AIA Lubbock

Provider No.: A197

Designing for Autism

AIA/CES No.: 092224

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Date: 09/22/2018

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Course Description

Autism Spectrum Disorder (ASD) is a complex developmental disorder affecting a wide range of abilities from proprioception to social and language deficits. To add to the complexity, the built environment has a profound impact on the sensory experience for individuals with ASD and their ability to learn and to interact with both people and the environment. This presents a unique challenge and opportunity for educators, practitioners, and designers. The Burkhart Center for Autism, an extension of Texas Tech University's College of Education, is a revolutionary education and research facility capable of meeting the needs of individuals with ASD at any age. This presentation will reflect on the planning of the Burkhart Center and its impact on the larger community. It will also discuss the interconnection of autism and design and review the research being conducted around designing facilities as living learning environments for understanding the characteristics of autism from all angles.

Learning Objectives

At the end of the this course, participants will be able to:

1. Participants will review the vision behind the TTU's Burkhart Center for Autism and the steps taken to make the project reality.

2. Participants will examine the program and the design of the Burkhart Center and review its impact on individuals with autism, their families, and the larger community.

3. Participants will gain a deeper understanding of the interconnection of autism and design.

4. Participants will explore the challenge and opportunities for designing for ASD as well as the effort to develop standard design guidelines to better shape the built environment for individuals with ASD.

photo: The Stephen Wiltshire Gallery

photo: Elevate Houston

What is ASD?

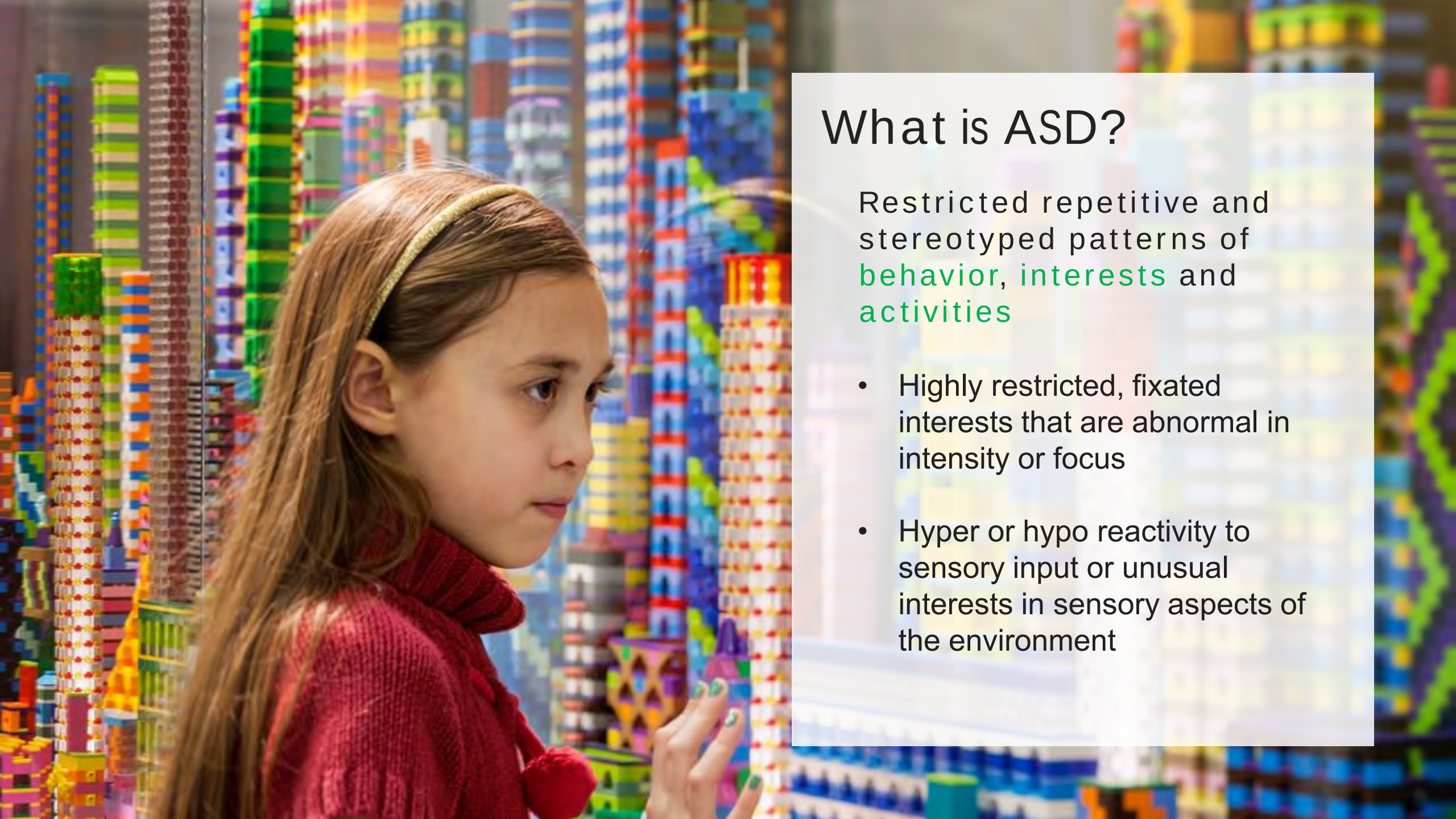
Persistent deficits in social communication and social interaction across multiple contexts

- Deficits in social-emotional reciprocity
- Deficits in nonverbal communicative behaviors used for social interaction
- Deficits in developing, maintaining, and understanding relationships

What is ASD?

Restricted repetitive and stereotyped patterns of behavior, interests and activities

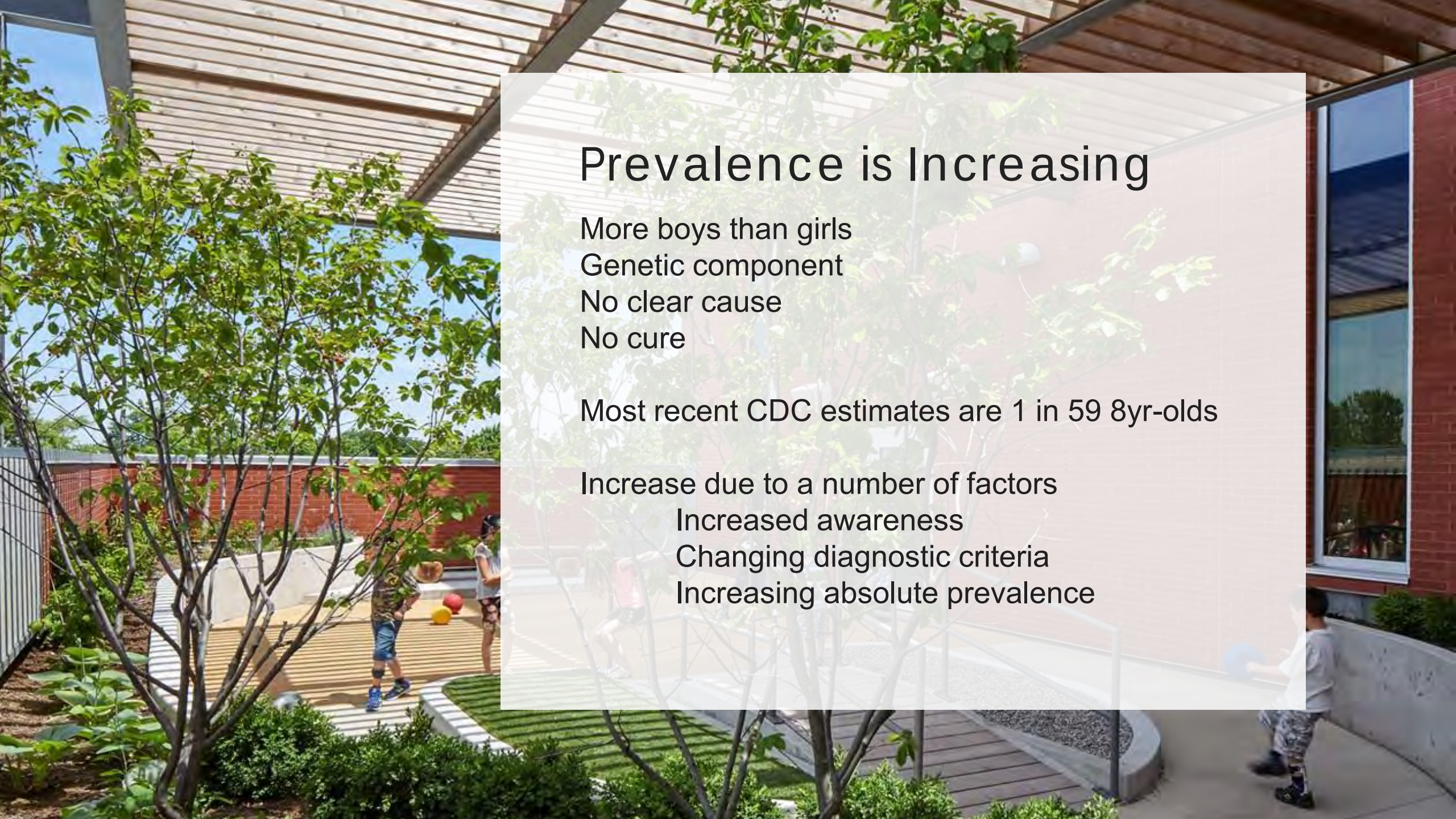
- Stereotyped or repetitive motor movements, use of objects, or speech
- Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior



What is ASD?

Restricted repetitive and stereotyped patterns of behavior, interests and activities

- Highly restricted, fixated interests that are abnormal in intensity or focus
- Hyper or hypo reactivity to sensory input or unusual interests in sensory aspects of the environment



Prevalence is Increasing

More boys than girls
Genetic component
No clear cause
No cure

Most recent CDC estimates are 1 in 59 8yr-olds

Increase due to a number of factors
- Increased awareness
- Changing diagnostic criteria
- Increasing absolute prevalence

I asked a 13 year old patient how he liked the book he was reading. He replied: “I’m 3/4s of the way through. There are 164,000 ‘O’s in it.”

