Initial Results of the Autism Care for Toddlers Clinic

Presented by:

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Background

- Autism Spectrum Disorder (ASD)
    - Characterized by impaired:
        - Social interaction
        - Verbal and Nonverbal Communication
        - Stereotypical and/or Repetitive Behaviors
        - Impaired Adaptive Skills

Background

- Prevalence of ASD
  - Risen dramatically in the last decade with current prevalence 1 in 68 children (CDC, 2014)
- Evidenced-Based Practice
  - Intensive Early Behavioral Intervention
  - 25-40 hours per week to achieve optimal outcomes   (Lovaas, 1987)

Background

- Autism Care for Toddlers Clinic
    - Goal – To serve under- or uninsured toddlers with evidenced based behavior analytic early intervention services
    - Collaborate and supplement the services provided by the IDEA Part C early intervention (Speech, OT and parent teaching)
    - Most toddlers receive approximately 2-4 hours of service per month
    - Services would be provided free of charge

Funding

- Autism Society of Nebraska
- United Way of the Midlands
- AmeriCorps
- UNMC Pediatric Research Grant
- Munroe Meyer Institute Guild
- LEND (Leadership in Education in Neurodevelopmental Disabilities)
- Maternal Child Health Personnel Preparation Grant
  - Office of Special Education Programs
    - Collaboration with UNL School Psychology Program

MMI Mission

Service

Training

Research

# MMI Mission

Service Overview

- Applied behavior analysis (ABA)
  - Only research-supported treatment for ASD
  - Recommended dosage: 25 to 40 hours per week
- Supervision provided by Board Certified Behavior Analysis (BCBAs)
- Direct services provided by Registered Behavior Technicians (RBTs)
  - Undergraduate and graduate students
  - AmeriCorps members

