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Jodi Beth Altman

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IRLEN SYNDROME AND THE READING PROCESS

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A Project  
Presented to the  
Faculty of  
California State University,  
San Bernardino

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In Partial Fulfillment  
of the Requirements for the Degree  
Masters of Arts  
in  
Education:  
Reading/Language Arts

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by  
Jodi Beth Altman

March 2003

IRLEN SYNDROME AND THE READING PROCESS

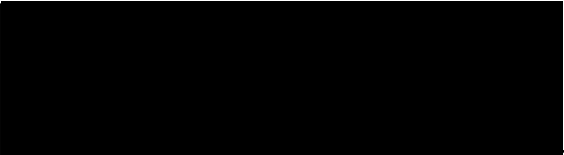
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San Bernardino

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by  
Jodi Beth Altman  
March 2003

Approved by:

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## ABSTRACT

Many students reach middle school and no longer have the desire to read or to learn. This overwhelming sense of failure is the result of continuous years of disappointment and frustration. After years of research it had been discovered that many students struggling with reading could have Irlen Syndrome. Students with Irlen Syndrome view the printed world in a distorted way because of a sensitivity to the timing of certain wavelengths of light. Irlen colored overlays could be the key to helping students who might have symptoms of Irlen Syndrome. In order to accommodate these children one must first identify their optimal colored overlay and then track their reading growth. To address these considerations, this project was conceived. It is based on a school wide intervention using the overlays. The project overlaps with the field of reading in terms of reading comprehension. Often reading comprehension can be impeded when students have perceptual processing difficulties. A review of the literature examined the effects of the overlays and also the application of specific reading strategies which can be improved in terms of effectiveness. Also included in the project is feedback from students involved in an intervention using overlays.

## ACKNOWLEDGMENTS

I would like to thank Alayne Sullivan Ph.D. for her professional assistance and Thom Gehring Ph.D. for inspiring me to pursue my graduate project. I would also like to acknowledge Christopher for believing in me and supporting me throughout my graduate program. Finally, thanks to my family who always taught me the importance of education.

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## CHAPTER ONE

### BACKGROUND

#### Introduction

This project focuses on the relationship between Irlen Syndrome, the use of Irlen colored overlays, and the effects on reading comprehension. Chapter one begins with an examination of the purpose, which will explain why the project was attempted. The project identifies the type of students who will benefit from using the colored overlays as a way to improve reading comprehension.

Irlen Syndrome is a perceptual dysfunction that results in reading difficulties. Individuals with Irlen Syndrome view text in a distorted manner and suffer from a variety of physical symptoms. These symptoms can in many cases be alleviated by using overlays. The overlays are plastic sheets tinted with an array of colors. It is believed the overlays reduce visual distortions and physical symptoms. The significance of the project acknowledges the importance of alternate reading interventions, especially with the high amount of struggling readers currently in middle school. Unfortunately, once students reach middle school it is assumed they can already read. Reading instruction is limited and struggling readers tend to fall further behind.

This project was undertaken in order to identify students who might be struggling with reading as the result of Irlen Syndrome. Limitations are established; they include the number of subjects and the fact that only one school was used to implement the project. Finally, definitions of terms are presented to clarify special terms and standard abbreviations used throughout the text.

#### Purpose

The purpose of the project was to determine if a school-wide intervention for students demonstrating symptoms of Irlen Syndrome would result in improvements in reading skills and a reduction in physical symptoms that might impede visual processing necessary for successful reading. All academic areas were assessed to determine when Irlen colored overlays were most beneficial.

Reading is an essential skill for all students and in all academic areas. Students are asked daily, to read and comprehend text that may be years above their reading level, especially in language arts, social studies, and science. The concept of reading involves an array of topics including understanding, engagement, appreciation, and an alignment of life experiences with text. Weaver (1994) stated that the definition one has for reading depends on the type of

instruction one receives as a child; therefore, there are a variety of definitions. Some professionals believe that reading means getting understanding from different combinations of vowels and constants. Others see print as a visual representation of the sounds that determine meaning. This, in turn, means that a student must be able to hear the words in order to have meaning. Those whose theoretical beliefs align with socio-psycholinguistics, see reading as in interaction between thought and language. A scientific approach states that that reading involves the process of light rays from the text hitting the retina. The signals are then sent along the optic nerve to the brain. Of course, the reading process does not occur until the signals are interpreted. Finally, Weaver (1994) addresses the importance of life experiences. She believes the reader brings past experiences to the text, increasing meaning and understanding. None of these reading processes or conceptions of reading can be effective if visual processing is impaired to such an extent that readers can not see the very words on the page.

Many students suffering from Irlen Syndrome struggle with academic reading because their physical symptoms prevent them from clearly viewing the text or cause too much discomfort for reading to occur. Irlen colored overlays

alleviate visual distortions and allow students to focus on comprehension of text. An intervention to address Irlen Syndrome was implemented which entailed a referral and screening process. After identified as having symptoms of Irlen Syndrome, each student was provided a Irlen colored overlay. After three months of use with the colored overlays, students were interviewed to determine if overlays helped reading comprehension.

#### Context

Many middle school students are struggling in all academic areas because of their inability to read and comprehend grade level text. Honig, Diamond, and Gutlohn (2000) estimate in 1998, twenty-six percent of eighth-graders were reading at the below basic level. There is also strong research showing these students become frustrated with failure and drop out at higher rates than their peers. They also found that when students were not reading by the end of first grade, they had a one in eight chance of catching up to their grade level without extreme intervention. Reading is a skill essential to survival in the real world. Sadly, many of our students slip through the cracks and leave middle school with minimal reading skills. This issue is going to become a hot topic due to

the recently established California high school exit exam. Many students have been getting by for years but will find themselves unable to pass the high school exit exam and will be left without a diploma. The fact is that many of these students may have perceptual processing difficulties related to Irlen Syndrome. Irlen colored overlays may be the answer to alleviating many of these perceptual and physical problems. This, in turn, allows students to focus on comprehension and learn the content of the subject matter. This project could be a key to helping many students who struggled with academics all their lives. Its overall emphasis was to provide a tool that would bridge the gap between students with symptoms of Irlen Syndrome and their peers, while at the same time improving reading comprehension and self-esteem.

#### Significance

Irlen's (1991) research stated that ten to twelve percent of the general population suffer from symptoms of Irlen Syndrome. This could be why Honig et al. (2000) state that thirty percent of students thought learning to read was extremely difficult. These students struggle with reading and, therefore, are less likely to engage in activities involving reading. Guthrie and Wigfield (2000) referred to

this as the Matthew effect, in which the higher level readers improve more rapidly than lower level readers throughout the educational experience. Honig et al. (2000) described the Matthew effect as good readers becoming richer readers, while nonproficient readers become poorer readers. Since reading is the basis for all academic success and many employment opportunities, the ability to read and improve reading skills is vital. This project provides information about an alternative reading intervention: Irlen colored overlays. If eight of the ten students who systematically used the overlays demonstrated an increase in reading comprehension, then we have found at least an important beginning to solving some of the reading problems that stem from perceptual dysfunction.

#### Limitations

This project is affected by a range of limitations including such factors as the population, sample size, length of time for project, limited variety of situations, the connection between perceptual processing and comprehension, and the method of obtaining results.

1. The population of this project was limited to middle school students in the Rialto Unified School District.

2. The project was limited to a small sample of students. Since not all students suffer from symptoms of Irlen Syndrome, a relatively small number of students could have been selected. Therefore, only ten students were used for this project. The students selected had symptoms ranging from moderate to severe.
3. The length of time for implementation of the project was a limitation. The project was completed in three months. A longer timeframe would have enabled students and teachers to examine improvements as reflected on academic report cards and standardized test scores.
4. The project was limited by the variety of situations in which students were observed using the colored overlays. Since students used the Irlen colored overlays in all academic classes, it would have been beneficial to complete observations in all classes. The majority of observations were completed in the Language Arts class.
5. The project is also limited by the possibility that an increase in perceptual processing may not result in increased comprehension. Many of these students were able to clearly view the text as the result of the Irlen colored overlays, but this does not guarantee an improvement in comprehension. Some students will have



to learn various comprehension strategies in order to assist them with the understanding of text.

6. A final limitation is that "results" were determined based on interviews conducted with students about their perceptions and impressions regarding the use of the overlays. Observations of students actually using the overlays would have been more beneficial. This would have allowed the researcher to study reading-in-process with the overlays. Relying on student impressions after the fact may yield different results.

#### Definition of Terms

The following terms are defined as they apply to this project as cited in Irlen, 1991.

Irlen Syndrome: perceptual or visual dysfunction that results in reading difficulties. Formerly referred to as Scotopic Sensitivity Syndrome or SSS.

Colored Overlays: plastic sheets or filters, each of which are tinted in different color, including peach, rose, goldenrod, gray, blue-gray, green, purple, yellow, and turquoise.

Visual Distortions: unstable print which has a tendency to move, fade, blur, disappear, shake, or appear as a double image. Distortions cause reading ability to deteriorate.

Symptoms:

Physical: headaches, stomachaches, irritated or watery eyes, eye strain, drowsiness, and frequent blinking.

Academic: avoids reading, reads slow and choppy, loses place, rereads lines and words, poor comprehension, writes uphill or downhill, unequal spacing, and inconsistent spelling.

Parsing: to analyze grammatically, identifying parts of speech and syntactic relations.

Fluency: rate, prosody, rhythm, tone, and expression in which one reads.

Literacy is essential in order to fully participate in society. Unfortunately, many students are not reading at grade level and are years behind in their literacy development. Many of these students may be suffering from Irlen Syndrome. Irlen Syndrome is a perceptual or visual dysfunction that results in reading difficulties with an array of physical symptoms. Visual distortions associated with Irlen Syndrome cause the print to move, fade, blur, disappear, shake, or appear as a double image. Visual distortions cause reading ability to deteriorate and initiate many physical problems. Individuals suffer from physical symptoms such as headaches, stomachaches, irritated eyes, eye strain, drowsiness, and frequent blinking. The

reading difficulties include the aforementioned physical symptoms as well as a variety of academic symptoms. Students with Irlen Syndrome have a tendency to avoid reading, to read slowly and in a choppy manner, to lose their place, to reread lines and words, and to have poor comprehension. Individuals struggle academically because of a wide spectrum of problems associated with Irlen Syndrome. The solution involves the use of Irlen colored overlays. The plastic sheets or filters reduce visual distortions and physical symptoms. The ability to see text clearly and free of visual distortions allows students to read more effortlessly. In turn, more time is spent determining meaning rather than attempting to identify letters and words. As a result, they may increase their chances to refine fluency and comprehension.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

#### Introduction

Chapter Two consists of a discussion of literature relevant to Irlen Syndrome and the reading process. Specifically, this chapter begins with an introduction to how Irlen Syndrome was discovered. The next section examines the various symptoms of Irlen Syndrome. It is important to be familiar with the wide range of symptoms in order to determine what effects they have on the reading process. If one can not identify students who might suffer from Irlen Syndrome, one can not help their current or future students. The familial incidence of Irlen Syndrome is then examined. It is imperative to realize that once a student is identified as having Irlen Syndrome, it is critical to meet with the family of that child. Since familial connections are so strong it is highly plausible that parents and siblings could also have symptoms of Irlen Syndrome.

The chapter then explores elements of the reading process to determine what the complex process of reading involves. To understand the importance of Irlen colored overlays as an intervention, one must determine what skills

good readers possess. Finally, Irlen overlays and their effect on the reading process are examined. The benefits of Irlen colored overlays in relation to fluency, eyestrain, concentration, and comprehension are discussed.

