

Developing Services to Enhance Social Functioning in Adults with Autism Spectrum Disorder



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**INTERAGENCY AUTISM COORDINATING
COMMITTEE (IACC) MEETING**

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Defining Symptom Domains of Autism Spectrum Disorder (ASD)



- **Social interaction / Social communication**
 - Social-emotional reciprocity
 - Nonverbal social communication
 - Developing, maintaining, and understanding relationships
- **Restricted, repetitive, stereotyped patterns of interests or behaviors**

The Need for Increasing Focus on Treatment and Services for Adults with ASD



- **Approximately 500,000 – 600,000 adolescents with ASD will enter adulthood in the next decade in the USA**

Challenges of Transition to Adulthood



- **Typical Challenges:**

- Completing secondary or post-secondary education
- Transitioning from educational setting to work setting
- Developing social and communication skills necessary for adult life
- Engaging with peers and the community
- Developing independence / ability to function once one's parents become elderly or pass away
- Difficulties with **social functioning** heighten all of these challenges.
- Lack of evidence-based treatment programs to improve social functioning in adults with ASD



Social Outcomes in Adults with ASD



TABLE 4 Social Relationships

Rating	Friends/Acquaintances ^a (n = 59 ^b)	n (%)
0	One or more friend of approximately same age	5 (9)
1	One or more friend but restricted range of interests	9 (15)
2	No specific friendships but seeks contact with others in group situations	8 (14)
3	Never any peer relationships involving selectivity/sharing	37 (63)
Close relationships ^a (n = 60)		
0	Close reciprocal relationship(s) (e.g., sexual relationship/marriage) past or present	4 (7)
1	Some reciprocal relationships but short duration and/or reduced sharing of activities	6 (10)
2	Only ever very brief relationships, involving minimal sharing of activities	4 (7)
3	No reciprocal relationships lasting >1 month or never had relationship	46 (77)

Note: ^aFriends are characterized as individuals seen for outings, visits outside the home but not necessarily involving emotional intimacy/sharing of feelings. Close relationships are characterized as involving close personal contacts (including sexual); sharing of feelings and activities.
^bOne informant could not report on this area.

From Howlin et al 2013 Social outcomes in mid- to later adulthood among individuals diagnosed with autism and average nonverbal IQ as children. *Journal of the American Academy of Child and Adolescent Psychiatry* 52:572-581

Residential Outcomes in Adults with ASD



TABLE 2 Residential Status (N = 60)

Rating	Where Living ^a	n (%)
0	Independently	8 (13)
1	Semi-sheltered accommodation (n = 5) or with parents but high degree of autonomy (n = 3)	8 (13)
2	{ At home, limited autonomy Residential home, limited autonomy	10 (17) 12 (20)
3	{ Specialist autistic placement or another placement with little/no autonomy Secure hospital care	20 (33) 2 (3)

Note: ^aAll individuals in residential care had been there since early adulthood (age 18–21).

From Howlin et al 2013 Social outcomes in mid- to later adulthood among individuals diagnosed with autism and average nonverbal IQ as children. *Journal of the American Academy of Child and Adolescent Psychiatry* 52:572-581

Employment Outcomes in Adults with ASD



TABLE 3 Employment Status

Highest Occupation	Job Type (N = 60)	n (%)
Professional or highly skilled	Computer programmer (construction design); engineer (nuclear research)	2 (3)
Nonmanual skilled	Project manager × 2 (civil service; telecom); artist (self-employed); accounts clerk (× 2); town planner; civil servant	7 (12)
Manual skilled	Electronics work	1 (2)
Partly skilled	Postal workers (× 2)	2 (3)
Unskilled and untrained	Postal work (family firm); McDonald's; sales assistant; cleaning/sorting in theatrical costumiers; factory assembly/packing work	5 (8)
Ph.D. student/voluntary lobbying work		1 (2)
Sheltered/voluntary employment	Basic industrial work/cleaning × 2; care-home/charity shop × 4; railway guard; kitchen/ gardening work × 2	9 (15)
Never worked/long-term unemployed		33 (55)

From Howlin et al 2013 Social outcomes in mid- to later adulthood among individuals diagnosed with autism and average nonverbal IQ as children. *Journal of the American Academy of Child and Adolescent Psychiatry* 52:572-581

