

A Toolkit for Allied Health Professionals

What you need to know about Irlen Syndrome: A light-based visual processing problem prevalent among your patients with concussion, head injury, attention deficits, learning problems, sensory integration challenges, Autism, and more.



Table of Contents

About the Irlen Syndrome Foundation	4
How to use this toolkit	5
Why should you know about Irlen Syndrome?	6
What is Irlen Syndrome?	7
Who does it affect?	8
How can you identify individuals at risk?	10
Symptom triggers	11
Impacts the entire body	12
The neuroscience: what do Irlen brains look like?	13
Why is Irlen Syndrome misdiagnosed?	14
Environmental modifications	15
Solution: Irlen Spectral Filters	16
Addressing persistent symptoms after traumatic brain injury and concussion	17
Research to support the use of Irlen Spectral Filters	18
Visual perception and vision	21
Irlen Syndrome Foundation Opportunities for Medical and Allied Health Professionals	22
References	23

About the Irlen Syndrome Foundation

The Irlen Syndrome Foundation seeks to increase proper identification of Irlen Syndrome and access to Irlen solutions (Irlen Colored Overlays and Irlen Spectral Filters). We offer access to Irlen certification and training programs, Irlen materials, and ways to better support children and adults with Irlen Syndrome.

OUR INITIATIVES

EDUCATION AND OUTREACH

ISF is committed to advancing understanding, awareness, and solutions for Irlen Syndrome around the globe. One of our goals is to ensure that no child is left unidentified by 2025.

RESEARCH

Our research grants encourage exploration in a variety of areas related to the syndrome, including neurological, biological, physiological, psychological, and emotional natures of the condition.

TECHNOLOGICAL ADVANCEMENT

Successful technology does exist to address the issues related to Irlen Syndrome. We are committed to continuing to advance that technology, taking advantage of new opportunities, scientific developments, and changing environments.

PERSONAL SUPPORT

Irlen Syndrome affects millions of people, yet stands apart from other learning and life challenges because of the ease of addressing the issue through non-invasive solutions. The Irlen Syndrome Foundation seeks to ensure that any individual suffering from this condition can afford the solutions they seek.






“Color alters brain activity in ways that extend well beyond color perception to influence brain regions supporting perception, thought, language and emotion.”

*- Dr. Adam Anderson
Director, Affect & Cognition Lab
Cornell University*



How to use this Toolkit

This toolkit is intended for professionals working in the health sciences, including doctors, psychiatrists, psychologists, nurses, occupational therapists, and researchers. *This kit includes:*

-  Background and information you need as a health professional to understand and assist individuals with Irlen Syndrome
-  A pre-screening questionnaire to quickly identify individuals at risk
-  Tips for environmental modifications and assistive technologies
-  Information about how to bring research-based solutions for Irlen Syndrome to your practice or institution
-  Ways the Irlen Syndrome Foundation can increase access to these solutions for your patients and clients who need them most

We have intended for much of the information provided in this toolkit to be disseminated, so we have made sections easy to pull apart, copy, and distribute either electronically or in paper format. Additional resources are available on our website (www.irlensyndrome.org), and we are always happy to help you get the information you need. Please email us at info@irlensyndrome.org.

Quick Facts:

- 1** Irlen Syndrome is a visual processing problem that can affect what people see (both in the environment and on the printed page), cause physical symptoms, impact gross and fine motor ability, depth perception, and overall health and well-being
- 2** Key indicators include: headaches, migraines, light sensitivity, instability in environment and print, as well as issues with attention, depth perception, reading, and other physical symptoms from visual activity in brightly lit environments
- 3** Irlen Syndrome is a neurological condition and not related to eye health. Binocular and accommodative anomalies may occur in conjunction with Irlen Syndrome, but are not the underlying physiological basis of the condition
- 4** Brain imaging shows individuals with Irlen Syndrome have over-activity in the visual cortex that is normalized with the use of precision-tinted spectral filters
- 5** Irlen Syndrome affects 15% of the population, 30% of those with ADHD and autism, 35% who have suffered a brain injury or concussion, and up to 46% of individuals with reading and learning difficulties
- 6** Irlen Syndrome will not improve with standard medical, ophthalmological, psychological, or educational intervention or treatment



Why Should You Know About Irlen Syndrome?

Identifying and addressing

Irlen Syndrome as part of an initial review and diagnostic protocol is a quick and easy way to remove one potential stressor affecting physical and emotional health. When Irlen Syndrome is addressed first, before remediation and other more invasive forms of testing and treatment for learning, reading,

attention issues, or unexplained physical symptoms that do not respond to medical treatment, it allows subsequent treatments and remediation to better address any remaining core issues. Irlen Syndrome can go hand-in-hand with other conditions, such as autism, ADHD, dyslexia, and brain injury or concussion, but it is also often

misdiagnosed as behavioral, psychiatric, or other medical conditions. A brief questionnaire is all you need to flag individuals who might be suffering from Irlen Syndrome.

What is Irlen Syndrome?

Irlen Syndrome is a perceptual processing difficulty and sensory modulation disorder.

A perceptual processing difficulty is a hindered ability to make sense of information taken in through the eyes. This is different from problems involving sight or vision. Perceptual processing difficulties affect how visual information is interpreted or processed by the brain.

Irlen Syndrome is hereditary and tends to run in families, affecting males and females equally. However, an individual can also acquire symptoms of Irlen Syndrome as a result of illness,

medical procedures, or head injury (such as a TBI or concussion).

Irlen Syndrome is a spectrum disorder, falling on a continuum from slight to severe. For some, symptoms may not begin immediately; however, symptoms will get worse the longer the individual continues to engage in visually-intensive activities or is under bright or fluorescent lighting.

Irlen Syndrome is a cluster of symptoms that can affect individuals with a variety of other medical, ophthalmological, psychological, educational, or

behavioral diagnoses. The condition is often unidentified or misdiagnosed as other conditions.

Light has profound effects on the brain well beyond perception or sight. Research has shown the power of different parts of the light spectrum (colors) to stimulate deep brain nuclei, having a unique influence on us and important implications for how individuals with Irlen Syndrome function and feel.