### What is Irlen Syndrome

In 1983 at the American Psychological Association's Ninety First Annual Convention in Anaheim, California, Helen Irlen introduced a group of symptoms which at that time was referred to as Scotopic Sensitivity Syndrome. Whiting (1988) stated that the syndrome was said to include six areas of difficulty: photophobia, eye strain, poor visual resolution, reduced span of fixation (focus), poor sustained focus and impaired depth perception. Whiting, Robinson, and Parrott (1994) described the symptoms further by stating that photophobia involves problems with bright sunlight or florescent lights. Visual resolution involves the visual distortions of print, which are made worse by the contrast between white background and black print. Restricted focus results in the ability to perceive only one letter at a time when reading. Sustaining focus is where the print seems to blur after a short time. Eyestrain occurs even though eyes have been checked by an optometrist or previously corrected by optical lenses. And finally, problems with depth

perception can result in a difficulty judging distances. In turn, many individuals with Irlen Syndrome have difficulty seeing three-dimensional objects.

Further medical research pinpointed the failure of timing in one of the two visual pathways when reading. The magnocellular system of the brain has large cells that are responsible for position, motion, and shape. It is believed that individuals with dyslexia and Irlen Syndrome have smaller than normal magnocellular cells (Robinson, Roberts, McGregor, Dunstan, & Butt, 1999). Robinson (1994) discussed a study which compared the autopsies of five brains of people with reading disabilities and five brains without reading disabilities. The brains of those who had reading disabilities contained abnormalities in the magnocellular layers, but those without a reading disability did not. As a result of these smaller magnocellular cells, low-contrast information processing is slower than normal. This is what leads to symptoms such as blurriness, jumpy, and moving text. Hence, students struggle to read the words and letters on the page because they appear to be not clear or still. They spend a massive amount of energy identifying letters and words and lose comprehension in the process.

The solution is a colored overlay used to reduce brightness, glare, and visual distortions while reading

text. The Irlen colored overlay actually changes the timing of the wavelengths, thus decreasing the visual distortions. In a study conducted by Buckinghamshire, Cheltenham, Worcester, and Cambridge, (1995) children reported more symptoms of visual discomfort and signs of fatigue when the Irlen colored overlays were not used. When the colored overlays were used, individuals demonstrated the greatest perceptual clarity of text. The ability to clearly and easily focus on the text can result in increased comprehension.

The use of Irlen colored overlays is extremely relevant to the field of special education. Research conducted by Irlen (1991) found that forty-six percent of those classified as learning disabled suffer from Irlen Syndrome. It is also believed that thirty-three percent of the population diagnosed as attention deficit or hyperactivity disorder suffer from Irlen Syndrome. This is because individuals with Irlen Syndrome commonly have difficulty concentrating when reading or doing schoolwork. The symptoms of Irlen Syndrome make it difficult to stay on task and thus students need to take frequent breaks and look away from the text. They quickly become restless, fidgety, and tired. Research by Sawyer, Taylor, and Willcocks (1994) showed the positive correlation between the success of

students with learning disabilities and the use of Irlen colored overlays. Students with specific learning disabilities made an average gain of forty-three percent more than the control group in terms of reading ages. There is also a correlation between dyslexia and Irlen Syndrome. Many of the symptoms of dyslexia and Irlen Syndrome are similar and, as a result, treatment for Irlen Syndrome can eliminate a layer of problems dyslexics face. Irlen (1994) stated that since the discovery of Irlen Syndrome, fewer individuals are being labeled dyslexic and others are no longer labeled as dyslexic.

#### Familial Incidence

In hopes of improving the identification process and early recognition of Irlen Syndrome, researchers have been studying the genetic link or familial incidence of Irlen Syndrome (Robinson, Foreman, & Dear, 1996). Robinson et al. (1999) believe the common link in familial prevalence could be a single gene, multiple genes acting together, or a common environmental factor, such as diet, chemicals or infection. Of the 751 children identified as having Irlen Syndrome, eighty-four percent had either one or both parents demonstrating similar symptoms.



These studies were stepping stones for further genetic research. The high correlation rate between parents and their children is very convincing and raises genetic questions. If researchers can help parents become more aware of the connections between their symptoms and their children's symptoms, the parents might be more supportive and understanding. For example, many of these parents do not read books with their children because they themselves lack confidence in their abilities. If parents with symptoms were given an Irlen colored overlay, they may have the confidence to read and help their children complete homework. This home-school connection is a powerful factor influencing the progress of a child's reading ability.

#### Elements of the Reading Process

In order to understand the benefits of Irlen colored overlays, one must first identify what the reading process involves. Cooper (1997) examines not only elements of reading but the historical changes the reading process has undergone. In the 1960s and 1970s, educators felt reading comprehension was the result of decoding. While utilizing this technique, educators found that comprehension was not occurring automatically. As a result, they turned to questioning techniques that asked students a greater variety

of questions at different levels. Questions ranged from basic text recall to predictions and inferences. This leads to an intricate process of higher level thinking and personal interpretation. Fairbanks (1998) stressed the importance of not only questioning, but listening carefully to student answers. She believes this will provide insights into the students' perspectives regarding school, learning, life, and literacy. This interaction with text led to the idea that literacy was more than isolated elements of reading, writing, speaking, and listening. Honig et al. (2000) found that no matter what theoretical beliefs educators had, they found a balance between phonemic instruction and rich literature led to greater success.

Researchers have evaluated the different models of theoretical beliefs that have evolved over the years. Specifically, they focused on three different schools of thought. Weaver (1994) stated that the first model encompassed the idea that learning to read means learning to correctly pronounce words. This model relates to the teaching practices of the 1960s and 1970s, in that word identification was the focus. Many educators disagreed with this model and felt correct pronunciation does not always bring meaning. The second model views learning to read as a process in which the reader identifies the word and,

therefore, develops meaning. With basal readers and scripted reading programs, most educational institutes teach reading utilizing this model. The third is described by Weaver (2000) as the socio-psycholinguistic approach. The socio-psycholinguistic approach views the reading process as an interaction between text and the reader's social background. Therefore, situational factors can determine how the reader comprehends what is read. In this model, meaning is not just automatic when the print is read but develops when the reader brings meaning to the text. Gaffney and Anderson (2000) reported that these trends in reading are associated with large scale social, economic, and political development, developments in cognate fields, general developments within education, and developments specific to reading education.

Cooper (1997) also reported comprehension is a process in which readers assign meaning utilizing not only clues from the text but their schemata. Schemata is defined as the prior knowledge a reader has based on life experiences. In her research, Fairbanks (1998) confirmed the notion that students benefit from classroom environments where they can explore their place in the world and society. Almasi and McKeown (1996) reported students were able to think about the context of the text and make interpretations when they

connected it to prior-experiences. Activities associated with personal experiences allow students to increase their level of participation, self-worth and motivation.

Motivation plays a critical role in the reading process. Guthrie and Wigfield (2000) reported motivation encompasses an intricate balance between personal goals, intrinsic motivation, extrinsic motivation, self-efficacy, and social motivation. Readers who suffer from symptoms of Irlen Syndrome commonly lack intrinsic motivation. They do not enjoy reading and therefore do not engage in literary experiences for their own benefit. Students who are intrinsically motivated are usually strategic readers who challenge themselves with difficult texts. Guthrie and Wigfield (2000) also reported that students lose their motivation when they realize they are not as capable as their classmates. These students cease to read and fall further and further behind in the growth of their literacy skills. Student motivation is also connected to student engagement.

Ideal learning outcomes are not the direct result of perfectly planned lessons and instruction. As Guthrie and Wigfield (2000) stated, these outcomes rely on the student's level of engagement. When engagement is continuous and students are engrossed in the learning experience, the

outcome will be powerful. Engagement occurs when teachers create an environment where the text can be deeply analyzed for hidden meaning, content, character actions, and personal life and cultural connections. Unfortunately, students with Irlen Syndrome can not participate in these rich discussions because they are unable to focus on the words in the text. Even if text is stimulating and highly interesting, students get discouraged and shut down mentally. This continuous cycle of failure can lead to a feeling of incompetence and inadequacy. The research conducted by Almasi and McKeown (1996) confirms this notion. They stated engaged students have more success academically than their less engaged peers.

Additionally, Almasi and McKeown (1996) conveyed the necessity of teacher observation in regard to engagement. If a student is staring at the pages of a book, it does not mean they are engaged. Deep discussions of reading can not be achieved if a student is unable to physically concentrate on the task at hand. These students then become behavior problems or go through the motions but are never truly engaged.

Irlen and Lass (1989) described good readers as those who are proficient in skills such as reading accuracy, rate, comprehension, and sustained attention. They believe Irlen

colored overlays are an intervention that allows individuals to perceive text without visual distortions and thus have a greater opportunity to become good readers. Klenk and Kibby (2001) agreed with these focus skills but believed reading fluency should be considered a major goal. Other experts believe that comprehension is the key to being a good reader. Flood and Lapp (1991) stated that good readers are those who are strategic and construct meaning as they read. Good readers monitor their reading by questioning, reviewing, revising, and rereading. Flood and Lapp (1991) believed there are four different kinds of knowledge:

1. Knowledge of letters and sound correspondences.
2. Knowledge of words and word forms.
3. Knowledge of syntax.
4. Knowledge of meanings and semantic relations (p. 732).

All of these skills prove difficult for individuals with Irlen Syndrome to master without the colored overlays.

Specific research on reading fluency was conducted by Chard, Vaughn, and Tyler (2002), who found students need to read rapidly in order to understand the connections that are necessary for comprehension to occur. This suggests students with Irlen syndrome face even further problems with comprehension because the visual distortions prohibit them for reading rapidly. Furthermore, Chard et al (2002)

suggested that opportunities to practice reading and rereading familiar text are ways for students to enhance their reading fluency. Unfortunately, students with Irlen Syndrome can not focus on text for long periods because of visual distortions and physical symptoms such as headaches and eye strain. Dbo, Sutherland, and Mcgettrick (1992) also found that headaches, induced by reading, were a major symptom preventing students from continuous reading experiences. Dbo et al. (1992) also identified glare as a major symptom. Eighty-six percent of the subjects in their study reported they could not continue reading because the page was too bright without the overlay.

As Klenk and Kibby (2001) stated, the bottom line is that students learn to read through engagement with age-appropriate text and print related activities. If students suffer from visual distortions or physical symptoms whenever they view the printed page, they will not be engaged with the text and therefore will not improve their reading skills.

#### Irlen Overlays and the Effects on Reading

Around the world researchers, educators, and medical professionals are discovering the benefits of Irlen colored overlays and lenses. This intervention has been helping

individuals improve their writing skills, math abilities, attitude, motivation, and reading levels. Whiting et al. (1994) found that, out of 213 individual surveyed, ninety-three percent had experienced improvements in the main areas of fluency, eyestrain, concentration, and comprehension. These improvements are not short-term. When these same individuals reported back six years later, the large improvements were in areas such as visual confusions, skipping lines unintentionally, concentration, overall difficulty of reading and fluency. The areas of improvement were very similar even years later. The only difference was comprehension, which was expected to take longer because it is a intricate process. Chan and Robinson (1989) stated readers have difficulty constructing meaning because their visual span restricts them to viewing one word or less. This supports the idea that meaning is constructed when readers can focus on complete sentences and paragraphs.

