

Social Skills Training for Youth with Autism Spectrum Disorder via Virtual Reality

Presented by: Dr. David Elkin
Executive Director
Center for Advancement of Youth



Acknowledgment

These projects were made possible by grant number U6631459 from the Office for the Advancement of Telehealth, Health Resources and Services Administration, DHHS

Center for Advancement of Youth (CAY)

- Fully-integrated, comprehensive pediatric behavioral outpatient clinic
- 65+ colleagues
- 2022: 22,000+ clinic visits
- Referral-based clinic
 - Main referral
 - Used to be ADHD
 - Now, ASD



Center for Advancement of Youth (CAY)

	2021	FY22 (July 21 – June 22)	2022	FY23 (July 22 – March 13, 2023)	Jan 2023 – March 13, 2023
Unique CAY patients with Autism Diagnosis	1,188	1,253	1,229	955	488
Unique CAY Patients Receiving ABA	3	4	7	7	5
Total Unique CAY Patients	8,760	8,717	8,894	6,732	3,429
Completed CAY Appointments with Patients with Autism Diagnosis	2,493	2,890	2,904	1,981	661
Completed CAY ABA appointments	111	426	550	429	151

Autism Spectrum Disorder (ASD)

- Prevalence: 1 in 44 in the US
 - Males are 4x more likely to be diagnosed
- Dx Criteria:
 - Persistent deficits in social communication/interaction
 - Reciprocity; non-verbal; relationships
 - Restricted, repetitive patterns of behavior, interests or activities
 - Stereotypy; routines; fixated interests; sensory input
 - Must be present early
 - Clinically significant impairment
 - Not intellectual disability
- Need clear markers

Current Study

- Participants:
 - Ages 6-17 years
 - Primary dx of ASD
 - Seen for therapy at CAY

Current Study

- VR environment
 - 5 scenarios
 - Simple to complex
 - Verbal interactions
 - Measured eye gaze



Initial Findings

- Participants:
 - 105 approached
 - 77 did not respond
 - 17 expressed interest, but could not be scheduled
 - 11 enrolled
 - 1 could not complete
 - 10 total, all males
 - 7 mild, 2 moderate, 1 severe
 - Age: $M=12.53$, $SD=2.24$



Number of Gaze Fixations M (SD)

Gaze Area	Mild (n=7)	Moderate (n=2)	Severe (n=1)
Left Eye	3.7 (3.1)	35.5 (46.0)	0
Right Eye	4.0 (2.8)	76.0 (0)	0
Mouth	42.5 (62.8)	230.5 (320.3)	0
Other face area	52.3 (38.5)	224.5 (311.8)	0

- Moderate ASD had significantly more eye contacts

Duration of Gaze Fixations M (SD), seconds

Gaze Area	Mild (n=7)	Moderate (n=2)	Severe (n=1)
Left Eye	2.6 (3.2)	2.9 (2.7)	0
Right Eye	1.7 (1.7)	3.3 (4.1)	0
Mouth	5.6 (9.0)	7.1 (12.3)	0
Other face area	3.2 (5.9)	5.2 (10.4)	0

- No significant difference in time spent on contacts

Discussion

- Small n
- Mild ASD tended to look at fewer facial features, but for the same amount of time
 - Novel VR experience?
- Moderate ASD tended to shift more
 - Rapid changes look like poor eye contact?



Year 1 Accomplishments

- Captured and measured eye movement
- Increased the complexity of the virtual reality environment
- Incorporated an emotional processing component where the avatars could show emotional responses on their faces



Future Goals

- Expand the application state-wide
- Gain marketing support
- Engage with other rural entities

The Telehealth Centers of Excellence(COE) develop resources for telehealth organizations, researchers, providers, and staff based on their experience, research, and innovation.

TelehealthCOE.org

Telehealth Centers
of Excellence



This presentation was made possible by the Health Resources and Services Administration (HRSA) of the US Department of Health and Human Services (HHS) as part of the National Telehealth Center of Excellence Award (U66 RH31458). The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS or the US Government.