



THE LUMINOPIA MISSION

To improve the lives of children and families
through captivating, rigorously developed
digital therapeutics.

Novel Digital Therapeutic Improves Visual Acuity and Encourages High Adherence in Amblyopic Children

Aaron M. Miller, MD; Lisa I. Bohra, MD; Christie L. Morse, MD;
Louis C. Blumenfeld, MD; Noha S. Ekdawi, MD; Ann U. Stout, MD;
Malcolm L. Mazow, MD; Eric D. Gaier, MD, PhD; Scott Xiao; David G. Hunter, MD, PhD;

Houston Eye Associates; Children's Eye Care Michigan; Concord Eye Center;
Eye Physicians of Central Florida; Wheaton Eye Clinic

Houston, TX; Detroit, MI; Concord, NH; Orlando, FL; Chicago, IL

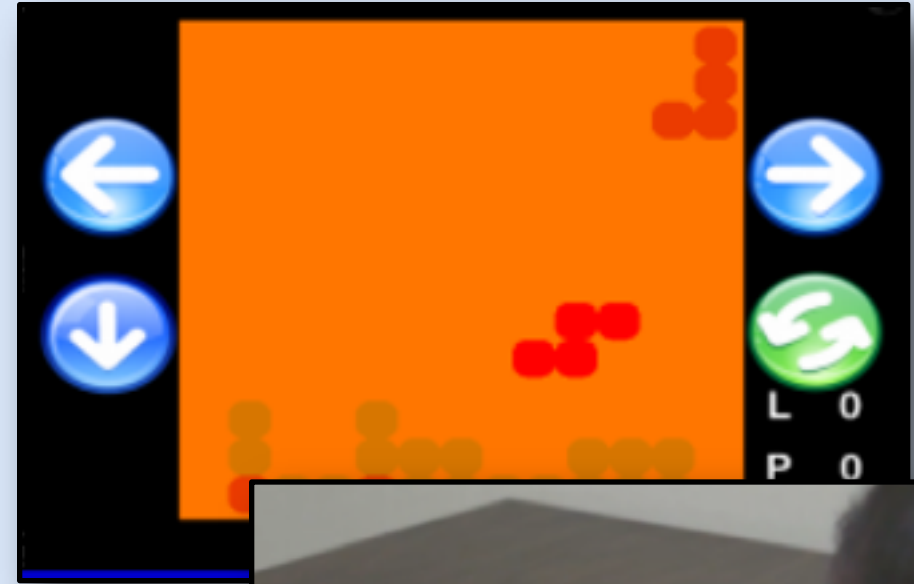
Amblyopia Standard of Care

- Patching and Atropine
- Problems:
 - Poor adherence
 - Incomplete improvement
 - No effort to enhance binocularity



Dichoptic Therapies

- Dichoptic therapies show promise
- 2 PEDIG RCTs failed to show efficacy
 - ATS 18: Low adherence
 - Falling blocks game - did not keep interest
 - ATS 20: Better adherence but:
 - Older cohort (7-12 years)
 - Almost all had prior treatment
 - Short study duration (4-8 weeks)