There are a variety of different symptoms that individuals with Irlen Syndrome experience. *The most common are:*



Light sensitivity



Reading problems



Attention and concentration problems



Strain and fatigue



Headaches and migraines



Print or environmental distortions

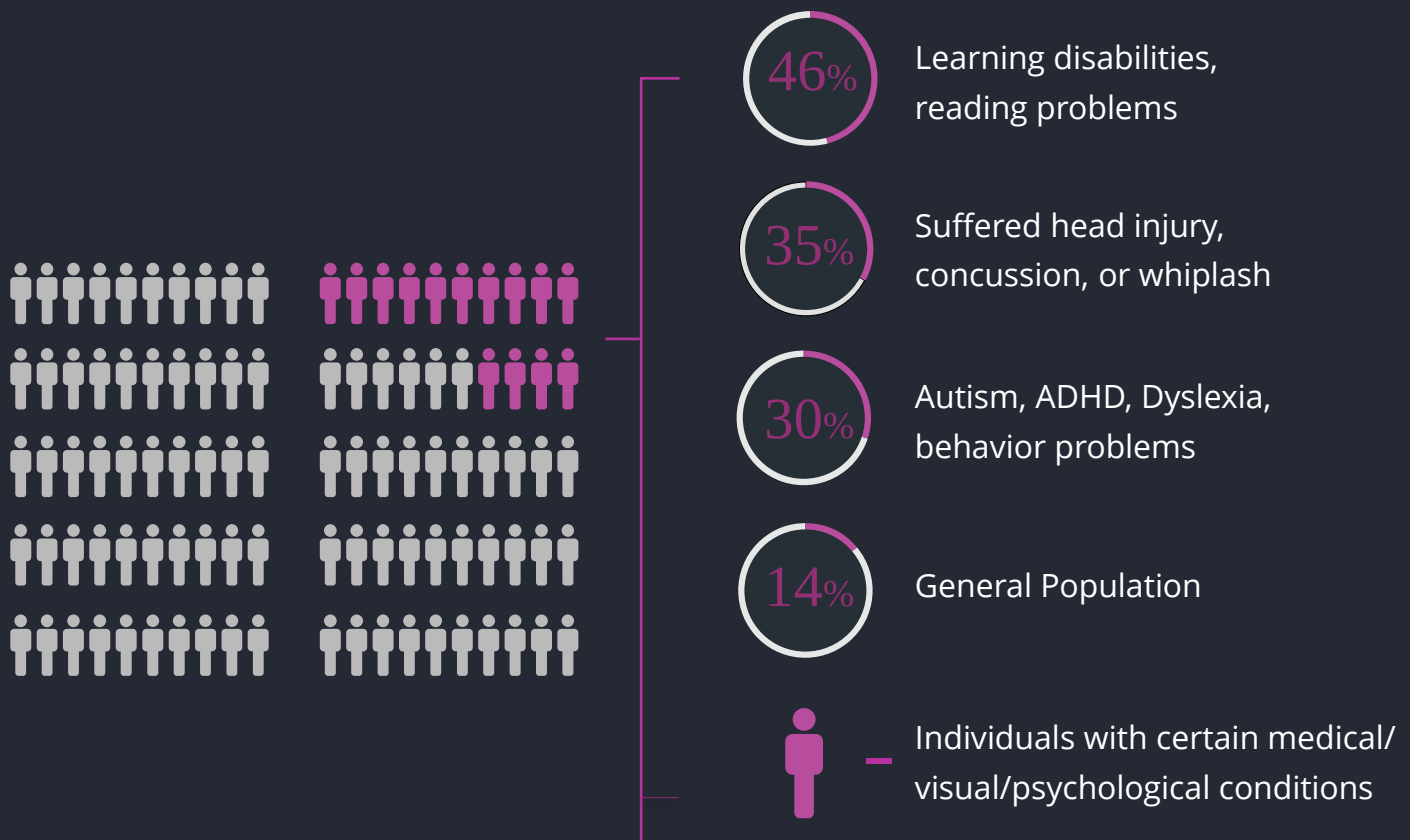


Problems with depth perception

Who does it Affect?

Irlen Syndrome affects a large portion of the population. While it is especially prevalent in individuals with learning and reading difficulties, it also affects a significant portion of individuals with co-morbid conditions such as ADHD, dyslexia, autism, and TBI or concussion.

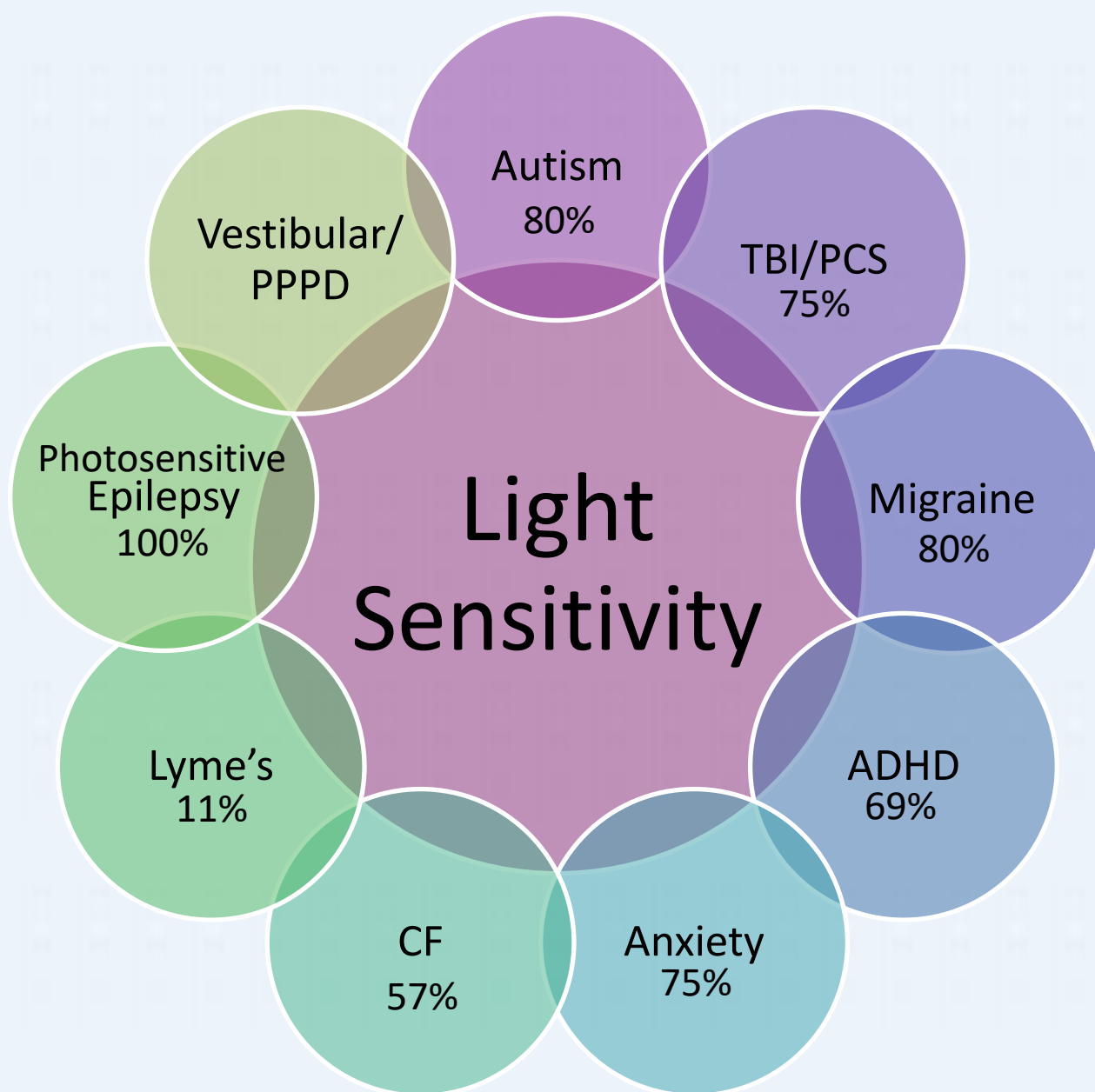
Irlen Syndrome is a cluster of symptoms that can exist regardless of what diagnosis an individual has been given. If your patients or clients experience symptoms that do not respond to medical treatment, Irlen Syndrome should be considered as a possibility.