-Alonso Andrews, Director – San Antonio Autism Treatment Center

photo: Rosalie Winard / The Economist

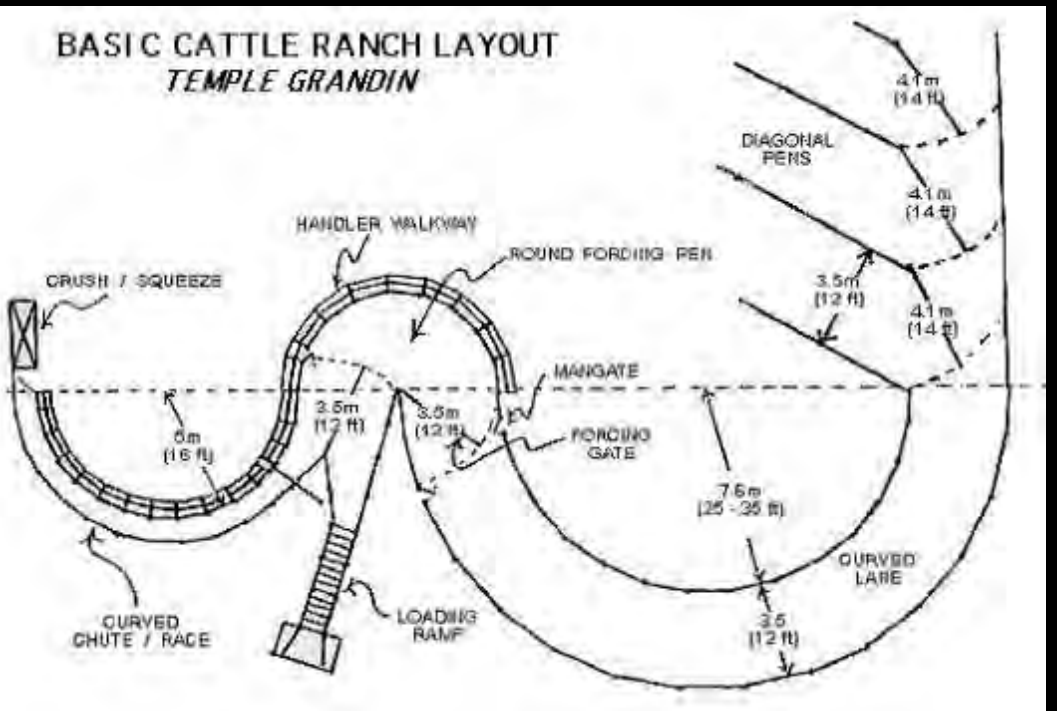


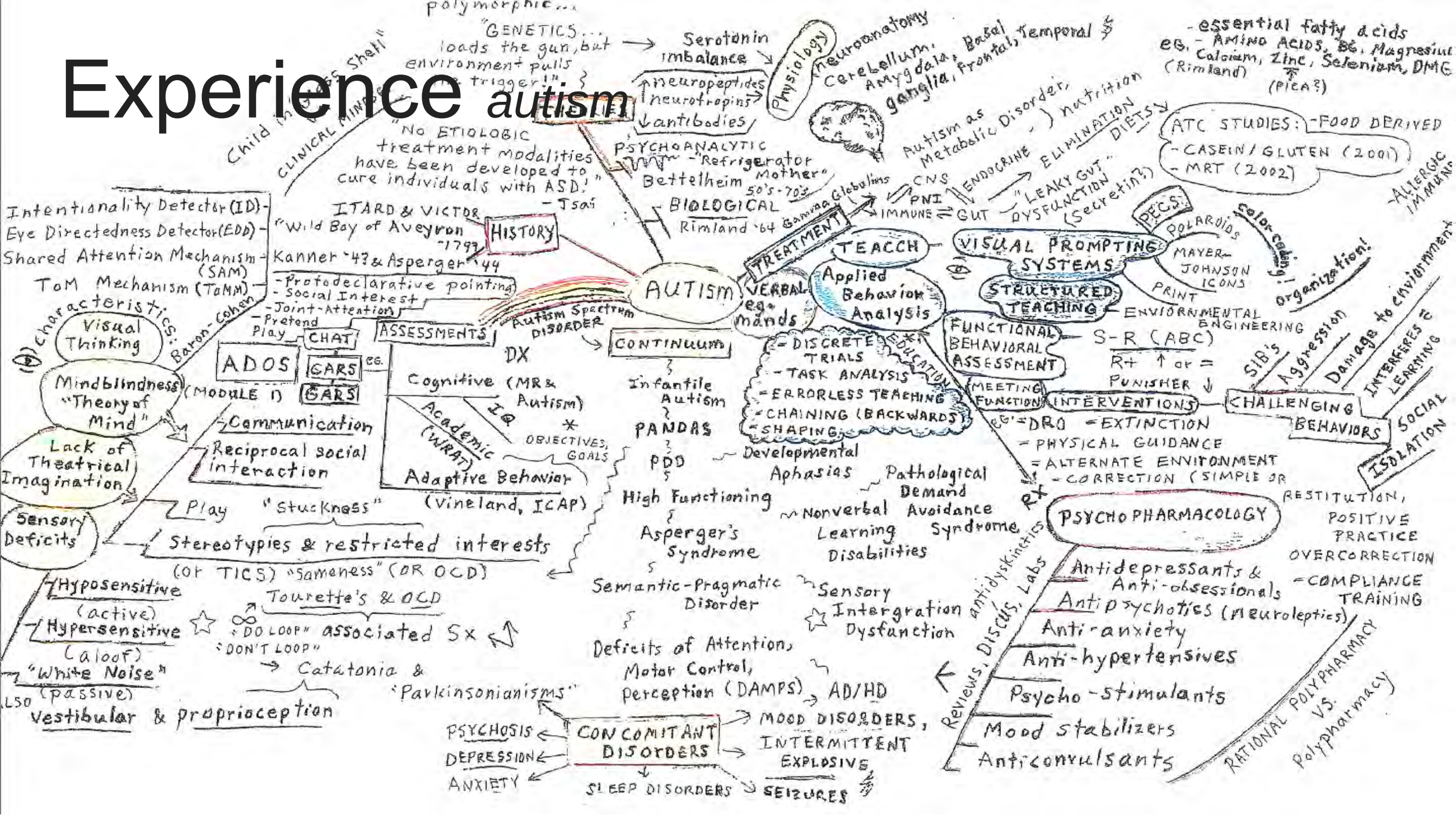
photo: TED

Research *autism*

- Sense of calm and order
- Good levels of natural light and ventilation
- Good proportion (golden section)
- Easily managed durable materials
- Good observation (safe + secure)
- Acoustics (special considerations due to heightened senses)
- Color (muted tones, warm and cool green and blue)
- Indirect Lighting (fluorescent flickering is very bad)
- Contrast/Pattern/Texture
- Smells (aroma therapy link?)
- Negative space important, lack of clutter (classrooms/exam rooms)

Just the beginning…

Experience *autism*



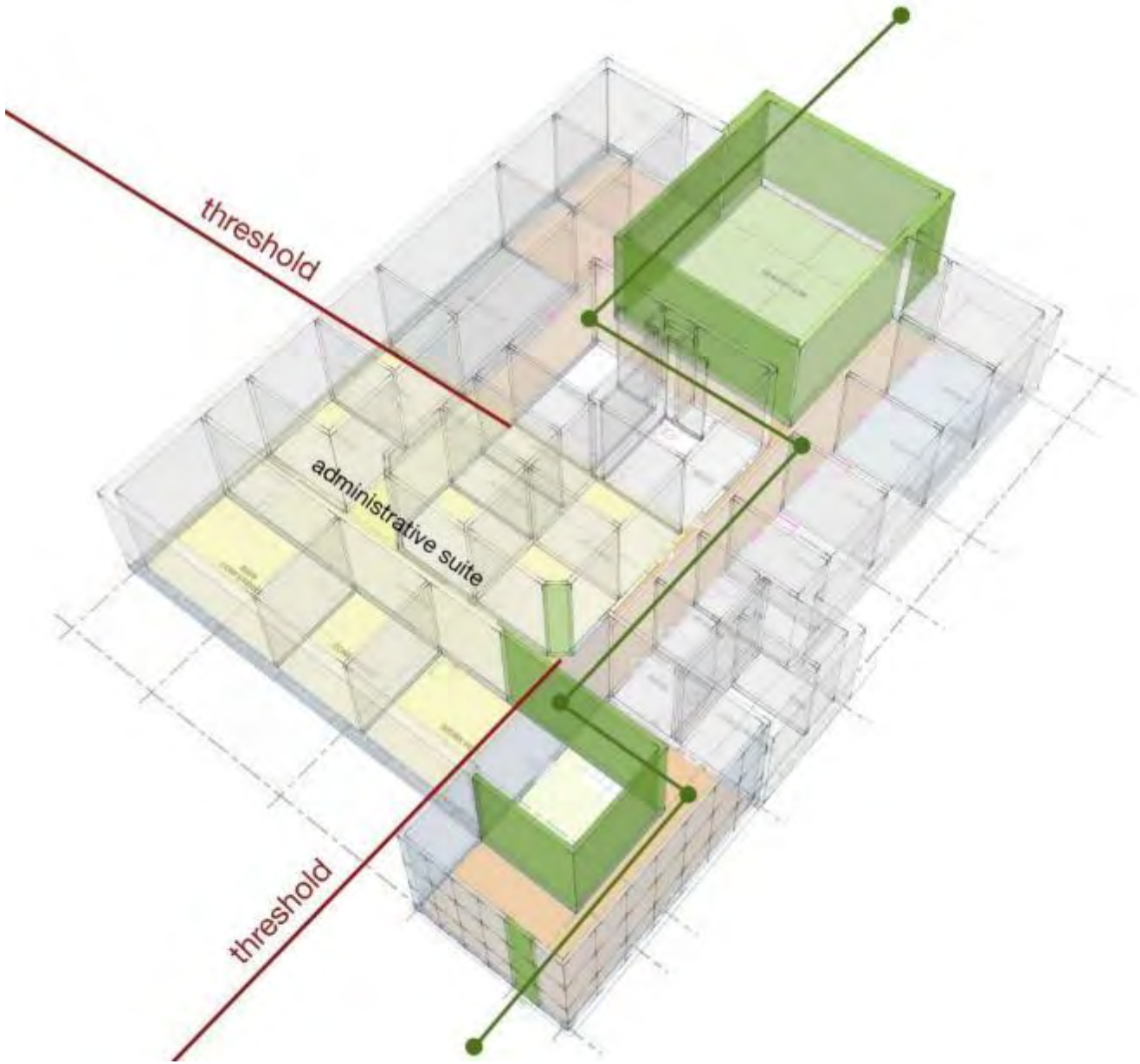
Design Considerations


Sensorial Sensitivities
Spatial Sequencing
Lighting
Acoustics
Interior Space
Outdoor Connection


Sensorial Sensitivities
photo: Norma Desmond

Sensorial Sensitivities Response to Stimuli

Sensorial Sensitivities Low –vs– High Sensory



Spatial Sequencing Create Thresholds & Delineate Path

Spatial Sequencing Wayfinding

Spatial Sequencing Repetition & Rhythm

Color | Texture | Pattern Transitions

Color | Texture | Pattern Separation of Space

Color | Texture | Pattern Place Making

Acoustics Processing Difficulties

Acoustics Flooring / Ceiling / Wall Finishes

Acoustics Unit Location / Placement / Duct Runs / Air Velocity

Lighting Distracting or Debilitating

Lighting Control Natural & Artificial Light

Lighting Manage Reflections & Direct Light

Outdoors Introducing Growth Cycles Attributes to Improved Physical and Emotional Function

Outdoors Benefits of Green Space & Natural Focus

Outdoors Extension of Classroom + Sensory Space


Burkhart Center for Autism Research & Education
Texas Tech University


BURKHART CENTER FOR AUTISM EDUCATION AND RESEARCH

TEXAS TECH UNIVERSITY®

Burkhart Center *for* Autism Education and Research

College *of* Education

Project Success Factors

photo: Norma Desmond

Burkhart Center for Autism Education & Research in the College of Education at Texas Tech University

1

To provide services to individuals with autism and their families in West Texas

2

To provide training and professional development for teachers, therapists, researchers, and families working with individuals with autism, and

3

To conduct cutting-edge research aimed at identifying the causes and most effective treatments for autism spectrum disorders and the core symptoms associated with the disorder.

OUR CORE VALUES …

We are motivated to prepare people with autism for a full, high-quality life that includes:

Life-long education and training

Independence in living

Employment

Relationships and connection to their community

OUR CORE VALUES …

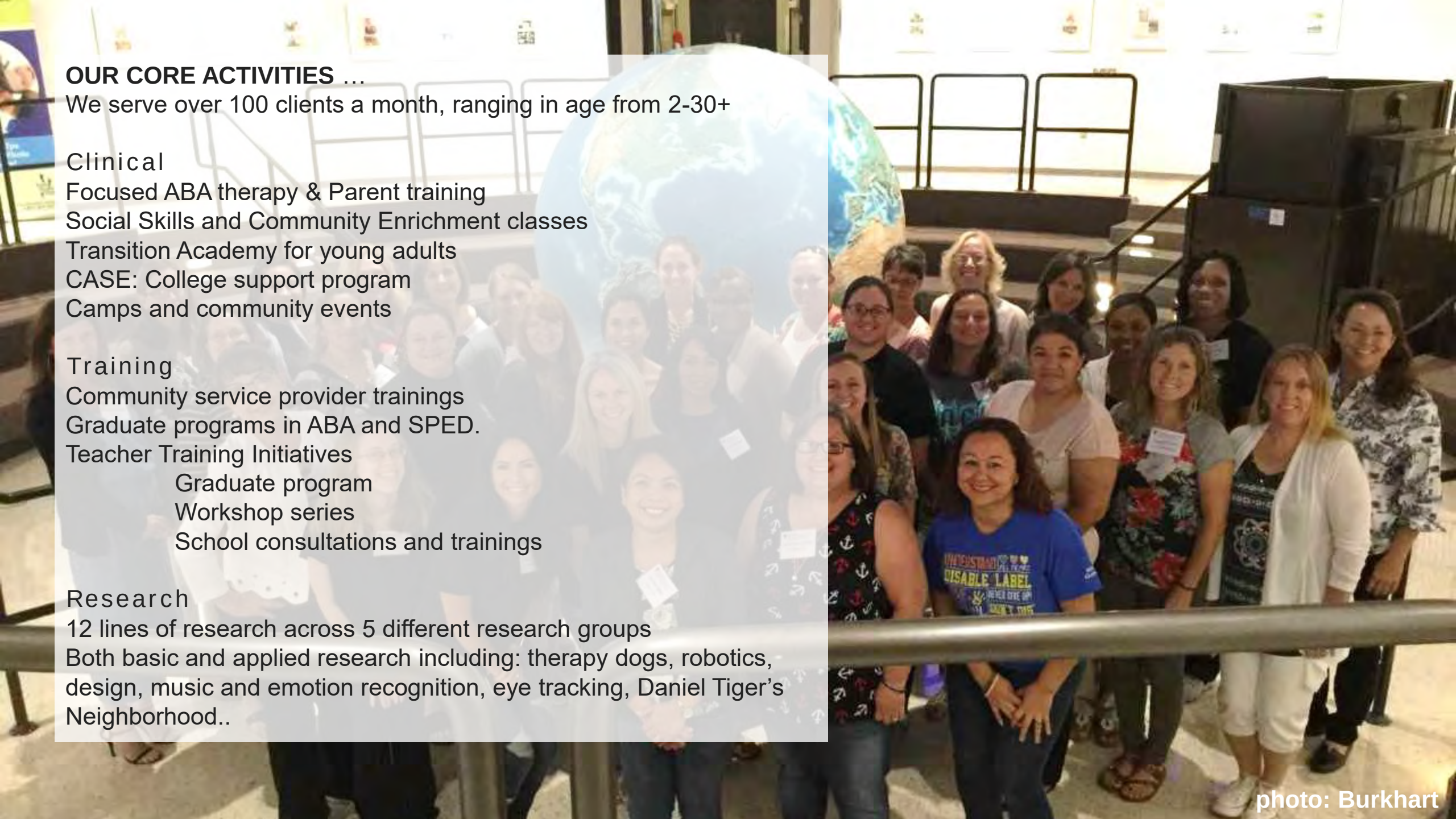
To do so, we:
Focus on abilities, not disabilities.

Strive to create empowerment and personal advocacy in our clients.