Research conducted by Fletcher and Martinez (1994) concluded that Irlen colored overlays enhanced parsing or the ability to identify parts of speech. Their study also saw a reduction in the number of eye-movements caused by misunderstanding, which in turn resulted in increased fluency. O'Connor, Sofo, Kendall, and Olsen (1990) carried out a study which gave a pretest and posttest to judge the



effects of the Irlen colored overlays on reading rate, accuracy, and comprehension. After one week the results showed an average gain of 6.6 months in reading rate, 6.9 months in reading accuracy, and 19.35 months in reading comprehension. Subjects diagnosed with Irlen Syndrome who were given a clear overlay actually regressed 3 months in accuracy and 7 months in comprehension. Therefore, demonstrating a placebo overlay did not improve reading accuracy or comprehension for students with Irlen Syndrome. A similar group of students suffering from symptoms of Irlen syndrome were given a clear overlay and actually regressed in all areas. Dbo et al. (1992) found that ninety-three percent of the individuals in their study increased their reading rate in the range of two to twenty-nine months. An additional study conducted by Carroll, Mullaney, and Eustace (1994) showed similar growth. Their treatment group improved two years in reading accuracy and three years in reading comprehension. Interestingly, older subjects improved at a greater rate than younger subjects in regard to reading accuracy and comprehension. Their study suggests that improvement in comprehension is the result of reductions in print distortions. This article is extremely compelling because the treatment groups demonstrated tremendous levels of growth over a 20-month period. Most

educators would be interested in implementing a program that could increase comprehension by three grade levels in one year.

Robinson and Foreman (1999) stated that improvements in reading comprehension and accuracy, such as those in the aforementioned studies, are because the Irlen colored overlays allow attention to be directed to print rather than word identification. Various gains reflect the fact that decrease in distortions allow attention to be directed to the processing of continuous text rather than individual words or letters. Chan and Robinson (1989) discussed a reading theory that stated there is a competition between word identification and comprehension for the limited capacity of memory during text processing. This theory contends Irlen colored overlays caused a reduction in visual distortions and allowed for more working memory to be dedicated to the processing of content rather than word identification. Overall, Orfield (2001) stated that visual function may be a better indicator of classroom success than race or socioeconomic level.

Benefits of the Irlen colored overlays can also be seen when evaluating student self-esteem levels. Weaver (1994) stated that children who are the least successful at reading may be the ones trying the hardest to follow their teacher's

instruction. They believed that decoding is reading and, therefore, when students can not decode the words they give up. What they do not realize is that their difficulties with perceptual processing could be the obstacle preventing them from reading. Therefore, the Irlen colored overlay enables them to stop concentrating so much on one strategy, such as decoding, and focus on several strategies. This is essential because, as Weaver (1994) stated, students' success mirrors their available reading strategies.

#### Contributing Factors

The research also demonstrates the need for optimal color selection when using overlays to assist in reading. The Irlen institute stresses the importance of a trained screener because, while an individual's optimal colored overlay will improve visual distortions, an inappropriate colored overlay can actually make the distortions worse. In support of this theory, Solman, Dain, and Keech, (1990) showed that the best colored filter selected for each of the readers dramatically reduced sensitivity. Lobello, Wolfe, Gulgo, and Doleys (1998) conducted a study to determine if different colored backgrounds could enhance student performance of pronunciation of pseudowords. The results showed that colored background did not improve phonological

processing ability. Of course, this study did not use the subjects' optimal colored overlay but rather tested a variety colors.

Croyle (1998) on the other hand, discovered that there is a significant three-way interaction between visual processing, color, and contrast. Croyle's results indicate that improvement depended on the color of the background, in this case, blue, red, or gray. He concluded that the combination of colors and contrasts must be carefully considered. In addition, Fletcher and Martinez (1994) stated that parsing is more efficient and automatic when the optimal colored overlay was used.

The introduction of Irlen colored overlays is also of relevance to the medical or pharmacological field. Many students who demonstrate symptoms of Irlen syndrome often act out in the school setting, especially when completing activities that involved reading. Klenk and Kibby (2001) found that 1.4 million children from five to eighteen years of age are currently taking medications such as methylphenidate, commonly referred to as Ritalin. This is the most prescribed drug for children in the nation, and is believed to change problem behaviors and attention span in the classroom. One wonders if attention span could be increased with the use of Irlen colored overlays.

In a study by Whiting (1988), it was found that, of the 155 surveys completed by Irlen colored overlay users, nine children were reluctant to use their overlays. The reasons overlays were not utilized include peer pressure, poor self esteem, and hostility from teachers. Additionally, Robinson and Foreman (1999) found after a 20 month period that several refused to wear the overlays primarily because of peer pressure. These results help stress the importance of whole school implementation including students and teachers. Teachers and students should be made aware of the benefits that can result from the use of Irlen colored overlays.

#### Summary

Parents expect education will provide their children with a sound foundation for productive citizenship in our society. Unfortunately, as a whole the educational system is perceived to be failing to meet the needs of many of these children. The answer for a select few could be the use of Irlen colored overlays. If the educational system is to create a solid foundation for everyone, we must examine all possibilities to help students become successful readers.

The research on familial incidence is vital when providing students with Irlen colored overlays. Parents and

siblings could also be suffering from similar symptoms. Many times they can identify with the struggles their student is facing. This support and understanding can assist the student in developing their literacy skills. It also increases communication between parent and child, which is the foundation for a healthy home-school relationship.

Reading is more than pronouncing and identifying words. Reading is a complex process involving personal connections between text and life experiences. Fluency and comprehension may be improved from the use of Irlen colored overlays. If students with Irlen syndrome are given a level playing field, in that they have text free from distortions, they may be able to close the reading gap. The reading gap is described by Honig, Diamond, and Gutlohn (2000) as the difference between the target level of reading proficiency, which should be possible for students to achieve, and the actual level of reading proficiency. If students are unable to clearly view the text their ability to comprehend is jeopardized. Students suffering from Irlen Syndrome are also often unable to develop the strategies associated with good reading, such as questioning, reviewing, revising, and rereading. The implementation of Irlen colored overlays is an essential step to solving reading problems associated with perceptual dysfunctions.

## CHAPTER THREE

### METHODOLOGY

#### Introduction

This project began in August of the 2002-2003 academic school year. During an in-service, staff members were trained by the researcher to identify the physical and academic symptoms of Irlen Syndrome. As a result of this training, staff members were prepared to refer students who were demonstrating symptoms of Irlen Syndrome. When referring a student, the staff supplied a list of the symptoms each student was exhibiting in the classroom. This information enabled the screener to prioritize targeted students. Individuals with more symptoms were screened first. Once students were referred the researcher screened them using the Irlen Reading Perceptual Scale, which can only be given by a trained and certified individual. To obtain this training, one must attend a weekend seminar at one of Helen Irlen's Institutes.

The screening process identifies individuals with Irlen Syndrome and determines the severity of their symptoms. The first two screening tasks present students with a large three-dimensional cube divided into smaller boxes. The students are asked to count a specified column of small

boxes without using their finger as a marker. After completing the task, students are asked questions regarding the movement and clarity of the lines on the page. They also report any physical strain or discomfort that may have occurred while completing the task. Both tasks are performed in order to induce symptoms related to Irlen Syndrome. It also benefits the student by creating an awareness of symptoms and provides them with language to talk about their reading difficulties. When administering the Irlen Reading Perceptual Scale, the screener must be unbiased in responses. Expressing opinions and feelings during the test can lead the students to respond a certain way. This could result in an incorrect identification or diagnosis. After screening, the students exhibiting moderate to severe symptoms were given their most beneficial colored overlay to use when reading at school and at home. To determine a student's optimal color, nine colored overlays are placed two at a time over a white page with black letters. The student compares the two sides and gives the screener feedback regarding the clarity of print and their level of comfort. This process is repeated until the optimal color is determined. Some students required more than one Irlen colored overlay or even more than one color. Parents were notified and given an informational letter



explaining the symptoms and warning signs of Irlen Syndrome (See Appendix A). In addition, teachers were given an accommodation sheet identifying the student, optimal Irlen colored overlay, and visual distortions (See Appendix B).

Based on initial screening information, ten students suffering from moderate to severe symptoms of Irlen Syndrome were selected to be monitored by the researcher. Every Wednesday, the researcher met with the selected students to discuss improvements they noticed while reading with the overlays. They were asked questions regarding the duration of their reading, the speed of their reading, and in what subjects they were utilizing the overlays. In addition, students were observed reading a passage while using the overlay and observed reading a passage without the overlay. The passage had different starting points and was written in Dutch to eliminate familiarity. Observations were made in regards to the pace students read and the number of errors made with and without the overlay. Students were also asked to complete a pointing task. They were given six opportunities to point to a word, look away, and then point to the word again. The first three times were with the optimal colored overlay and the last three times were without an overlay. The speed of word identification was compared to determine effectiveness of the overlay.

### Population Served

This intervention project was developed specifically for the use of students in sixth through eighth grade at Jehue Middle School in the Rialto Unified School District. The project, however, is appropriate for any school district. The students in this project consisted of four eighth graders, two seventh-graders, and four sixth-graders. Each student demonstrated moderate to severe physical or academic symptoms of Irlen Syndrome. In this study, the students utilized a variety of individual and combined Irlen colored overlays. The study consisted of blue, rose, peach, green, green on top of blue-gray, two greens together, two blue-gray together, four blue-gray together, and two purples together. Student participants were specifically selected due to their willingness to communicate their experiences openly. Each had been previously screened to eliminate visual problems as a contributing factor.

### Method of Measurement

In order to study the effect of the overlays on reading processes and general reading comprehension a questionnaire (See Appendix C) was developed. The questionnaire was based directly on elements of the Irlen Perceptual Scale. These included such items as headaches, stomachaches,

irritated or watery eyes, drowsiness, frequent blinking, and rubbing eyes. It identified academic improvements in areas such as speed of reading, comprehension, duration of reading, amount of miscues while reading aloud, joy of reading, independent reading, fluency, and expression. In addition, the questionnaire asked students if they had been using the Irlen colored overlay consistently, and if they felt support from their peers and parents. This idea of peer influence was especially vital data because of the importance of peer pressure and acceptance during the middle school years. Each student completed the questionnaire orally in a one-on-one situation and the interviews were tape recorded for the purpose of transcription.

#### Summary

This project was implemented to determine the amount of growth and improvement students demonstrated and establish a precedence for school wide implementation of Irlen colored overlays. The project included teacher referral, parent involvement and researcher follow up in the form of the above-mentioned interview. It was especially important to middle school teachers because it is often assumed that by the time students reach middle school they already know how to read. Therefore, many school districts do not currently

have reading classes or assessments in place.

Theoretically, reading mastery would be wonderful but, as educators know, this assumption would not be true. Educators lacking formal reading instruction often find themselves helpless when teaching grade-level text to a class of below-basic readers.

It is crucial to remember that a correct diagnosis can only follow an appropriate referral from the teacher. Teachers need to be well informed about symptoms, behaviors to look for, and academic difficulties that result from Irlen Syndrome. Students need to feel support from their parents. In order for this intervention to be successful students, teachers, and parents need to communicate and work together. With this collaboration, the use of Irlen colored overlays can have many benefits, including a love of literature and reading. The process of reading no longer becomes a physically painful experience dominated with failure, but rather one associated with support and growth.

## CHAPTER FOUR

### FINDINGS

#### Introduction

This chapter presents the findings of the data gathered from ten interviewed students (See Appendix D). The interviews were analyzed based on the number of students who experienced changes and anecdotal comments.