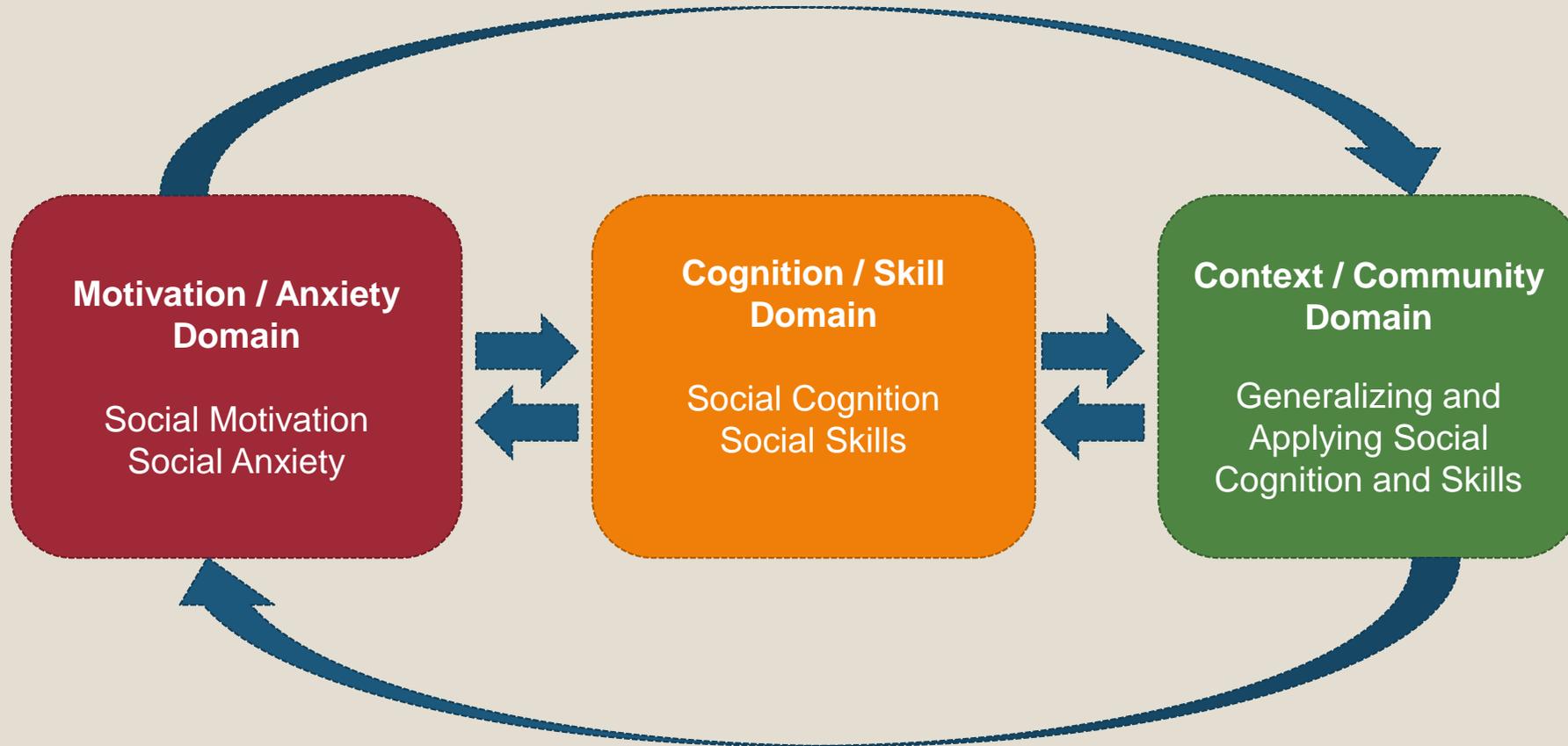
Importance of Social Functioning



- **Social Functioning:** ability to navigate the social world in real-world settings, including home, school, work, and community
- Difficulties with social functioning have been cited as one of the main barriers to employment, independence, and overall functioning in adults with ASD.
- Social Functioning has many components



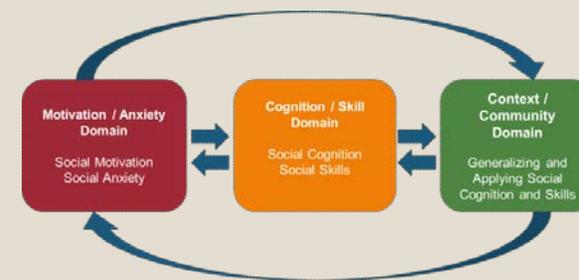
Domains Essential for Social Functioning



TUNE In: Training to Understand and Navigate Emotions and Interactions



- NIMH R34MH104407, Brodtkin, PI
- Study Period: August 2014 to August 2017
- Objective
 - To develop and pilot a **new treatment program** to improve **social functioning** in **adults** with ASD
- Strategy
 - Design a treatment program that addresses the many components of social functioning
 - A focus on the fundamentals of social functioning
 - ✦ Ability to tune into one's own state and into others
 - ✦ Ability to understand and navigate emotions
 - ✦ Ability to understand and navigate conversation
 - ✦ Generalize these skills to a community / work setting
- Tactics
 - The treatment program incorporates a variety of therapeutic “tools” to address social functioning (an eclectic treatment program)
 - Integration of cognitive, behavioral, and mindfulness-based approaches



Outline of TUNE In



- Determination of Eligibility
- Pre-Treatment Assessments
- **Component 1—Social Motivation/Anxiety**
 - 5 weekly individual sessions: Addressing goals / motivation, Cognitive Coaching, Exposure, Mindfulness
- **Component 2—Social Cognition/Skill**
 - 8 weekly group sessions: Group-based Social Cognition and Interaction Training for Individuals with ASD, Video Modeling of Social Skills
- **Component 3—Generalization to Community**
 - 4 weekly sessions: Participation in a Volunteer Work Team
- Post-Treatment Assessments

