

Therapeutic Tinting for Migraines, Seizure Disorders and ABI/TBI's

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VISION and COLOR

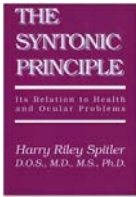

Does Color Affect Vision?

- Most OD's would say, "No!", or would downplay the role of color.
- Look for the science
- Don't throw out the baby with the bathwater

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Early History

- 1920's and 1930's Spittler The Syntonic Principle"
- Effects of light and color on health
- Skeffington Contemporary
- There is far too much evidence and good neurological work, which now shows the connections Spittler hypothesized do indeed exist!

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Examples

- Jet lag phenomenon
- Physiologic day length (25 ½ hours)
- S.A.D. (Seasonal Affective Disorder) color and mood work
- Optic Nerve – Pituitary connection via nerve fibers

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Syntonics

The science of light

- Eastern like philosophy
 - Ying and Yang
 - homeostasis
 - Sympathetic – parasympathetic balance
- Different wavelengths will stimulate or calm sympathetic or parasympathetic systems
- Test to see if the patient is in or out of balance

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Syntonic color

- Treatment color can change over time
- Same color may do different things for different people
- Effective color may change due to stress levels, time of day etc.
- Use Greek letters to designate specific wavelengths (confusing)

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Intuitive Colorimeter

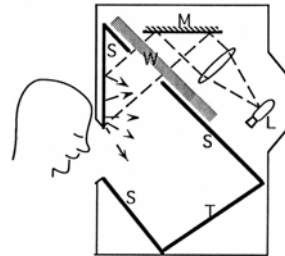


- This English instrument allows one to easily manipulate a light source through color space, changing wavelength and saturation at ease.
- There are people that are more sensitive to specific wavelengths greater than they are to a neutral density filter.

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Inside the Colorimeter

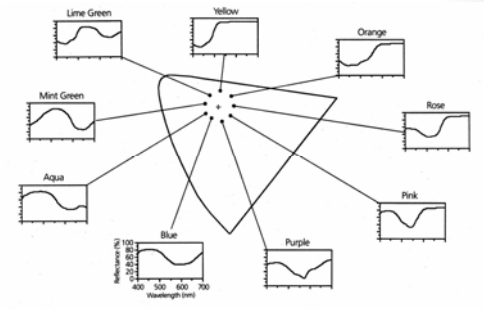


- Mechanism capable of producing any color
- Indirect viewing

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Color space

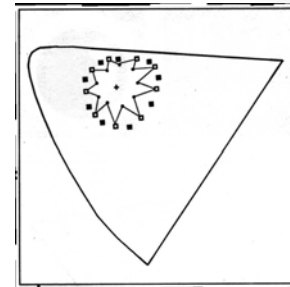


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Color Space Graph

- When there is a best color there are adjacent colors that decrease performance.
- Surrounding destructive rings are complementary colors



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Filters Effects on Reading

- Experimented with gray and blue filters
 - Gray
 - Slightly slowed reading speed
 - Maximized reading comprehension
 - Slowing may not be clinically significant
 - Could be DB Harmon light ratio effect
 - Could be Streff contrast hypersensitivity
 - Blue
 - Significantly increased reading speed in poor readers
 - Did not alter comprehension
 - May act like low plus lenses

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Our First Case

- Former Deputy Chief of Memphis Police
- Head of cyber-security for FedEx
- Suffered for last several year with debilitating headaches if in fluorescent lights for more than 15 minutes.
- Wore two pairs of sunglasses and a ball cap, at times had to add a hoodie.
- Came to SCO and first seen by Marc Taub.



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Not Enough

- Prior experience of custom tinting soft CL's in private practice in dealing with TBI, mostly blue lenses in that population.



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First CL Tinting – Center Only



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More needed



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Even More



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Yup...that's it!



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From email 8/21/2013

- Good afternoon Dr. Harris, I hope this e-mail finds you well. I want to give you a brief update on the tinted contacts you made for me due to my sensitivity to fluorescent lighting. They are working extremely well and they have changed my life in a very positive way. I can now work without having to wear my sunglasses. I am not tired at the end of my work day due to the exposure to the fluorescent lighting and I can actually read after work without my reading glasses after I take the tinted contacts out. It is amazing and I thank you again for what you have done for me.