Verbal Behavior Approach

- Manipulate environment to change behavior

- Functional approach to language

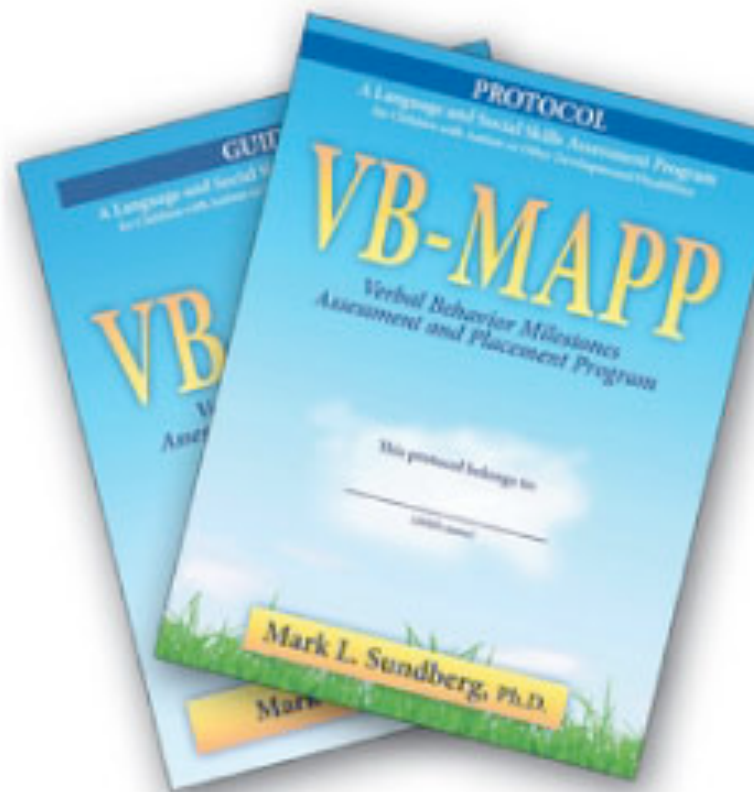