#### Presentation of the Findings

The interview started with a basic question which determined if the students had been using the Irlen colored overlay on a regular basis. Eight stated they had been using it regularly. One stated he used it all day every day, two at home only, and seven at home and at school while reading.

Peer influence can be vital, especially in middle school. All ten students stated they felt comfortable using the Irlen colored overlays in front of their peers. Krystle explained that sometimes peers help her feel comfortable, "there is another student in my class who uses them and he is real popular. No one would dare say anything because of him." In addition she had a teacher who let her explain to the class what the Irlen colored overlays did for her. She even stated that "some of them have asked if they could get

tested and I told them I would see what I could do." The combined support from her peers and teacher made her feel at ease in the classroom. Matthew took a very mature attitude when he explained why he felt comfortable using the overlay in front of his peers, "it makes reading easier and it isn't something to be embarrassed over." In addition, more than one student reported that peers thought the Irlen overlays were "cool."

Table 1 represents the number of students that used the Irlen colored overlays for each academic subject.

Table 1. Subject Areas in Which Irlen Colored Overlays Were Used

School Subject	Number of students
Language Arts	8/10
Math	6/10
Social Studies	7/10
Science	6/10
Physical Education	2/10
Exploratory	4/10

The results show that students use the Irlen colored overlays most frequently in Language Arts class and least frequently in Physical Education. During the interview process students stated that this lack of use was because reading is only required once a week on health days.

In relation to academic areas, students were asked if their grades improved since using the Irlen overlay. Eight stated they felt their grades had improved since using the Irlen overlay, one said they did not, and another student said he was unsure. One student reported his grades had not improved because "I am a little lazy with school but I do read a lot in class." He was honest and realized that it was his own lack of motivation that resulted in low grades. Other students experienced positive results. Richard went from 2s to 3s in Social Studies and Language Arts, while Deborah received a 3+ in Language Arts.

Table 2 displays the number of students who felt they had improved with various reading skills. Students evaluated their own growth in relation to how fast they could read, how well they comprehended text, their ability to make fewer mistakes while reading aloud, and their improvement in fluency and expression. In addition, they determined whether they enjoyed reading more, and increased the time they spent reading at home, the duration of their reading sessions, and the amount of time they spent independently reading.

Table 2. Improvement in Various Reading Skills

Reading Skill	Number of Students
Speed of Reading	10/10 (see Appendix D)
Comprehension	8/10 (see Appendix D)
Reading Longer	10/10 (see Appendix D)
Fewer Mistakes Reading Aloud	9/10 (see Appendix D)
Enjoy Reading More	9/10 (see Appendix D)
Read at Home More	8/10 (see Appendix D)
Read Independently More	8/10 (see Appendix D)
Fluency and Expression	7/10 (see Appendix D)

All of the students stated they felt the Irlen colored overlay improved their reading skills. Specifically, all ten of the students interviewed believed they now read for longer durations of time. Two said they read 10 minutes longer, six said 20 minutes longer and two said 30 minutes longer. Several of the students, including John, stated they never used to read but started to because of the Irlen overlays. Krystle took it a step further when she stated that, "reading isn't painful anymore. I will actually read even if it isn't for my class reading log." Richard used to read once every week and now reads four days a week. Deborah never used to read at home and now she reads almost every night.

Other reading skills such as comprehension and making guesses of unknown words also improved. Students said they



could pay attention more while reading and therefore answered the comprehension questions better. Ernesto declared that he could make guesses at unknown words because he could sound them out and before he could not concentrate and focus on one word without the letters running together. Krystle's difficulties resulted from severe headaches. She would just skip the word because if she did not her head would hurt. She said she "attempts to read a word and spend time on it." Matthew and Mike, on the other hand, were unable to see the blurry words and would just guess. Now they could see the letters clearly. This ability to see words clearly also influenced fluency. Matthew felt he could pronounce the words better and read faster. Mike said he could "read faster because there is not scribble scrabble" and that he was "more confident" about his reading.

Finally, nine of the students enjoyed reading more since using the Irlen colored overlay. Inez stated that he "enjoys reading more but only when I use it."

Table 3 presents the decrease in physical symptoms. Students suffered from a variety of symptoms and therefore not all symptoms in Table 3 apply to all interviewed students.

Table 3. Decrease in Physical Symptoms

Symptoms	Number of Students
Headaches	6/10 (see Appendix D)
Stomach Aches	2/10 (see Appendix D)
Irritated/ Watery Eyes	6/10 (see Appendix D)
Drowsiness	6/10 (see Appendix D)
Frequent Blinking	4/10 (see Appendix D)
Rubbing Eyes	3/10 (see Appendix D)
Dizziness	1/10 (see Appendix D)

Ernesto could only read for a short time and then he would get dazed and just stop reading. When asked what he meant by dazed, he described it as dizzy. He has not experienced this dizziness since he began using the Irlen colored overlays. Krystle suffered from severe headaches that started whenever she attempted to read. This resulted in trips to the nurse and missed instruction because of time away from class. She explained, "I used to go to the nurse two to three times a week and now I have only gone once since getting the overlay, and that was because I was actually sick." In addition, she was supposed to see a specialist about her headaches but was put on a year-long waiting list. Since her headaches ceased she did not feel the need to keep her appointment with the physician. Andrew also suffered from headaches on a daily basis but said he has not had them since he was given the Irlen overlay. Inez

noticed a decrease in eye irritation. He made the following observation, "I use to have to rub my eyes for like three minutes. I was trying to make them stop watering but I don't have to rub them much now."

Table 4 examines the percentage of students who noticed an improvement in specific reading symptoms.

Table 4. Improvement in Reading Symptoms

Reading Symptom	% of Students
Accidentally Skipping Lines	80% (see Appendix D)
Losing Place	70% (see Appendix D)
Accidentally Skipping Words	60% (see Appendix D)
Avoid Reading Aloud	50% (see Appendix D)
Reading Slowly	100% (see Appendix D)
Reading in a Choppy Manner	80% (see Appendix D)
Decrease in Blurry Words	100% (see Appendix D)
Decrease in Moving Words	70% (see Appendix D)
Decrease in Irritation from White Paper	70% (see Appendix D)
Decrease in Irritation from Bright Lights	40% (see Appendix D)

Matthew would lose his place every time but "not anymore." When asked if he has stopped reading in a choppy manner, Andrew stated, "I can read much clearer." Deborah used to accidentally skip lines all the time but now she can "see the lines much better." Deborah's mother noticed improvement in regard to choppy reading. Deborah was pleased

to relay that her mother "says I don't stop as much." Her mother has also increased the amount of reading they do together at home since she started using the Irlen colored overlays.

One student, Richard, discovered that he has made a tremendous amount of growth reading aloud. During the interview he discussed his experiences with stuttering. "I don't stutter anymore. Last year my class use to make fun of me because I stuttered all the time but with the overlay I don't this year." Not only did he read aloud more frequently but his confidence level increased. Ernesto never used to volunteer to read and felt uncomfortable if asked to read by the teacher. After using the Irlen colored overlays he said, "Now I'm like whatever." He no longer felt uncomfortable reading aloud.

Blurry words were a very common symptom among this group of students. In the beginning of the study, all students identified blurry vision as a major barrier to reading. After three months, all of the students noticed a significant decrease in blurry words. John described the words as "really blurry but not with the overlay." Matthew used to read one page and then the text would get blurry but now it does not. Before using the Irlen overlays Richard would "stare at the words and they would start getting

blurry and wobbly." These wobbly words also classify as visual distortions or moving print. Matthew's words would "jiggle without the overlay" and Inez's words would "move on top of each other." All three students stated that the text stopped moving when they used the Irlen colored overlays.

Students also experienced irritation from the white paper of textbooks, tests, and worksheets. This was usually caused by the glare from the florescent lights. Krystle explained the difference, "Yeah, it has gotten better. I can read white paper if it is a short assignment but when there is a lot of reading I need the overlay. I guess the overlay soothes my eyes." Similarly, Richard said the paper got darker with the irlen colored overlay and therefore does not bother him anymore.

To ensure the success of the student, parental support must equal or exceed the support provided by the school. Nine of the students felt support at home and one felt no support. John's parents read with him each night and make him use the overlay while reading. He also stated they have noticed an improvement. "They also tell me I am doing good." Of course, even support can sometimes be negative. Andrew stated that when he is not reading with his Irlen overlay at home his mother will "cuss at me and tell me to go get it."

## Discussion of the Findings

The reduction in physical symptoms was the most vital component in this study. This enabled students to see words clearly for the first time, focus on words without physical strain or pain, to read aloud, and enjoy the overall reading process. Many of these students actually viewed the printed word clearly for the first time. This ability to clearly view text led to not only increased fluency, but increased comprehension. As previously mentioned, research by Honig et al. (2000) stated that the ability to identify words rapidly and effortlessly allowed the reader to focus on extracting meaning from the text. In this case, students were no longer distracted by visual distortions and could concentrate on the meaning behind the words.

It was apparent that the students in this study judged their self-worth in the classroom based on their ability to read. Unfortunately, what they did not realize was that they were comparing themselves to students who do not suffer from the same symptoms or difficulties. They never realized they were viewing the printed word in a different manner than their peers. They never understood why their neighbor could read the text that was moving or blurry. An awareness of this difference, and the ability to reduce symptoms, resulted in powerful changes.

Students demonstrated a powerful increase in their level of intrinsic motivation. Previously, several of the students were reading only when it was a requirement for class. After the Irlen colored overlays were implemented, students found themselves reading books independently for pleasure. This was one of the contributing factors to the student's sense of improved comprehension. As Guthrie and Wigfield (2000) stated, students who read actively and frequently improve their comprehension of text (pg. 404). The students also became engaged in the reading experience. They began to participate in class discussions, make personal connections, and interpret the literature being read.

Peer pressure can have detrimental effects on middle school students. All students interviewed felt comfortable using the Irlen colored overlays in front of their classmates. They knew the overlays were helping them academically, which was of utmost importance. These students wanted to become better readers and were willing to try a different strategy in order to reach their educational goals.

Many students felt a literacy connection with their parents, which was not present before the implementation of Irlen colored overlays. After being notified of the

program, parents took a more hands-on approach with reading. They discussed the symptoms of Irlen Syndrome with their children and the parental support put students at ease. In fact, two of the students requested screening for an additional family member.

Throughout the interviews the common element that connected each student was an improved sense of self-esteem. Students had more confidence in their reading ability and therefore enjoyed the reading experience more at school and at home. They were no longer facing the same level of humiliation or frustration in regard to their reading. The level of confidence they exuded drastically changed over the three-month period. This is a major contributing factor that resulted in success for these students.



## CHAPTER FIVE

### CONCLUSIONS AND RECOMMENDATIONS

#### Introduction

A number of conclusions and recommendations were formed as a result of reviewing the literature related to the reading process and Irlen Syndrome and examining the student interviews. It became obvious that readers suffering from symptoms of Irlen Syndrome need more than reading instruction to be successful. They need the Irlen colored overlay to reduce their physical symptoms and view the text clearly. After students began utilizing the Irlen colored overlays, they found themselves able to construct meaning and relate to the text. Previously, visual distortions and physical symptoms prevented them from focusing on the print for even short periods of time. Additionally, this reduction of symptoms led to an increase in self-esteem. Students regained confidence in their reading capabilities, which resulted in higher levels of engaged learning in the classroom. Students were able to participate in deep discussions and connect text to their own personal experiences. They began to volunteer to read aloud in class and had higher opinions about their reading comprehension ability. Finally, students in the study demonstrated

improved levels of intrinsic motivation. Students who stated they never read, began to read at home for the pure pleasure of reading.