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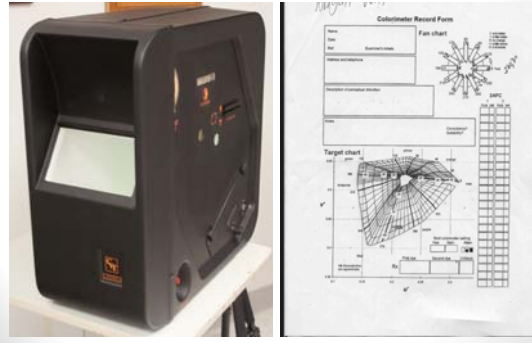
What about others?

- Patient AW comes to SCO VT clinic with reading problems and wants color testing.
- Had contacted Colorimeter people in the UK and got a referral to SCO.
- Did full binocular evaluation in VT clinic first and felt that low plus for near would be helpful.
- Parent still wanted color testing done.

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Colorimeter



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Watch the color changes



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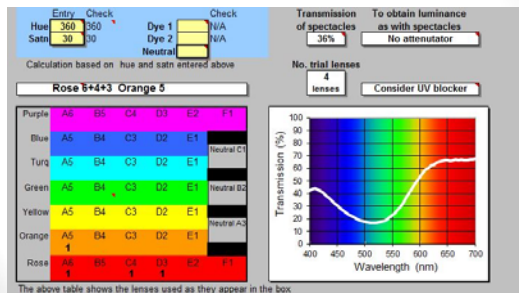
Now on some nonsense print



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Excel Spread Sheet



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Lens Simulation



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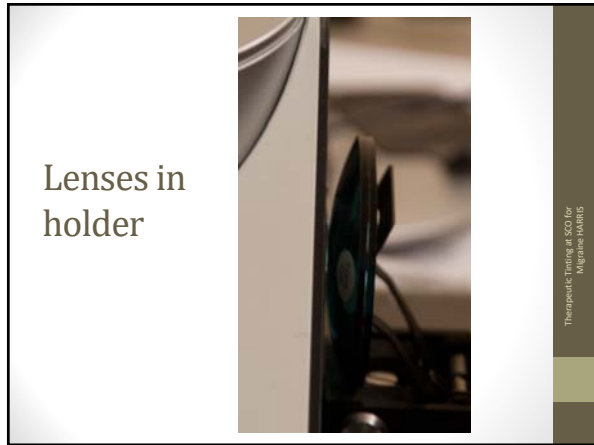
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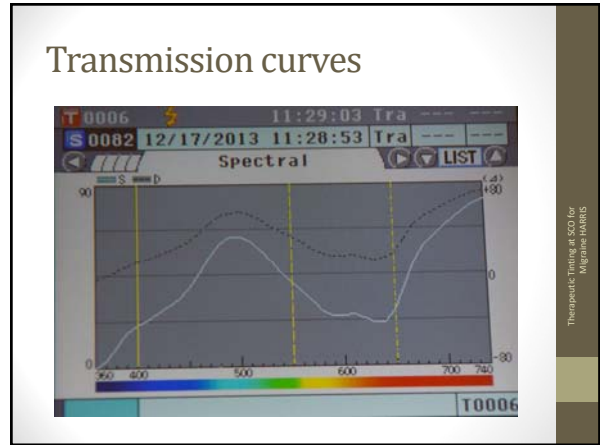
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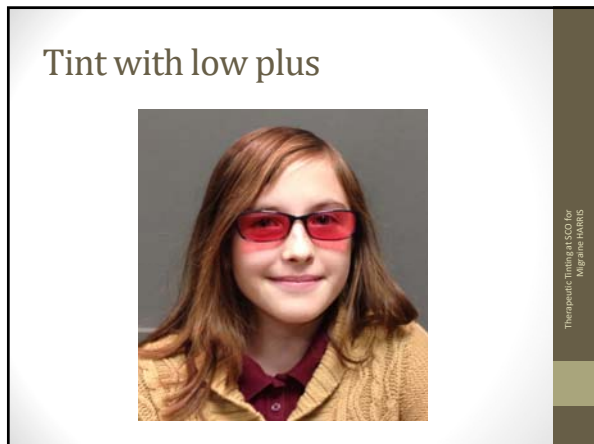
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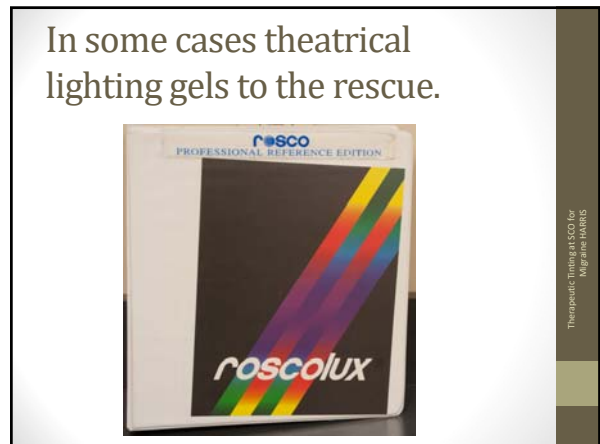
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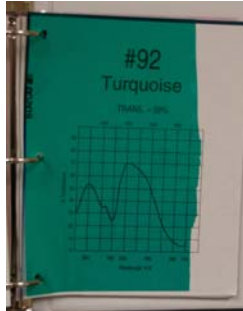