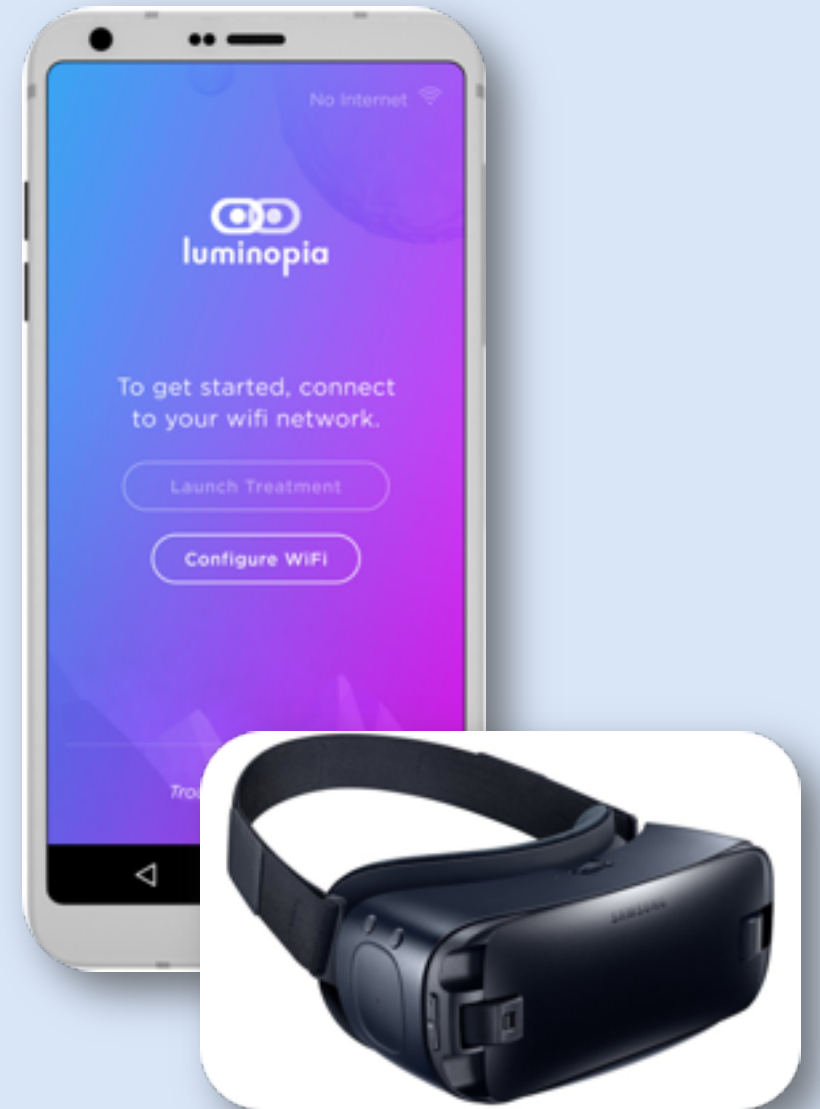
Purpose of the Study

- Evaluate efficacy of a novel digital treatment
- “Luminopia One”
 - Not a video game
 - Children can choose from popular TV shows and movies to watch as treatment
 - 700+ hours of licensed content available