Engage with our community by partnering with diverse agencies, districts, and populations to fully imbed our work in the natural environment.

Show individuals, families, and professionals what is possible by offering innovative, best-practice services and training and conducting cutting-edge research.

photo: Burkhart



OUR CORE ACTIVITIES …
We serve over 100 clients a month, ranging in age from 2-30+

Clinical

Focused ABA therapy & Parent training
Social Skills and Community Enrichment classes
Transition Academy for young adults
CASE: College support program
Camps and community events

Training

Community service provider trainings
Graduate programs in ABA and SPED.
Teacher Training Initiatives
- Graduate program
- Workshop series
- School consultations and trainings

Research

12 lines of research across 5 different research groups
Both basic and applied research including: therapy dogs, robotics, design, music and emotion recognition, eye tracking, Daniel Tiger's Neighborhood..

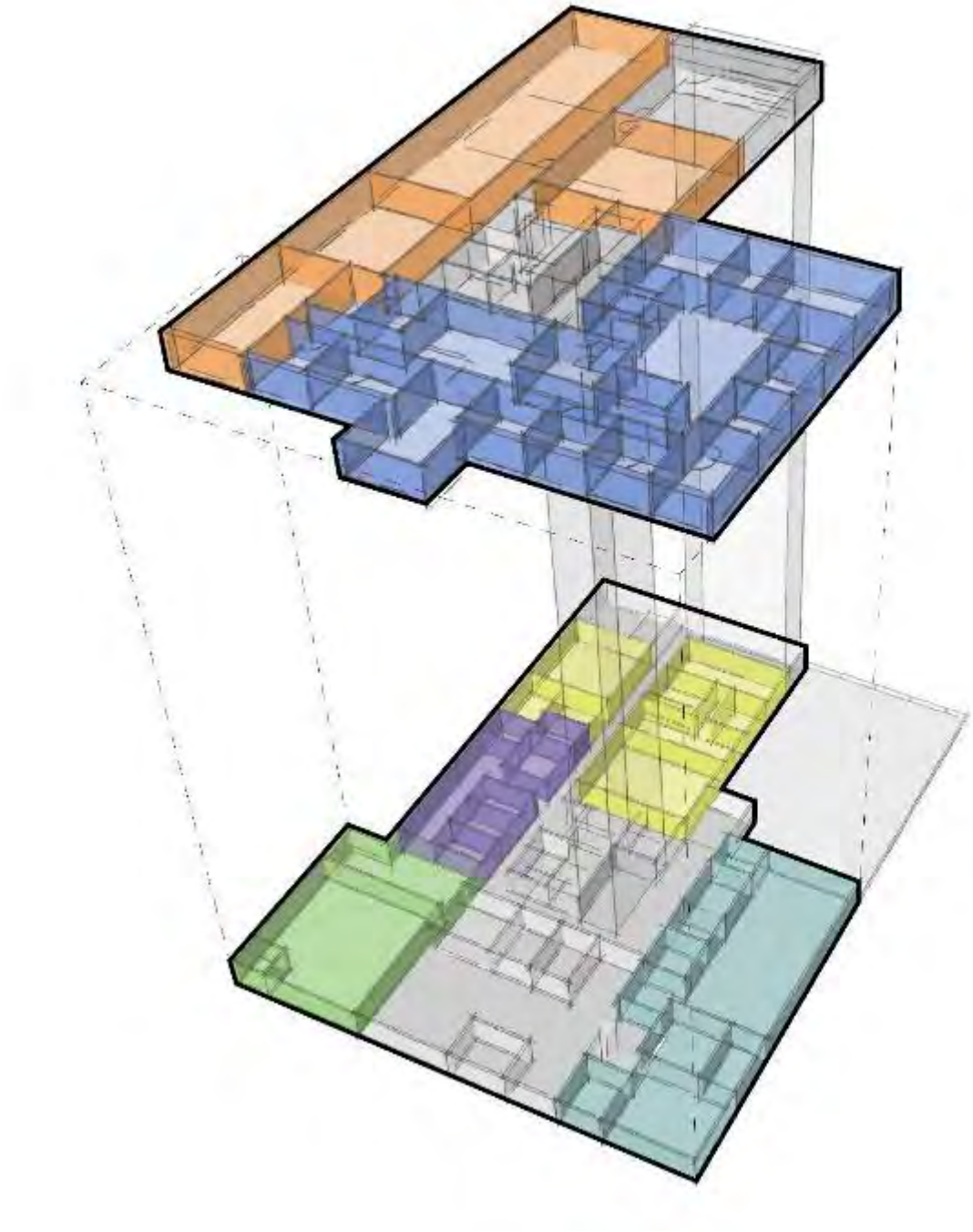
photo: Burkhart


Texas Tech University
Lubbock
2200
6500
2255
326
6700
6800
6900
1700
2000
84
27
62
327
289
835
114
40
4th St
11th Pl
19th St
E 19th St
34th St
42nd St
50th St
66th St
69th St
Broadway
Parkway Dr
Acuff Rd
Clovis Rd
N University Ave
N Indiana Ave
N Quaker Ave
N Frankford Ave
Texas Tech Pkwy
N Martin L King Blvd
Avenue K
Avenue L
Avenue O
Avenue P
Avenue U
Marshall Ormsby Memorial Hwy
Martin Luther King Jr Blvd
Memphis Ave
Milwaukee Ave
Quaker Ave
Indiana Ave
Slide Rd
Loop 289
Texas 289 Loop Frontage Rd
US 62 Frontage Rd
E Slaton Hwy
Southeast Dr
331


15th St
Akron Ave
18th St
19th St
62
Texas 114
Flint Ave
Detroit Ave
Elgin Ave
Canton Ave
Boston Ave
Clay Ave


15th St
Akron Ave
18th St
19th St
62
Texas 114
Flint Ave
Elgin Ave
Detroit Ave
Canton Ave
Boston Ave


Burkhart
Center
Google Earth



Level 2

Research

Level 1

Clinical & Training


Transition Academy
Outpatient
Restaurant
Outdoor Play
Pre-K Instruction
Lobby
Main Entry

Level 1

Lobby Nexus of All Activities

Lobby Easily Navigated

Lobby Socialization in a Secure Place

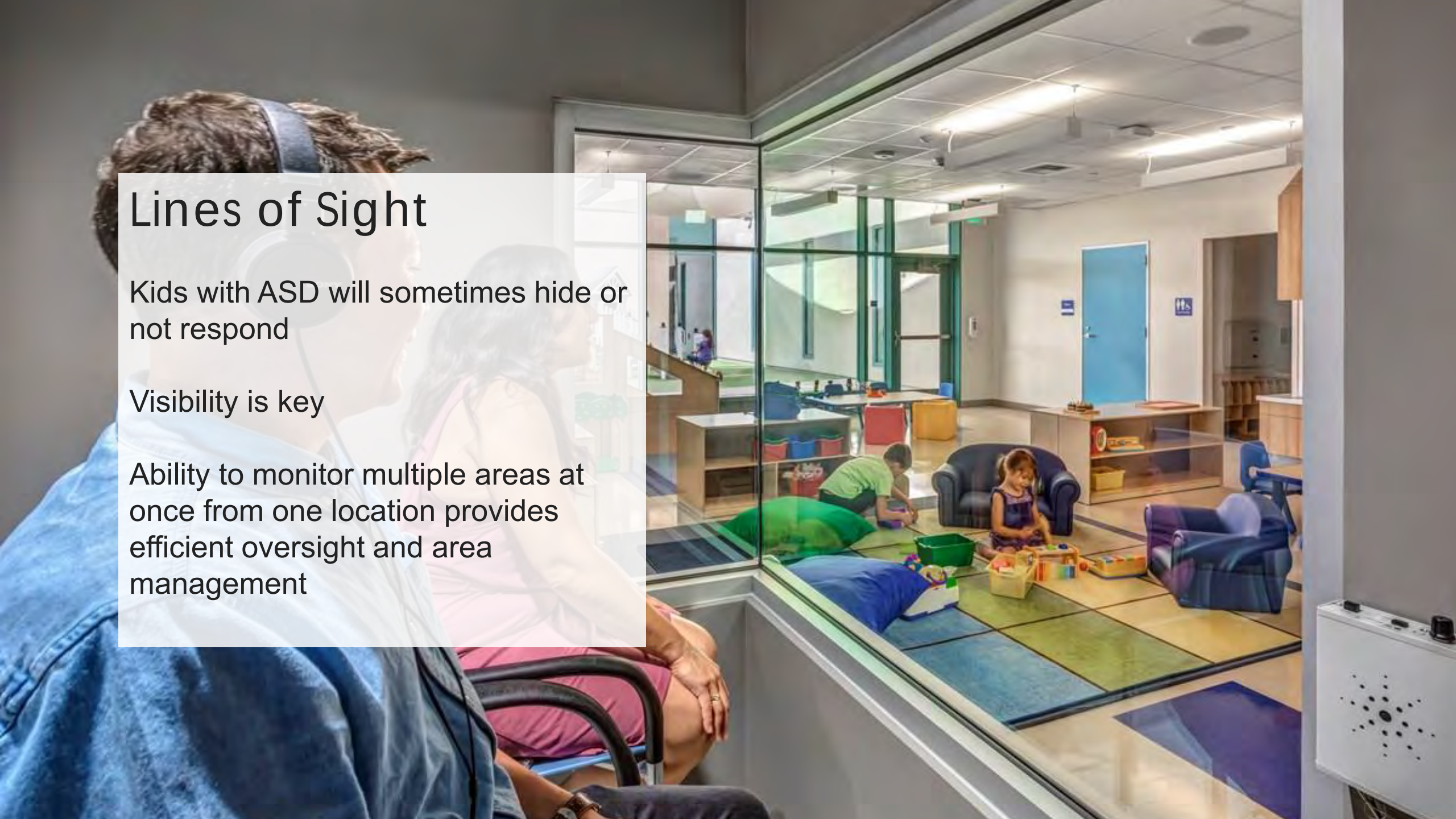
Wayfinding Pattern and Rhythm

Lines of Sight

Kids with ASD will sometimes hide or not respond

Visibility is key

Ability to monitor multiple areas at once from one location provides efficient oversight and area management



Safety & Security Lines of Sight

Safety & Security Lines of Sight

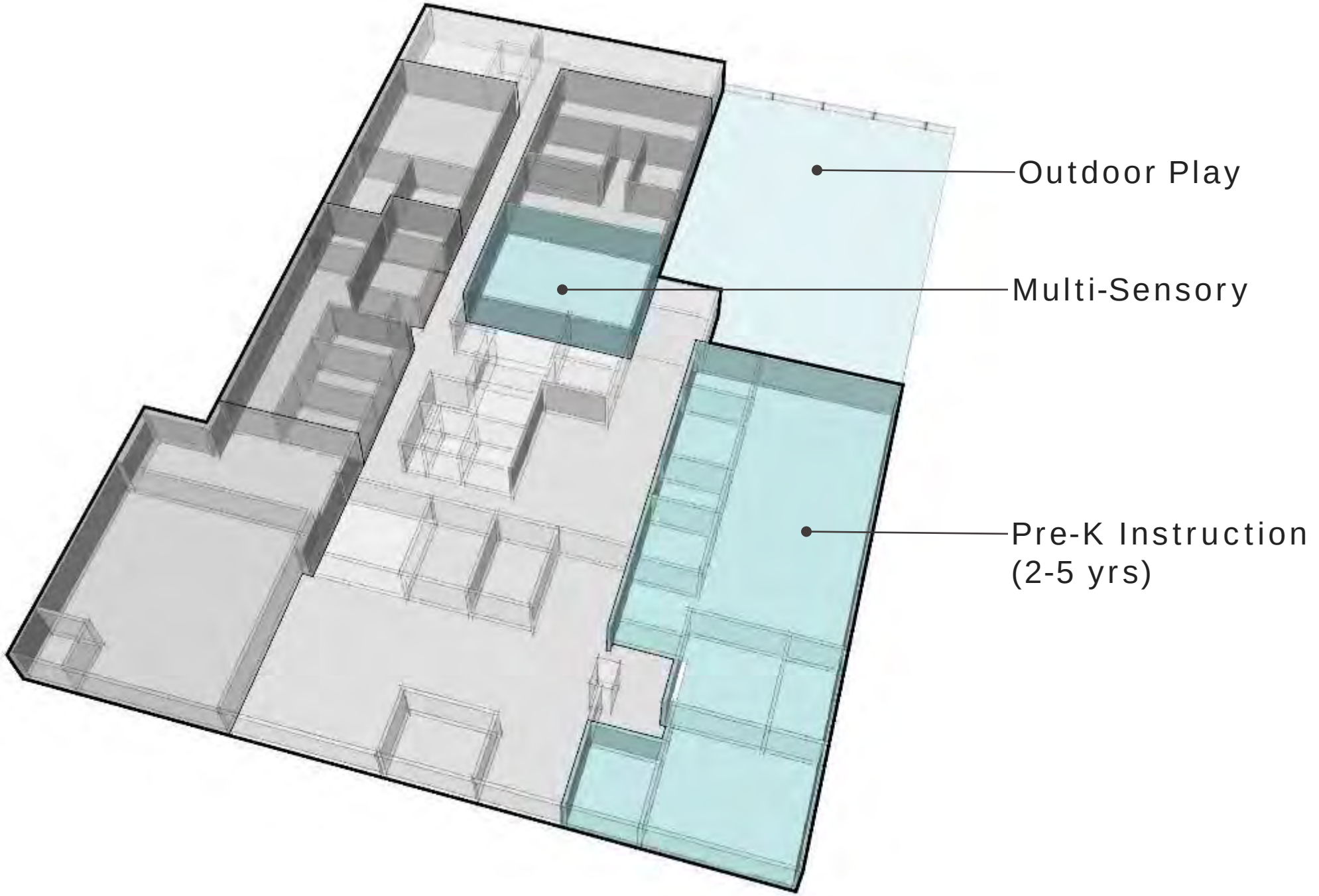
Control Egress Through Design

Over 40% of children with ASD will wander or run away from caregivers at some point