Study Eligibility, Setting, & Compensation



- **Eligibility**

- Inclusion criteria: Adults age **18 years or older** with a diagnosis of autism spectrum disorder (**ASD**) who can attend **weekly sessions** (1-2 hours each) for a ~5 month period
- Exclusion criteria: intellectual disability, current psychotic symptoms, current severe mood symptoms, current severe substance use disorder, recent suicidal or aggressive behaviors

- **Setting**

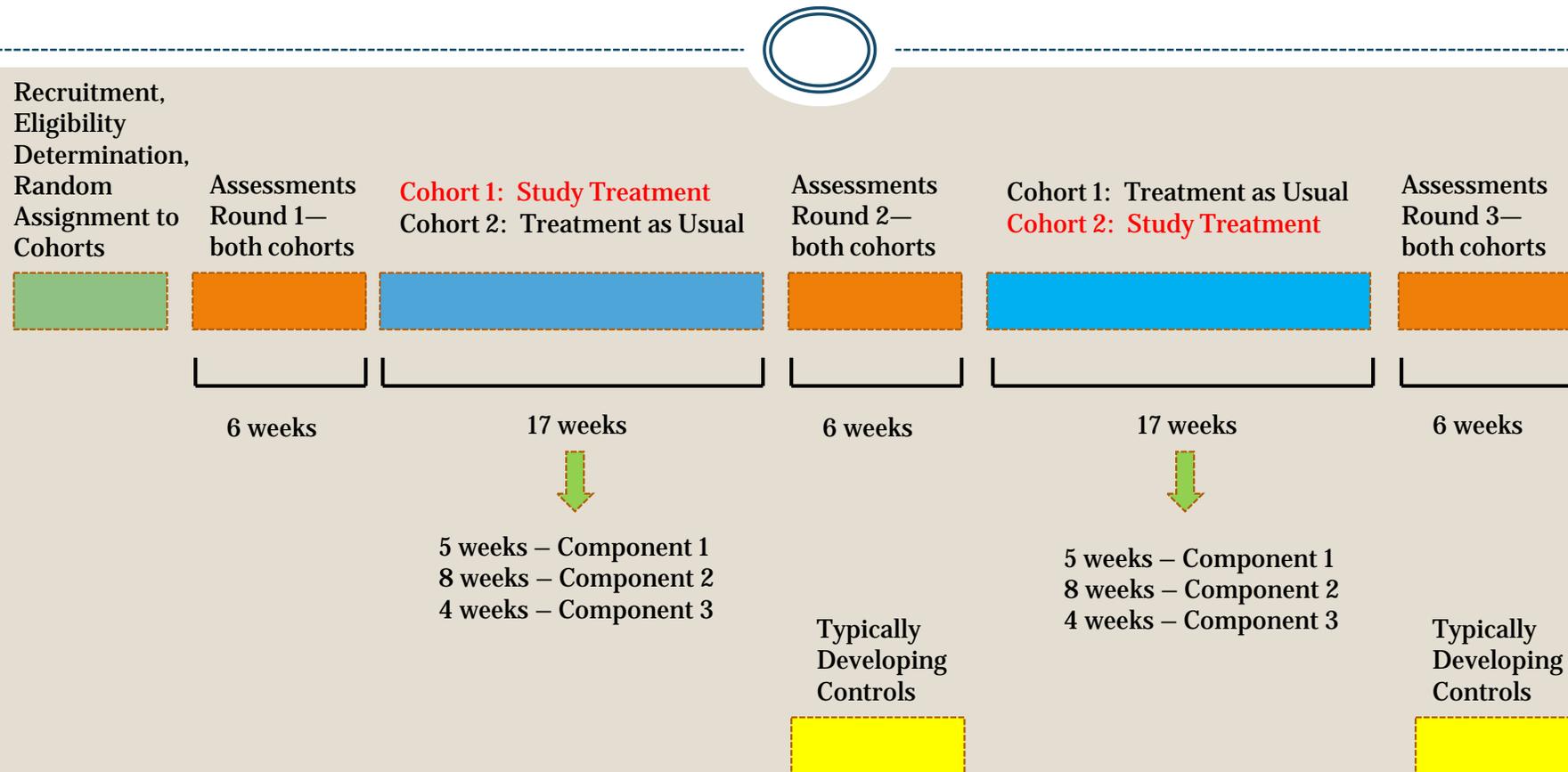
- Perelman School of Medicine at the University of Pennsylvania and the Center for Autism Research at the Children's Hospital of Philadelphia

Participants

Demographics Summary

	N	Males	Females	White	African-American	Asian-American	Mean Age (years)	SD Age (years)
Cohort 1	7	7	0	6	1	0	27.9	7.4
Cohort 2	13	11	2	13	0	0	27.8	8.9
TOTAL	20	18	2	19	1	0		