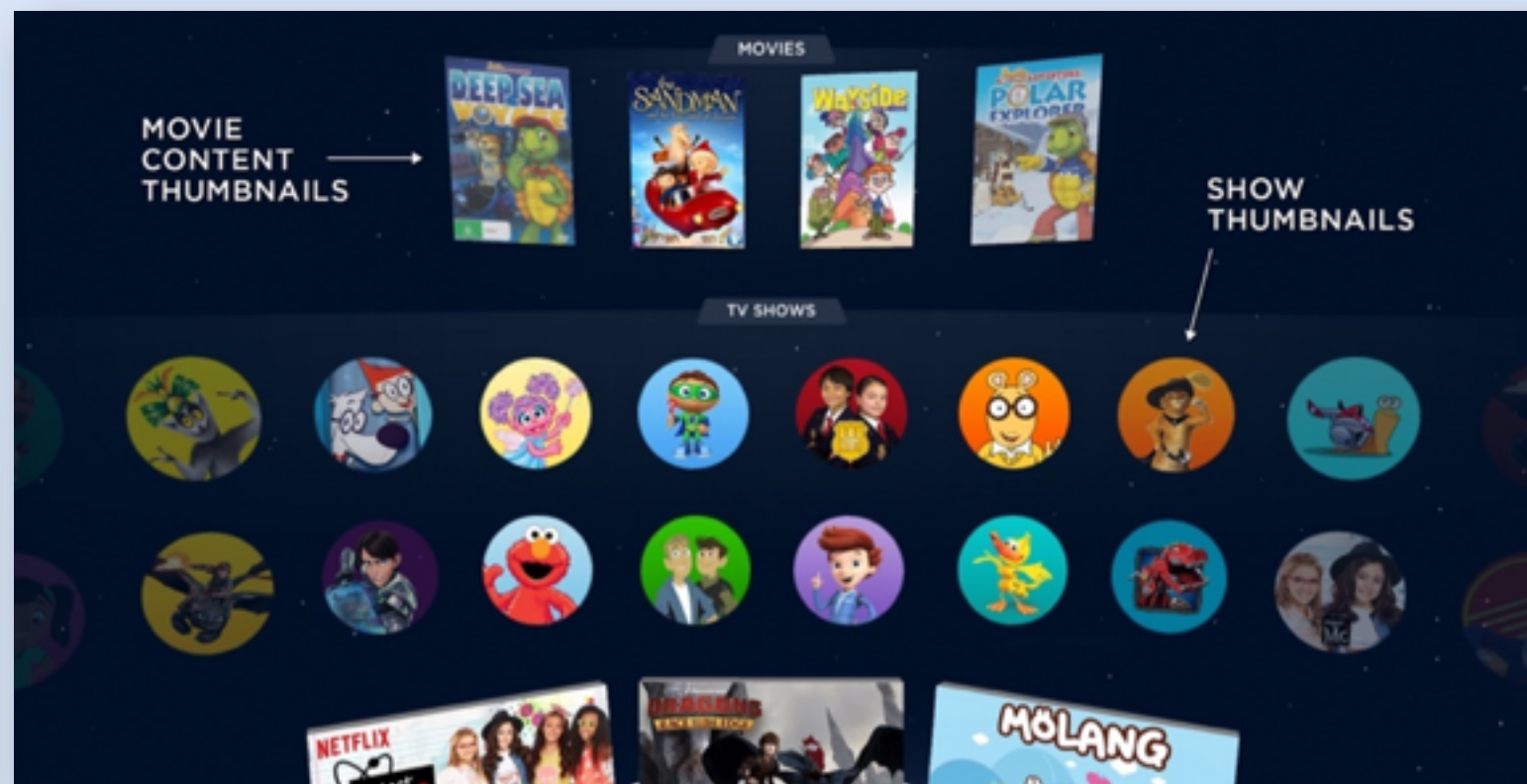


Methods – Device

- Luminopia One device
 - Smartphone with pre-loaded treatment software
 - Virtual reality (VR) headset
- Treatment
 - At home
 - With current glasses
 - 1 hour/day for 12 weeks