A pre-screening questionnaire, included in initial intake paperwork, can easily and quickly flag patients who are likely to benefit from additional screening and intervention for Irlen Syndrome.

Who has Irlen Syndrome?

Symptoms of Irlen Syndrome can appear in patients with a variety of other diagnoses that report greater than average sensitivity to light. This includes autism, TBI, Migraine, anxiety, and ADHD, all with reported light sensitivity of 69% or higher.



Percent of individuals reporting light sensitivity among various conditions

How can you identify Individuals At Risk?

This is a prescreening tool. It is not intended for use in formal diagnosis or treatment of Irlen Syndrome. A long self-test identifying areas outside reading that may be affected by Irlen Syndrome, as well as special diagnostic tools for individuals on the autism spectrum are also available. Visit www.irlensyndrome.org for more information.

Pre-Screening Instrument for Irlen Syndrome

Instructions: If you experience a symptom listed below, rate severity on a scale of 0 to 5 (with 0 being no problem, 1 slight, and 5 severe). Place a number in each box.

Do you feel...?	In Sunlight Without Sunglasses	In Fluorescent Lights	Using Computers/ Tablets	When Reading	Total
Eye Strain / Pain					
Headaches / Migraine					
Nauseous					
Dizzy					
Fatigued					
Angry					
Irritable / Agitated					
Fidgety					
Panicked / Anxious					
Brain Fog					
Disoriented					
Light Headed					
Fight or Flight					
Unable to Concentrate or Focus					
TOTAL SCORE					

A 4 or 5 for any symptom or a total score of 12 or more in any column suggests environmental factors such as light and high contrast visual stimuli may be contributing to physical, emotional, and cognitive symptoms.

Do you have difficulty with any of the following activities? Check all that apply.

- | | |
|--|---|
| <input type="checkbox"/> Driving at night | <input type="checkbox"/> Looking at patterns or stripes |
| <input type="checkbox"/> Judging distances | <input type="checkbox"/> Glare |
| <input type="checkbox"/> Tracking moving objects | <input type="checkbox"/> Hazy days |
| <input type="checkbox"/> Reading on white paper | <input type="checkbox"/> Handwriting |

In conjunction with the score above, these indicators provide additional information about Irlen Syndrome involvement.

Symptom Triggers

Irlen Syndrome symptoms are triggered by the environment. Bright and fluorescent lighting, glare, high contrast (black print on white paper), patterns, stripes, bright or fluorescent colors, images with lots of details, large amounts of print on the page, demands for sustained attention, and print size, style and format can all cause problems for individuals with Irlen Syndrome.

Bright or Fluorescent Lighting

Bright lights, and particularly fluorescent lights (like the ones used in classrooms), are particularly problematic. Individuals with Irlen Syndrome will often prefer to read in dim or low-light conditions. Bright lights will trigger symptoms to appear sooner and task the brain more, making activities more difficult.

Print Size, Style and Format

Fancy fonts may look good to the average person; but to a person with Irlen Syndrome, ornate fonts, serif fonts, and small text make reading infinitely more difficult.

Details

As with patterns and stripes, images with lots of details can often become distorted and become uncomfortable to look at and difficult to decipher.

Sustained Attention

The longer the individual tries to read or attend to material, the worse symptoms get and the more difficult and more painful things become.

Bright or Fluorescent Colors

These colors tend to be particularly offensive to individuals with Irlen Syndrome. Looking at these items can cause physical pain or discomfort. Printing important information on brightly colored paper can ensure that individuals with Irlen won't read it!

Patterns and Stripes

These items often become distorted, moving and changing as the individual looks. These distortions can create physical symptoms, such as stomachaches and nausea.

Glare

Glare off of glossy, white textbook pages, whiteboards, computer screens, and tablets is often painful for individuals with Irlen Syndrome.

Lots of Print on the Page or Screen

The more print that appears on the page or screen, the more difficult the page is to read, and the more likely it is to cause distortions.