Study Design / Timeline



Pre/Post Assessments of Various Domains



- **Overall ASD Symptoms**
 - Social Responsiveness Scale, ADOS, SCQ
- **Social Motivation**
 - Broad Autism Phenotype Questionnaire, MAP-SR
- **Social Anxiety**
 - Liebowitz Social Anxiety Scale, Schizotypal Personality Questionnaire
- **Social Cognition and Attention**
 - Penn Social Cognition Battery (ER40, MEDF, ADT), The Hinting Task, Eye Tracking
- **Social Skills**
 - Contextual Assessment of Social Skills
- **Size of Social Network**
 - Social Network Index
- **Overall Psychological Well Being**
 - Scale of Psychological Well-Being



Ashley Pallathra, B.A.

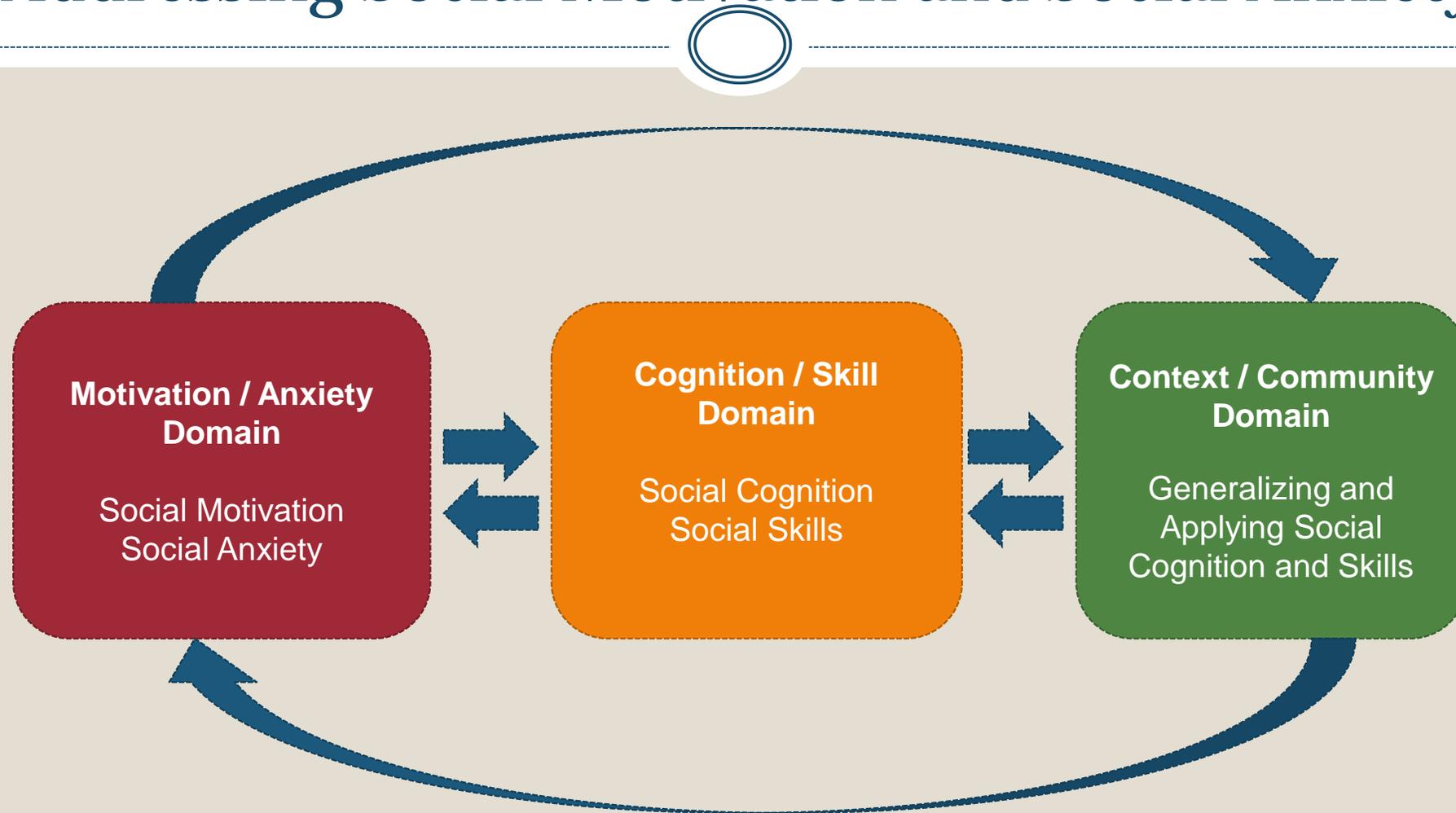


Monica Calkins, Ph.D.