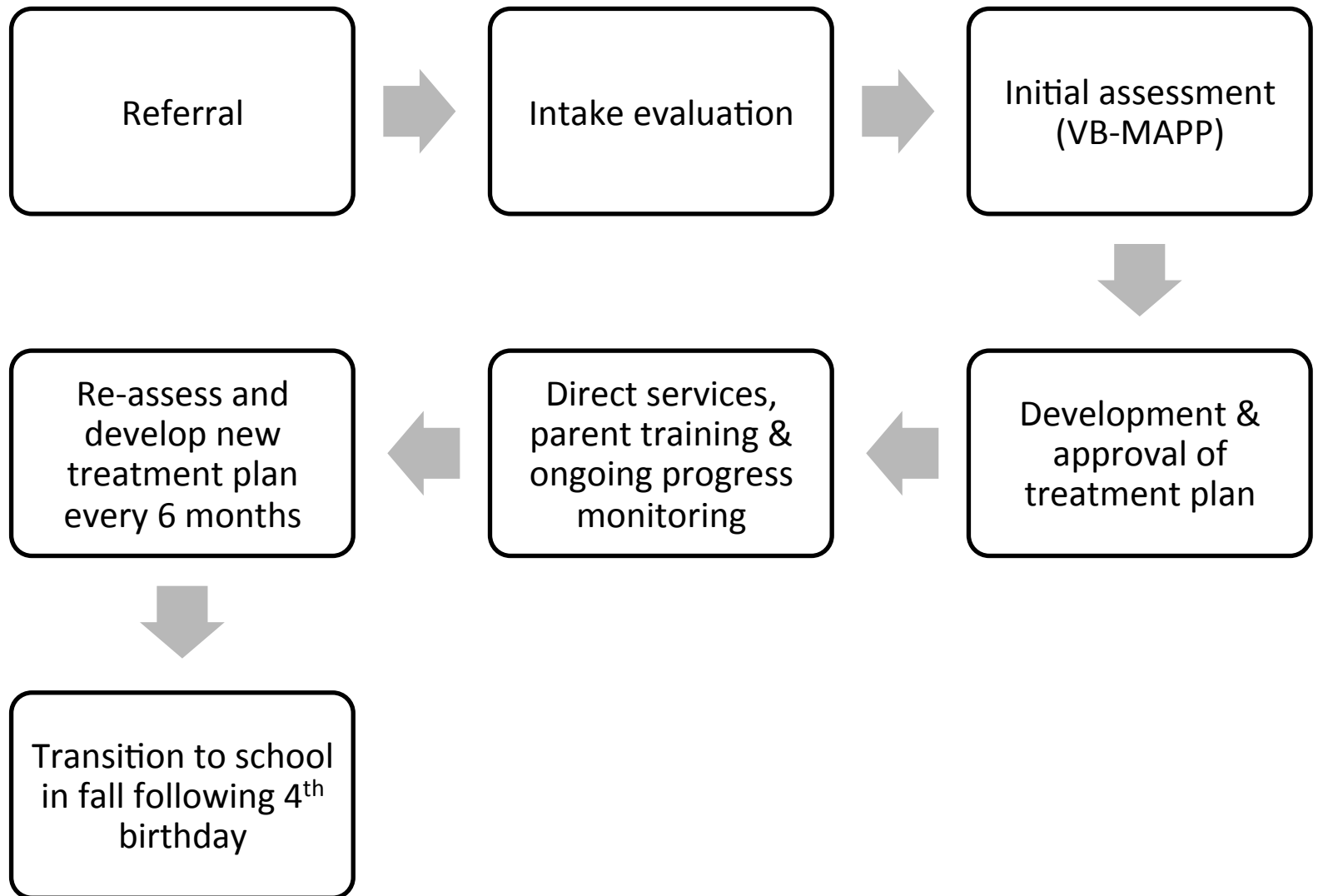 - Speaker and listener as <u>separate</u> repertoires
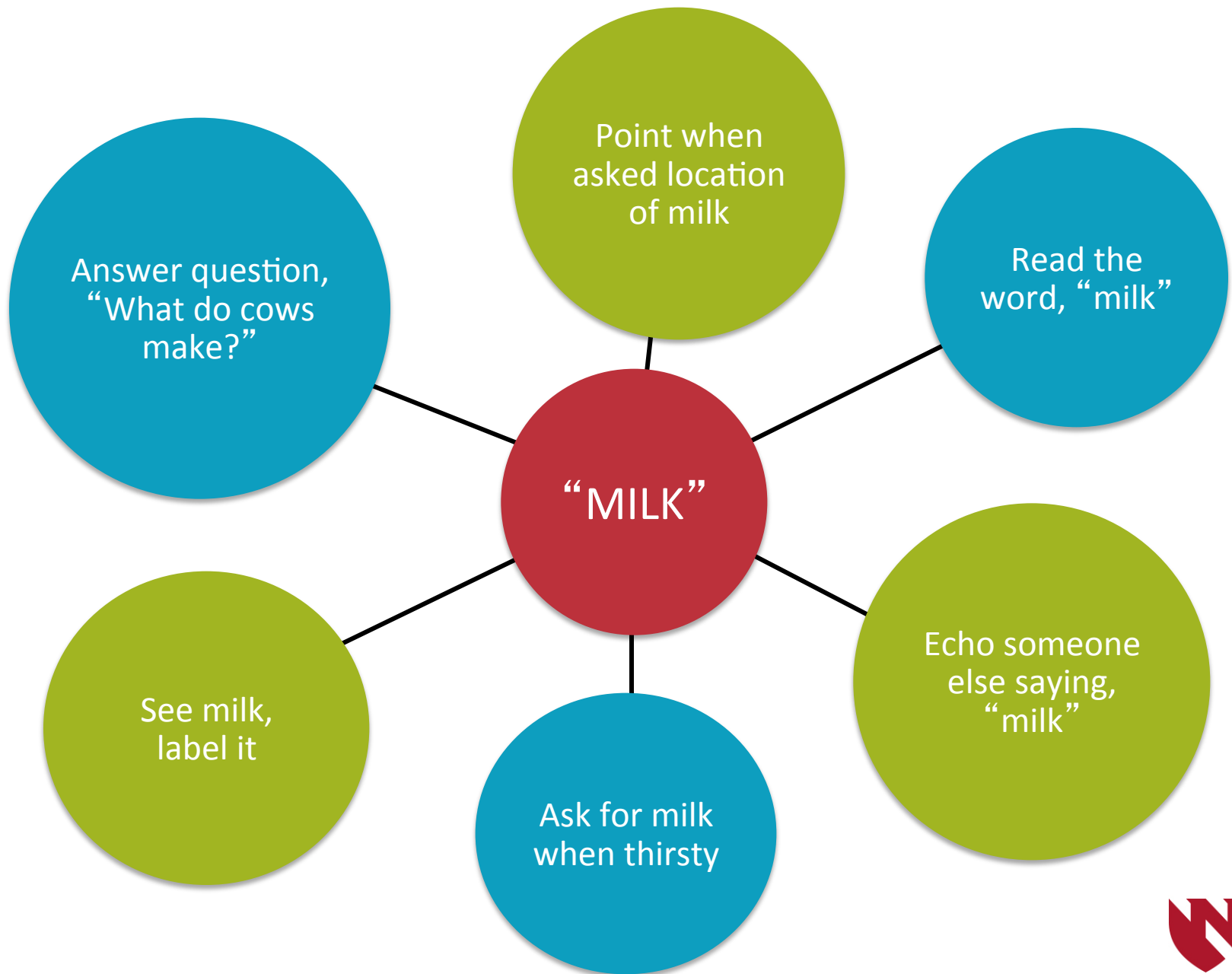
Verbal Behavior Approach