Methods – “Luminopia One” Device



Methods – “Luminopia One” Device

Amblyopic Eye



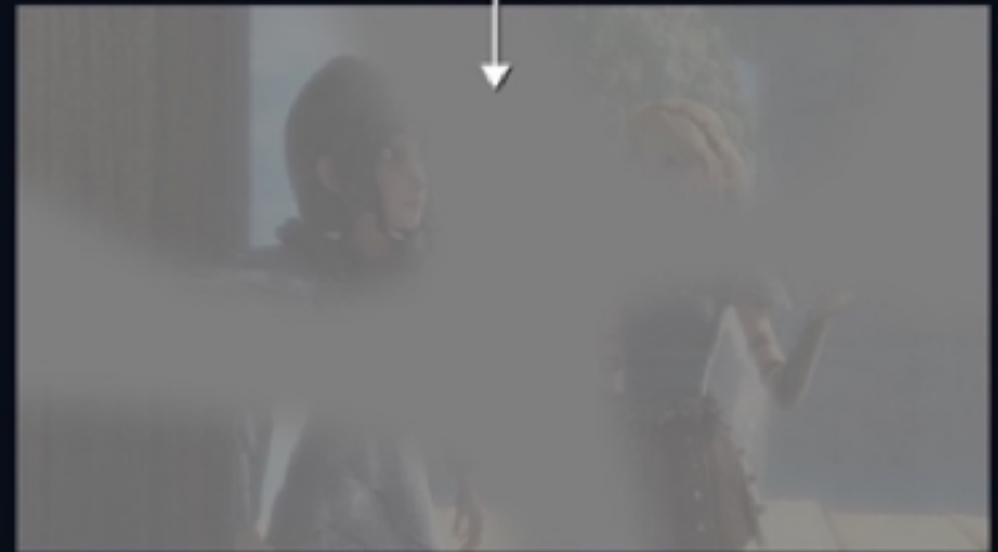
21:25  26:48

Minutes
to go

23



Dominant Eye



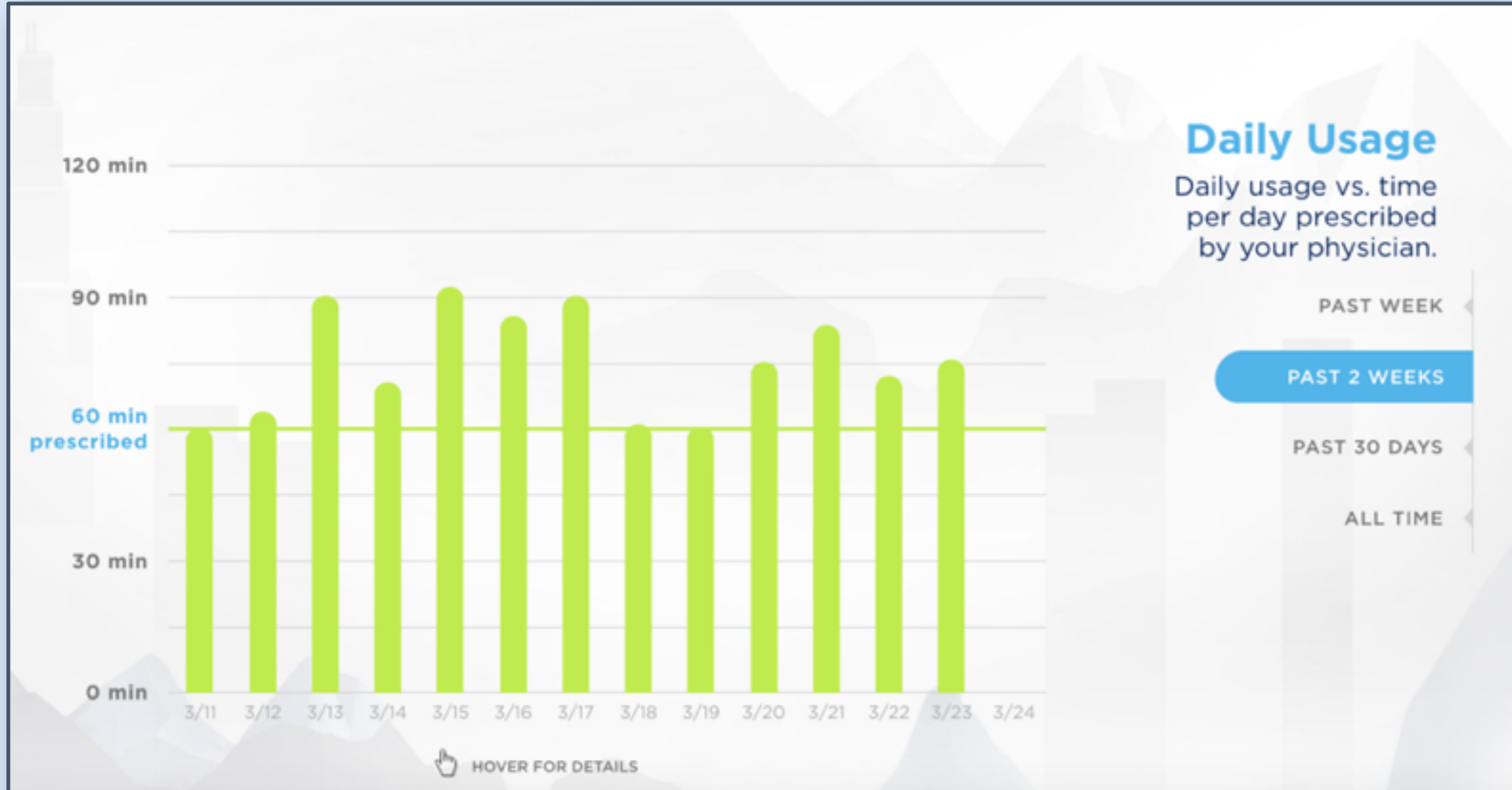
21:25  26:48

Minutes
to go

23

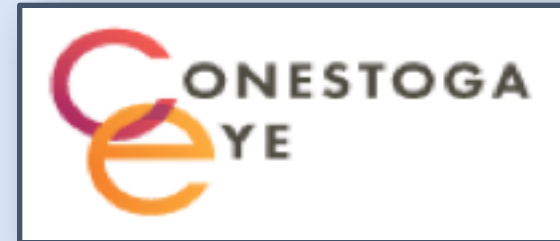
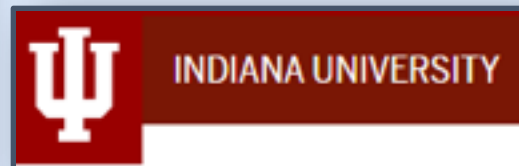


