



# Creative Assessment

*Low/high tech  
Applications in rural Kansas*



- Former premature infant
- 542 gms. (1lb. 3 oz.) 24 weeks, 5 days gestation
- ROP stage 1, zone @ plus disease, Diode laser
- Seizure disorder, IVH grade III bilateral, perinatal hydrocephalus, stabilized
- 11 mos. 1st eval. by me
- Eyes: visual responses not typical for corrected age

# History

- Additional diagnoses
- high myopia -9.00 OU
- esotropia, BMRrec 12/13
- Amblyopia OD
- Nystagmus
- Mild optic nerve atrophy
- CVI
- ADHD: Intuniv
- Autism spectrum 2015
- Anxiety disorder

- VA OD 20/150  
OS 20/60

Near 20/25 with bifocal  
(threshold)

Color vision ishihara  
diff/D16 normal

VF generalized  
constriction

Slow shift of gaze



# QUANTITATIVE COLOR VISION TEST PANEL 16 RECORDING FORM

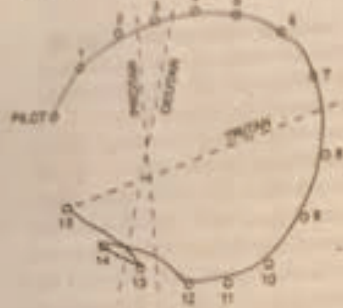
NAME \_\_\_\_\_

AGE \_\_\_\_\_

CASE NO. \_\_\_\_\_

3-5-15

TEST 1



TEST 3

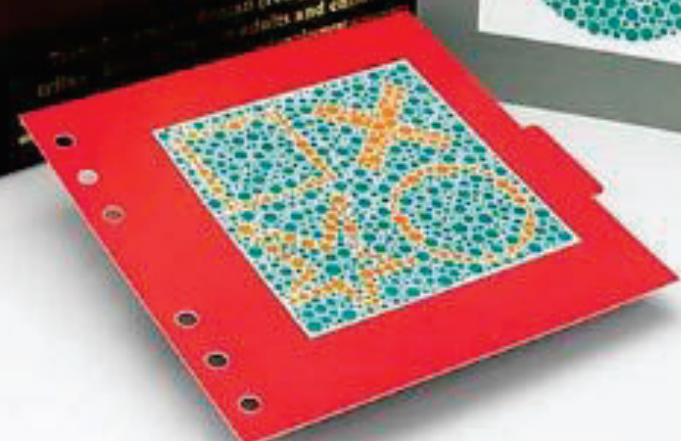


Exam Date: 6-23-14

ISHIHARA'S TESTS

Plate	Number	Answer
1	12	
2	8	
3	29	
4	5	
5	3	8
6	15	
7	74	71
8	6	8
9	45	
10	5	
11	7	
12	16	X
13	73	
14	x	
15	x	
16	26	
17	42	

#260700



# Dutton CVI Inventory 2016

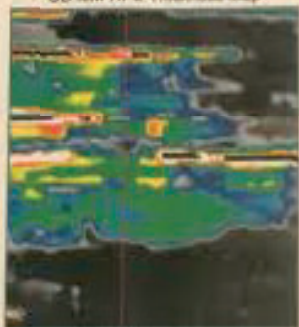
- Leaves food on far end of plate
  - Diff. with viewing at distance, seeing friends at distance, fast moving things
  - Gets lost in crowded spots
  - Difficulty recognizing emotions
  - Diff. walking on uneven ground
  - Holds on to clothing of person near
  - Gets angry when other children cause distraction
- Visual attention: finding place again, misses objects, can't get back on task

ID: 11364 Exam Date: 6/27/2018 5:04 PM Linda Lawrence MD  
DOB: 11/28/2008 Exam Time: 5:04 PM 5:01 PM  
Gender: Female Serial Number: 500-33372 500-33372  
Technician: Operator, Cirrus Signal Strength: 3/10 5/10