- Verbal Behavior Milestone Assessment and Placement Program (VB-MAPP)
  - Break skills down into discrete, measurable behaviors
  - Grouped by operant/skill area
  - Used as assessment, curriculum guide and progress monitoring tool
  - 3 developmental levels:
    - 0-18 months
   - 18-30 months
    - 30-48 months

Referral → Intake evaluation → Initial assessment (VB-MAPP) → Development & approval of treatment plan → Direct services, parent training & ongoing progress monitoring → Re-assess and develop new treatment plan every 6 months → Transition to school in fall following 4th birthday

Service Impact

- Pilot phase: 3 families
- Current capacity: 20 families
- Total number served: 35 families

MMI Mission
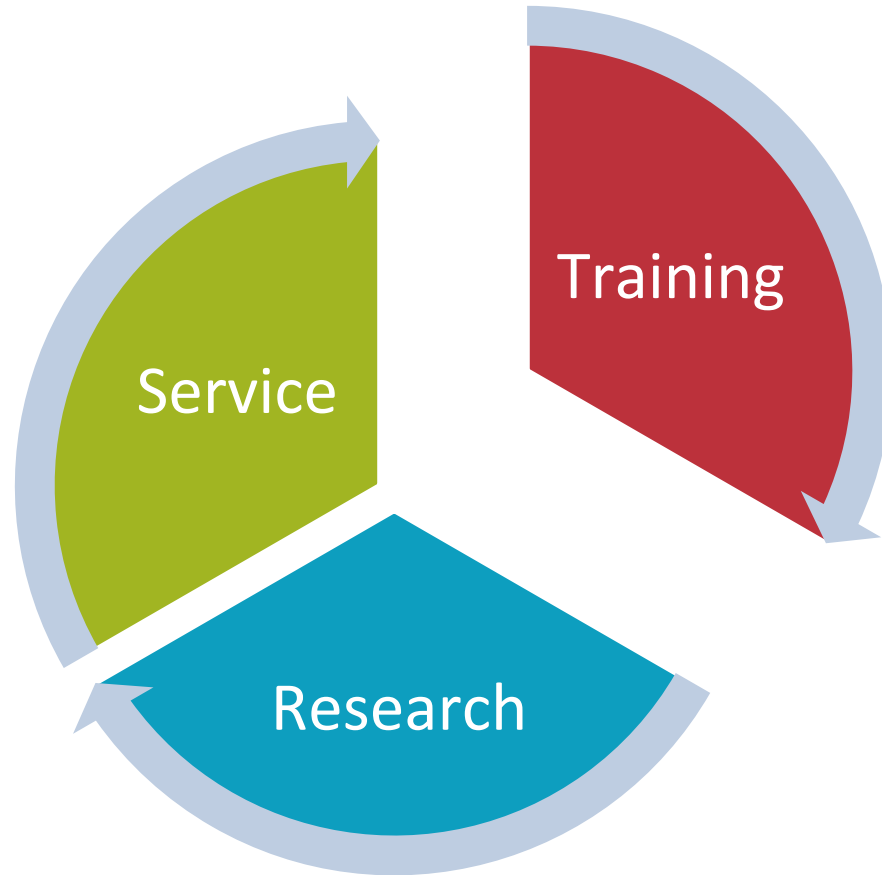
Interdisciplinary Training

- Need for professionals skilled in early intervention
- Various disciplines

  - Education
  - Psychology
  - Speech-language pathology

  - Occupational therapy
  - Pre-medicine
  - Social Work

Training

- Registered Behavior Technicians (RBTs)
    - 40-hour training, ongoing supervision
- Board Certified Behavior Analysts (BCBAs) & Provisionally Licensed Mental Health Practitioners (PLMHPs)
    - Ongoing supervision
- Post-doctoral fellows & pre-doctoral interns
    - Provide supervision, case management
- Volunteers & undergraduate interns
    - Training in basic procedures, ongoing supervision

Training Impact

- Pilot phase: 5 staff
- Current capacity: 30 staff/volunteers
- Total number trained: 40+ staff/volunteers
  - 13 RBTs (6 more anticipated in May!)
  - 4 BCBAs (2 more anticipated in May!)

MMI Mission

Research

- Staff training
    - Discrete-trial teaching
    - Naturalistic teaching strategies
    - Child-directed interactions
- Building rapport ("pairing")
- Identifying effective teaching procedures
- Evaluating child preference for teaching procedures
- Effectiveness of verbal behavior approach

Effectiveness of Verbal Behavior Approach

Autism specific symptoms-Social communicative, repetitive, restricted, sensory behaviors

- Autism Diagnostic Observation Schedule (ADOS-2)
- Repetitive Behavior Scale-Revised

Developmental skills-receptive/expressive language, cognitive, motor

- Mullen Scales of Early Learning
- Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP)

Functional Ability—Communication, social, home and community living, self care, safety

- Adaptive Behavior Assessment System (parent report)

Evaluation Procedures

Norm-Referenced

Mullen Scales
ABAS-2

Scores reflect one's performance compared to others (national sample)

Measures *broad* skills.