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Component 1: Addressing Social Motivation and Social Anxiety



Motivation / Anxiety Domain

Cognition / Skill Domain

Community / Context Domain

Component 1:

Addressing Social Motivation and Social Anxiety



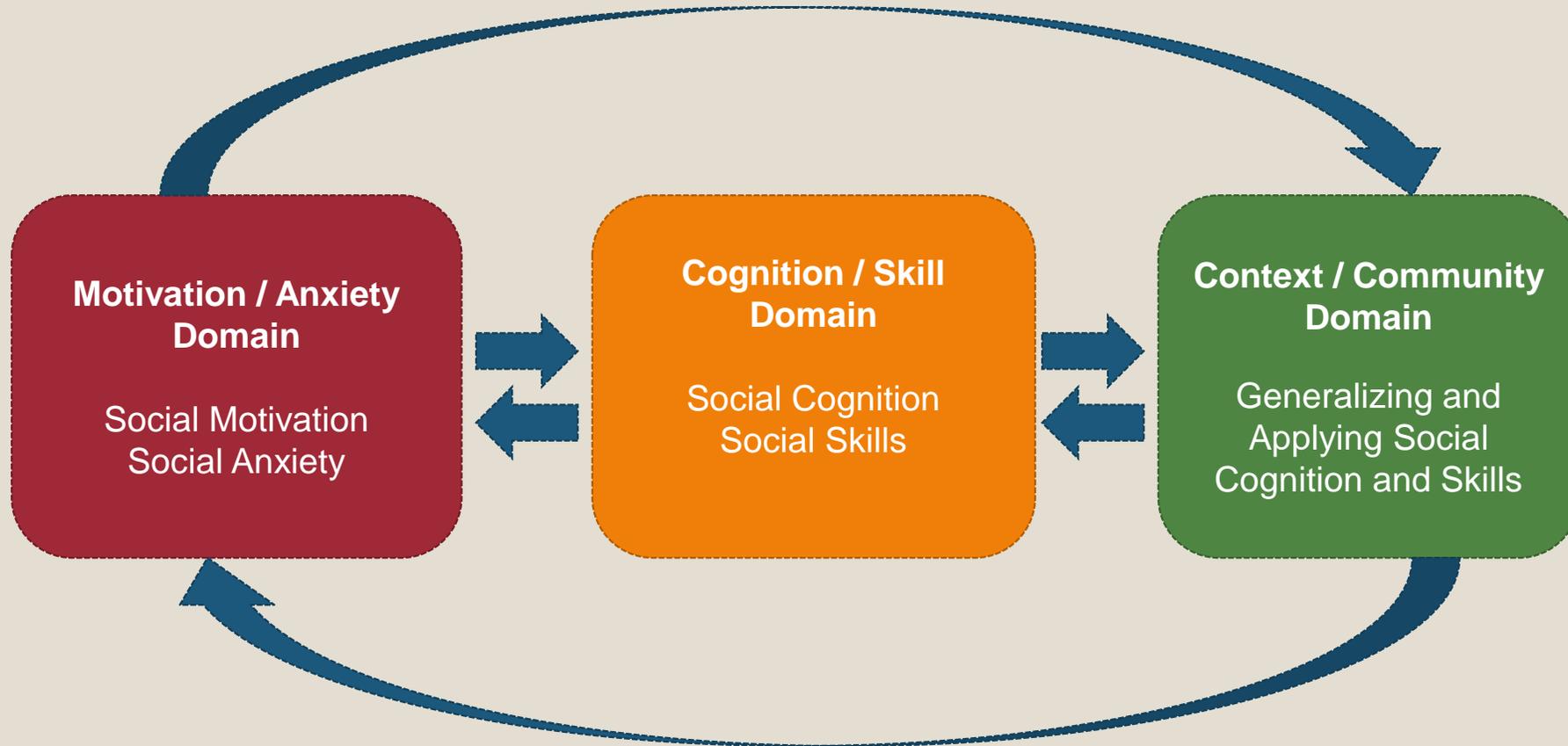
- Once weekly, hour-long individual session for 5 weeks
 - Logistics: Identify and address any logistical / executive functioning hurdles to participating in the program
 - Building motivation: Identify activities that participant finds rewarding, and ways in which improving social functioning can improve his or her ability to engage in those rewarding activities
 - Regulating emotion / social anxiety: Learn and practice mindfulness exercises – reduce social anxiety, manage stress during social interactions (progressive series of exercises from solo to interactive)
 - Cognitive approach to social anxiety: Identify automatic thoughts, feelings, and behaviors that occur during these interactions

**Motivation / Anxiety
Domain**

Cognition and Skills
for Social Functioning

Community /
Context Domain

Component 2: Building Social Cognition and Social Skills



Component 2:

Building Social Cognition and Social Skills



- Objectives

- Didactics: Develop social understanding
 - ✦ Where to direct attention
 - ✦ How to recognize social and emotional cues
 - ✦ Perspective-taking (“Theory of mind”)
- Video modeling of social skills: Develop and practice social skills using video modeling

- Structure

- Once weekly group sessions for 8 weeks
- 90 minutes per session
 - ✦ 30 minutes of didactic instruction and discussion focused on developing social understanding
 - ✦ 60 minutes of video modeling and practice of social skills
- ~6-8 participants per group