### Conclusions

Society places such importance on reading that individuals who can not read judge themselves as inferior and unsuccessful. As educators we can not send students into the world without skills and tools to survive. One of these tools is the Irlen colored overlay. Their use had a positive influence on the reading skills and self-esteem of all ten students in this project. Students began to volunteer to read in front of their peers and answer comprehension questions about the texts they read. They felt they could read with greater speed and make fewer mistakes while reading aloud. This new sense of confidence resulted in a positive attitude regarding themselves and their education.

There was also a decrease in a variety of physical symptoms, which had prevented students from clearly viewing and focusing on text. Students were no longer distracted by eye strain and headaches. Therefore, they were able to concentrate and focus their attention on the text and the instructor. In fact, students even decreased the amount of

time they spent outside of class in the nurse's office. They spent more time in the classroom critically analyzing meaning because word recognition had become more automatic.

In addition, students stated they read more as a result of using the Irlen colored overlays. Some students stated they never read until they started using the Irlen colored overlays. This is an essential element of reading because professionals believe that students who score higher on standardized tests read more words per day. More importantly, the increase in intrinsic motivation will be a life changing factor. This motivation will carry through to high school, college, and the working world. It will establish a sense of accomplishment and pride in each student.

The use of Irlen colored overlays breaks down one of the obstacles preventing students from becoming successful readers. It is not a final answer, but can benefit students in a variety of ways including fluency, comprehension, and self-esteem.

#### Recommendations

The implementation of Irlen colored overlays needs to accompany a variety of interventions. Students will still need specific reading tutoring, school interventions, and

extensive teacher guidance. The colored overlays reduce the physical symptoms and visual distortions which prevent these students from reading, but the overlays do not teach them to read. Frequently these students will be years behind and need continued encouragement and support from teachers, peers, and parents. The next step should be the development of specific strategies to improve reading skills such as comprehension and vocabulary development. The combination of Irlen colored overlays and specific reading instruction translate into reading success.

Funds should be allocated to Irlen Syndrome intervention annually. This would enable identified students to continue using the overlays, and new students to be provided materials. It would be beneficial to supply students with several sets of Irlen colored overlays. This would allow students to keep a set at home and in each classroom they attend. It would also prevent the Irlen colored overlays from being scratched or damaged. Additionally, money needs to be allocated to rescreening students previously diagnosed with Irlen Syndrome in order to determine if they benefit from using the same colored overlay. Irlen (1991) stated overlay color changes twenty-five percent of the time.

Further investigation is needed in order to truly determine all the benefits of Irlen colored overlays. The focus of the research should be on observational data collection. Students should be observed in a variety of academic environments which require engagement with text. In addition, longitudinal research should be conducted in order to track the progress of students who are utilizing Irlen colored overlays and also receiving reading interventions. This would enable the researcher to analyze the long term effects of Irlen colored overlays on reading strategies and comprehension.

APPENDIX A  
PARENT LETTER AND INFORMATION SHEET

Jehue Middle School  
Rialto Unified School District  
1500 North Eucalyptus Avenue  
Colton, CA 92324

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Dear Parent or Guardian,

Many children and adults with reading problems have no difficulty reading words but are inefficient readers who skip lines and lose their place or have poor comprehension. This problem is called Irlen Syndrome. Readers with Irlen Syndrome see distortions on the printed page which can cause eye strain, fatigue, a slow reading rate, and poor comprehension. These perceptual problems can often be reduced by the use of a colored plastic overlay top to be used over reading materials. This is just one strategy that can help with reading skills and the ability to stay on task. For further information, refer to Reading by the Colors by Helen Irlen or [www.Irlen.com](http://www.Irlen.com).

Your child has complained of many symptoms consistent with Irlen Syndrome. \_\_\_\_\_ was screened and has various symptoms of Irlen Syndrome. With the use of the colored overlay, your child should notice improvements in reading rate, accuracy, or comprehension. Please encourage the use of the colored overlay when reading at home and at school.

If you have any questions feel free to contact Jehue Middle School at 909-421-7377.

*"Together Everyone Achieves More"*

## Irlen Syndrome Warning Signs

The following is a list of symptoms associated with Irlen Syndrome. If you or your child exhibit many of the following characteristics, you may want to consult an Irlen Specialist.

### Reading Behavior

Does your child:

- \* avoid reading?
- \* dislike reading?
- \* prefer dim lights?
- \* difficulty comprehending?
- \* become easily distracted?

### Body Language

Does your child:

- \* move around trying?
- \* shade the page?
- \* move head across the page?
- \* use finger or marker?
- \* blink, squint, rub eyes?
- \* become very sleepy?
- \* lose concentration?

### When reading out loud, does your child:

- \* skip words or reread words and lines?
- \* read word by word?
- \* misread words?
- \* read slowly or with hesitation?

### When reading, does your child complain:

- \* the print seems to move or even disappear?
- \* of stomachaches or feeling dizzy?
- \* the page seems too bright or glary?
- \* of headaches or sore eyes?
- \* of blurry vision?

### Written Work

Do you see:

- \* an inability to write on the line, writing uphill, or downhill?

Unequal spacing?

Errors copying?

- \* inconsistent spelling of the same word?
- \* misaligned numbers in columns?

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For more information contact:

Irlen Institute

5380 Village Road, Long Beach, California 90808, USA



APPENDIX B  
TEACHER ACCOMMODATION SHEET

Irlen Syndrome Accommodation Sheet

Teachers: \_\_\_\_\_

Student Name: \_\_\_\_\_

Colored Overlay: \_\_\_\_\_

Distortion: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\*Please remind the student to use the colored overlay while doing any activity involving reading.

APPENDIX C  
INTERVIEW QUESTIONS

### Irlen Overlays

1. Has your child been using the Irlen overlays?  
YES \_\_\_ NO \_\_\_
2. How often?  
Every day \_\_\_  
All day every day \_\_\_  
At school only \_\_\_  
At home only \_\_\_  
At home and school both while reading \_\_\_
3. For what subject areas does your child use the Irlen overlay?  
Language Arts \_\_\_  
Math \_\_\_  
Science \_\_\_  
PE \_\_\_  
Other \_\_\_ What subject \_\_\_\_\_
4. Does your child feel comfortable using the Irlen overlay in front of peers?  
YES \_\_\_ NO \_\_\_
5. Do you feel that the Irlen overlays have been helping your child read better?  
YES \_\_\_ NO \_\_\_
6. If the Irlen overlays have been helping your child read better, check the areas where you see an improvement:
  - a speed of reading \_\_\_
  - b comprehension \_\_\_
  - c able to read longer when using the overlay \_\_\_
  - d how much longer can your child read when using the overlay:
    - 10 minutes longer when using overlays \_\_\_
    - 20 minutes longer when using overlays \_\_\_
    - 30 minutes longer when using overlays \_\_\_
    - 40 minutes longer when using overlays \_\_\_
    - 50 minutes or longer when using overlays \_\_\_
  - e make fewer mistakes when reading a loud \_\_\_
  - f enjoy reading more \_\_\_
  - g read at home more \_\_\_
  - h read independently more \_\_\_
  - i read with more fluency & expression \_\_\_
  - j able to make more guesses about unknown words \_\_\_
7. Have you seen an improvement in your child's grades since using the Irlen overlays?  
YES \_\_\_ NO \_\_\_

8. Do you notice a decrease in physical symptoms such as the following when your child is using the Irlen overlays? Check all that apply.

- a headaches \_\_\_\_\_
- b stomach aches \_\_\_\_\_
- c irritated and/or watery eyes \_\_\_\_\_
- d drowsiness \_\_\_\_\_
- e frequent blinking \_\_\_\_\_
- f rubbing eyes \_\_\_\_\_

9. Do you support the use of Irlen overlays at home when your child is reading?

YES \_\_\_\_\_ NO \_\_\_\_\_

10. Do you believe that you or any of your other children would benefit from the use of Irlen overlays?

YES \_\_\_\_\_ NO \_\_\_\_\_ Who \_\_\_\_\_

APPENDIX D  
INTERVIEW TRANSCRIPTS

John

Date started using overlay: 9/25/02

Color used: Blue

Date interviewed: 12/12/02

Altman: Have you been using the Irlen Overlays?

John: Yes.

Altman: How Often?

John: All the time.

Altman: At home and at school.

John: Yep.

Altman: : What do you usually use the overlay for? Language Arts, Math, Social studies or Science?

John: Language Arts, Social Studies, Science, and Math.

Altman: What about in PE?

John: Yes, when I am doing health.

Altman: Why health?

John: We read but it is only on Mondays.

Altman: What about Exploratory?

John: Yes, there is a lot of reading.

Altman: Do you feel comfortable using the overlay in front of your peers?

John: Yes.

Altman: How come?

John: I don't know....because other people in my class have them. Some kids want my overlay so they can read.

Altman: Do you feel the overlays are helping you read better?

John: Yes.

Altman: In what ways?

John: The words don't move

Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.

Altman: The speed that you are reading.

John: A little.

Altman: Do you think you can answer comprehension questions better?

John: A little.

Altman: Are you able to read longer?

John: Yes.

Altman: How much longer? 10 minutes? 20 minutes?

John: 20 minutes longer

Altman: How long could you read before you used the overlay?

John: I never use to read.

Altman: Have you been making fewer mistakes when you read out loud?

John: Yes.

Altman: Do you volunteer to read more since using the overlay.

John: I didn't use to volunteer. I feel more comfortable.

Altman: Do you enjoy reading more?

John: A little

Altman: Do you read at home more?

John: Yeah, with my mom.

Altman: Do you read Independently now?

John: No, I read with my mom.

Altman: Do you think you are reading with more expression and fluency.

John: Yes. People have noticed.

Altman: When you come to a word you don't know are you able to make a better guess?

John: Yes.

Altman: Have your grades improved since you have been using the overlay?

John: I don't know we haven't gotten our grades yet.

Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.

Altman: Headaches?

John: No

Altman: Stomach Aches?

John: No

Altman: Watery or Irritated Eyes?

John: No

Altman: Drowsiness, getting tired when you read?

John: No

Altman: How about frequent blinking?

John: Yeah, I use to blink all the time.

Altman: How about now.

John: I don't have it anymore.

Altman: Rubbing your eyes?

John: Not anymore.

Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.

Altman: Are you accidentally skipping lines less.

John: Yes.

Altman: What about losing your place when you read.

John: No, I still lose my place. I use my finger to mark.

Altman: Accidentally skipping words?

John: Yes.

Altman: Avoid reading aloud?



John: Yes, I read out loud now.

Altman: Reading slowly.

John: A little better.

Altman: Reading in a choppy manner.

John: Yes...a lot

Altman: Did you ever have words get blurry?

John: Without the overlay they are really blurry but not with it.

Altman: Did you ever have words that moved?

John: Not anymore.

Altman: Did the white paper ever seem to bright for you?

John: It bother me a little but not any more. It is better to read because it calms me.

Altman: Did the bright lights ever bother you?

John: No

Altman: Do your parents support your use of the overlays at home?

John: Yes.

Altman: What do they do.

John: If I am reading they make me go get it. They also tell me I am doing good.

Ernesto

Date started using overlay: 10/8/02

Color used: Rose

Date interviewed: 12/12/02

Altman: Have you been using the Irlen Overlays?

Ernesto: Yeah

Altman: How Often?

Ernesto: Um

Altman: Every day? All day? At school? At Home? Or at school and home whenever you read?

Ernesto: At school and at home whenever I read.