# Macula Thickness OU: Macular Cube 512x128

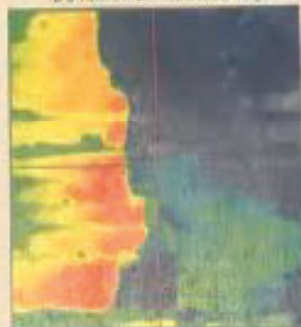
OD ● ● OS

OD ILM-RPE Thickness Map



Fovea: 206, 57

OS ILM-RPE Thickness Map



Fovea: Not found

Normative data is not available, Patient age < 18

OD OCT Fundus



OD ILM-RPE Thickness



OS ILM-RPE Thickness



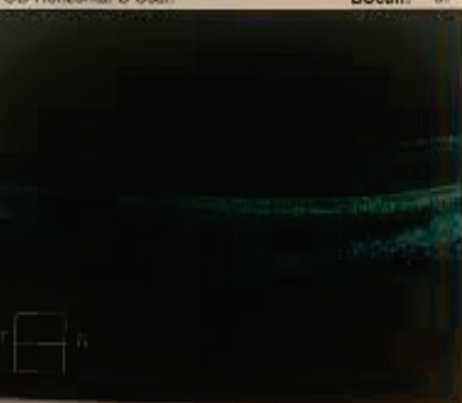
OS OCT Fundus



ILM - RPE	OD	OS
Thickness Central Subfield (µm)	223	228
Volume Cube (mm³)	5.9	10.3
Thickness Avg Cube (µm)	165	287

OD Horizontal B-Scan

BScan: 57



OS Horizontal B-Scan

BScan: 64



# OCT

- Nystagmus
- Poor foveal differentiation
- No norms for kids



# Control\_18

# F\_9

Confidence Ellipse Area = 6.43%

Confidence Ellipse Area = 50.18%

Confidence Ellipse Area = 6.49%

Confidence Ellipse Area = 51.80%





# Interventions

## *Parent Questions*

1. how to decrease anxiety
2. How to teach math
3. Measure vision bilateral because of nystagmus

- How does this testing help with our understanding of how this student sees and what we can do to enhance her independence, happiness and productivity

# Boy 12 years

- Born term, cord around neck, took 30 secs to respond
  - El age 7 months
  - Plays baseball, football
  - No other medical history, no prior MRI
  - Mom says difficulty with math
  - Ambidextrous
- Face 10 secs  
OD 20/30, OS 20/20  
Near 20/20 12.5%  
crowding 20/40, two lines above 20/60  
EYE: c/d 0.4-0.5,  
microstrabismus with RET  
OCT normal

# Control\_18

# M\_12

Confidence Ellipse Area = 6.43%

Confidence Ellipse Area = 19.01%

Confidence Ellipse Area = 6.49%

Confidence Ellipse Area = 27.52%





Run 1

Control\_18

Confidence Ellipse Area = 7.74%



M\_12

Confidence Ellipse Area = 14.01%



Run 2

Confidence Ellipse Area = 7.91%



Confidence Ellipse Area = 25.87%



Low



High



# Interventions

- Uses yellow translucent bookmark
- Increase spacing for math
- Bifocal for crowding, magnifications seems to help

# Girl now 15 years

- Eval. age 5 months El
- Twin
- 4lb, 6 oz, SGA, 36 weeks
- ? ET
- 6<sup>th</sup> grade hit head on goal post
- Et with BMRrec

and bilat lat rectus rec

Mild right amblyopia

Eye:

Complains of diff with computer

20/40 OD, 20/20 OS with correction distance

Near 20/20 Crowding

20/60 near, in bifocal

OCT normal

Run 1

## Control\_18

Confidence Ellipse Area = 7.74%



Confidence Ellipse Area = 14.01%

## F\_14

Confidence Ellipse Area = 10.13%



Run 2

Confidence Ellipse Area = 7.91%



Confidence Ellipse Area = 25.87%

Confidence Ellipse Area = 13.85%



# Does she have CVI??

- Only did toy box
- After this meeting, had mental health crisis, hospitalized, new medications