Building Social Skills



- **Video Modeling of Social Skills**

- An evidence-based intervention that has proven effective in building social skills in children and adolescents with ASD
- 40-60 minutes of social skills practice using pre-recorded video models
 - ✦ Examples: greeting, maintaining back-and-forth conversation, listening skills
 - ✦ Use multiple examples to practice

- **Collaborators**

- James Connell, PhD. & Jessica Day-Watkins,
MSEd, MSEd, BSBA
- *Drexel University Autism Institute*



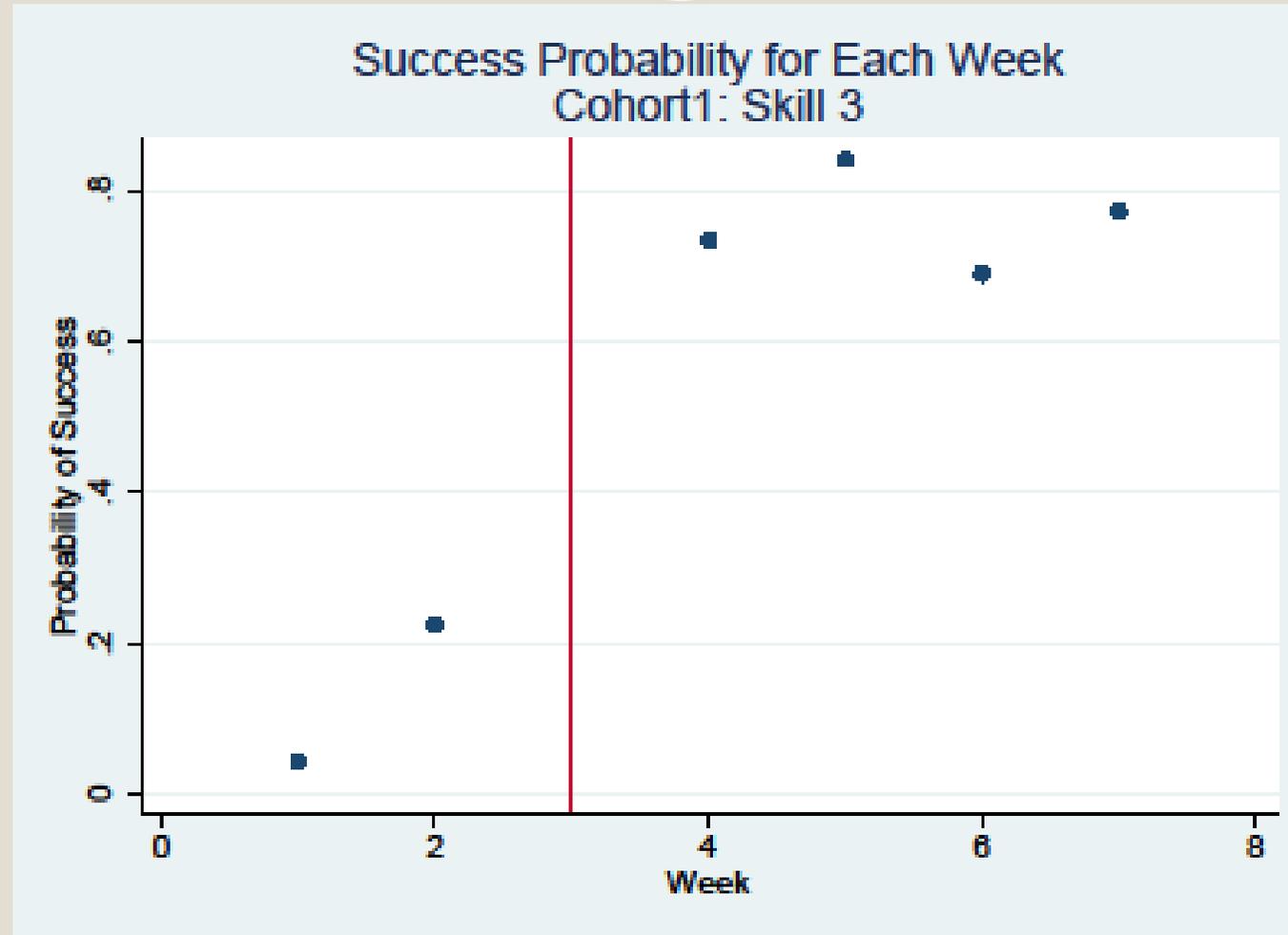
Component 2: Social Cognition and Social Skills Group



Ashley Pallathra, B.A.