Building design must provide support to prevent and, if necessary, slow down an escaping child

- Turns
- Doors
- Gates

Safety & Security Delay Egress

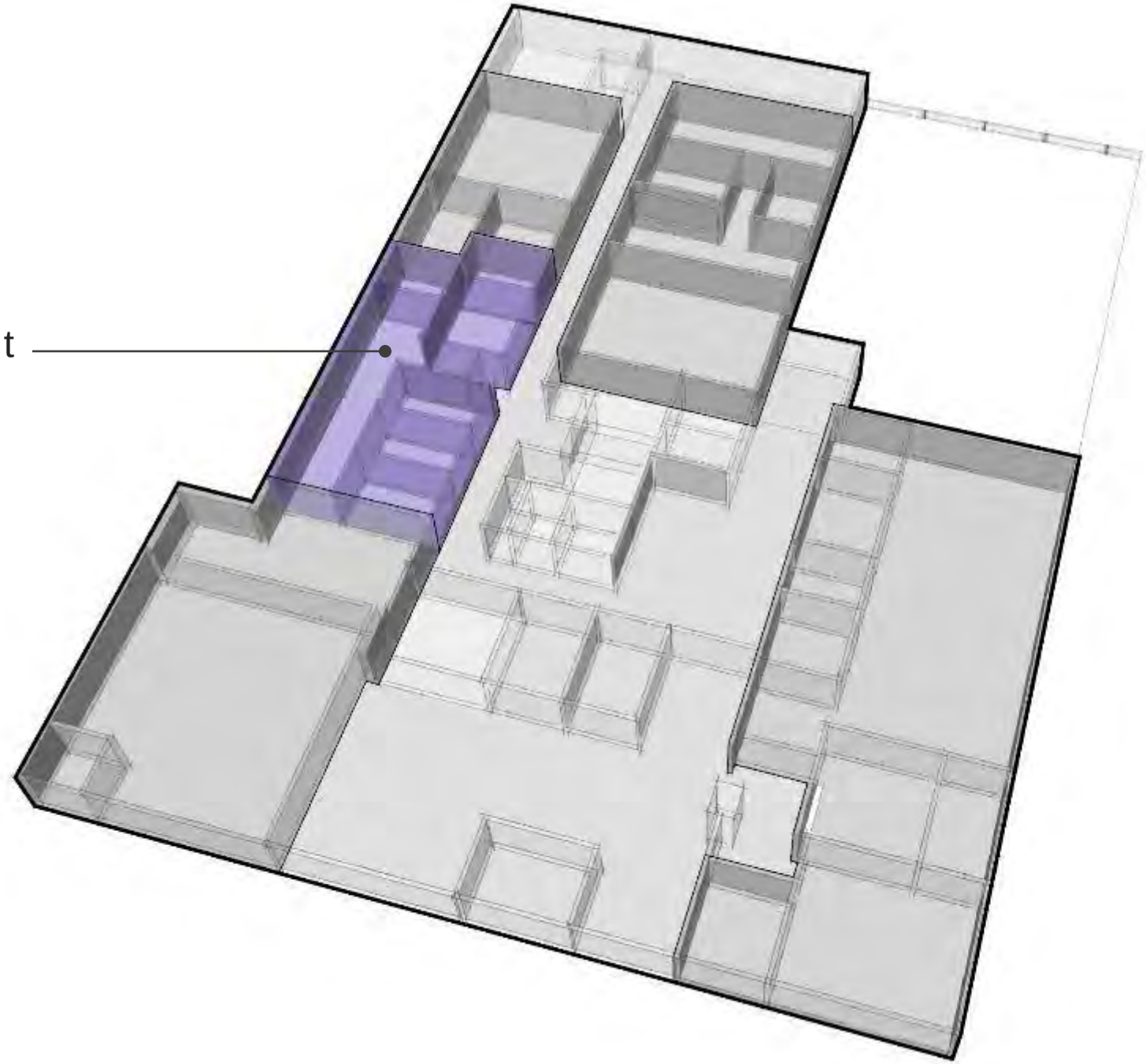


Level 1

Education Individuals with Autism & Families

Education Train the Trainers + Promote Research

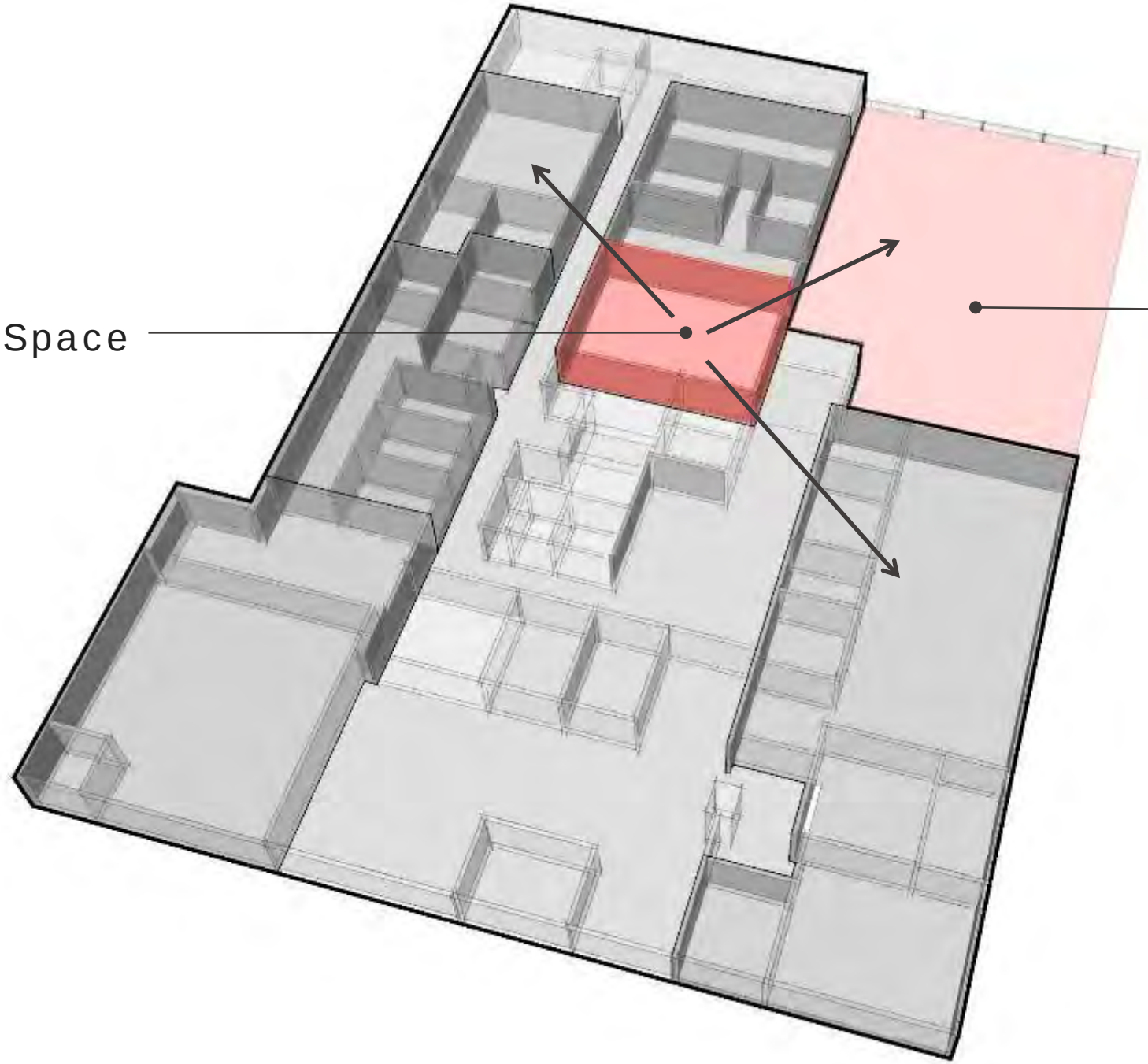
Environment Engaging & Calm + Flexible



Level 1

Therapy Promote Research

Therapy Engaging & Calm



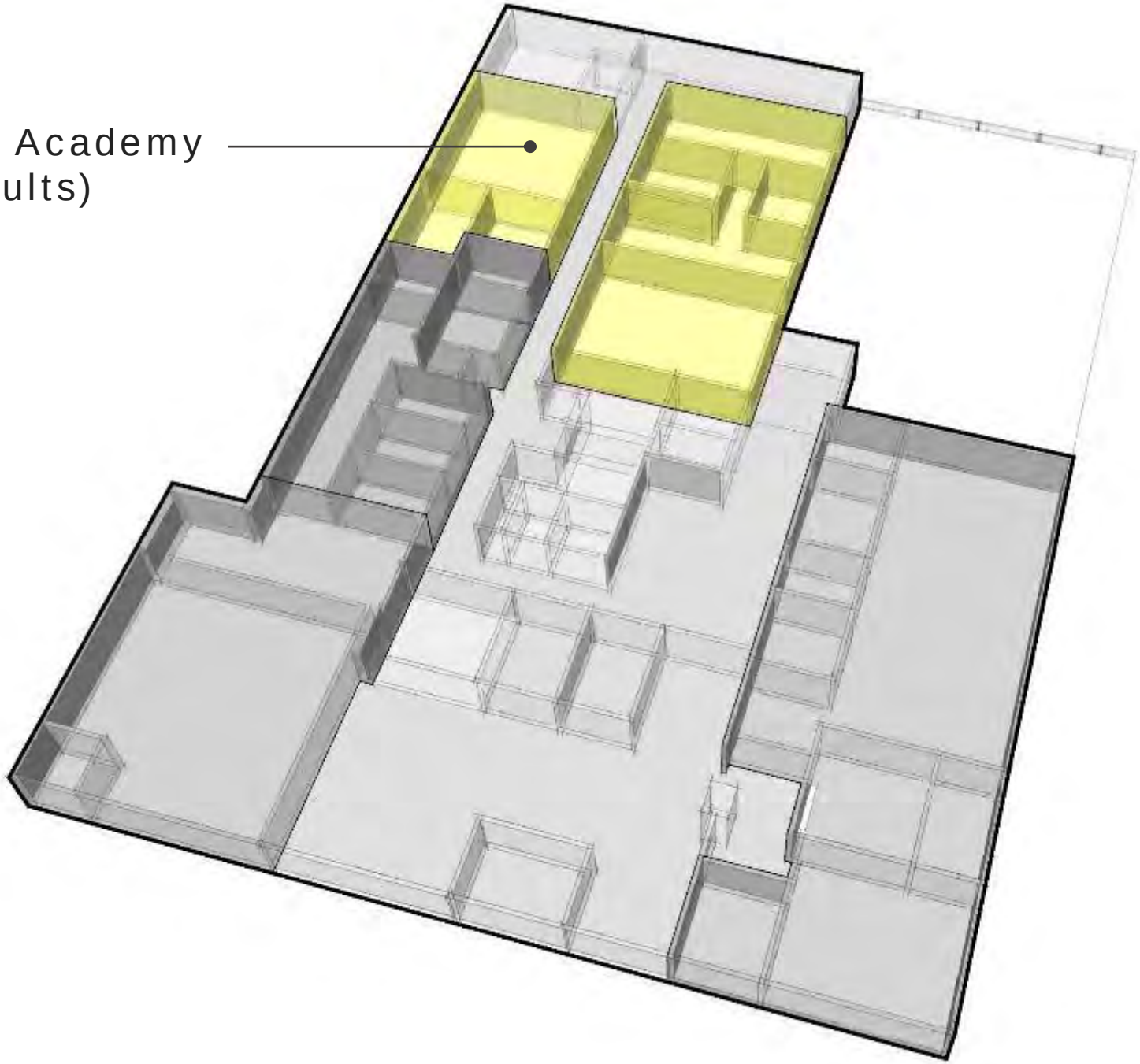
Level 1

Learning Through Play Calming for the Overactive

Multi-Use of Space


Learning Through Play Interesting for the Inactive

Transition Academy
(Young Adults)