Methods – Compliance via Patient Portal



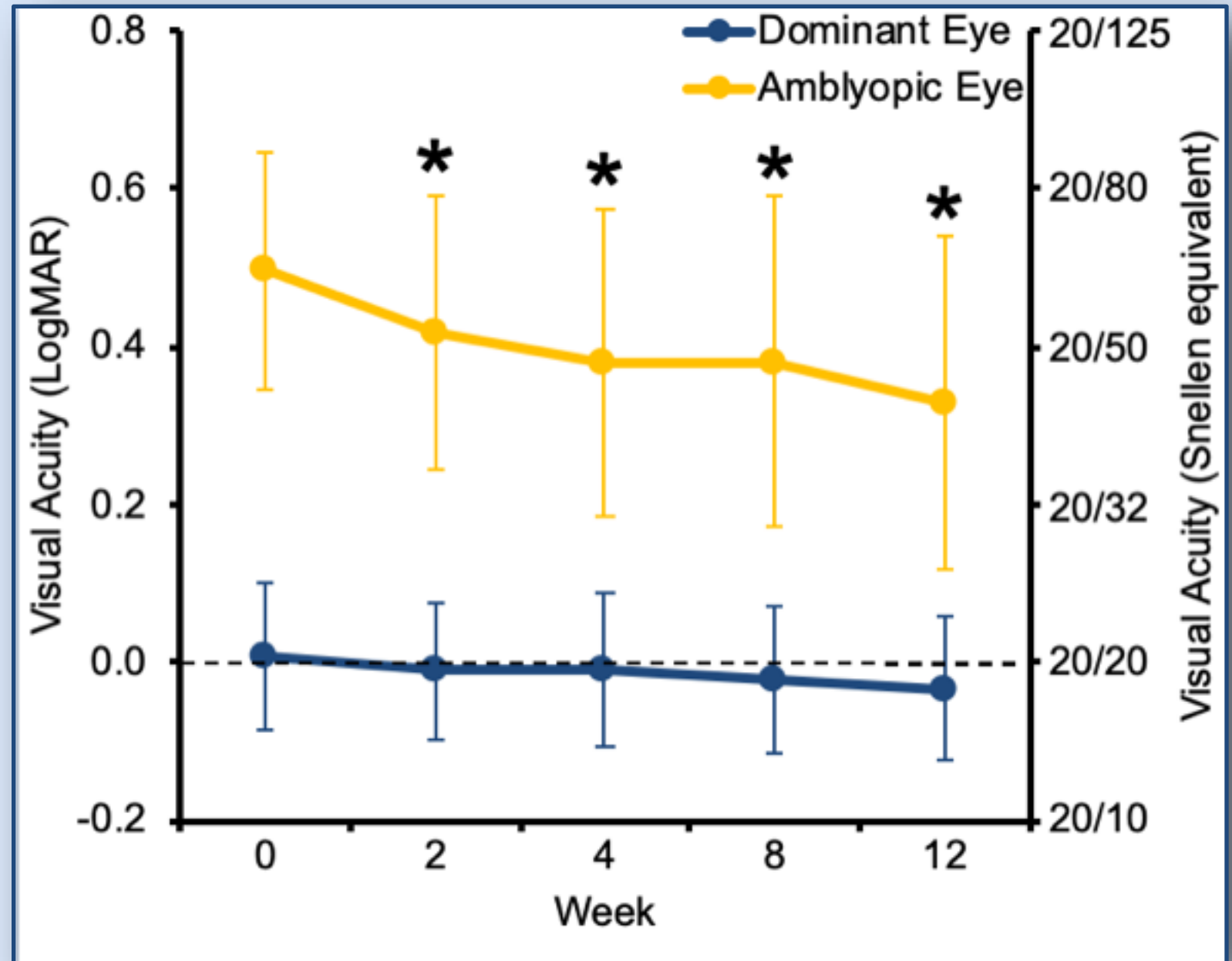
Methods

- Multicenter pilot study
- 10 institutional and community-based sites



VISUAL ACUITY

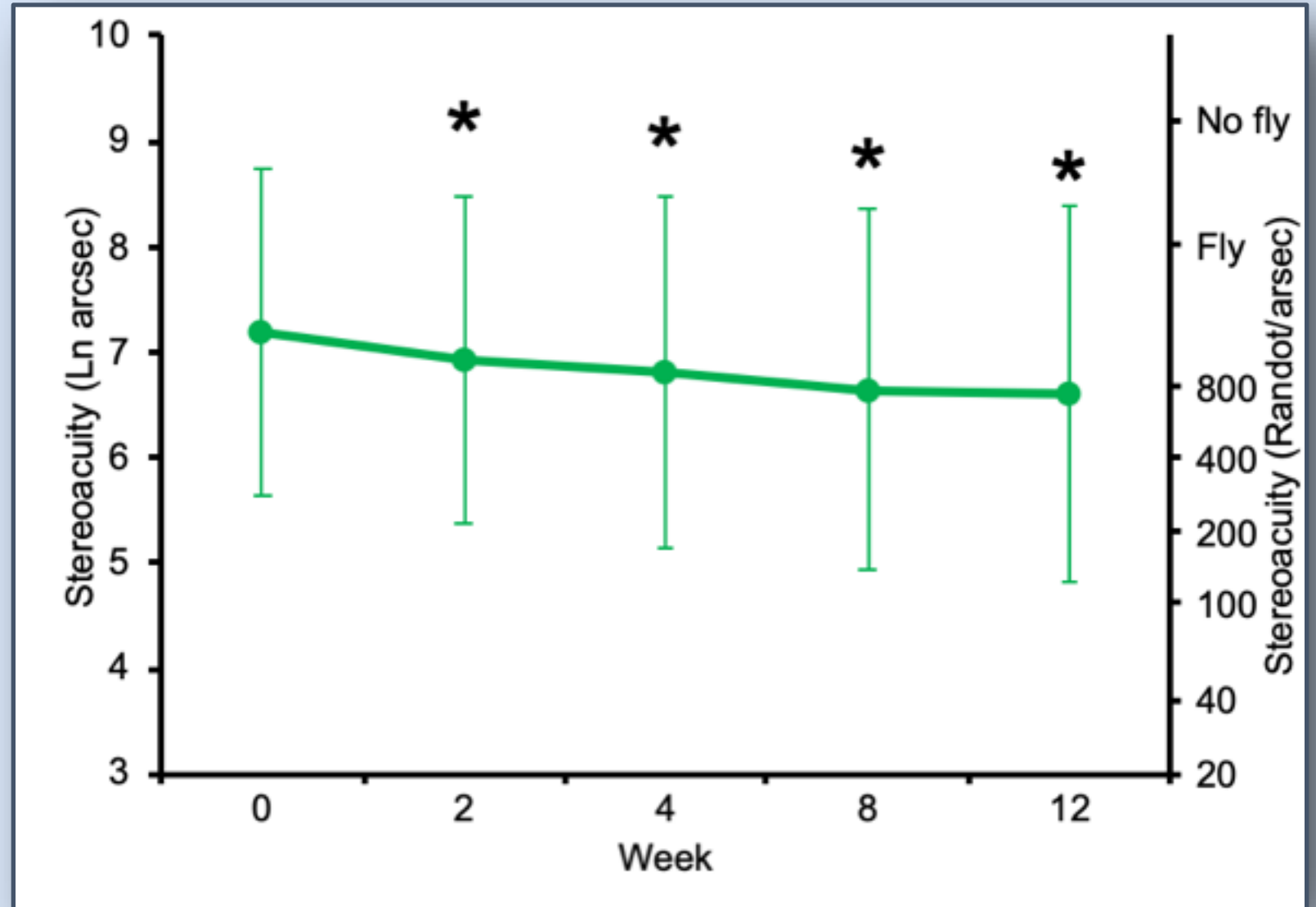
- N = 56
- Mean improvement:
1.7 logMAR lines
(95% CI: 1.33-2.01, $p < 0.001$)
- 50% improved 2+ logMAR lines
- 29% children had resolution of amblyopia (interocular difference ≤ 2 logMAR lines)