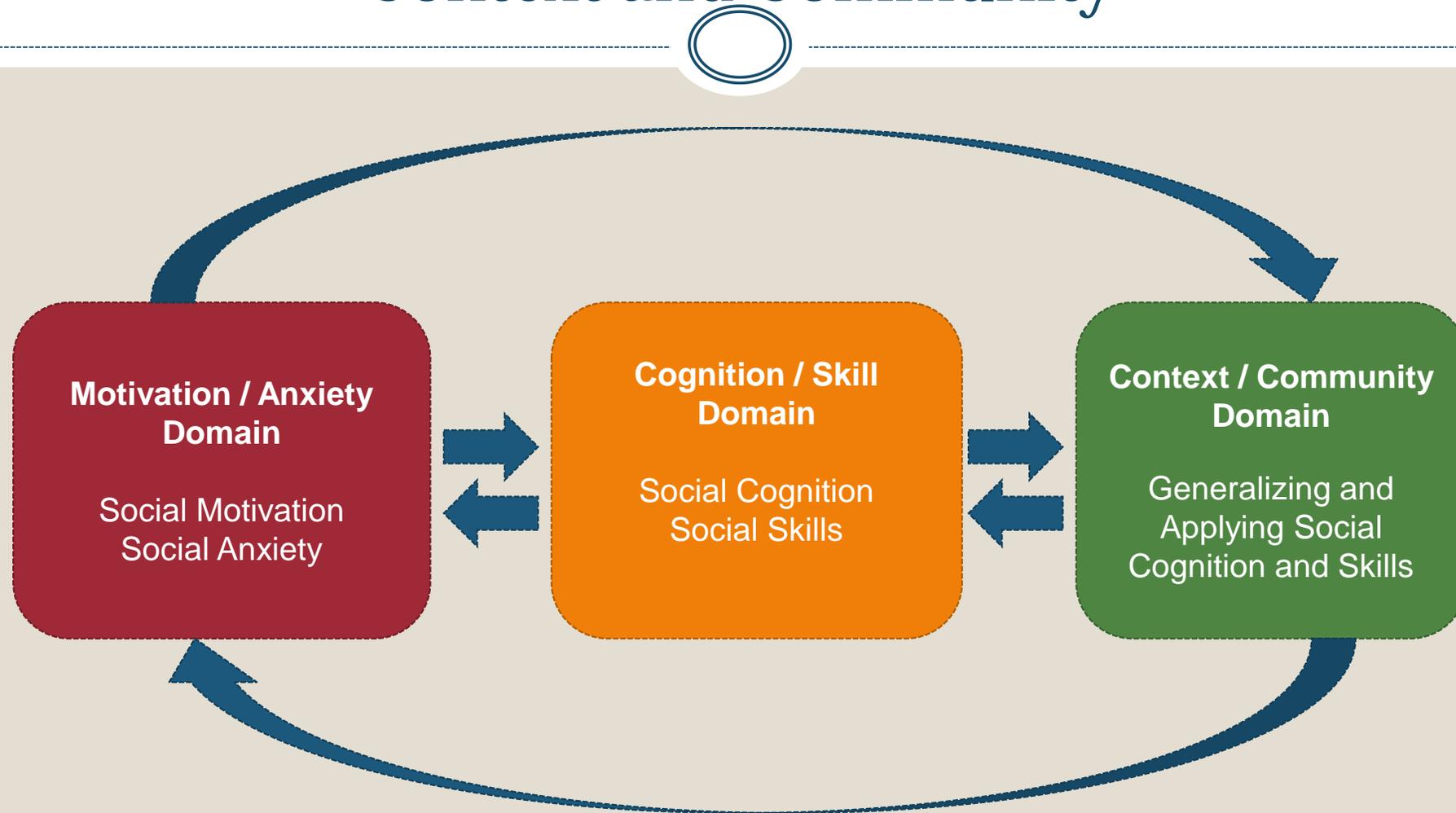
Session	Social Cognition Didactics	Video Modeling of Social Skills
1	Group Introduction to Social Cognition	Baseline Assessment of Social Skills
2	Directed Attention—Distinguishing Social from Nonsocial information	Social Cues Indicating that It Is, or Is Not, a Good Moment to Approach
3	Directed Attention-- Where to Look for Social Information (Facial Expression, Body Language, Direction of Gaze, Tone of Voice)	Social Approach and Greeting
4	Emotion Recognition—Identify Distinguishing Features of Various Emotions	Initiating Conversation
5	Perspective Taking—Catch the Social Cues	Reciprocal Communication: Conversation and Listening Skills, Empathic Responding
6	Emotion Recognition and Perspective Taking	Reciprocal Communication: Conversation and Listening Skills, Empathic Responding
7	Integrating Directed Attention, Emotion Recognition, and Perspective Taking	Reciprocal Communication: Conversation and Listening Skills, Empathic Responding
8	Review, Wrap Up, and Integration of Skills	Putting It All Together: Naturalistic Conversation Practice

Effect of Video Model on Acquisition of Social Approach and Greeting in Cohort 1



Odds ratio 36, $p < 0.05$

Component 3: Context and Community



Component 3: Generalizing Social Understanding and Social Skills to the Community



- **Goals**

- Practice newly acquired social understanding and social skills in a new context -- a “real-world” setting outside of a health care setting
- Participating on a volunteer work team that is helping others in need

- **Structure**

- Site: Ronald McDonald House (3925 Chestnut St., Philadelphia, PA)
- Work teams consisting of both study participants and typically developing volunteers, including research study personnel
- 4 sessions; 60-90 minutes per session
- Assess social understanding and social skill in this setting