Level 1


Transition Academy Independent Living Skills

Transition Academy Ease Transition

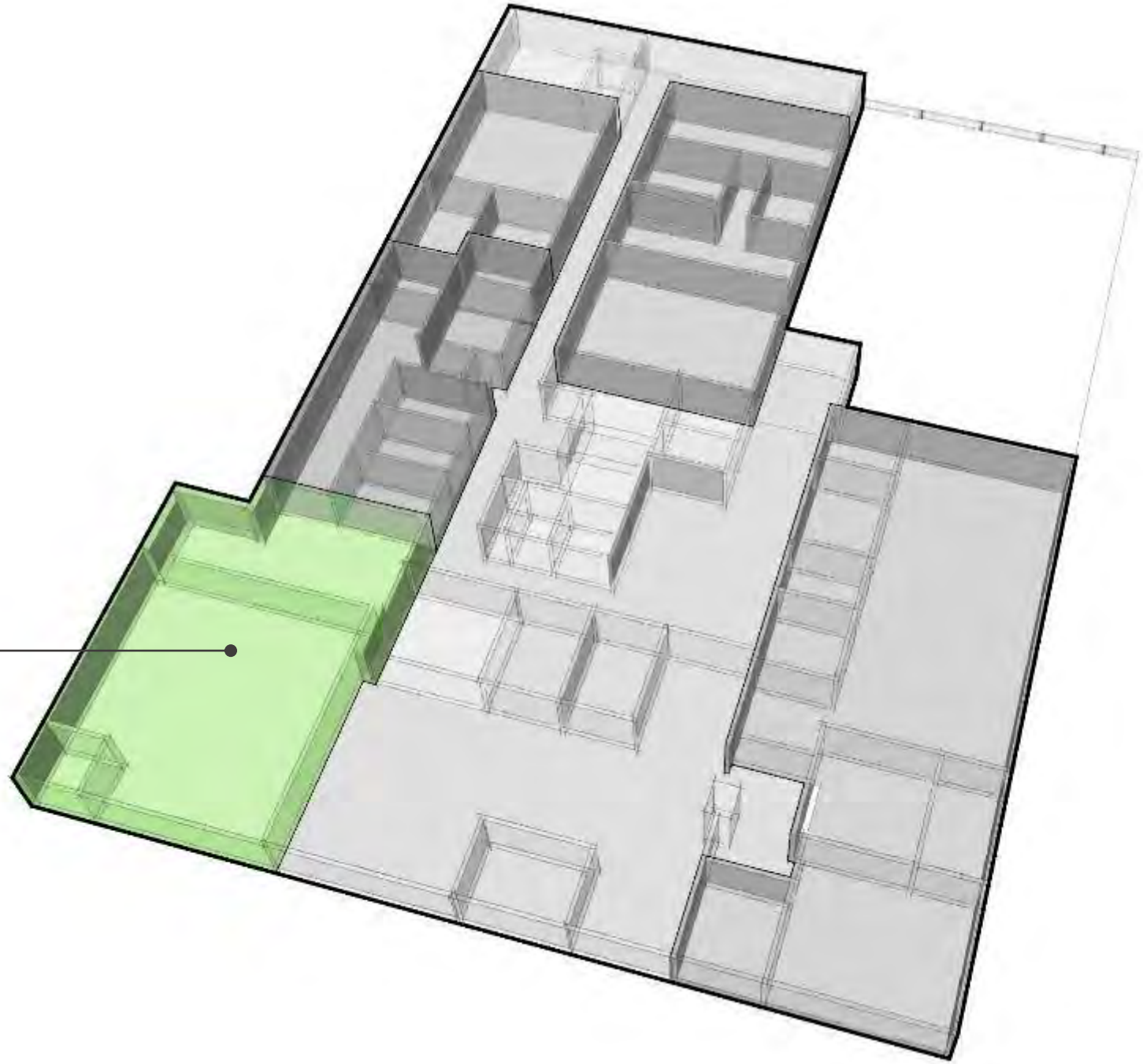

Transition Academy Kitchen Skills/Safety + Healthy Food Choices


Transition Academy Laundry + Cooking + Cleaning

Transition Academy

Transition Academy

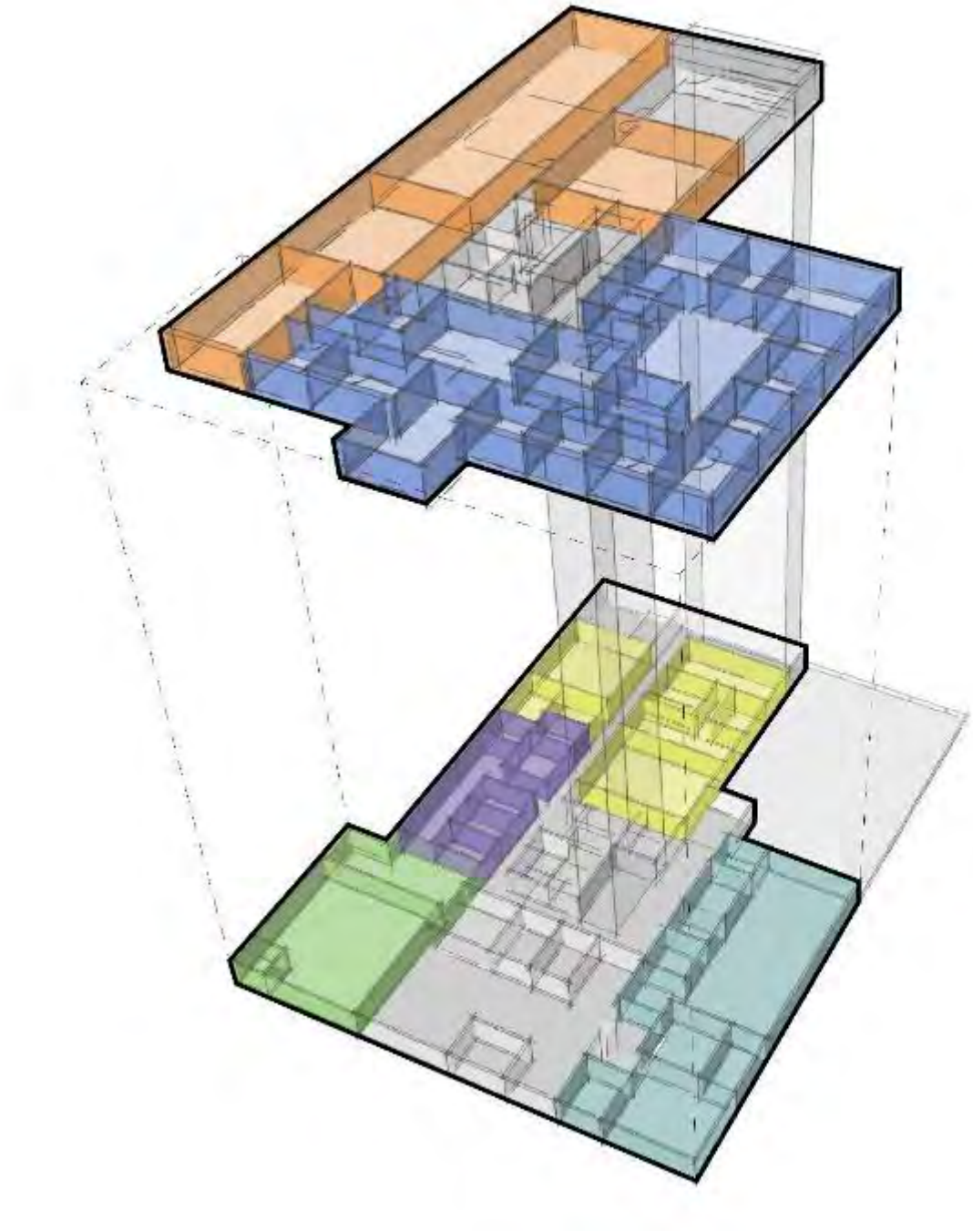

Transition Academy



Level 1


Transition Academy Restaurant Partnership


Transition Academy Restaurant Partnership

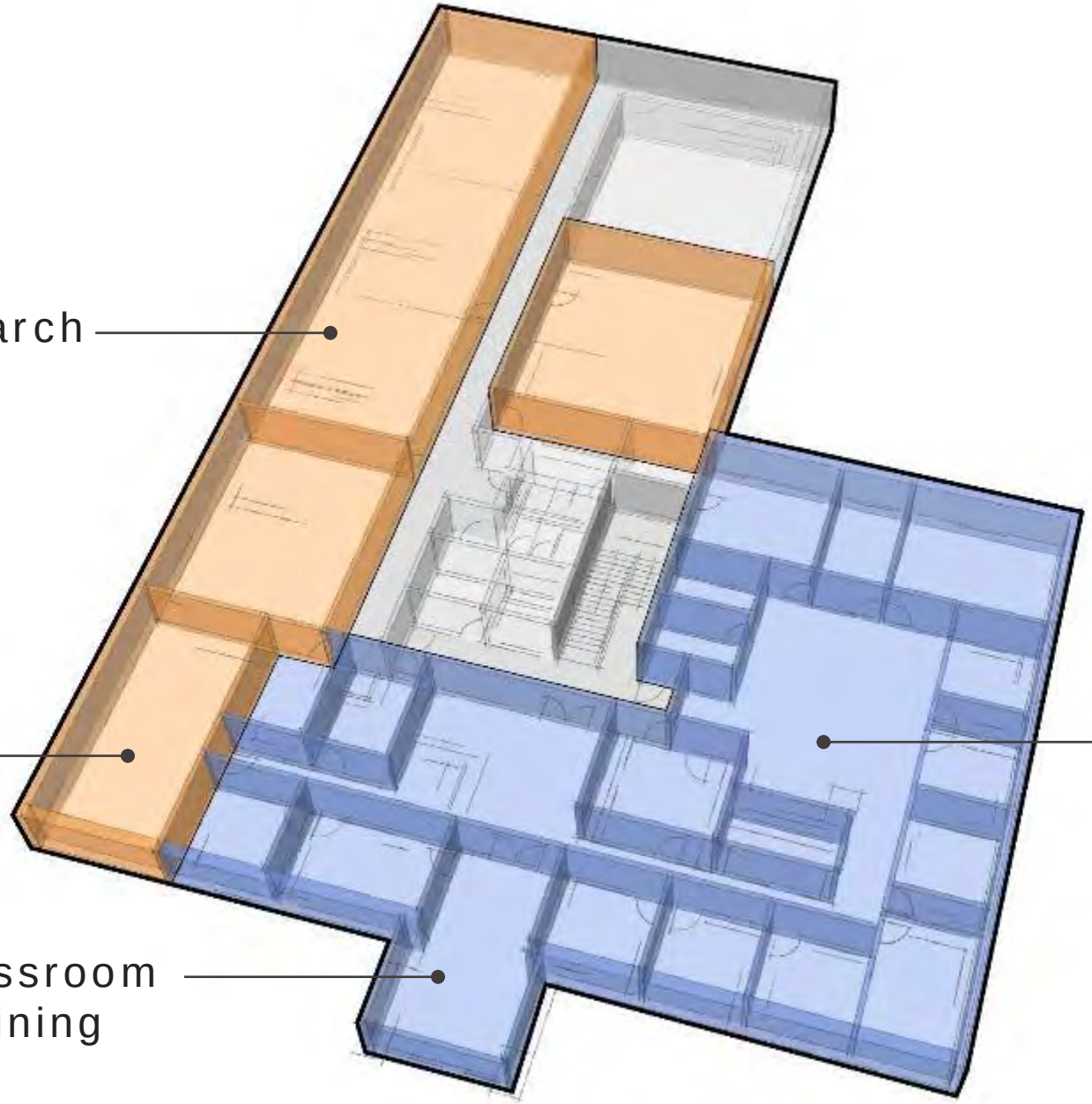


Level 2

Research

Level 1

Clinical & Training


Research
Classroom
Training
Classroom
Training
Office/Collaboration

Level 2


photo: Burkhart

photo: Burkhart


photo: Burkhart

photo: Burkhart

University Context Administration Building

















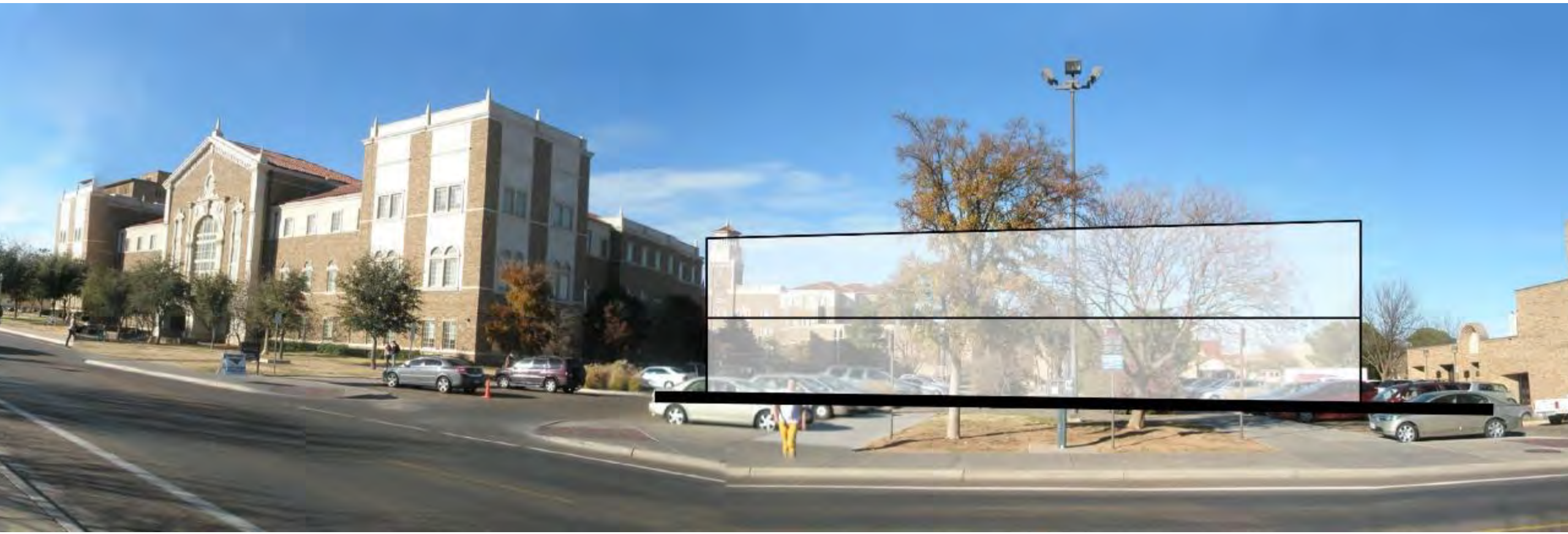

entry

facade

arcade

detail

University Context College of Education

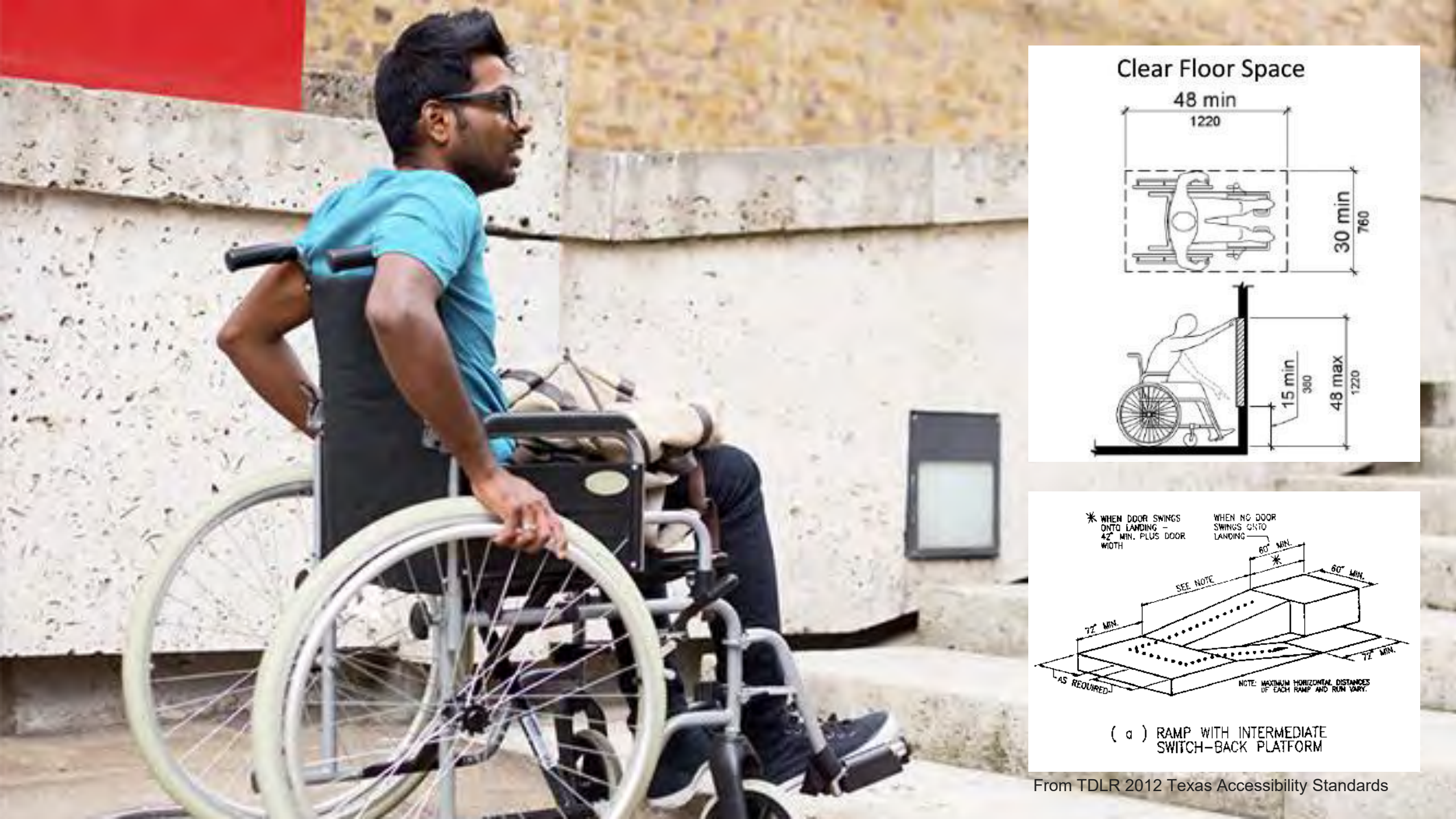


Design Guidelines

Figure 17: Word Cloud Indicating Facilitative Design Issues for Students with Autism Spectrum Disorder as Indicated by Prevalence Throughout Narrative Survey Question Text
Source: Author

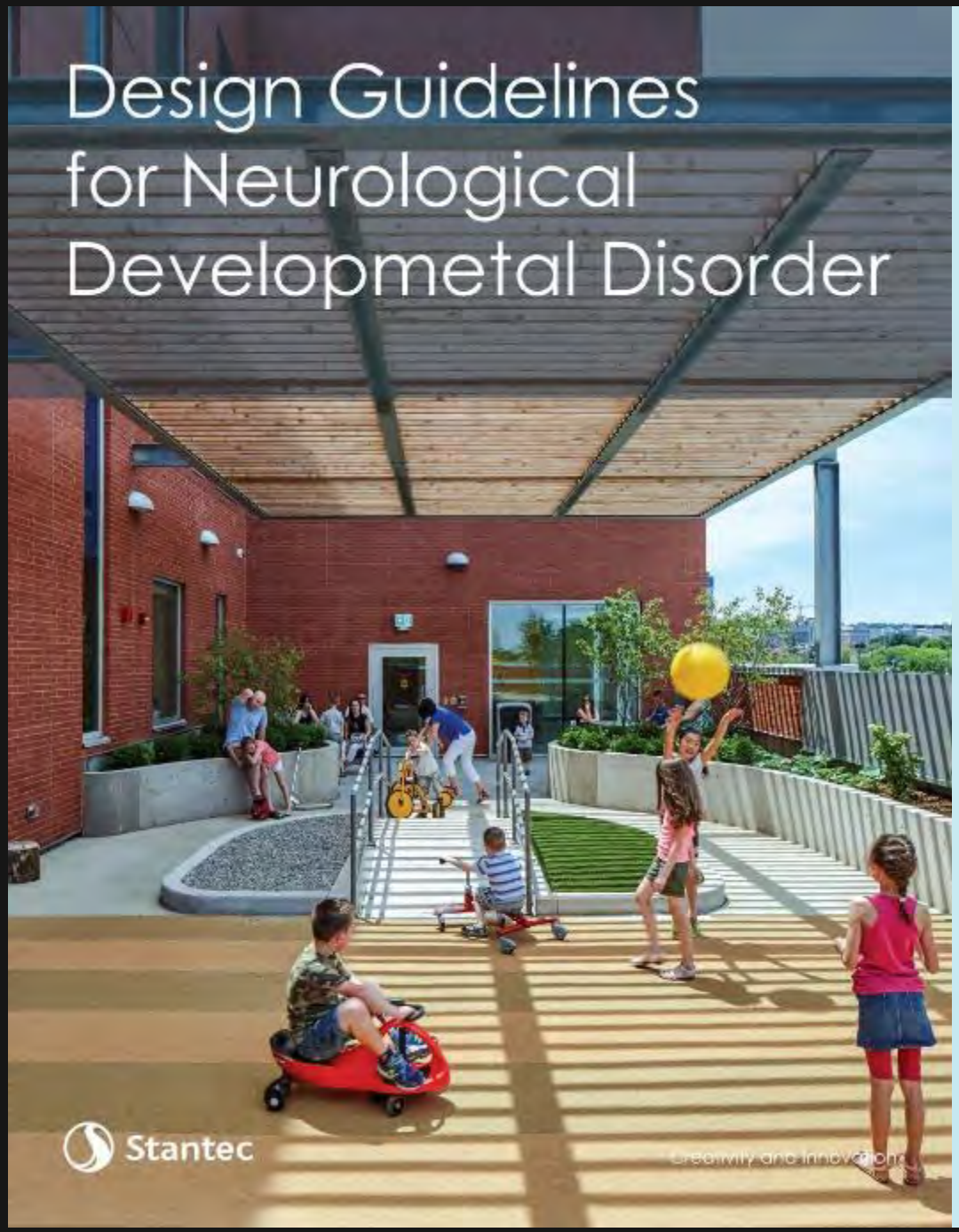
San Antonio ATC

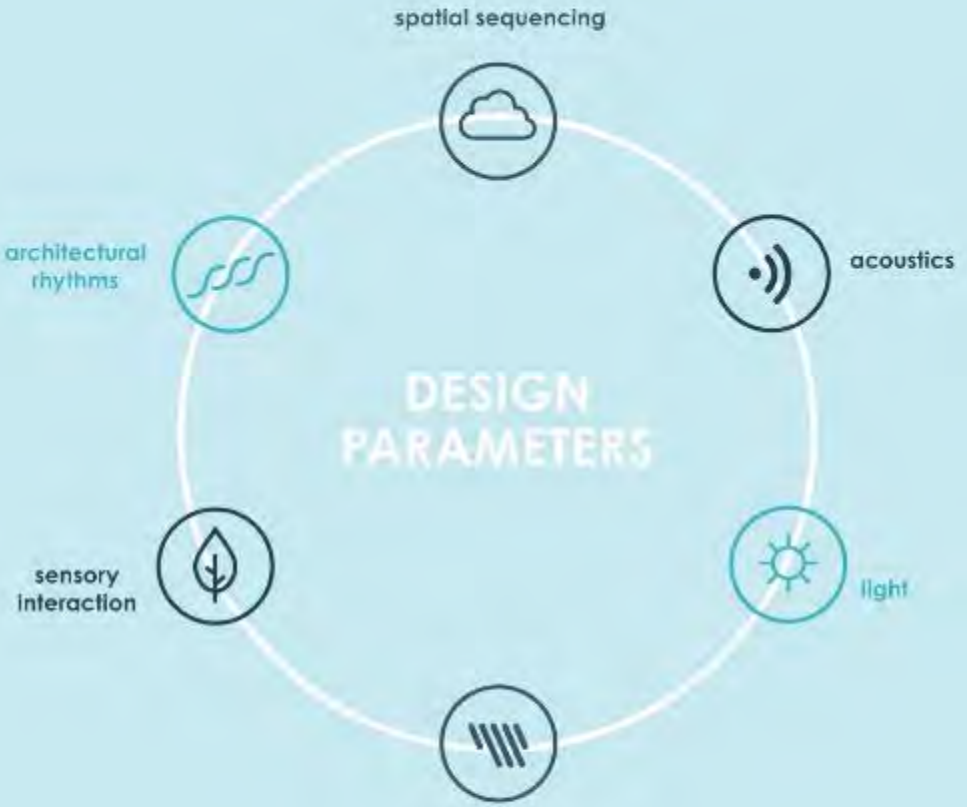
Ron Joyce Children's Health Centre



From TDLR 2012 Texas Accessibility Standards

Design Guidelines for Neurological Developmetal Disorder





The prevalence of autism spectrum disorder(ASD) in children is currently on the rise (Maynard 2015).It is estimated that one out of ever sixty-eight children now suffers from the disorder as of 2015, where only one in eighty-eight had been affected previously in the same study done in 2013(CDC 2013; 2015). Autism is a complex developmental disorder that affects a wide range of abilities from proprioperception, or the ability to locate one's own body

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THE STUDIES