STEREOACUITY

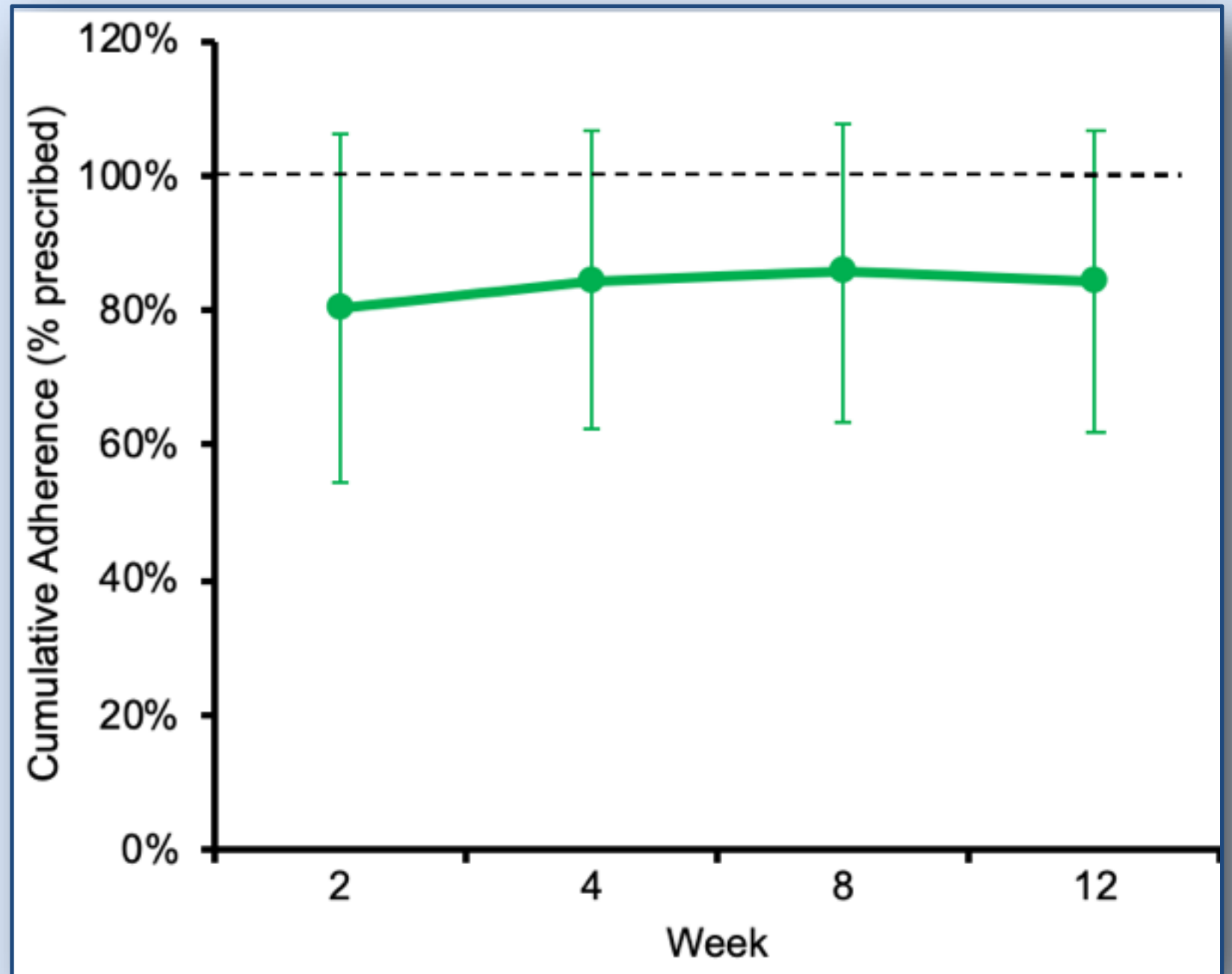
- Randot Fly/Preschool
- Mean improvement: **553 arcsec** (almost 1 octave)
- 43% children improved 2+ stereoacuity levels

