stress should always have their eyesight checked by an optometrist familiar with reading difficulties.**

## MANAGING STUDENTS WITH VISUAL STRESS IN THE CLASSROOM

<u>Suggestion</u>	<u>Comment</u>
coloured overlays	Coloured overlay testing requires lighting conditions that reflect the conditions (intensity and wavelengths) of the patient's workplace. Encourage use of overlays, especially as benefit may not be evident for the first few minutes, but no point labouring the idea.
tinted lenses	Expensive, but effective if indicated by sustained use of overlay.
coloured paper	Choose coloured paper to write on that is the same tint as the required overlay. For reading you can encourage using overlay over white paper.
reading window	Can be home made. A piece of card with a horizontal slot (about 160x5mm). LDA (ldalearning.com) do plastic ones.
reading rulers	Can be bought in a variety of colours. Handy pencil case size.
monitoring/ review	Colour preference can change with time...review annually at least.
short frequent breaks	Give eyes a rest when necessary.
notes to teachers	Inform teachers of the difficulties, stresses and ways to help.
coloured desk lights	May be useful for individuals.
whiteboards/blackboards	Blackboards do not reflect light that causes glare. Whiteboards should be mounted at an angle to the wall so that the reflected light is directed to the ceiling to remove the possibility of glare. Using a coloured or black background on which to project data will reduce glare. Dry wipe boards are the worst for producing discomfort and disability glare and should not be used for data projection despite reduced costs.
coloured pens, chalks	Allow students to experiment and indicate which are most comfortable.
curtains/roller blinds	May be used to reduce natural luminance levels, but Venetian blinds are to be avoided because of the risk of pattern glare.
reduce patterns and avoid Venetian blinds	Avoid large patterned surfaces with repetitive stripes with spatial characteristics that induce pattern glare i.e. 1-10 cycles per second. Even when Venetian blinds are closed completely the shine on the curved surfaces can make a striped pattern.
visors	Allow/encourage use of visor or peaked cap to shield eyes from any unpleasant overhead lighting.
line/character spacing	Space lines and characters widely. Be careful about choosing borders (i.e. border art) with repetitive designs and avoid if in doubt.
font size/type	Size 14 at least in Verdana, Tahoma, Ariel or other similar typeface,

	Print onto recycled paper to blur edges of text, sharp definition not necessarily helpful.
sloping desk	May be helpful when copying from the board because the orientation is the same as the characters on the board...less vertical to horizontal transposition.
examinations	If the exam paper is on coloured paper photocopy onto white paper and use overlay. Write on paper of a colour chosen by student from a selection or on buff recycled paper without optical brightener/whitener. Refer to Guidance notes from JCQ
fluorescent lighting	Luminaires should be such that the flicker is high frequency (above 100Hz). Teachers should be able to finely control the lighting in relation to pupil needs and natural light.
computer screens	Students can experiment with different background colours and different font colours to achieve best individual options.
Sheet magnifiers	Widely available and can be useful in some instances.

## **FURTHER SOURCES OF INFORMATION**

'About visual stress': Accompanying leaflet for students with visual stress.

### **Websites:**

[www.essex.ac.uk/psychology/overlays/](http://www.essex.ac.uk/psychology/overlays/) (information about visual stress)

[www.s4clp.org](http://www.s4clp.org) (Society for Coloured Lens Prescribers)

[www.crossboweducation.com](http://www.crossboweducation.com) (for reading rulers)

[www.ceriumvistech.co.uk](http://www.ceriumvistech.co.uk) (for tinted lenses)

[www.desktoppublications.com](http://www.desktoppublications.com) (supplies such as coloured exercise books)

[www.ioosales.co.uk/](http://www.ioosales.co.uk/) (for Wilkins Intuitive Overlays Test and overlays)

[www.ldalearning.com](http://www.ldalearning.com) (reading windows and other supplies)

[www.visual-stress.com](http://www.visual-stress.com) (images of visual stress+ other information/tests)

### **Books:**

Irlen, H. (1991, 2005) *Reading by the Colors: Overcoming Dyslexia and Other reading Disabilities through the Irlen Method*. New York: Avery

Stone, R. (2002) *The Light Barrier*, St Martin's Press, New York

Wilkins, A. (2003) *Reading Through Colour: How Coloured Filters Can Reduce Reading Difficulty, Eyestrain and Headaches*. Wiley