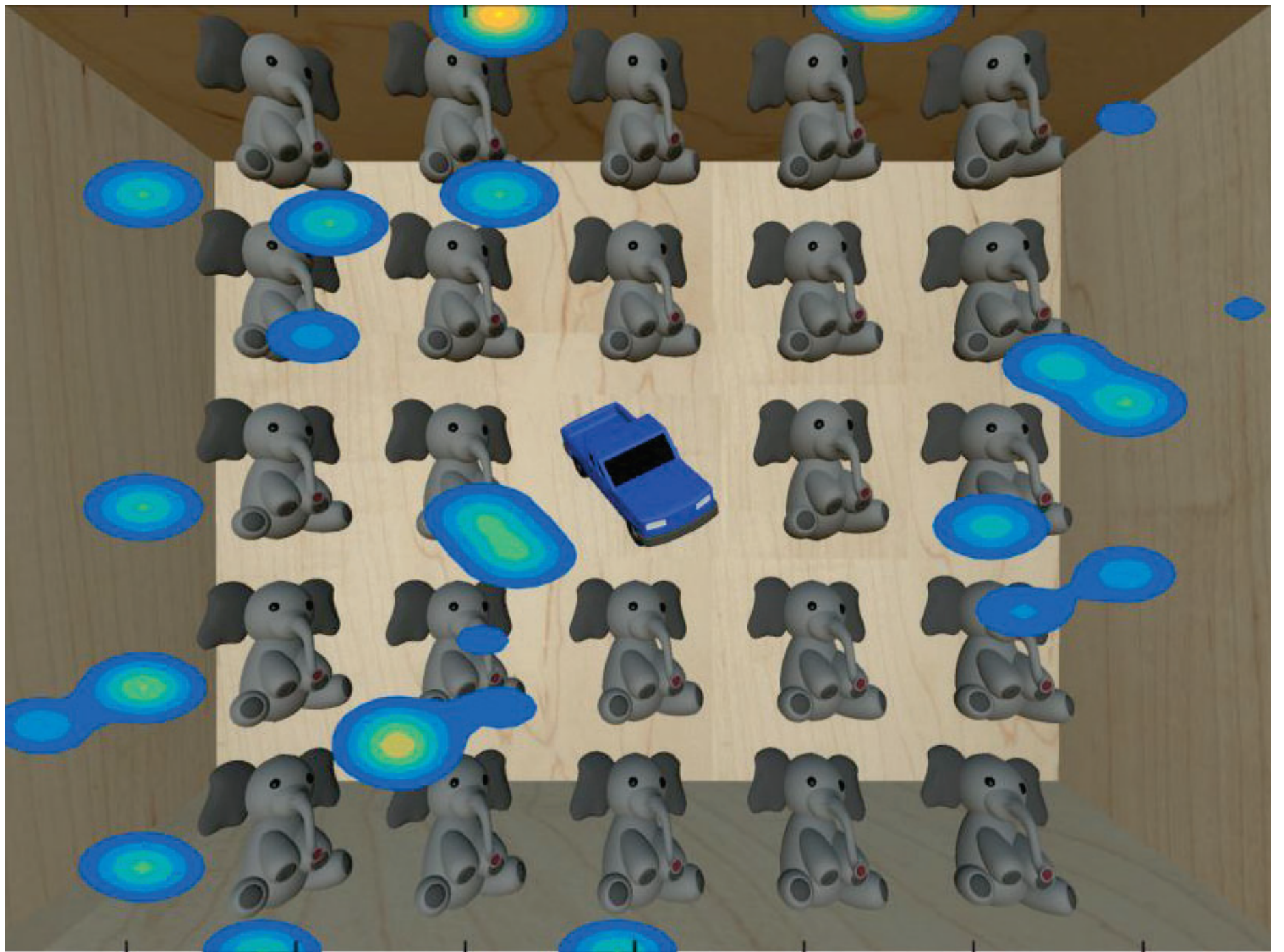
# 18 yo. young man

## Power of the information for parent

- First exam 4 years old
- Agenesis of corpus callosum
- ??? ASD
- Seizure disorder with vagal nerve stimulator
- Imaging: partial agenesis of CC, ventriculomegaly, thinning of right cerebral peduncle, thinning of right midbrain and pons, right middle cerebellar peduncle
- Meds Keppra, Trileptal

### Eye

- Strabismus with surgery
- Poor accommodation
- Has bifocal, glasses
- Small, atrophic optic nerves
- Minimal nystagmus



- Mom is vision professional
- Diagnosis of ASD does not seem to fit
- Very affectionate and communicates even though non verbal
- Power of discussion with parent, reaffirmation that fixation pattern not normal

# 12 year old girl

Seen in ICD as adopted child 7 months old, no history, passed ICD age 2

Vision therapy with OD in adolescence

Came to see me again because no success with VT

Struggling at age 10 yo. in school

MRI ordered age 10 because of VF changes, initially read as normal, however reread and probable asymmetry in posterior cerebrum, ?intrauterine stroke?