• N = 56



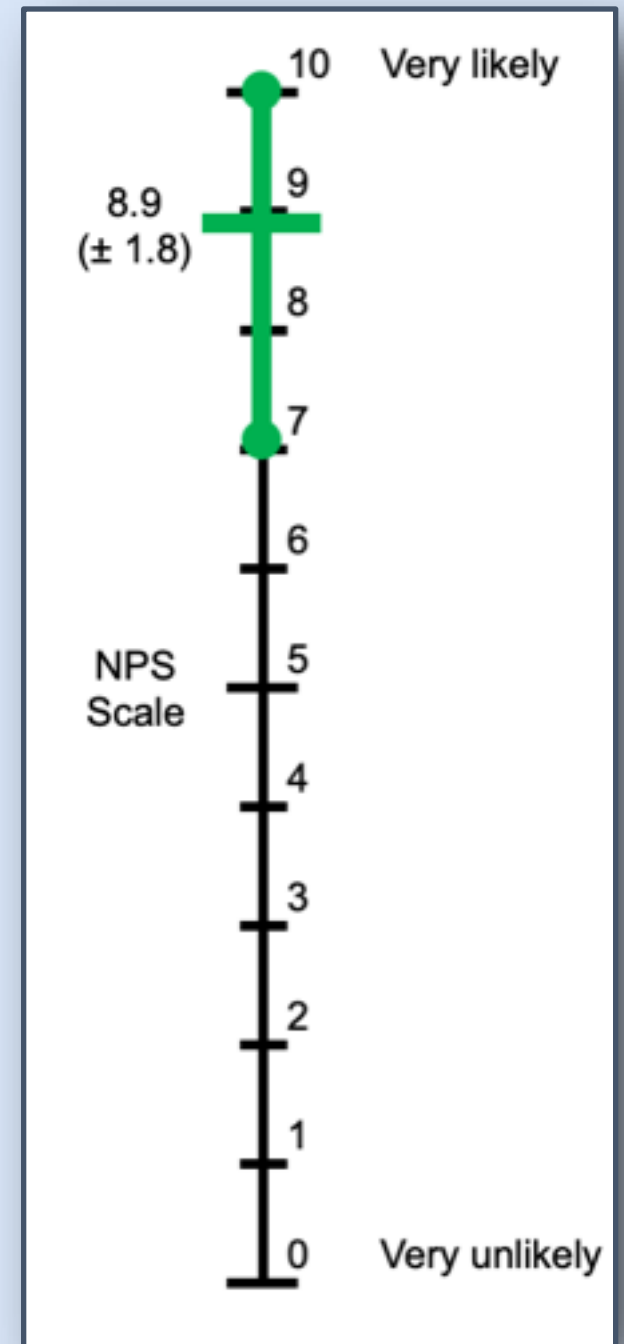
ADHERENCE

- Adherence automatically recorded
- % of total time prescribed
- Median cumulative adherence over 12 weeks: **89%** (IQR: 74-99%)
- N = 56



PARENT SATISFACTION

- “How likely would you be to recommend this Rx to someone else with lazy eye?”
 - Scale of 0 (very unlikely) to 10 (very likely)
- Mean response: **8.9 out of 10**
- 66% of parents responded 10/10
- N = 56



Top 10 Most Popular TV Shows

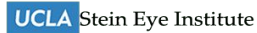
1. Molang
2. Wayside School
3. Dragons: Race to the Edge
4. Trollhunters
5. America's Got Talent
6. Ever After High
7. Wild Kratts
8. Super WHY!
9. Jasper The Penguin
10. Turbo F.A.S.T



Amblyopia Advisors

*Assembled renowned
key opinion leaders from
throughout ophthalmology*

Clinical Research Network



Dr. Peter McDonnell

Chairman of the Wilmer Eye
Institute, Johns Hopkins



Dr. David Hunter

Ophthalmologist-in-Chief,
Boston Children's Hospital



Dr. Mark Bear

Picower professor of
Neuroscience, MIT



Dr. Marguerite McDonald

Performed America's first
laser vision correction surgery



Dr. Eric Gaier

Part-time team member
Pediatric Ophthalmologist, BCH



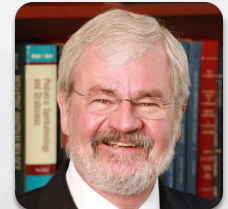
Dr. Gil Binenbaum

Chair of Pediatric Ophth.
Research, CHOP



Dr. Skip Rizzo

Director of Medical VR, USC
Creative Institute for Tech



Dr. Edward Buckley

Chair of Ophthalmology, Duke
Former President, AAPOS

Amblyopia Platform

*Digital therapeutic achieves
unparalleled at-home use
adherence to care*

Luminopia™ One

TV & Movie Content

is rebalanced to each eye as
treatment within a VR headset

Adherence

88%

- ✓ Ages 4-12
- ✓ 12 week usage
- ✓ IP granted & pending
- ✓ 700+ hours of content

Signed Media
Partners



nickelodeon

NBCUniversal





THANK YOU