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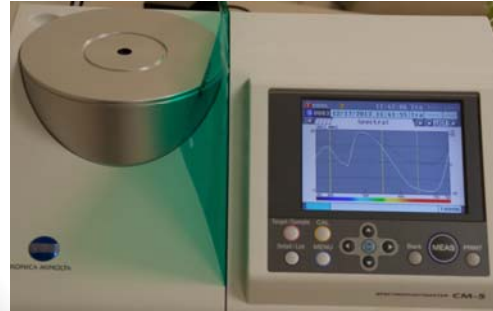
Each gel with it's transmission



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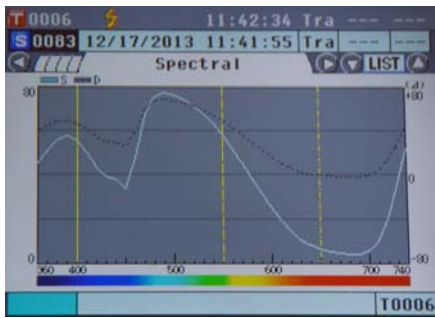
Measuring the gel



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Gel measurement



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SCO Student – Migraines with AW



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Migraine & Seizures secondary to multiple TBI's (exam 4/8/14)

- Began riding horses at the age of 2.
- Did not wear helmets and fell from or was thrown from horses often.
- First concussion at the age of 4-5.
- By the age of 12 she had sustained 6-8 concussions.
- During this time she would have what the pediatrician called, "convulsions" but he said that they were from overheating.
- In 2004, she had a brain bleed, possibly secondary to a car accident.
- Tried Trileptol but was allergic.
- Tried Kepra but this didn't work very well at all.
- Added in Lyrica 150 mg/day with Kepra at 3500 mg/day

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Continued...

- Been on these meds for 5 years.
- No grand mal seizures for 5 years.
- Last petit mal seizure in July of 2013.
- Auras precede her events which can be either a seizure or migraine.
 - Vision tunnels
 - Can't hear & she doesn't respond to queries
 - Smells rubbing alcohol
 - Tastes metal
 - Makes noises and jerky physical movements
 - Lasts 20-30 minutes and her head feels like it is in a vice

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- Fluorescent lights trigger auras
- When she has auras:
 - 10% don't do anything
 - 80% turn into migraines
 - 10% turn into seizures
- With the Intuitive Colorimeter we found that 240 hue 30-50 saturation worked nicely and a tweak to 225 hue was even better.
- Testing with Roscolux filters showed that middle transmittance blues with maybe a hint of green.
- Plan: Do glasses first and if this helps, tint the contacts.

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Intuitive Colorimeter

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First Try:

positive reaction

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With Contacts

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Two weeks later..