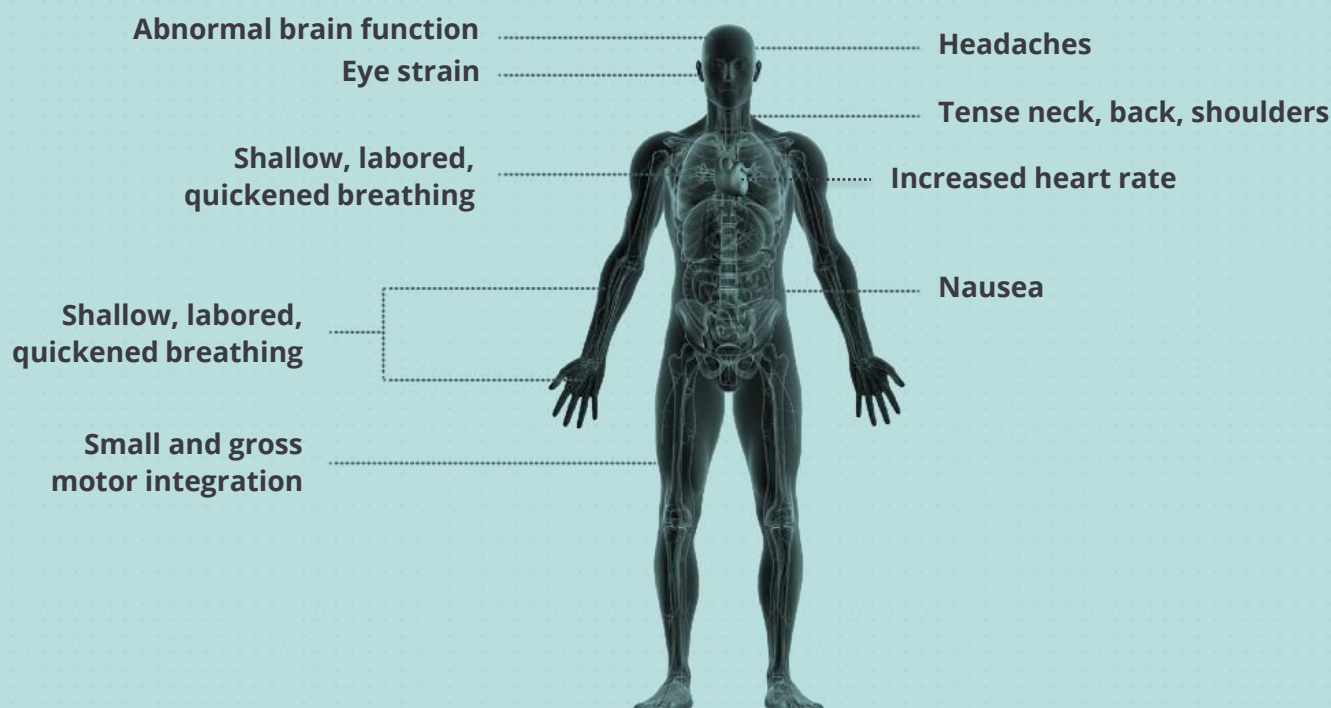
A variety of activities can trigger symptoms of Irlen Syndrome

Any activity requiring someone to attend visually can be an Irlen trigger. This includes everything from general perception to reading, computer use, watching TV, driving, and even sports. Depending on how severely the individual suffers from Irlen Syndrome, symptoms may begin immediately or may take a period of time to build.

When either the environment or visually-intensive activities put stress on the brain,

it results in changes in brain chemistry and changes to the nervous system. These changes impact cortisol, serotonin, dopamine, and hormone levels that lead to the learning, reading, emotional, and behavioral issues often connected with Irlen Syndrome.

Impacts the Entire body



Systemic Impact:

- Autonomic NS imbalance
- Immune system suppressed
- Endocrine system imbalance
- Emotional, behavioral, psychological implications
- Attention difficulties
- Depth perception and sensory integration
- Sleeping difficulties
- Visual fragmentation

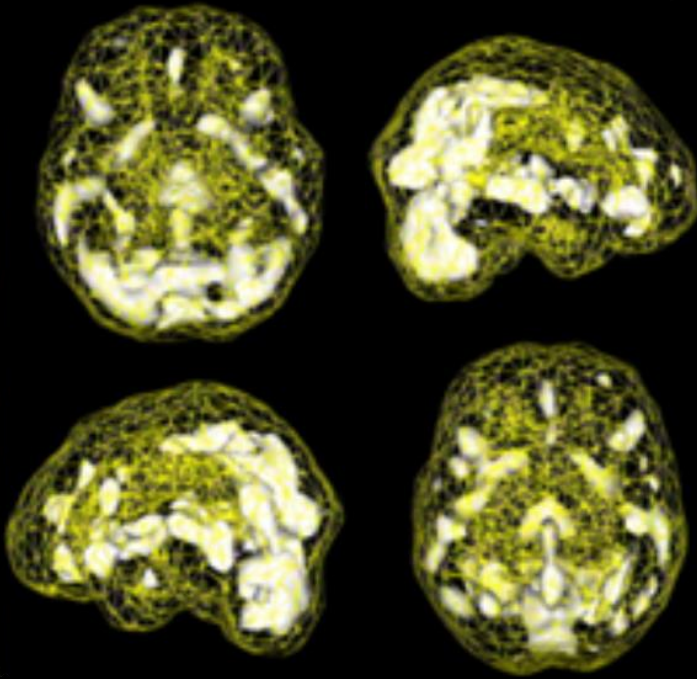
In Summary, Irlen Syndrome is...

- A problem with the brain, not the eyes
- Difficulty processing visual information
- Usually hereditary, but also acquired via injury, illness, medical procedures (e.g., concussion, TBI)
- Affects males and females equally
- A spectrum disorder, falls on a continuum from slight to severe
- Recognized by a variety of symptoms: e.g., light sensitivity, difficulty reading and attending, strain, fatigue, headaches, migraines, anxiety, poor depth perception, and print or environmental distortions
- The result of stress on the brain that results in learning, reading, emotional, attentional and behavioral challenges

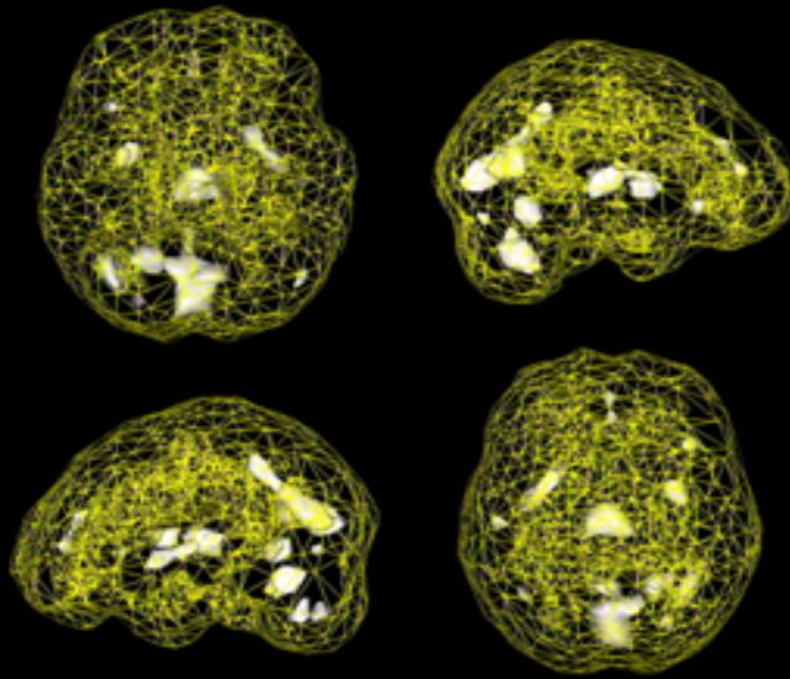
Irlen Syndrome is not identified by current educational, medical, optometric, or psychological tests, so health professionals need to be informed and aware of the signs, symptoms, and available solutions. The Irlen Method, which utilizes spectral filters to adjust the spectrum of light reaching the brain, is not a medical treatment and is not intended to treat conditions with a medical origin.