An exploration into the literature and interviews with practitioners familiar with autism has exposed the challenges and limited research surrounding the topic of designing for autism. Our team at Stantec would like to contribute to the body of knowledge available to designers interested in designing for autism.

Many factors can impact the progress and abilities of autistic individuals. Our team has chosen to isolate two environmental factors: lighting and acoustics.

In order to bolster our study we would like a general behavior mapping exercise to be completed that captures overall behavioral patterns in the space through simple note taking. An example floor plan is below with various types of notes that would be beneficial to our research. We will provide you with a document similar to this for your specific space. Please fill this in during the observation time that you as a team have established.

OBSERVER: _____ ACTIVITY: _____

DATE: _____ AGE GROUP: _____

GENERAL NOTES:

_____

_____

_____

_____

_____

_____

_____

_____

LIGHTING

The study will be an observational study of the impact of tunable light on the stress and social interaction levels of children with autism.

The study proposes placement of tunable light into individual exam/treatment rooms of a given autism center and will include the involvement of individuals who would normally participate in the treatment of autistic children: occupational therapists, speech therapists, medical practitioners, etc.

The study makes use of two design matrices (Table 1 & 2 below) where practitioners would note the type of light in use in the exam room and its impact on stress (through a saliva swab to measure cortisol levels) at different times throughout the session: at the beginning, during the session, and the end of the session. The study would also make note of the level of social and environmental responsiveness of the patient during the session.