- She reported not getting any aura or headaches for the full two weeks since going to the contacts.
- We had made two pairs one dark and one a bit lighter.
- She was in the dark pair for those 2 weeks.
- She tried the lighter pair for a day and got a headache.
- Of course, right back to the darker pair.

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Another





- History of migraines beginning a few months prior and getting progressively worse.
- Meds don't seem to help much at all.
- Having to miss a lot of school.
- Goes to church with one of our faculty.
- And just in case you thought everyone chose blue or blue-green!

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With her contacts



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In her own words.

- “After trying multiple medication to try to lessen the amount of side effect from complicated migraines, we found no relief. Finally I went to the optometrist and they gave me tinted glasses that have stopped my complicated migraines completely. I am very thankful for being a part of this study.”
B.B.

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Blast Injury – Red Lenses



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Summer Study

- How much was the Hawthorne effect?
- How much was placebo effect?
- Study title: **Validation of standardized testing protocol for the clinical application of colored filters**
- Purpose from IRB: For many years we have been evolving systems for using tinted lenses for the treatment of a number of vision/health conditions including: migraine, acquired brain injury, traumatic brain injury, seizure disorder and reading problems. We wish to see how a group of normal responds to our testing protocols.

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Study

- Main hypothesis: Normals would NOT select specific color that have significant saturation.
- 100 subjects, 2nd and 3rd year SCO students, all of whom we thought were “normal”.
 - However, 21 of them did report that had did respond to a questionnaire that they had experienced either a mild TBI, seizures or migraines.
- We had also recruited out of the SCO faculty and staff and family members, 9 more who had either a mild TBI, seizures or migraines.
- So we ended up with 80 “normals” and 30 with problems.

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Study

- 5 point Likert scale:
 - -2 = I really don't like this color
 - -1 = I don't like this color
 - 0 = Neutral response
 - +1 = I like this color
 - +2 = I really like this color
- 24 different hue/saturation combinations shown
 - 12 of them have a hue designation but saturation is 0%, therefore these are all actually just neutral balanced white light, sort of a control
 - 12 of them actually have color
 - Show all 24 and record all the numbers.

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The 80 Controls

- 23 of the 80 gave one or more of the presentations a "2", I really like this.
- 19 of the 23 had ALL of their "2's" be the neutral 0% saturation color (no color actually ☺).
- 1 subject had only 1 "2" response and it was at 210 and commented that the color was not any better than sunglasses.
- 1 subject had two "2" responses with 240 being the best.
- 1 subject had three "2" responses with 270 being the best. They said the lens was comfortable to look through and would wear them as sunglasses but everyday or all the time.
- 1 subject had four "2" responses with only one of them having a saturation and it was at 240.

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The 30 with symptoms

- 8 subjects had one or more "2" responses with 50% saturations. The following are the wavelengths chosen:
 - 120
 - 180
 - 210 (3)
 - 270
 - 300
 - 4 – responses but couldn't pick one as the best
- 6 subjects chose the 0% saturation as "2's" one or more times
- 16 subjects gave none of the color presentations a "2".

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Differences between groups

- Control group N=80
 - 4 chose a color but didn't need it. 5%
- Treatment group N=30
 - 8 chose a "treatment" type of color. 26.7%
 - 6 chose a "treatment" type that couldn't help. 20%
 - 16 chose no color. 53.3%

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Treatment Reactions

- 5 reported that the lens selected was comfortable.
 - Of these three said it was definitely better than sunglasses
 - Two said it was similar to sunglasses
- One was very happy with the lens and comfortable and is having them made.
- One felt very relaxed by the color, much more so than sunglasses and will have them made.
- One was in a rush and also couldn't pick amongst the 4 choices.