The Neuroscience

Without Irlen Spectral Filters



With Irlen Spectral Filters



SPECT scans courtesy of the Amen Clinic

What Do Irlen Brains Look Like?

The most current research on Irlen Syndrome utilizes advanced brain-mapping technology to show actual changes and normalization of brain functioning with the proper use of precision-tinted colored filters. Researchers have utilized functional magnetic resonance imaging (fMRI), magnetoencephalography (MEG), visual evoked responses (VER), and single photon emission computed tomography (SPECT) scans to objectively document the profound effects of visual sensory overload on the brain and the

normalization of brain activity when individually-prescribed, precision-tinted colored filters are worn.

This research has shown increased activity in the brain's emotional and visual processing centers, early hyper-reactivity to visual stimuli, abnormal V5 function (visual cortex), and visual cortical hyper-activation. Brain imaging has also been used as an objective correlate of headache reduction and reading improvements.

A study conducted at the Amen Clinic in California compared the brains of 42 people with Irlen syndrome to 200 age-matched individuals without any evidence of Irlen syndrome. SPECT scans showed increased activity in the brain's emotional and visual processing centers and decreased activity in the cerebellum (an area that helps to integrate coordination and new information). This over-activity normalized when individuals with Irlen Syndrome put on their individually prescribed Irlen Spectral Filters.



A STORY OF MISDIAGNOSIS: “IT’S ALL IN YOUR HEAD”

Why is Irlen Syndrome **Misdiagnosed?**

The disorder manifests itself differently within different populations.

For example, individuals with autism experience a chaotic and fragmented visual world that contributes to self-soothing behaviors and lack of eye contact; whereas, a TBI sufferer might primarily exhibit migraines. Irlen Syndrome is easy to identify, if you know what to look for; however, it can look similar to, and co-exist with, other conditions, including dyslexia, ADHD, vestibular dysfunction, binocular vision dysfunction, post concussion syndrome, and migraine disorder. All of these factors can lead to mis- or missed-diagnosis.

Eliana’s Story: In fifth grade, Eliana started getting daily headaches. In search of an answer, Eliana’s mom took her first to the pediatrician who referred her to the ophthalmologist, who referred her to a neuro-ophthalmologist. Still without answers, Eliana went to the neurologist who recommended an MRI to rule out a brain tumor. Eliana’s mom was terrified.

After the MRI results came back clean, the neurologist pulled Eliana’s mother aside and said, “I think this might be psychological. I am referring Eliana to a psychiatrist.” The psychiatrist sat Eliana down and told her that he believed her headaches were “all in

her head” and that she was making them up. He believed psychiatric care was the only available solution left.

A friend suggested to Eliana’s mom that they might want to look into Irlen Syndrome, and through the evaluation they discovered that Eliana was extremely light sensitive, had been experiencing visual distortions she hadn’t been able to describe, and that this was in fact the cause of her daily headaches. After receiving her spectral filters, Eliana no longer experienced headaches or struggled at school.

Environmental Modifications

In addition to spectral filters, a number of modifications and accommodations can also support individuals who suffer from Irlen Syndrome at home, at school, and at work.

Lighting:

- Turn off fluorescent lights: use natural light and incandescent lighting whenever possible
- Place colored gels over fluorescent lights
- Wear a dark brimmed hat or visor as protection from overhead fluorescent lighting

At School or Work:

- Avoid white backgrounds on print, screens, and in the environment in favor of gray, tan, or light blue instead
- Avoid using patterns on walls or carpet
- Avoid colored markers and highlighters (red and yellow are hard to see)
- Write in columns instead of across the entire length of the page

Computers, Phones and Tablets:

- Use colored overlays or a device's accessibility settings to change screen color
- Consider using other accessibility software such as text-reader or talk to text

Reading Modifications:

- Irlen Spectral Filters
- Colored overlays
- Magnifying bar, bookstand, and markers to help with tracking and to reduce glare
- Visor/brimmed hat
- Markers (above, below, to the side of the line)
- Use dim or natural lighting, not fluorescent
- Audio books

Contrast:

When you see clients/patients:

- Avoid bright or fluorescent colors for both papers you use and also clothing you wear
- Avoid wearing stripes, plaids and polka dots
- Avoid wearing glittery or sparkling jewelry and buttons

Paper:

- Use recycled, off-white,
- non-glare paper
- Avoid white, high-gloss paper
- Print documents on a preferred colored paper instead of white



Solution: Irlen Spectral Filters

Over 35 years ago, research directed by Helen Irlen under a federal research grant studied methods of helping children and adults with reading and learning disabilities.

It was through this research that she identified a portion of the population suffering from a light-based sensory integration disorder that was not being helped by standard interventions or treatment protocols. Her research defined the nature of Irlen Syndrome, and also discovered that color could help this specific population.

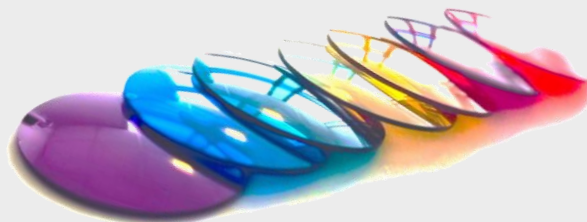
Our brains are asked to interpret many millions of light signals each moment. Some individuals have brains that are over-reactive to such visual stimulation, triggering a variety of physical, visual, cognitive, behavioral, and emotional symptoms.

Custom Spectral Filters adjust how light waves are sent to the brain. These individually-formulated lenses filter light wavelengths in a way that is tailored specifically for each individual brain. Research shows symptom reduction is most successful when light signals are precisely filtered with a unique formula for every person.

With the right custom spectral filter, brain activity remains calm and normal, even in bright and fluorescent lighting, when working on computer screens, or performing other visually intensive tasks.

The appropriate filtering leads to significant improvement in physical symptoms such as headaches, stomachaches, anxiety or fidgetiness, and also improvement for those experiencing distortions in their environment and issues with depth perception.

Professionals trained in the Irlen Method are able to determine the specific color required for each individual's brain. With over 100,000 different possible color combinations, individualized color is the key to success when addressing Irlen Syndrome.



Any health professional with a postgraduate degree can be trained in the Irlen Method to identify Irlen Syndrome and facilitate the proper color selection for maximum benefit. Self-selection of color is not encouraged, as it can make problems worse.