Each skill is measured by 1-2 items of varying difficulty

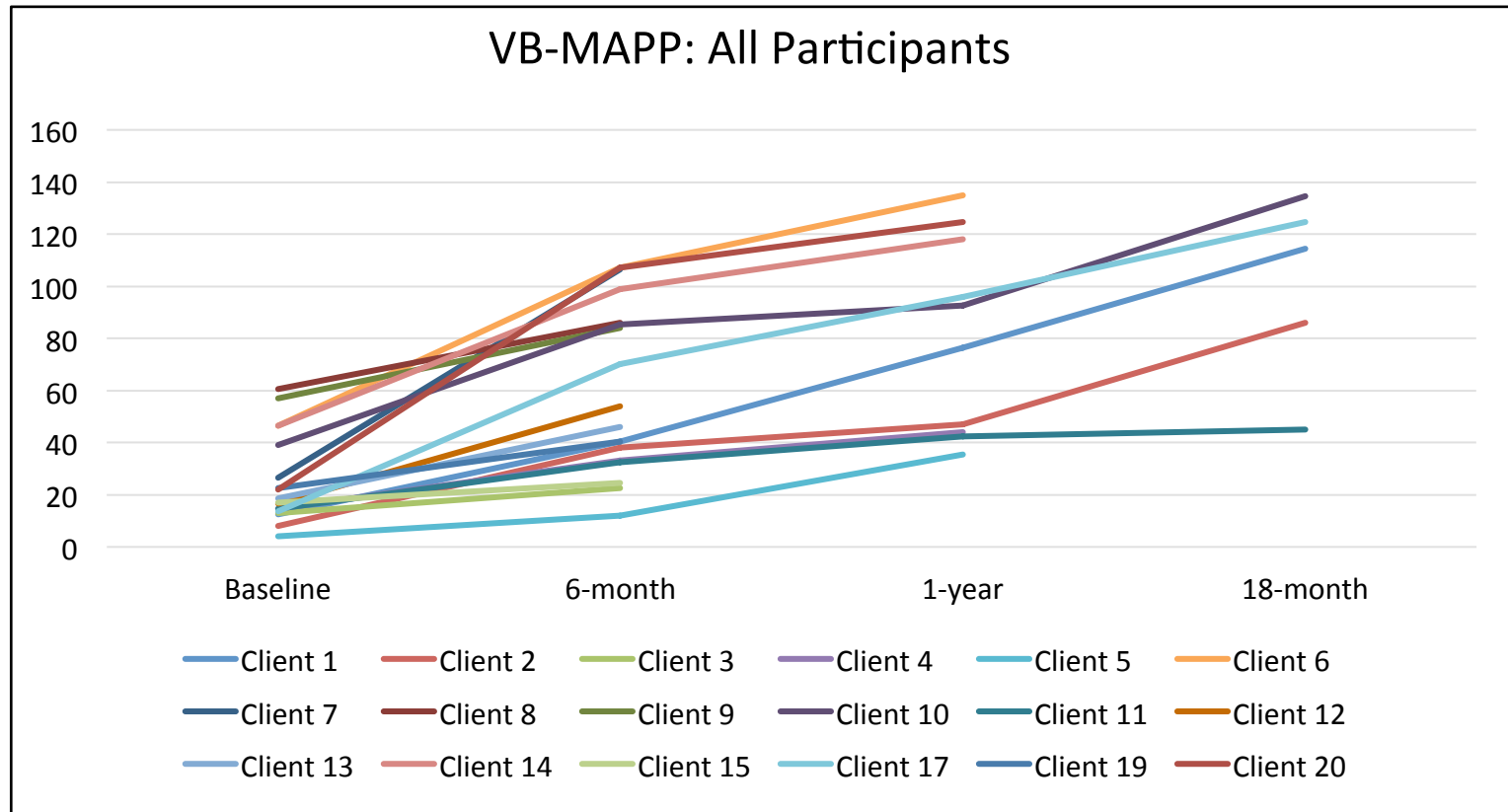## Criterion-Referenced

ADOS-2

VB-MAPP