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Softchrome folds it's tent

nexgenoptical

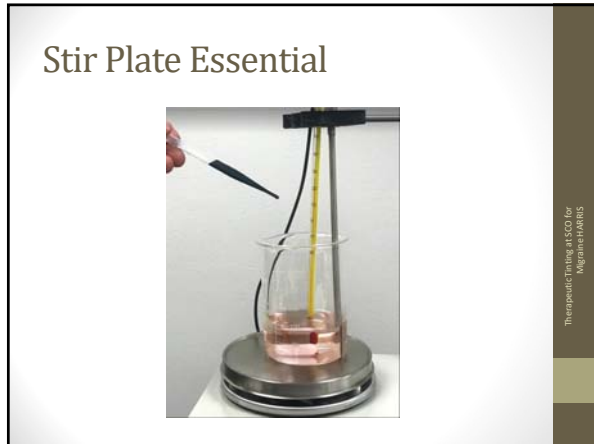
<http://www.nexgenoptical.com/spectratint/>

Spectratint

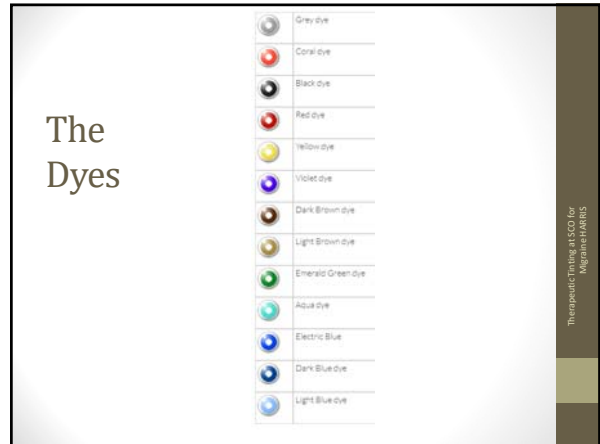
FASTER, SIMPLER AND LESS EXPENSIVE IN-HOUSE SOFT LENS TINTING IS NOW A REALITY

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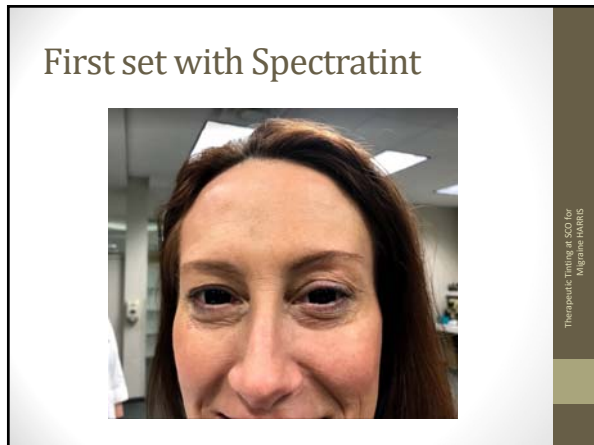
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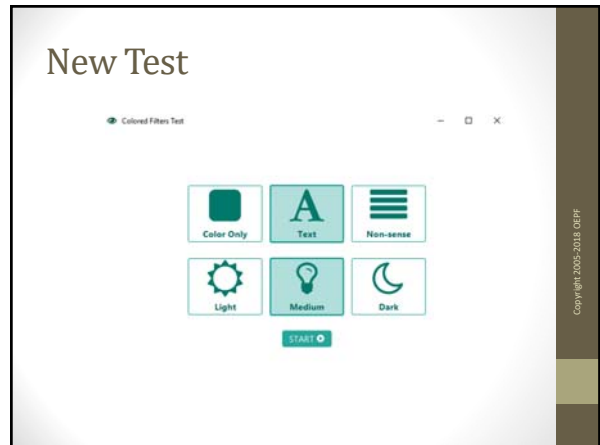
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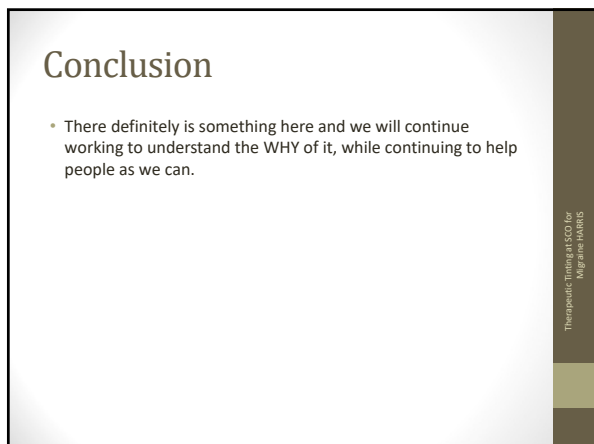
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