Altman: OK

Altman: : What do you usually use the overlay for? Language Arts, Math, Social studies or Science?

Ernesto: Language Arts, Social Studies, and Science.

Altman: What about in PE?

Ernesto: Yeah.

Altman: What about Exploratory?

Ernesto: Yeah, only when I'm reading

Altman: Do you use it when you are taking tests or when you are reading from the textbook?

Ernesto: Um...both but it is hard to use when I am using a scantron.

Altman: Do you feel comfortable using the overlay in front

of your peers?

Ernesto: Yeah.

Altman: How come?

Ernesto: I don't really care what other people think.

Altman: Do you feel the overlays are helping you read better?

Ernesto: Yeah.

Altman: In what ways?

Ernesto: I read faster and I don't lose my place that much. That's about it.

Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.

Altman: The speed that you are reading.

Ernesto: Yeah

Altman: Do you think you can answer comprehension questions better?

Ernesto: Yeah.

Altman: How come?

Ernesto: I can read and understand the questions better.

Altman: Are you able to read longer?

Ernesto: Yeah.

Altman: How much longer? 10 minutes? 20 minutes?

Ernesto: A lot longer...about 30 minutes.

Altman: How long could you read before you used the overlay?

Ernesto: Only a little while and then I would get all dazed and just stop reading.

Altman: What do you mean by dazed?

Ernesto: I would get all dizzy.

Altman: Have you had the dizziness since you started using the overlays.

Ernesto: Nope.

Altman: So, since you started using the overlay you are reading more?

Ernesto: Yeah.

Altman: Have you been making fewer mistakes when you read out loud?

Ernesto: Um, yeah.

Altman: Do you enjoy reading more?

Ernesto: Well, not really.

Altman: Do you read at home more?

Ernesto: Yeah.

Altman: Do you read Independently now?

Ernesto: Yeah, now I read for my reading log and some for fun.

Altman: Do you think you are reading with more expression and fluency.

Ernesto: Sort of.  
Altman: When you come to a word you don't know are you able to make a better guess?  
Ernesto: Yeah.  
Altman: How come?  
Ernesto: I can sound it out.  
Altman: How come you couldn't do that before?  
Ernesto: Because I couldn't concentrate and focus on one word without it getting all stuck together.  
Altman: Do you volunteer to read out loud more?  
Ernesto: Yeah. My teacher noticed that.  
Altman: Does the teacher ever call on you?  
Ernesto: Yeah  
Altman: How does that make you feel?  
Ernesto: Now I'm like whatever.  
Altman: How did you feel about reading out loud before you had the overlays?  
Ernesto: Before I felt uncomfortable.  
Altman: Have your grades improved since you have been using the overlay?  
Ernesto: Yeah. Just in English.  
Altman: Why just English?  
Ernesto: She makes me use them the most.  
Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.  
Ernesto: OK  
Altman: Headaches?  
Ernesto: Never had.  
Altman: Stomach Aches?  
Ernesto: Never had.  
Altman: Watery or Irritated Eyes?  
Ernesto: Didn't have it  
Altman: Drowsiness, getting tired when you read?  
Ernesto: Yeah, that's decreased.  
Altman: How tired did you use to get before.  
Ernesto: I would get exhausted so I would just close the book and do something else.  
Altman: How about frequent blinking?  
Ernesto: No, never had.  
Altman: Rubbing your eyes?  
Ernesto: No.  
Altman: Now, before you said you use to get dizzy. Has that decreased?  
Ernesto: Yeah.  
Altman: We are going to talk about some of the improvements

you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.

Ernesto: OK

Altman: Are you accidentally skipping lines less.

Ernesto: Yeah. I don't any more. It makes it easier.

Altman: What about losing your place when you read.

Ernesto: Before but not now.

Altman: Accidentally skipping words?

Ernesto: Use to before but not now

Altman: Avoid reading aloud?

Ernesto: I use to.

Altman: How about now?

Ernesto: No.

Altman: Would you volunteer to read aloud now.

Ernesto: Oh, yeah. I wouldn't do that before.

Altman: Reading slowly.

Ernesto: Yeah.

Altman: Reading in a choppy manner.

Ernesto: Yeah. That's why I read faster.

Altman: Did you ever have words get blurry?

Ernesto: Yeah

Altman: What does the overlay do for you?

Ernesto: The words look clear so I can focus.

Altman: Did you ever have words that moved?

Ernesto: No

Altman: Did the white paper ever seem to bright for you?

Ernesto: No.

Altman: Did the bright lights ever bother you?

Ernesto: Yeah but some of my teachers moved me to a window because you told them too.

Altman: Does that help?

Ernesto: Yeah but I don't know why.

Altman: Do your parents support your use of the overlays at home?

Ernesto: Yeah, they tell me to use it when I'm reading.

### Krystle

Date started using overlay: 9/30/02

Color used: Peach

Date interviewed: 12/12/02

Altman: Have you been using the Irlen Overlays?

Krystle: Yes.

Altman: How Often?

Krystle: At home and school whenever I read.

Altman: : What do you usually use the overlay for? Language Arts, Math, Social studies or Science?

Krystle: Language Arts, Math, Social Studies, and Science.

Altman: What about in PE?

Krystle: Not really.

Altman: What about Exploratory?

Krystle: Not really.

Altman: Do you feel comfortable using the overlay in front of your peers?

Krystle: Oh Yeah.

Altman: How come?

Krystle: Oh yeah, there is another student in my class who uses them and he is real popular. No one would dare say anything because of him. My math teacher also let me tell the class about it and so they knew all about it. They would never make fun of me.

Altman: Have those other students ever asked to try it?

Krystle: Yeah, they do sometimes. Some of them have asked if they could get testes and I told them I would see what I could do.

Altman: Do you feel the overlays are helping you read better?

Krystle: Oh definitely yes. I use to get all these headaches and now I can read much faster and longer.

Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.

Altman: The speed that you are reading.

Krystle: Yes.

Altman: Do you think you can answer comprehension questions better?

Krystle: Yeah, I can pay attention more while reading and then answer the comprehension questions better.

Altman: Are you able to read longer?

Krystle: I use to only read for about 5 minutes but now I can read about 20 minutes or beyond.

Altman: Have you been making fewer mistakes when you read out loud?

Krystle: Yes and I feel more comfortable.

Altman: Do you enjoy reading more?

Krystle: Yes.

Altman: Do you read at home more?

Krystle: Yeah. I do my reading logs now.

Altman: Do you read Independently now?

Krystle: Yeah. Reading isn't painful anymore. I will actually read even if it isn't for my reading log.

Altman: Do you think you are reading with more expression

and fluency.

Krystle: Oh yeah, before you know I couldn't even think about what I was reading I just wanted to stop.

Altman: When you come to a word you don't know are you able to make a better guess?

Krystle: Yeah, I use to just skip the word because if I didn't my head would hurt. Now I can attempt to read a word and spend time on it.

Altman: Have your grades improved since you have been using the overlay?

Krystle: I would say a little. I was put into different classes, you know...out of AVID. My teachers said they have seen improvement.

Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.

Altman: Headaches?

Krystle: Yes! I use to go to the nurse 2 to 3 times a week and now I have only gone once since getting the overlay and that was because I was actually sick.

Altman: Weren't you seeing a specialist for your headaches?

Krystle: Well, I was put on this waiting list and they said I would have to wait like a year. But now I don't think I even have to go.

Altman: Stomach Aches?

Krystle: Same as the headaches.

Altman: Watery or Irritated Eyes?

Krystle: They would get really stained and burn but not anymore.

Altman: Drowsiness, getting tired when you read?

Krystle: I use to have to lay down and get real tired. Now I am ore alert and can focus longer.

Altman: How about frequent blinking?

Krystle: Yes.

Altman: Rubbing your eyes?

Krystle: I always tried not to rub my eyes so no.

Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.

Altman: Are you accidentally skipping lines less.

Krystle: Yeah, I don't do it anymore.

Altman: What about losing your place when you read.

Krystle: Yeah.

Altman: Accidentally skipping words?

Krystle: Once and a while I will skip a word but that is when I have to rush.

Altman: Avoid reading aloud?

Krystle: A little more. I still don't volunteer but if a teacher asks me to read it isn't a big deal anymore. I have more confidence.

Altman: Reading slowly.

Krystle: Yeah, I read a lot faster now.

Altman: Reading in a choppy manner.

Krystle: Yeah.

Altman: Did you ever have words get blurry?

Krystle: Oh, the words use to get blurry but not anymore.

Altman: Did you ever have words that moved?

Krystle: No.

Altman: Did the white paper ever seem to bright for you?

Krystle: Yeah, it has gotten better. I can read white paper if it is a short assignment but when there is a lot of reading I need the overlay. That one time I was taking a long test and didn't have, remember, that is why I came and borrowed one. I guess the overlay soothes my eyes.

Altman: Did the bright lights ever bother you?

Krystle: It has improved because you ask the teachers to sit me by the window. The only class I don't is because she doesn't have windows.

Altman: Do your parents support your use of the overlays at home?

Krystle: Yes, she asks me every night if I have homework. If I tell her I have a long assignment with reading she makes me use it. She also wants me to use it at school so she doesn't have to keep picking me up from the nurse.

Altman: So you use to miss a lot of school because of headaches?

Krystle: It's not that I was absent. I was just at the nurse a lot and my mom would have to bring medicine because the nurse can't give it to you. But my mom hasn't have to come since I started using the overlay.

#### Matthew

Date started using overlay: 9/25/02

Color used: Green on top of blue-gray

Date interviewed: 12/13/02

Altman: Have you been using the Irlen Overlays?

Matthew: Yes.

Altman: How Often? Every day? All day? At school? At Home? Or at school and home whenever you read?

Matthew: At school and home whenever I read.

Altman: : What do you usually use the overlay for? Language Arts, Math, Social studies or Science?

Matthew: Um, like English and Language Arts. Oh wait, they are the same thing. Math only when I have to read. Social Studies. Not Science.

Altman: What about in PE?

Matthew: No

Altman: What about Exploratory?

Matthew: No, I have art. I only use it when we are reading about artists.

Altman: Do you feel comfortable using the overlay in front of your peers?

Matthew: Yeah.

Altman: How come?

Matthew: Because it makes reading easier and it isn't something to be embarrassed over. Someone else in my class also has one.

Altman: Do you feel the overlays are helping you read better?

Matthew: Yes.

Altman: In what ways?

Matthew: Not much blurriness and I can concentrate on one word without it getting blurry.

Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.

Altman: The speed that you are reading.

Matthew: Yes.

Altman: Do you think you can answer comprehension questions better?

Matthew: Yes. I can answer the teachers questions a little bit better.

Altman: Are you able to read longer?

Matthew: Yes. I use to read one page and then it would get blurry and now it doesn't.

Altman: How much longer? 10 minutes? 20 minutes?

Matthew: About 10 minutes.

Altman: How long could you read before you used the overlay?

Matthew: I didn't read.

Altman: Have you been making fewer mistakes when you read out loud?

Matthew: I still make mistakes but less since I have been using the overlay.

Altman: Do you enjoy reading more?

Matthew: Well, I still don't love it.

Altman: Do you read at home more?

Matthew: Yes.

Altman: Do you read Independently now?

Matthew: Yes, not just for my reading logs.



Altman: Do you think you are reading with more expression and fluency.

Matthew: Yeah because I can pronounce the words now and know what it says.

Altman: When you come to a word you don't know are you able to make a better guess?

Matthew: Yeah! Because I use to not see it and would just guess. Now I can see the letters.

Altman: Have your grades improved since you have been using the overlay?