Addressing Persistent Symptoms After Traumatic Brain Injury and Concussion

Damage to the brain makes it vulnerable to external stressors like light. Offensive wave lengths of light create extreme stress on the brain that affects many physical, cognitive and emotional areas of function.

A variety of academic difficulties, visual distortions, and photophobia can persist for months or years after head injury. These persistent difficulties include reading difficulties related to print clarity and stability (e.g., blurry text, moving text, difficulty tracking from one line to the next), eye-strain, issues with attention and concentration, and light sensitivity/photophobia. Standard medical and optometric/ophthalmological treatment (including vision therapy and general tints) often do not relieve these symptoms or correct the underlying issue. Precision-tinted spectral filters, can successfully address these lingering issues after head injury.

"As a professional football player, I experienced 15 – 20 impacts to the head per day and 25 – 30 a game while performing as a running back. I suffer with intermittent bouts of depression, varying degrees of anxiety and paranoia, continuous headaches, with extreme light sensitivity, spontaneous loss of balance, motion sickness, and continuous severe tinnitus. Irlen Spectral Filters assist immensely with several of my symptoms. My headaches and feeling nauseous, motion sickness, and light sensitivity are instantaneously gone."

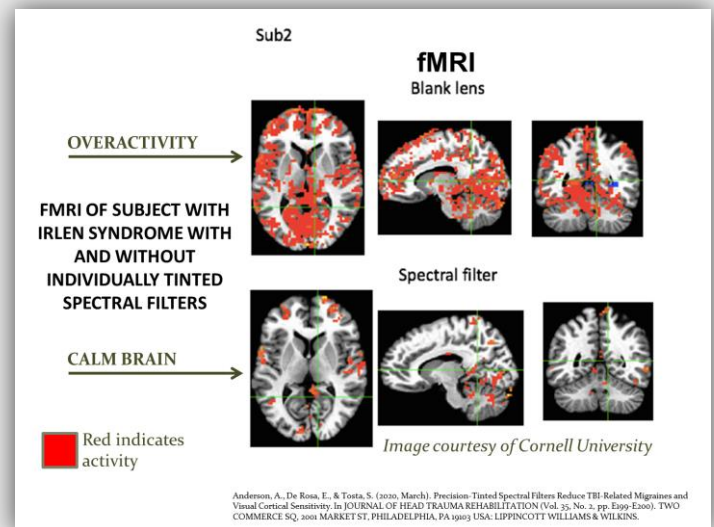
Nickolas "Nick" Bell
Former NFL Football Player

Research to Support the Use of Irlen Spectral Filters

The Irlen Method and the efficacy of colored filters has been the subject of over 200 research studies in education, psychology, and medicine. This research has established a hereditary component of the disorder¹⁻², a number of biochemical markers for problems associated with Irlen Syndrome³, and differences between the functioning of brains of individuals with Irlen Syndrome⁴⁻⁸. The research has repeatedly documented improvements in a variety of reading skills, reduction in physical symptoms, and improved functioning and success in both academia and the workplace⁹⁻¹⁴. Research on Irlen Syndrome has also documented co-morbidity with a variety of other disorders, including chronic fatigue syndrome¹⁵, ADHD¹⁶, and autism¹⁷.

Recent research at Cornell University showed normalization of over-activity in the visual cortex

when subjects wore their individually-tinted Irlen Spectral Filters. This improved brain function corresponded directly to reported improvements in physical symptoms and visual clarity and stability¹⁸.

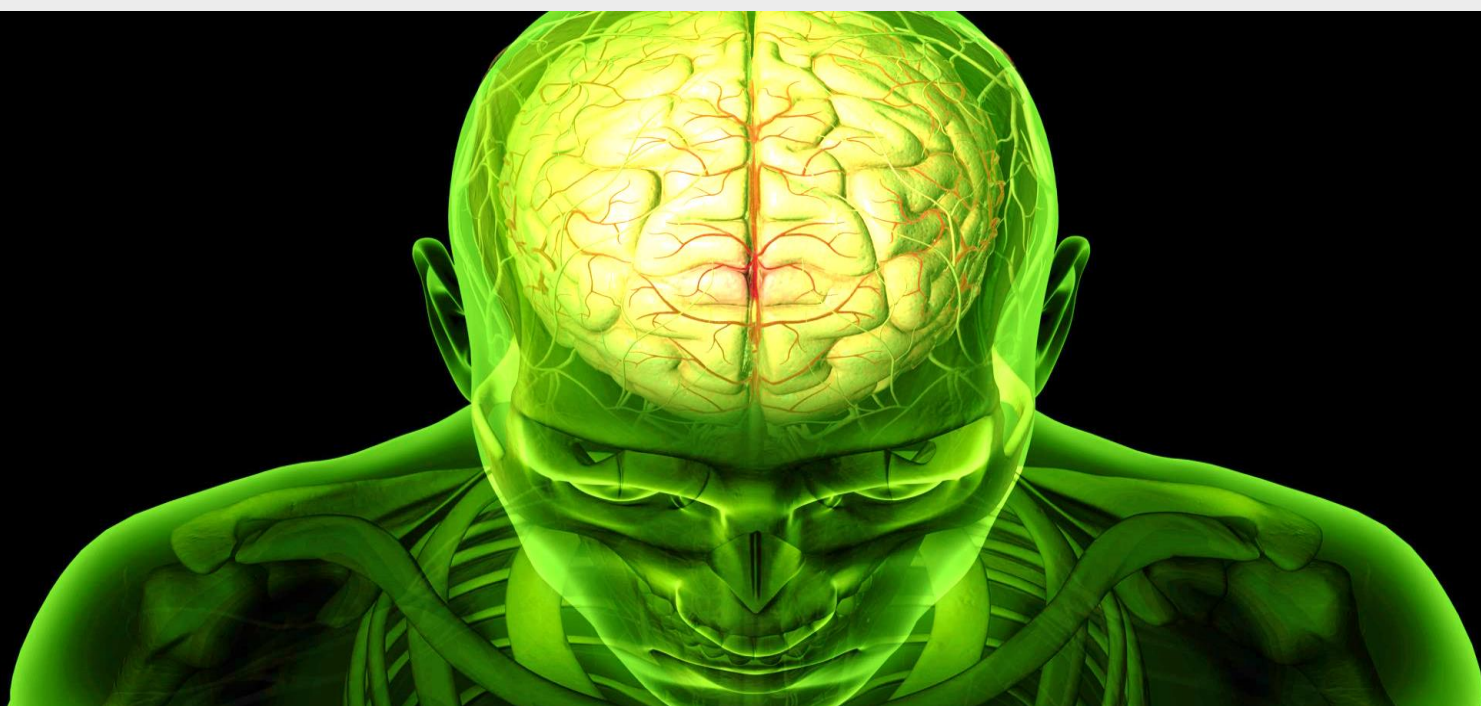


Research Reveals Irlen Spectral Filters Calm and Normalize Brain Function

In 2009, Yellen and Schweller utilized state-of-the-art Visual Evoked Responses (VER), a portion of their comprehensive neuroelectrical evaluation of patients called the DESA®, and discovered that individuals with Irlen Syndrome have early hyper reactivity to visual stimuli somewhere between 30-60 milliseconds, and it is 3-9 standard deviations above normal (the Yellen-Schweller Effect). Irlen Spectral Filters reduce the standard deviation abnormalities of the Yellen-Schweller Effect, lessening of the delay of the brain coming back “online” and allowing it to clear sooner.