Motivation / Anxiety
Domain

Cognition / Skill
Domain

**Community / Context
Domain**

Volunteer Work Team Setting



- **Philadelphia Ronald McDonald House (PRMH)**
 - 3925 Chestnut St., Philadelphia, PA
 - A philanthropic institution that supports families of seriously ill children
 - Family members stay at the PRMH and have some meals provided to them there
 - Participants are part of a work team that prepares meals for families

Motivation / Anxiety
Domain

Cognition / Skill
Domain

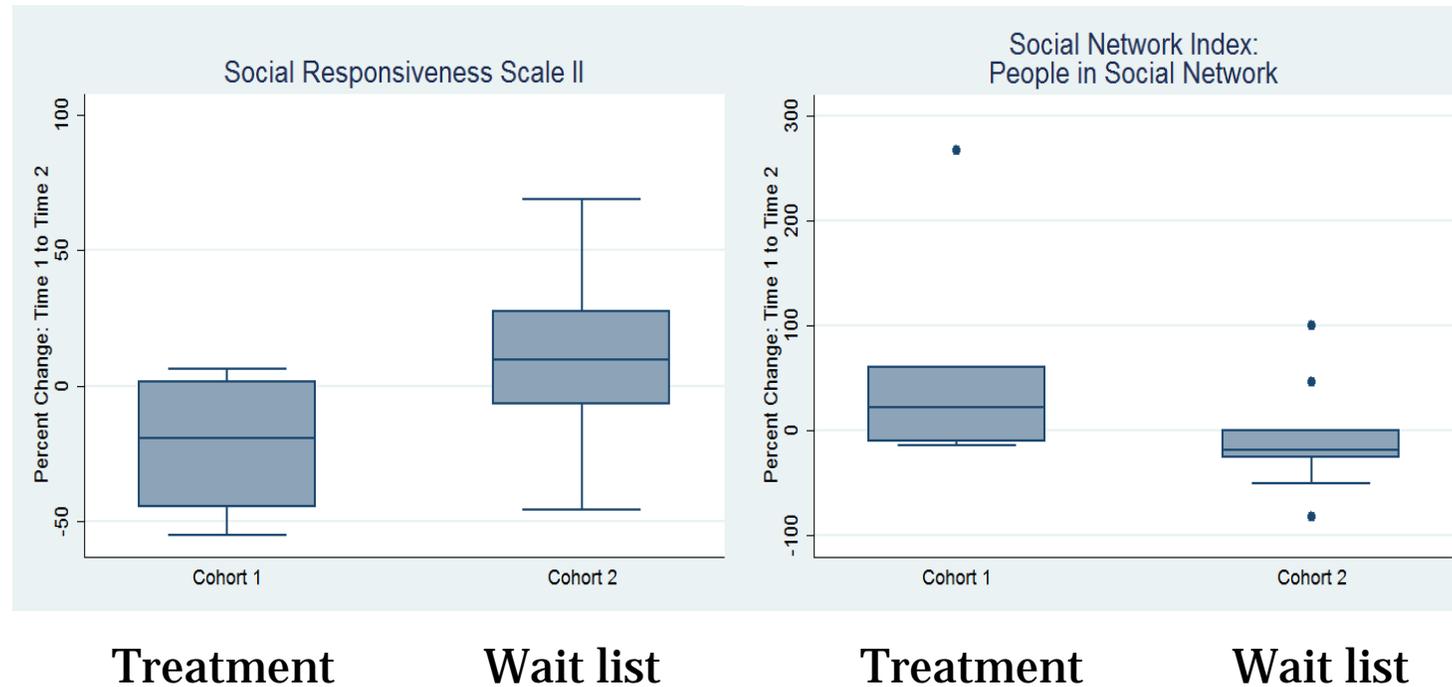
**Community / Context
Domain**

Follow Up



- Re-contact participants at 3, 6, and 12 months following the end of the study
 - To determine whether they are still engaged in volunteer work
 - Inquire about employment status
 - Inquire about participation in vocational rehabilitation

Effects of TUNE In on Social Functioning: Preliminary Results



Social Responsiveness Scale II (SRS-II)

Social Network Index (SNI)— # of people that participant is in regular contact with

Wilcoxon Rank Sum Test: SRS-II $p = 0.03$; SNI $p = 0.02$

Future Directions



- Complete data analysis for Cohorts 1 and 2
- Refine the procedures based on the experience and data from this pilot study
- Larger-scale clinical trials with a larger number of participants to more fully test the treatment
- If effective, dissemination to community mental health providers
- Develop more advanced modules for development of social understanding and social skills
- Develop a program that suitable for intellectually-disabled participants

Our Team



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- Department of Psychiatry, Perelman School of Medicine at the University of Pennsylvania
- Center for Autism Research (CAR) at Children’s Hospital of Philadelphia (CHOP)
- A.J. Drexel Autism Institute at Drexel University
- University of North Carolina