Social Interaction

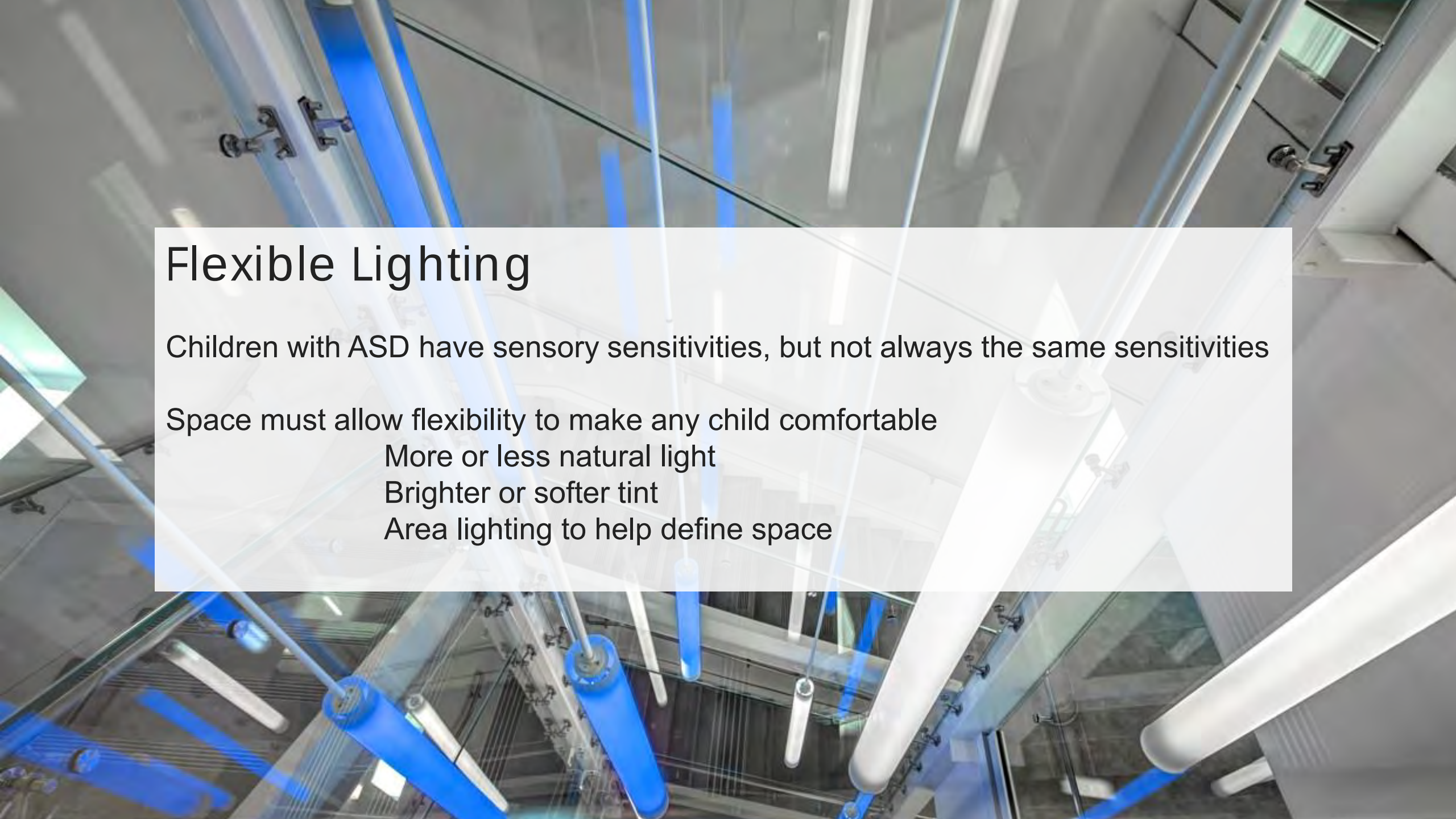
Tunable Light Level (beginning, middle, end)	HIGHLY RESPONSIVE	MILDLY RESPONSIVE	NOT RESPONSIVE	MILDLY AVERSIVE	HIGHLY AVERSIVE	COMMENTS
[illegible]						
[illegible]						
[illegible]						
2500 K						
3500 K						
5000 K						
2500 K						
3500 K						
5000 K						

Cortisol Levels

Tunable Light Level	BEGINNING	MIDDLE	END	COMMENTS
[illegible]				
[illegible]				
[illegible]				

Stantec


BURKHART CENTER FOR AUTISM EDUCATION AND RESEARCH



Flexible Lighting

Children with ASD have sensory sensitivities, but not always the same sensitivities

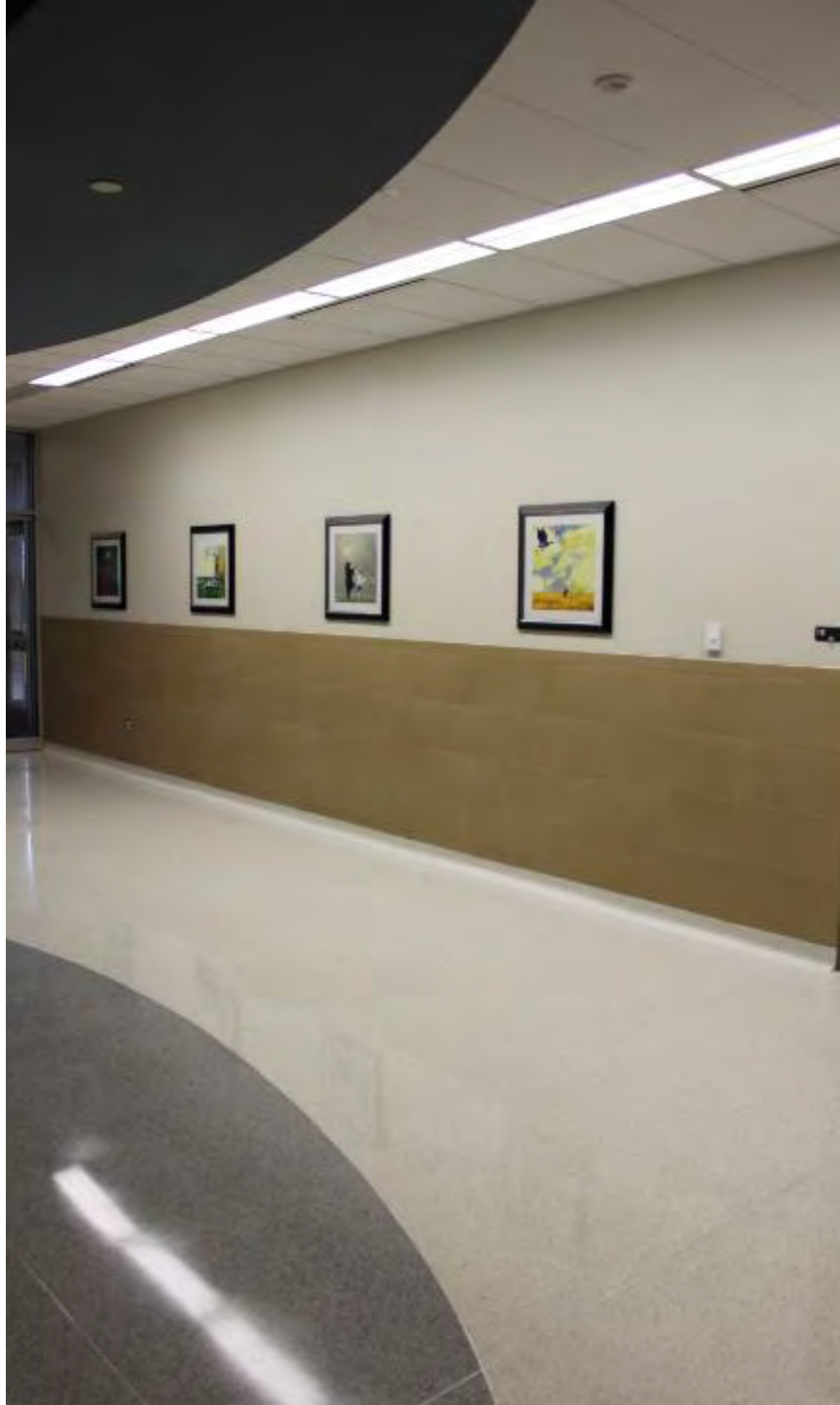
Space must allow flexibility to make any child comfortable

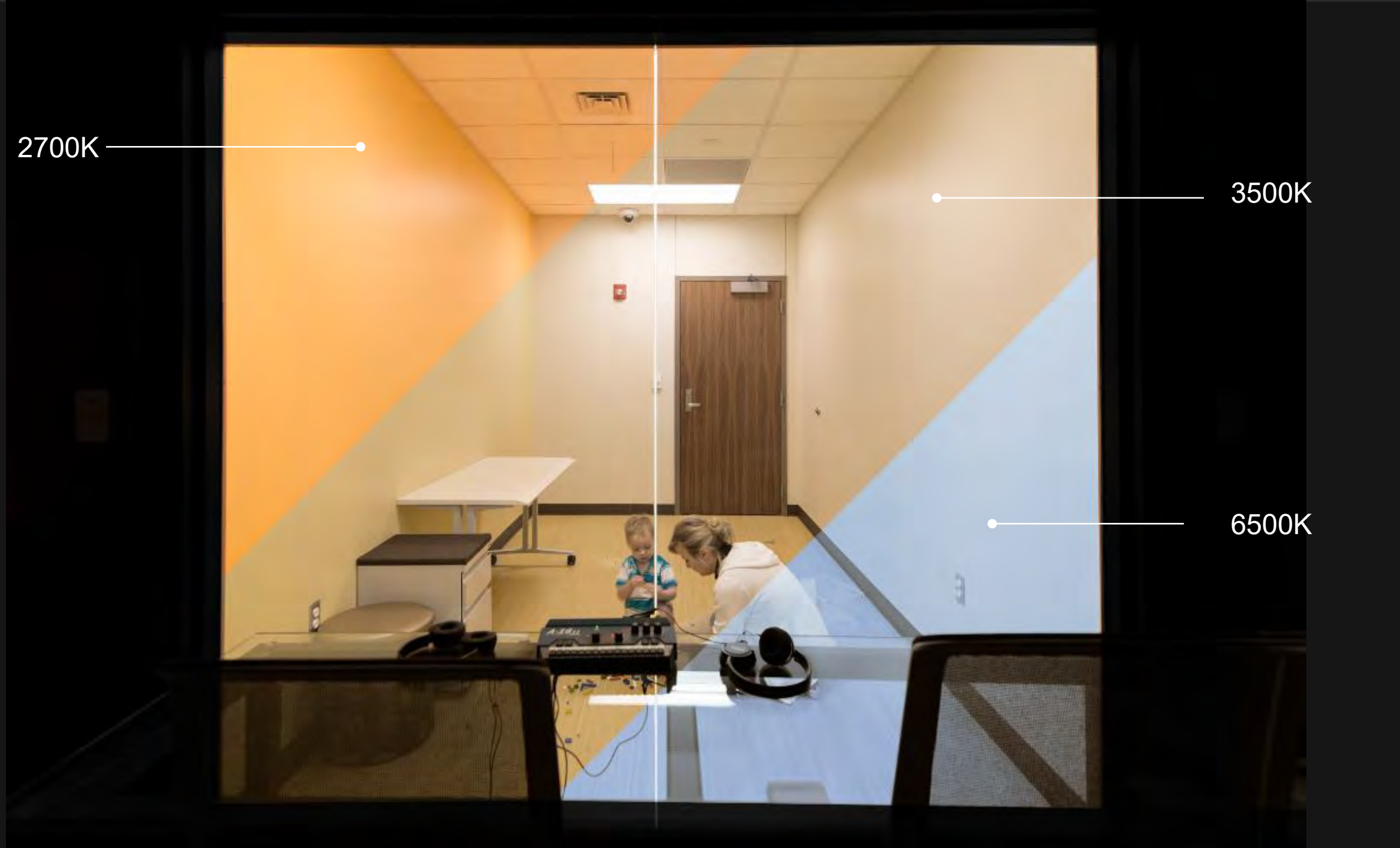
- More or less natural light
- Brighter or softer tint
- Area lighting to help define space