# Current

- Meds: Buspirone, Vyvanse, Adderal

Eye:

OD 20/20, OS 20/30 with correction

Near 20/25 OU

Optic nerve C/D 0.4/0.3

Exophoria, compensating

Optic nerve atrophy mild  
OD>OS

VF central suppression/inf

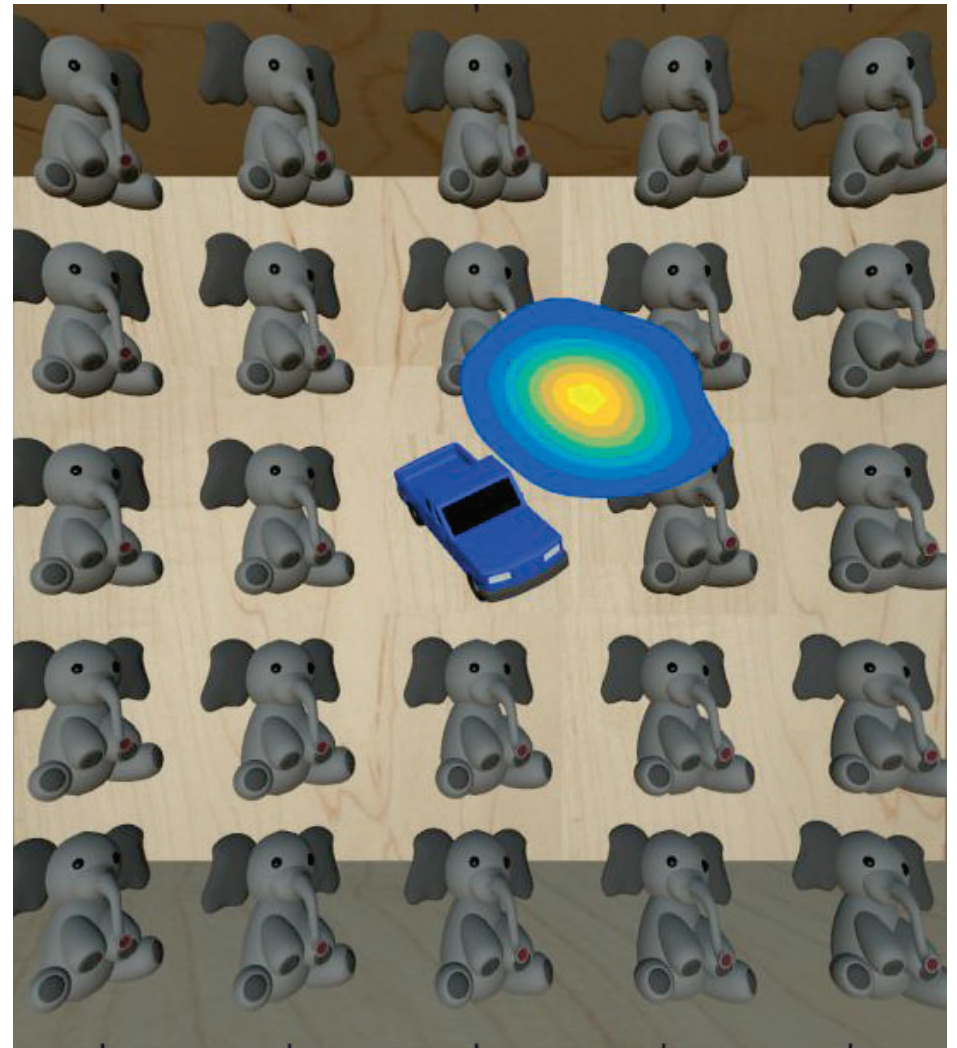
OCT macula normal

# Dutton's CVI Inventory

- Trips on obstacles on floor
- Has diff with stairs
- Diff with edges
- Trips on pavement going down
- Diff finding beginning of line when reading, diff finding next word
- Diff with fast moving object like animals, catching ball
- Seeing distance
- Finding close friend in crowd
- Getting lost in crowded shop
- Difficulty finding clothing in a pile
- Finding toys in a box, copying
- Runs into furniture low
- Gets angry if furniture moved

# Further History from Mom

- Movement of other children distracts
- Difficulty catching baton
- Diff with fast moving objects
- Diff with clutter
- Diff seeing objects at a distance
- Inferior VF loss



A.B.

Control\_18

Confidence Ellipse Area = 6.43%



F\_12

Confidence Ellipse Area = 13.85%



Confidence Ellipse Area = 6.49%



Confidence Ellipse Area = 16.81%





# Family questions

- How do we teach math?
- Why does she not make eye contact
- More space for math problems
- Modified batons with tape
- Request IEP
- ?O&M

# Where to go now

- We don't cure CVI
- We can help to lessen the effects of the disability
- We need to develop techniques to help us understand how the child sees
- This will help us understand the best interventions that are needed
- Eye-tracking technology and Virtual reality may help in research.