Matthew: No, because I am a little lazy with school but I do read a lot in class.

Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.

Altman: Headaches?

Matthew: Before the overlays yeah.

Altman: How about now?

Matthew: No

Altman: How often did you use to get them.

Matthew: When I would read for a long time.

Altman: Stomach Aches?

Matthew: No

Altman: Watery or Irritated Eyes?

Matthew: Yeah, they always use to but they don't hurt anymore.

Altman: Drowsiness, getting tired when you read?

Matthew: My eyes use to get sleepy but not now.

Altman: How about frequent blinking?

Matthew: No.

Altman: Rubbing your eyes?

Matthew: Yeah, I use to whenever I read but not now.

Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.

Altman: Are you accidentally skipping lines less.

Matthew: Yes.

Altman: What about losing your place when you read.

Matthew: Yes. I use to lose my place every time but not anymore.

Altman: Accidentally skipping words?

Matthew: I still skip words.

Altman: Avoid reading aloud?

Matthew: I still won't volunteer but I don't mind if she calls on me. Wait, sometimes I do raise my hand but she call on other people.

Altman: Reading slowly.

Matthew: Yes. It makes it more comfortable to read during popcorn.

Altman: Reading in a choppy manner.

Matthew: Yes.

Altman: Did you ever have words get blurry?

Matthew: Yeah! The words are not blurry anymore.

Altman: Did you ever have words that moved?

Matthew: Yeah. The words jiggle without the overlay.

Altman: Did the white paper ever seem to bright for you?

Matthew: Yeah. The overlay gives it color.

Altman: Did the bright lights ever bother you?

Matthew: No. There is still a glare sometimes.

Altman: Do your parents support your use of the overlays at home?

Matthew: Yeah when I am reading. If I don't have it she says, where is your overlay.

Andrew

Date started using overlay: 10/10/02

Color used: Rose

Date interviewed: 12/13/02

Altman: Have you been using the Irlen Overlays?

Andrew: Yes.

Altman: How Often? Every day? All day? At school? At Home? Or at school and home whenever you read?

Andrew: Whenever I am reading at home and at school.

Altman: : What do you usually use the overlay for? Language Arts, Math, Social studies or Science?

Andrew: Math, science and social studies.

Altman: What about in PE?

Andrew: When they give us papers.

Altman: What about Exploratory?

Andrew: Yeah, that is the RSP class.

Altman: Do you feel comfortable using the overlay in front of your peers?

Andrew: Yeah.

Altman: How come?

Andrew: Another kid in my class uses one.

Altman: Do you feel the overlays are helping you read better?

Andrew: Yeah.

Altman: In what ways?

Andrew: Helps me read faster because I use them everyday.

Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if

you saw improvement.

Altman: The speed that you are reading.

Andrew: Yes.

Altman: Do you think you can answer comprehension questions better?

Andrew: A little.

Altman: Are you able to read longer?

Andrew: Yep.

Altman: How much longer? 10 minutes? 20 minutes?

Andrew: 15 minutes.

Altman: Have you been making fewer mistakes when you read out loud?

Andrew: Yep.

Altman: Do you enjoy reading more?

Andrew: Yep.

Altman: Do you read at home more?

Andrew: No.

Altman: Do you read Independently now?

Andrew: A little.

Altman: Do you think you are reading with more expression and fluency.

Andrew: Yeah, my teacher says I read with expression. What does that mean?

Altman: When you come to a word you don't know are you able to make a better guess?

Andrew: Yes, but I don't know why.

Altman: Have your grades improved since you have been using the overlay?

Andrew: No, I don't think so.

Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.

Altman: Headaches?

Andrew: Use to everyday.

Altman: How about since you started using the overlay?

Andrew: No more!

Altman: Stomach Aches?

Andrew: No. Never did.

Altman: Watery or Irritated Eyes?

Andrew: No. Never had.

Altman: Drowsiness, getting tired when you read?

Andrew: I use to, I use to fall a sleep but not when I have the overlay.

Altman: How about frequent blinking?

Andrew: I use to but not anymore.

Altman: Rubbing your eyes?

Andrew: I use to and I still do.  
Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.  
Andrew:  
Altman: Are you accidentally skipping lines less.  
Andrew: I'm not sure.  
Altman: What about losing your place when you read.  
Andrew: I don't lose it anymore but I use to.  
Altman: Accidentally skipping words?  
Andrew: I still do.  
Altman: Avoid reading aloud?  
Andrew: I never use to volunteer out loud and still won't.  
Altman: How do you feel if the teacher does call on you?  
Andrew: More comfortable if I have the overlay.  
Altman: Reading slowly.  
Andrew: Yes.  
Altman: Reading in a choppy manner.  
Andrew: I can read much clearer.  
Altman: Did you ever have words get blurry?  
Andrew: The words are clear now.  
Altman: Did you ever have words that moved?  
Andrew: The words use to switch around but nope, not anymore.  
Altman: Did the white paper ever seem to bright for you?  
Andrew: I couldn't see the paper very good. It was bright/  
Altman: How about when you have the overlay over it?  
Andrew: It is better.  
Altman: Did the bright lights ever bother you?  
Andrew: They didn't bother me.  
Altman: Do your parents support your use of the overlays at home?  
Andrew: Yes.  
Altman: What do they say if you aren't using it.  
Andrew: She will cuss at me and tell me to go get it.

Richard

Date started using overlay: 10/22/02  
Color used: Two green overlays  
Date interviewed: 12/17/02

Altman: Have you been using the Irlen Overlays?  
Richard: Yes.  
Altman: How Often? Every day? All day? At school? At Home?  
Or at school and home whenever you read?  
Richard: When I read all the time. At home and school.  
Altman: : What do you usually use the overlay for? Language

Arts, Math, Social studies or Science?

Richard: Math and Science and Language Arts. And Social Studies.

Altman: What about in PE?

Richard: No, I forget cause we don't read a lot.

Altman: What about Exploratory?

Richard: I have band but don't read the music.

Altman: Do you feel comfortable using the overlay in front of your peers?

Richard: Yes.

Altman: How come?

Richard: They think the overlays are cool and Jon also uses them.

Altman: Do you feel the overlays are helping you read better?

Richard: Yes.

Altman: In what ways?

Richard: They help me see better. If I stared at the words they started getting blurry and wobbly.

Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.

Altman: The speed that you are reading.

Richard: Yes. Cause I can see my spot better.

Altman: Do you think you can answer comprehension questions better?

Richard: Yeah a little.

Altman: How come?

Richard: It use to get blurry but now I can understand what I am reading.

Altman: Are you able to read longer?

Richard: Yes.

Altman: How much longer? 10 minutes? 20 minutes?

Richard: About 30 minutes longer.

Altman: Have you been making fewer mistakes when you read out loud?

Richard: Yes.

Altman: Do you enjoy reading more?

Richard: Yes.

Altman: Do you read at home more?

Richard: Yes

Altman: Do you read independently now?

Richard: Yes.

Altman: How often did you use to read?

Richard: Not that often, like once every week

Altman: How about now?

Richard: Like all week, like 4 days a week.

Altman: Do you think you are reading with more expression and fluency.

Richard: Yeah sometimes.

Altman: When you come to a word you don't know are you able to make a better guess?

Richard: Yeah .

Altman: How come?

Richard: I can actually see the words.

Altman: Have your grades improved since you have been using the overlay?

Richard: Yeah, I went from 2's to 3's in social studies and language arts.

Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.

Altman: Headaches?

Richard: I use to get headaches every 10 minutes but I don't get them anymore.

Altman: Stomach Aches?

Richard: I never had them.

Altman: Watery or Irritated Eyes?

Richard: They use to start stingy but they don't get watery anymore.

Altman: Drowsiness, getting tired when you read?

Richard: I use to, I fell asleep one time

Altman: How about now?

Richard: I'm not tired.

Altman: How about frequent blinking?

Richard: I still blink a lot.

Altman: Rubbing your eyes?

Richard: I never really did.

Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.

Altman: Are you accidentally skipping lines less.

Richard: Yeah, I use to skip lines and catch myself and then I would have to go back.

Altman: What about losing your place when you read.

Richard: Yeah, I use to a lot but.

Altman: How about now.

Richard: No.

Altman: Accidentally skipping words?

Richard: I still skip words.

Altman: Avoid reading aloud?

Richard: Well, I use to stutter.

Altman: How about with the overlay?

Richard: I don't stutter anymore. Last year my class use to make fun of me because I stuttered all the time but with the overlay I don't this year.

Altman: Reading slowly.

Richard: I read a lot faster.

Altman: Reading in a choppy manner.

Richard: I told you before, I don't stutter anymore.

Altman: Did you ever have words get blurry?

Richard: Yeah.

Altman: Have you seen an improvement?

Richard: Yeah, definitely.

Altman: Did you ever have words that moved?

Richard: Yeah, they use to move around but they don't with the overlay.

Altman: Did the white paper ever seem to bright for you?

Richard: Yes.

Altman: How about now?

Richard: The paper is darker and doesn't bother me.

Altman: Did the bright lights ever bother you?

Richard: Not really.

Altman: Do your parents support your use of the overlays at home?

Richard: They remind me if I am not using it.

### Deborah

Date started using overlay: 10/21/02

Color used: Green

Date interviewed: 12/19/02

Altman: Have you been using the Irlen Overlays?

Deborah: Yes.

Altman: How Often? Every day? All day? At school? At Home? Or at school and home whenever you read?

Deborah: At home and at school. Whenever I am reading.

Altman: : What do you usually use the overlay for? Language Arts, Math, Social studies or Science?

Deborah: Only Language Arts.

Altman: What about the other subjects?

Deborah: We don't really read a lot in those classes.

Altman: What about in PE?

Deborah: No.

Altman: What about Exploratory?

Deborah: No.

Altman: Do you feel comfortable using the overlay in front of your peers?

Deborah: Yes.

Altman: How come?

Deborah: They asked what it is and think it is cool.  
Altman: Do you feel the overlays are helping you read better?  
Deborah: Yes.  
Altman: In what ways?  
Deborah: I can see the words better. They use to get blurry.  
Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.  
Altman: The speed that you are reading.  
Deborah: Yes  
Altman: Do you think you can answer comprehension questions better?  
Deborah: Yes  
Altman: Are you able to read longer?  
Deborah: Yeah.  
Altman: How much longer? 10 minutes? 20 minutes?  
Deborah: About 25 minutes  
Altman: How long could you read before you used the overlay?  
Deborah: 10 minutes and then I would get tired.  
Altman: Have you been making fewer mistakes when you read out loud?  
Deborah: Yes, I make fewer.  
Altman: Do you enjoy reading more?  
Deborah: Yes.  
Altman: Do you read at home more?  
Deborah: Yes.  
Altman: How much did you use to read at home?  
Deborah: Never  
Deborah: Almost every night, at least a lot more than I use to.  
Altman: Do you read independently now?  
Deborah: Yes.  
Altman: Do you think you are reading with more expression and fluency.  
Deborah: Yes.  
Altman: When you come to a word you don't know are you able to make a better guess?  
Deborah: Yes.  
Altman: Have your grades improved since you have been using the overlay?  
Deborah: Yes in English it is a 3+.  
Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.  
Altman: Headaches?