Lewine et al. (1997) utilized magnetoencephalography (MEG) to characterize visual responses in conditions with and without lenses. In all cases, the evoked magnetic signal reflected a complicated pattern of bilateral activation of multiple cortical generators. A major difference in with and without lens conditions was seen between 170 and 200 msec post-stimulus. The data suggest that the colored Irlen lenses provide for normalization and crystallization of visual information processing in individuals with Irlen Syndrome.

Brain Imaging Shows Positive Changes with Individualized Color



1 Huang et al. (2011)

used fMRI to investigate differences between individuals suffering from Irlen Syndrome and controls in relation to migraine and to determine the effectiveness of precision-tinted colored filters. The research showed a normalization of cortical activation and spatial frequency tuning for the migraineurs with precision tinted filters that suggests a neurological basis for the therapeutic effect of these lenses in reducing visual cortical hyper-activation in migraine.

2 Kim et al. (2015)

investigated patterns of functional magnetic resonance imaging (fMRI) activation during sentence reading before and after wearing color-tinted lenses. The reading speed of patients improved more than 20% while wearing the selected lenses. When compared to the before-lens session, the after-lens session identified significant regions of activation in the left middle and superior temporal gyri. No region of activation at the same threshold was found in the before-lens session as compared to the after-lens session. These results could explain the effectiveness of color-tinted lenses in patients with Irlen syndrome.

3 Chouinard et al. (2011)

compared the neurological characteristics of a person with Irlen Syndrome with control subjects who were participating in a language. The descriptive results indicated that there are numerous significant differences in many areas of the brain cortex between the control subjects and the individual with Irlen Syndrome, providing evidence of a neurobiological foundation to Irlen Syndrome.

New Research on the Connection Between ADHD and Visual Processing

Researchers from David Yellin College of Education in Israel and the Irlen Institute in the United States release a new scientific study that suggests adults with untreated visual processing problems are more likely to receive an unnecessary ADHD diagnosis. The study expands understanding of adult ADHD to encompass overlap with visual processing difficulties, and identifies adjunctive treatment options.

According to the study titled, “Evidence for Overlapping Visual Processing Difficulties in Adult ADHD and Visual Stress,” published in August in the *Journal of Perceptual and Motor Skills*,

at least half of adults diagnosed with ADHD who also suffer from a visual processing problem known as Visual Stress can improve their attention issues by adjusting the color of visual signals sent to the brain.

“We’ve known for a long time that visual processing problems can cause attention issues,” says Dr. Aviva BarNir, lead author of the study. The authors wrote, “Although attention problems in ADHD are associated with executive functions, such as staying on task and are not specific to vision, there is evidence that vision difficulties may be central to adult ADHD etiology,” suggesting to BarNir and her team the possibility of treating Visual Stress to address ADHD.

BarNir and her colleagues aren’t the first to suggest this, but their research is the first to examine whether correcting Visual Stress can impact ADHD diagnosis and treatment.

Senior author Dr. Sandra Tosta from the Irlen Institute in Long Beach, California, explains that “people who suffer from Visual Stress have a hyper-reactive visual system, particularly to certain color wavelengths.” This can lead to a variety of difficulties, including physical symptoms such as headaches and fatigue, perceptual distortions, and issues with attention and concentration, among others.

Visual Stress is successfully treated by wearing specialized colored lenses to adjust visual processing in the brain. In the study, BarNir and colleagues hypothesized that this might also reduce ADHD diagnosis among adults with Visual Stress.

To test their theory, BarNir and her team sampled fifty-nine adults, age 18-50, diagnosed with both ADHD and Visual Stress, dividing them into two groups. One group wore colored lenses to correct their visual processing difficulties and the other did not.

The research team examined attention performance, including susceptibility to distraction, after one hour and again after 3-6 months of lens use, using both a computer-based continuance performance test and a self-report questionnaire based on the DSM-5 ADHD criteria. Results showed immediate improvement in attention and concentration issues in roughly half of participants to the extent that they no longer qualified for an ADHD diagnosis. These improvements were not found in individuals who did not wear the lenses.

The improvement persisted over time, with 64% of participants no longer warranting an ADHD diagnosis after wearing the lenses for 3-6 months, according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) of ADHD criteria.

“Color’s ability to impact brain function isn’t a new concept,” said Dr. Adam Anderson, neuroscientist and Professor of Psychology at Cornell University, and external advisor on the study. “We know that different wavelengths of light have powerful effects on the brain from influencing biological rhythms to regulating pain and reward systems,” said Dr. Anderson. “This research suggests different colors also have significant impact on brain networks supporting attention and concentration.”

Misdiagnosis of ADHD is a legitimate concern. This is especially true in adults where diagnosis is difficult due to the overlap of ADHD with other psychiatric disorders, and a tendency of clinicians to over-diagnose as a way of giving clients access to potential treatments. Recognizing the large overlap in attention issues between ADHD and Visual Stress allows for successful differential diagnosis and treatment.

Visual Processing and Vision

Attention to visual processing and visual acuity and accommodation should go hand-in-hand. While separate and distinct, visual issues related to the eye and processing issues connected to the brain both contribute to an individual's ability to properly synthesize visual information. Comprehensive care for individuals with Irlen Syndrome includes an optical exam by an eye-care professional to rule out and correct any optical issues prior to successful intervention for visual processing difficulties.

Visual Processing is Distinct from Vision

Research has shown that binocular and accommodative anomalies may occur in conjunction with Irlen Syndrome, but are not considered to be the underlying physiological basis of the condition.

Not Optometry or Medicine

Irlen has been reviewed by various USA Boards of Optometry and the USA Medical Board and was found to be neither the practice of optometry or medicine.

