

Irlen Full Explanation

Irlen Syndrome, or Scotopic Sensitivity Syndrome, was first identified by Educational Psychologist Helen Irlen while she was working with adult learners in the early 1980's. Until described in her book, Reading by the Colors (Avery Press, 1991), there was no explanation or treatment for this perceptual disorder. Many people with this disorder were misdiagnosed as dyslexic or slow learners. In 1991, Dr. Margaret S. Livingstone of Harvard Medical School published research which offered a medical explanation for this disorder.

Individuals with Irlen Syndrome perceive the printed page and/or their environment differently. If they are severely affected, they must constantly make adaptations or compensate. Individuals are often unaware of the extra energy and effort they are putting into reading and perception.

Reading may be slow and inefficient, or there may be poor comprehension, strain, or fatigue. Irlen Syndrome can also affect attention span, listening, energy level, motivation, work production, and mental health.

People with Irlen Syndrome are often seen as underachievers or as having behavioral, attitudinal, or motivational problems. Irlen Syndrome can also coexist with other learning problems, such as attention deficit disorder, dyslexia, or autism. Treatment for Irlen Syndrome may lessen many of the symptoms of these disorders.



What are the signs of Irlen Syndrome?

The following is a short excerpt from the Irlen Survey form, used to determine if screening for Irlen Syndrome is advisable. The full version (4 pages) can be downloaded here: [Word Document PDF File](#)

If an individual answers yes to 3 or more of the following questions, there is a good chance that they are affected by Irlen Syndrome, and they should be tested by a qualified Irlen Screener. In the screening, he/she will find out for certain if they are affected, determine their level of severity, and learn about treatment. More information about screening can be found at the bottom of this page.

- Do you skip words or lines while reading?
- Do you lose your place or reread lines?
- Does reading make you tired?
- Do you need to take frequent breaks while reading?
- Do you find yourself blinking or squinting when you read?
- Do your eyes hurt, or get watery or dry when reading?
- Do you prefer to read in dim light?
- Do you find your head moves closer to the page as you read?
- Do you use your finger or a marker to help you read?
- Does reading get harder the longer you do it?
- Do you get restless or fidgety when reading?
- Are you easily distracted when you read?
- Do you find it hard to remember what you have just read?
- Do you try to avoid reading?

Other signs of Irlen Syndrome include:

- Words appear blurry, or appear to shift on the page
- You are bothered by bright, glossy paper when reading
- You develop a headache or nausea during or after reading
- You have trouble copying from the board or produce unequal spacing when writing
- You have problems with depth perception, e.g. catching balls, determining distances when driving
- You have difficulty with headlights and streetlights at night



What is the Cause of Irlen Syndrome, and Why do Colors Help?

Although the exact cause of Irlen Syndrome has yet to be established, it has been shown to be a visual-perceptual problem, most likely originating either in the retina of the eye or in visual cortex in the brain. The following is a hypothetical explanation, based on current research into this syndrome.

In the visual system, there are two separate visual processing pathways, the Magnocellular, or Fast, and the Parvocellular, or Slow. The Fast pathway does not see colours, and is responsible for discerning movement, depth, and high contrast images. The Slow pathway determines colour, fine details and resolves low contrast images. The Fast pathway is also responsible for inhibiting the slow pathway when the eyes are moved, so that the image of what was previously being looked at does not persist. It appears that in people with Irlen Syndrome, the Fast pathway is disabled to some extent. This seems to affect the ability of the Fast pathway to inhibit the Slow pathway, which in turn results in images persisting when the eyes are moved. As a result, the brain perceives overlapping images. In severe cases, when the brain tries to interpret these images, it perceives images that aren't there. The individual may "see" letters moving on the page, blurring, or forming strange patterns. In less severe cases, the misperceptions do not occur or may be suppressed, but the brain expends more energy in processing the images than is required by most people, resulting in headaches, eyestrain, and/or fatigue. These problems generally get worse the longer a person tries to read, or do other visually intensive activities.

Bright lights, fluorescent lights, or glossy paper will often make the problems worse, as the extreme contrast will increase the problem of persistent images. Irlen Syndrome manifests itself most strongly when reading words or music, because of the repetitive patterns on the page. When the eyes scan across the page, the patterns of words on the page and persistent images will jumble in a manner that is difficult for the brain to interpret properly. In the Irlen Method, the individual is assessed with a wide array of colour filters, singly and in combination, to find the most suitable colour. The colour filters appear to act by blocking some of the light which would normally activate the Slow visual pathway, in effect taking over the inhibitory role of the Fast pathway, and thus appear to reduce or eliminate the persistent images. The filters stop the confusing signals from being sent to the brain, and the individual will see the page more normally and easily. This treatment may also be helpful to individuals who experience other related problems, such as faulty depth perception or night driving difficulties.