Deborah: Never had  
Altman: Stomach Aches?  
Deborah: Never had.  
Altman: Watery or Irritated Eyes?  
Deborah: I use to all the time every time I read but now I don't.  
Altman: Drowsiness, getting tired when you read?  
Deborah: I still get tired but not as tired.  
Altman: How about frequent blinking?  
Deborah: Never had.  
Altman: Rubbing your eyes?  
Deborah: Never had.  
Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.  
Altman: Are you accidentally skipping lines less?  
Deborah: Yes, I use to like all the time. I see the lines much better now.  
Altman: What about losing your place when you read.  
Deborah: Much better now.  
Altman: Accidentally skipping words?  
Deborah: Once and a while I will skip a word but not as much.  
Altman: Avoid reading aloud?  
Altman: Reading slowly.  
Deborah: A lot faster now.  
Altman: Reading in a choppy manner.  
Deborah: My mom has said something about that. She says I don't stop as much.  
Altman: Did you ever have words get blurry?  
Deborah: That is how it has helped me the most.  
Altman: Did you ever have words that moved?  
Deborah: The words never moved.  
Altman: Did the white paper ever seem to bright for you?  
Deborah: It is better now because it makes the paper darker.  
Altman: Did the bright lights ever bother you?  
Deborah: Not really.  
Altman: Do your parents support your use of the overlays at home?  
Deborah: They always remind me to take it out when I'm reading.

Mike

Date started using overlay: 10/22/02

Color used: Two blue-gray

Date interviewed: 12/19/02

Altman: Have you been using the Irlen Overlays?

Mike: No. Only at home.

Altman: : What do you usually use the overlay for? Language Arts, Math, Social studies or Science?

Mike: None of them.

Altman: What about in PE?

Mike: No

Altman: What about Exploratory?

Mike: No

Altman: Do you feel comfortable using the overlay in front of your peers?

Mike: Yeah.

Altman: Do you feel the overlays are helping you read better?

Mike: Yeah.

Altman: In what ways?

Mike: I can read faster because there is not scribble scabble.

Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.

Altman: The speed that you are reading.

Mike: Yeah.

Altman: Do you think you can answer comprehension questions better?

Mike: No, I have trouble remembering what I read.

Altman: Are you able to read longer?

Mike: Yeah, about 20 minutes longer.

Altman: Have you been making fewer mistakes when you read out loud?

Mike: Yeah, but I am usually reading to myself.

Altman: Do you read at home more?

Mike: Yes.

Altman: Do you read independently now?

Mike: Yes.

Altman: Do you think you are reading with more expression and fluency.

Mike: No, I don't read out loud.

Altman: When you come to a word you don't know are you able to make a better guess?

Mike: I can sound them out now because the words aren't blurry.

Altman: Have your grades improved since you have been using the overlay?

Mike: I think so in Language Arts.

Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.

Altman: Headaches?

Mike: I use to have them a lot but I don't get them anymore.

Altman: Stomach Aches?

Mike: I use to but not that much now.

Altman: Watery or Irritated Eyes?

Mike: No.

Altman: Drowsiness, getting tired when you read?

Mike: I still get sleepy.

Altman: How about frequent blinking?

Mike: No. I never did that.

Altman: Rubbing your eyes?

Mike: I didn't do that either.

Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.

Altman: Are you accidentally skipping lines less.

Mike: No. I still do that. Why is that?

Altman: What about losing your place when you read.

Mike: I don't lose my place anymore.

Altman: Accidentally skipping words?

Mike: It depends on what I am reading.

Altman: Avoid reading aloud?

Mike: I am trying but still avoid it.

Altman: Reading slowly.

Mike: Yes that is what I like the most.

Altman: Reading in a choppy manner.

Mike: Yeah, I am more confident.

Altman: Did you ever have words get blurry?

Mike: The words are clear now.

Altman: Did you ever have words that moved?

Mike: The words don't move with the overlay on the paper.

Altman: Did the white paper ever seem to bright for you?

Mike: The white paper was super bright but the colored overlay makes it darker.

Altman: Did the bright lights ever bother you?

Mike: The lights bother me no matter what.

Altman: Do your parents support your use of the overlays at home?

Mike: No, they don't really talk to me about it.

Altman: Now you say all these things have improved but you

don't use it at school, why?

Mike: The other kids might take it away or something. One got bent and I don't want the other one bent.

Inez

Date started using overlay: 9/19/02

Color used: Four blue-gray

Date interviewed: 12/18/02

Altman: Have you been using the Irlen Overlays?

Inez: Not that much

Altman: How come?

Inez: I used them in the beginning but it is hard to remember to take them out.

Altman: How Often? Every day? All day? At school? At Home? Or at school and home whenever you read?

Inez: At home only when I'm reading and doing homework. I actually read more now.

Altman: : What do you usually use the overlay for? Language Arts, Math, Social studies or Science?

Inez: Only Reading Logs and Homework.

Altman: Do you read in language Arts?

Inez: No, we listen to the teacher a lot because a lot of the kids speak Spanish

Altman: Are you in an ESL program?

Inez: Yes.

Altman: Do you feel comfortable using the overlay in front of your peers?

Inez: Yes

Altman: How come?

Inez: They didn't really ask about it.

Altman: Do you feel the overlays are helping you read better?

Inez: Yes.

Altman: In what ways?

Inez: The words look clear.

Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.

Altman: The speed that you are reading.

Inez: Yeah, I can read a little bit faster.

Altman: Do you think you can answer comprehension questions better?

Inez: Yes

Altman: Are you able to read longer?

Inez: Yeah.

Altman: How much longer? 10 minutes? 20 minutes?

Inez: 20 minutes.  
Altman: How long could you read before you used the overlay?  
Inez: Not even 10 minutes.  
Altman: Have you been making fewer mistakes when you read out loud?  
Inez: Yeah...for sure.  
Altman: Do you enjoy reading more?  
Inez: I enjoy reading more but only when I use it.  
Altman: Do you read at home more?  
Inez: Yes.  
Altman: Do you read independently now?  
Inez: No  
Altman: Do you think you are reading with more expression and fluency.  
Inez: Yes.  
Altman: When you come to a word you don't know are you able to make a better guess?  
Inez: Yes  
Altman: How come?  
Inez: I can see each letter. They use to blend together.  
Altman: Have your grades improved since you have been using the overlay?  
Inez: Yeah.  
Altman: How come?  
Inez: I have been doing my homework now. I do my reading logs now.  
Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.  
Altman: Headaches?  
Inez: I use to but not that much with the overlay.  
Altman: Stomach Aches?  
Inez: Never had.  
Altman: Watery or Irritated Eyes?  
Inez: Much better.  
Altman: Drowsiness, getting tired when you read?  
Inez: I still get tired.  
Altman: How about frequent blinking?  
Inez: Never had.  
Altman: Rubbing your eyes?  
Inez: I use to have to rub my eyes for like 3 minutes.  
Altman: Why?  
Inez: I was trying to make them stop watering but I don't have to rub them much now.  
Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me

if you have seen improvements in the area I mention.  
Altman: Are you accidentally skipping lines less.  
Inez: Yes  
Altman: What about losing your place when you read.  
Inez: I still lose my place a lot.  
Altman: Accidentally skipping words?  
Inez: I don't skip any words anymore.  
Altman: Avoid reading aloud?  
Inez: No, I don't read out loud much.  
Altman: Reading slowly.  
Inez: Yes.  
Altman: Reading in a choppy manner.  
Inez: Yes.  
Altman: Did you ever have words get blurry?  
Inez: I use to but not with the overlay.  
Altman: Did you ever have words that moved?  
Inez: Not with the overlay.  
Altman: What did your words use to do?  
Inez: They use to move on top of each other.  
Altman: Now you say all these things have improved but you don't use it at school, why?  
Inez: Cause I forget to pull it out  
Altman: Did the white paper ever seem to bright for you?  
Inez: Never bothered me.  
Altman: Did the bright lights ever bother you?  
Inez: None. Don't bother me.  
Altman: Do your parents support your use of the overlays at home?  
Inez: Yeah.

### Daniel

Date started using overlay: 10/01/02  
Color used: Two purples  
Date interviewed: 12/19/02

Altman: Have you been using the Irlen Overlays?  
Daniel: Yes but they are getting dirty.  
Altman: How Often? Every day? All day? At school? At Home?  
Or at school and home whenever you read?  
Daniel: Everyday at school and everyday at home.  
Altman: : What do you usually use the overlay for? Language  
Arts, Math, Social studies or Science?  
Daniel: For reading and writing. And math.  
Altman: What about science and social studies?  
Daniel: Yes.  
Altman: What about in PE?

Daniel: No I don't need it.  
Altman: Do you feel comfortable using the overlay in front of your peers?  
Daniel: Yes.  
Altman: How come?  
Daniel: I don't pay attention to anyone else.  
Altman: Do you feel the overlays are helping you read better?  
Daniel: Yes  
Altman: I am going to name some areas you could have seen improvement in your reading. I would like you to tell me if you saw improvement.  
Altman: The speed that you are reading.  
Daniel: Yes a lot.  
Altman: Do you think you can answer comprehension questions better?  
Daniel: Not really.  
Altman: How come?  
Daniel: The words still ain't make sense sometimes.  
Altman: Are you able to read longer?  
Daniel: Yes.  
Altman: How much longer? 10 minutes? 20 minutes?  
Daniel: 10 minutes  
Altman: Have you been making fewer mistakes when you read out loud?  
Daniel: Yes.  
Altman: Do you enjoy reading more?  
Daniel: Yeah.  
Altman: Do you read at home more?  
Daniel: I do read at home more.  
Altman: Do you read Independently now?  
Daniel: Only sometimes. I need a lot of help and my mom is not home a lot.  
Altman: Do you think you are reading with more expression and fluency.  
Daniel: I don't know what any of that means.  
Altman: Do you think you can read and change your voice with the character?  
Daniel: No, I never know who be talking.  
Altman: When you come to a word you don't know are you able to make a better guess?  
Daniel: Sometimes.  
Altman: How come?  
Daniel: I try harder.  
Altman: Have your grades improved since you have been using the overlay?  
Daniel: Yeah in Math.

Altman: I am going to name some physical symptoms you could of had before you started using the overlays and I would like you to tell me if they have decreased. If you never had the symptom just say you never had it.

Altman: Headaches?

Daniel: Yes before but I don't get it when I use it.

Altman: Stomach Aches?

Daniel: No I never had, only my eyes and head.

Altman: Watery or Irritated Eyes?

Daniel: Yeah.

Altman: Drowsiness, getting tired when you read?

Daniel: Yes.

Altman: How about frequent blinking?

Daniel: I still blink.

Altman: Rubbing your eyes?

Daniel: I still have to rub my eyes sometimes.

Altman: We are going to talk about some of the improvements you could have seen while you were reading. You just tell me if you have seen improvements in the area I mention.

Altman: Are you accidentally skipping lines less?

Daniel: I still skip lines.

Altman: What about losing your place when you read.

Daniel: I don't lose it anymore.

Altman: Accidentally skipping words?

Daniel: I skip words I don't know.

Altman: Avoid reading aloud?

Daniel: I never read out loud, I hate it.

Altman: Reading slowly.

Daniel: That has yes.

Altman: Reading in a choppy manner.

Daniel: No.

Altman: Did you ever have words get blurry?

Daniel: When I first put the overlay on the blurry went away.

Altman: Did you ever have words that moved?

Daniel: The words stopped moving.

Altman: Did the white paper ever seem to bright for you?

Daniel: The white paper is white, I mean bright.

Altman: What about when you use the overlay?

Daniel: It is Ok but when the light hits it.

Altman: You mean there is a glare?

Daniel: Yes.

Altman: Did the bright lights ever bother you?

Daniel: No.

Altman: Do your parents support your use of the overlays at home?

Daniel: Now they do, after you sent a letter.



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