Similar to Other Processing Problems

Irlen Syndrome is an information and sensory processing problem. As such, it is similar to other processing problems (both visual and auditory) that are diagnosed by psycho-educational testing and addressed outside of the traditional medical or optical setting.

Overlapping Symptomology

Symptoms of Irlen Syndrome overlap with other issues commonly addressed by eye-care professionals, such as binocular vision disorder (BVD) and convergence disorder, sometimes leading to misdiagnosis. Irlen Syndrome will not resolve with optical treatments such as prism lenses, vision therapy, syntonics light therapy, or other commonly prescribed optical solutions. Similarly, optical issues will not resolve with Spectral Filters.

Optical Tints are Not Individualized Color

Colored lenses that are prescribed and tinted by an eye-doctor are not the same as individualized, precision-tinted spectral filters required to address Irlen Syndrome. To properly address Irlen Syndrome, the color formula needs to be specific to the individual's brain response to light and visual stimuli.





Irlen Syndrome Foundation Opportunities for Medical and Allied Health Professionals

Understanding Irlen Syndrome

is just the first step. Once you identify patients at risk for this condition, you may want to have them screened by a certified Irlen Screener to properly identify Irlen Syndrome. Any health professional with a postgraduate degree can be trained and certified to screen for Irlen Syndrome. Please contact us

for more information about training and certification opportunities and how to incorporate the Irlen Method into your existing practice.

The Irlen Syndrome Foundation also offers scholarships to individuals who need but cannot afford Irlen Services.

For more information about individual aid opportunities, send inquiries to aid@irlensyndrome.org

References

- 1. Loew, S.J., & Watson, K. (2012).** A prospective genetic marker of the visual perception disorder Meares-Irlen syndrome. *Perceptual and Motor Skills*, 114(3), 870-882.
- 2. Robinson, G.L., Foreman, P.J., Dear, K.G.B., and Sparkes, D. (2004).** *The Family Incidence of a Visual-Perceptual Subtype of Dyslexia*. Nova Science Publishers, 27-40.
- 3. Robinson, G.L., Roberts, T.K., McGregor, N.R., Dunstan, R.H., & Butt, H. (1999).** Understanding the causal mechanisms of visual processing problems: a possible biochemical basis for Irlen Syndrome? *Australian Journal of Learning Disabilities*, 4(4), 21-29.
- 4. Chouinard, B.D., Zhou, C.I., Hrybousky, S., Kim, E.S., Cummine, J. (2012).** A functional neuroimaging case study of Meares-Irlen syndrome/visual stress (MISViS). *Brain Topography*, 25(3):293-307.
- 5. Huang, J., Zong, X., Wilkins, A., Jenkins, B., Bozoki, A., Cao, Y. (2011).** fMRI evidence that precision ophthalmic tints reduce cortical hyperactivation in migraine. *Cephalgia*, 31(8):925-36.
- 6. Lewine, J.D., Davis, J., Provencal, S., Edgar, J., Orrison, W. (1997).** A magnetoencephalographic investigation of visual information processing in Irlen's Scotopic Sensitivity Syndrome. Conducted at The Center for Advanced Medical Technologies, The University of Utah School of Medicine, Salt Lake City, Utah, and Department of Psychology, The University of New Mexico, Albuquerque, New Mexico.
- 7. Yellen, A. & Schweller, T. (2009).** The Yellen-Schweller Effect: Visual Evoked Responses and Irlen Syndrome.
- 8. Kim, J. H., Seo, H. J., Ha, S. G., & Kim, S. H. (2015).** Findings in Meares-Irlen Syndrome: A Pilot Study. *Korean Journal of Ophthalmology*, 29(2), 121-125.
- 9. Noble, J., Orton, M., Irlen, S., Robinson, G. (2004).** A controlled field study of the use of colored overlays on reading achievement. *Australian Journal of Learning Disabilities*, 9, 14-22.
- 10. Park, S.H., Kim, S., Cho, Y.A., Joo, C. (2012).** The Effect of Colored Filters in Patients with Meares-Irlen Syndrome. *J Korean Ophthalmol Soc.*, 53(3):452-459. Korean.
- 11. Robinson, G.L., & Foreman, P.J. (1999).** Scotopic sensitivity/Irlen syndrome and the use of colored filters: A long-term placebo controlled study of reading strategies using analysis of miscue. *Perceptual & Motor Skills*, 88, 35-52.
- 12. Irlen, H., & Robinson, G.L. (1996).** The effect of Irlen coloured filters on adult perception of workplace performance: a preliminary survey. *Australian Journal of Remedial Education*, 1, 7-17.
- 13. Robinson, G.L., & Conway, R.N.F. (2000).** Irlen lenses and adults: a small scale study of reading speed, accuracy, comprehension and self-image. *Australian Journal of Learning Disabilities*, 5, 4-13.
- 14. Whiting, P., Robinson, G.L., & Parrot, C.F. (1994).** Irlen colored filters for reading: a six year follow up. *Australian Journal of Remedial Education*, 26, 13-19.
- 15. Loew, S.J., Marsh, N.V. & Watson, K (2014).** Symptoms of Meares-Irlen/Visual Stress Syndrome in subjects diagnosed with Chronic Fatigue Syndrome. *International Journal of Clinical and Health Psychology*, 14(2), 87-92.
- 16. Loew, S.J. & Watson, K. (2013).** The prevalence of symptoms of scotopic sensitivity/Meares-Irlen syndrome in subjects diagnosed with ADHD: Does misdiagnosis play a significant role? *Croatian Review of Rehabilitation Research*, Vol.49. Supplement, str. 50-58.
- 17. Irlen, H. (2012).** A sensory intervention for visual processing deficits using precision colored filters. *Autism Science Digest: The Journal of AutismOne*, 04, 94-102.
- 18. Anderson, A., De Rosa, E., & Tosta, S. (2020, March).** Precision-Tinted Spectral Filters Reduce TBI-Related Migraines and Visual Cortical Sensitivity. In *JOURNAL OF HEAD TRAUMA REHABILITATION* (Vol. 35, No. 2, pp. E199-E200). TWO COMMERCE SQ, 2001 MARKET ST, PHILADELPHIA, PA 19103 USA: LIPPINCOTT WILLIAMS & WILKINS.

For More Information

- *Information about Irlen Syndrome:*
- www.irlensyndrome.org
- *Information about Irlen Solutions and Screener Trainings:* www.irlen.com
- *Books by Helen Irlen available from Amazon.com and BarnesandNoble.com: [Reading By The Colors](#), [The Irlen Revolution](#), [Sports Concussion and Getting Back in the Game of Life](#)*