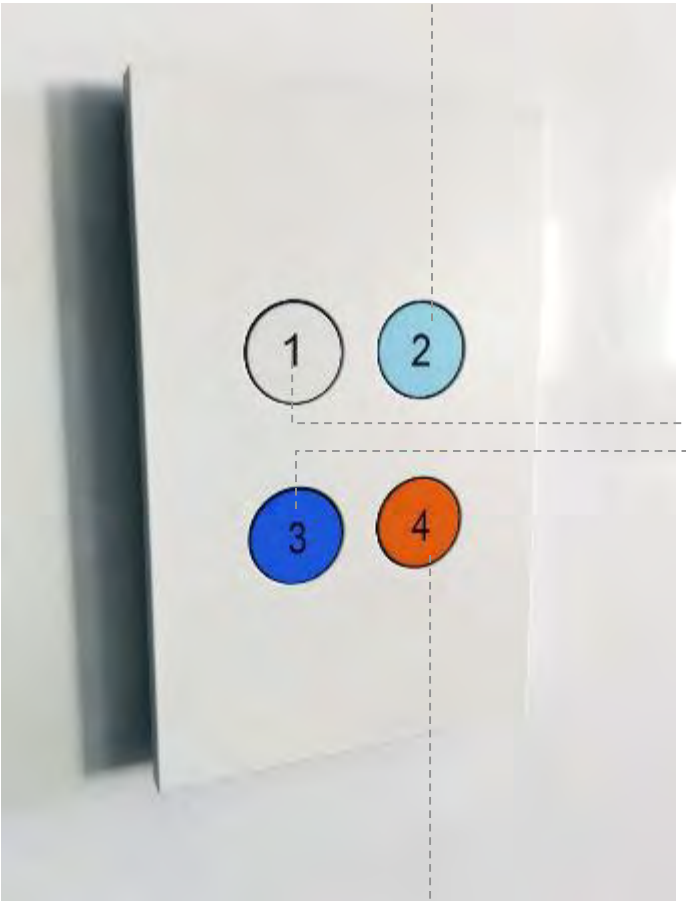

1

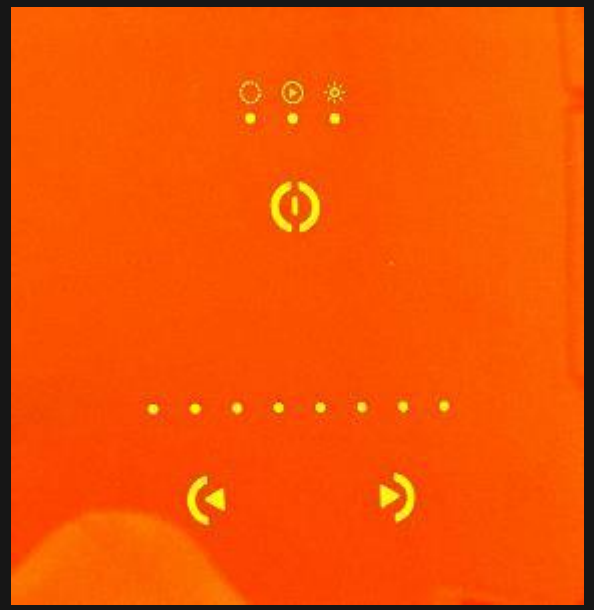

2

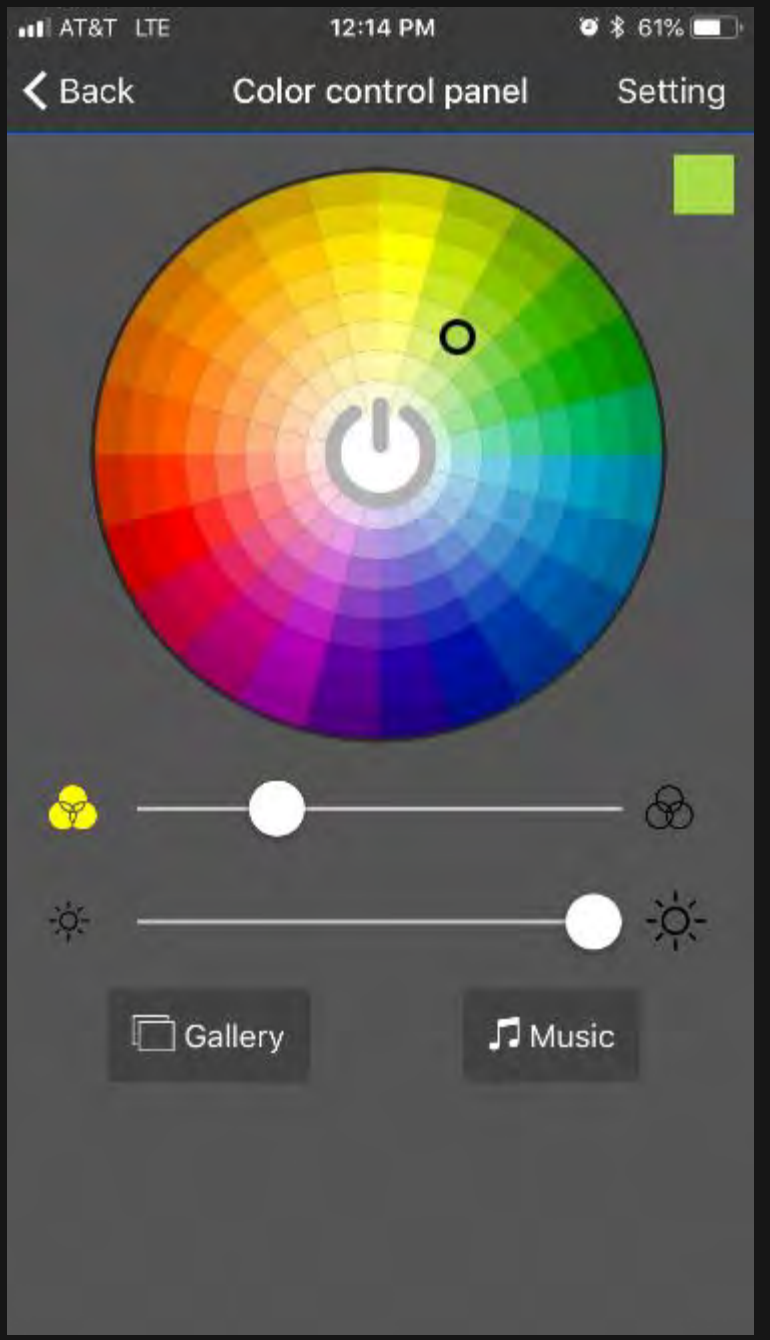

3

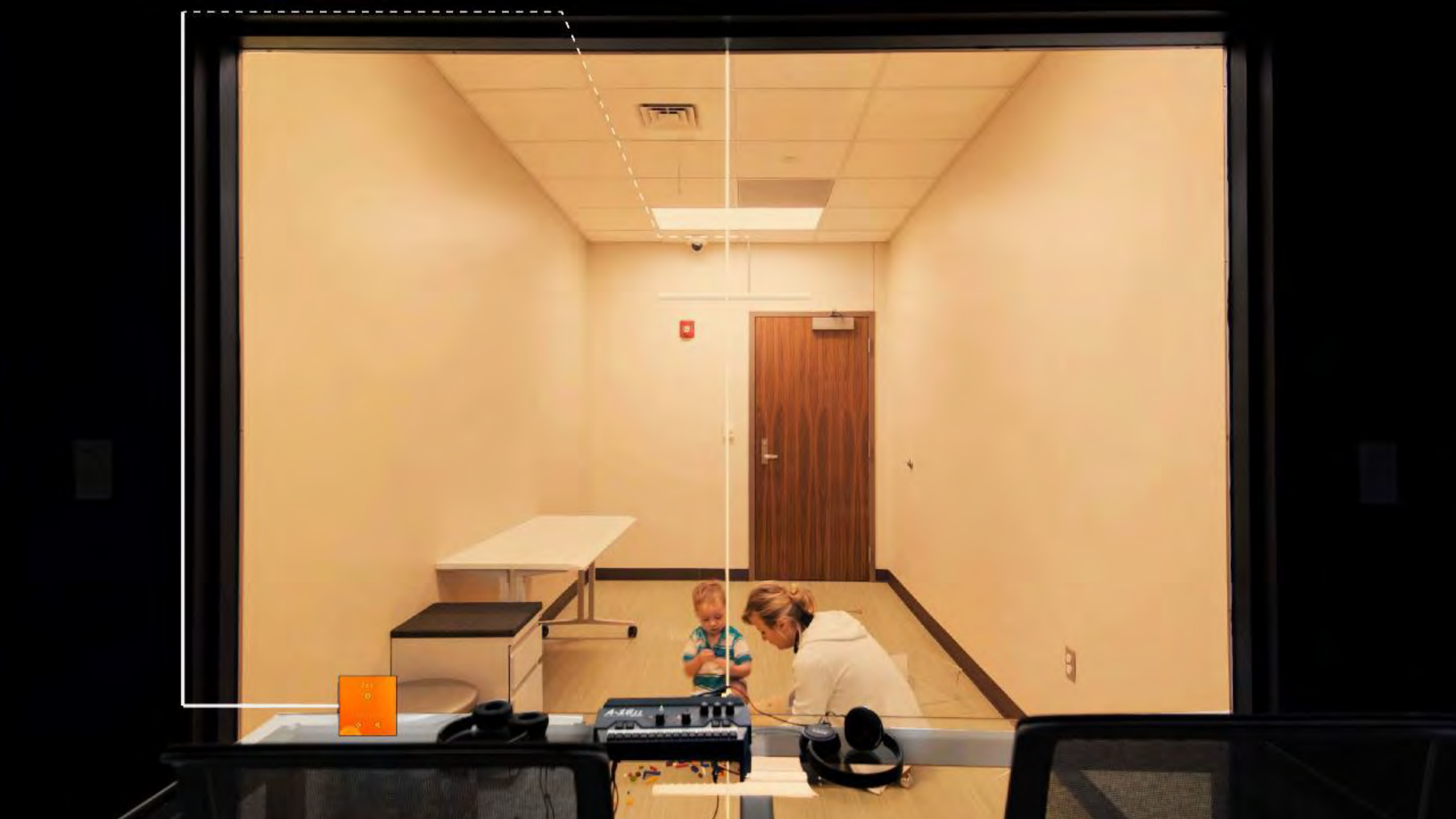


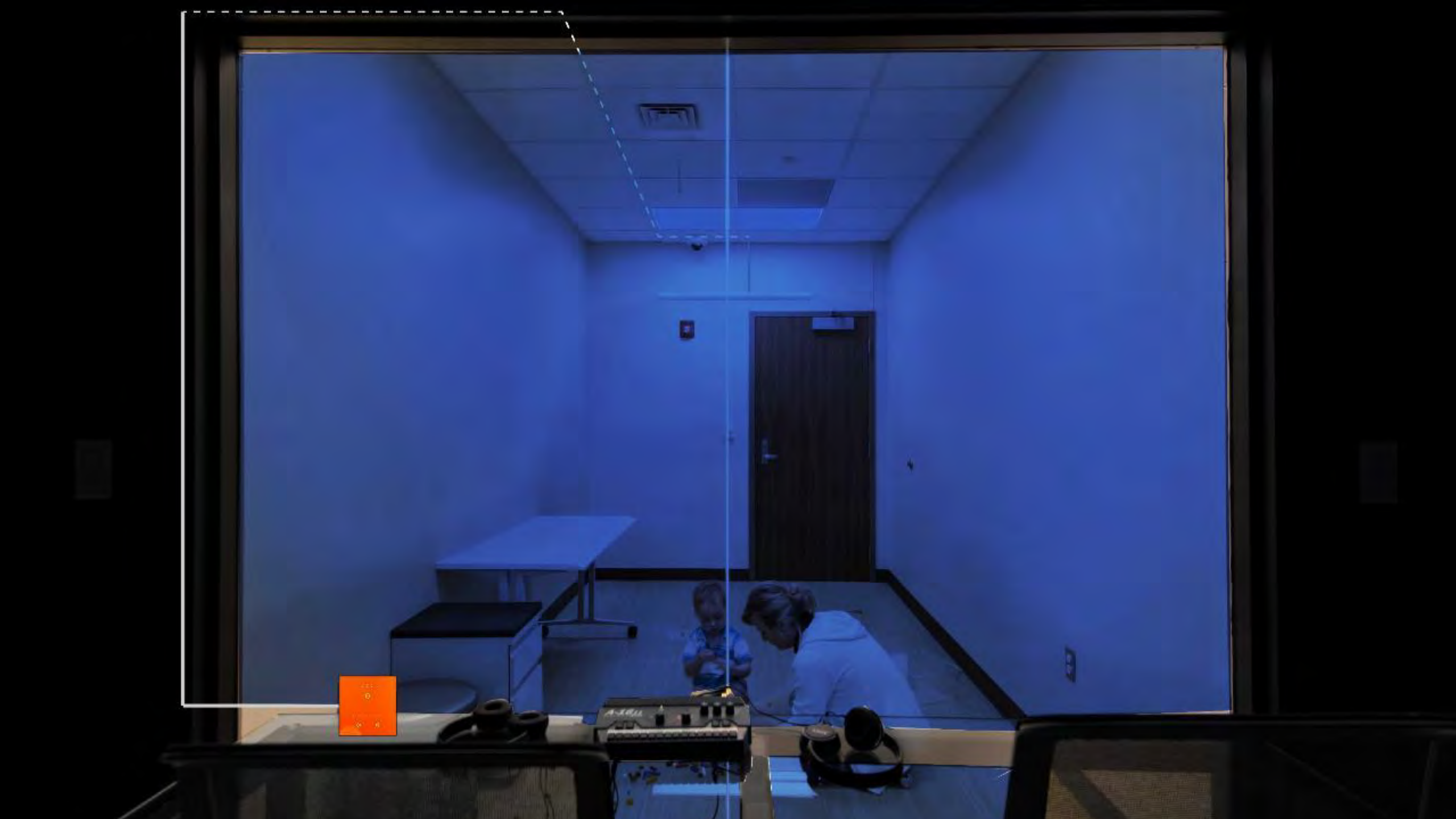

2700K
3500K
6500K


1
2
3
4




AT&T LTE
12:14 PM
61%
Back
Color control panel
Setting
Gallery
Music





This concludes The American Institute of Architects
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Please take a moment to complete the evaluation form.

AIA Lubbock

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