Scores reflect performance according to a pre-set or acceptable standard

Measures *specific* skills that translate to curriculum

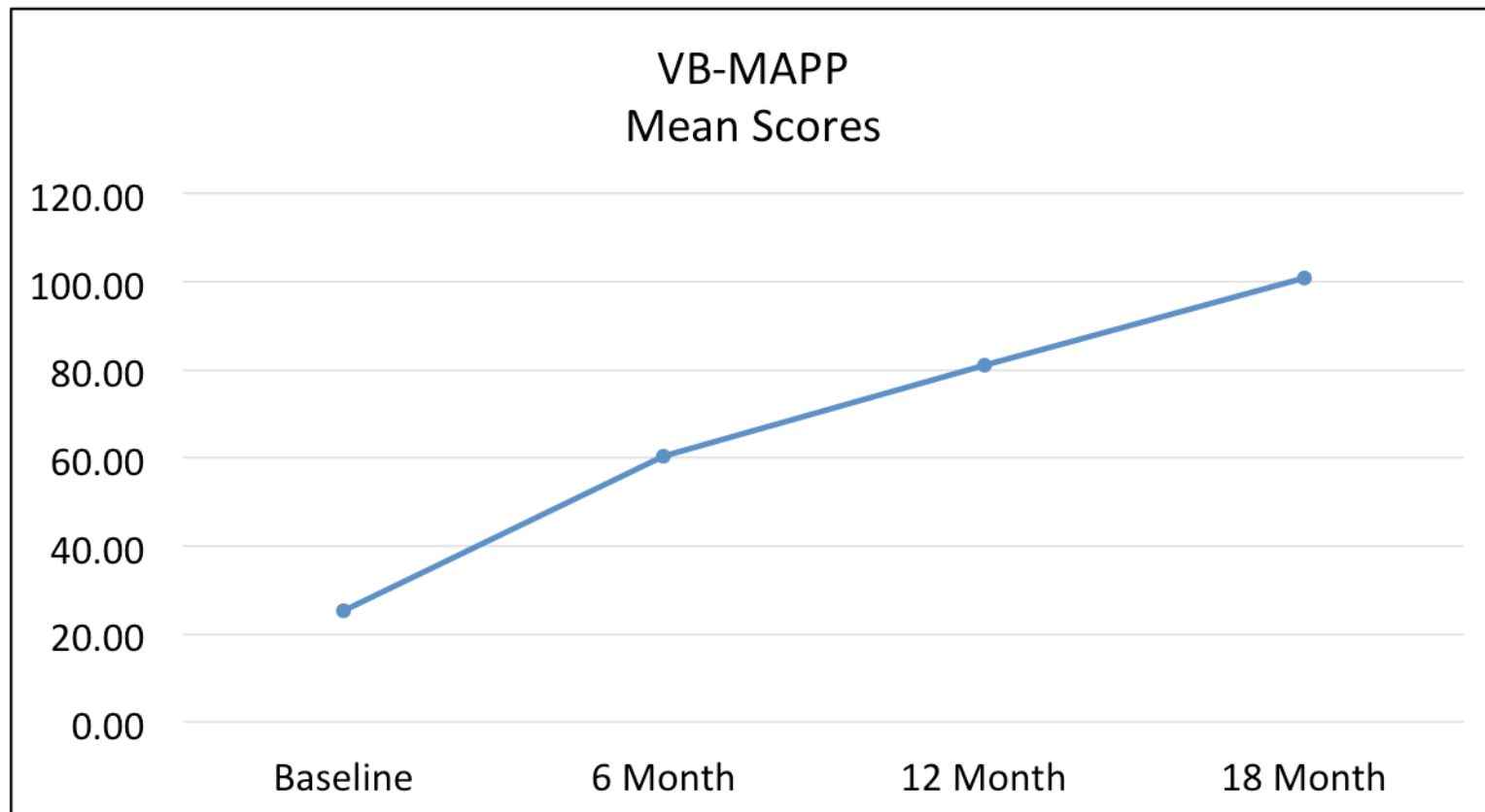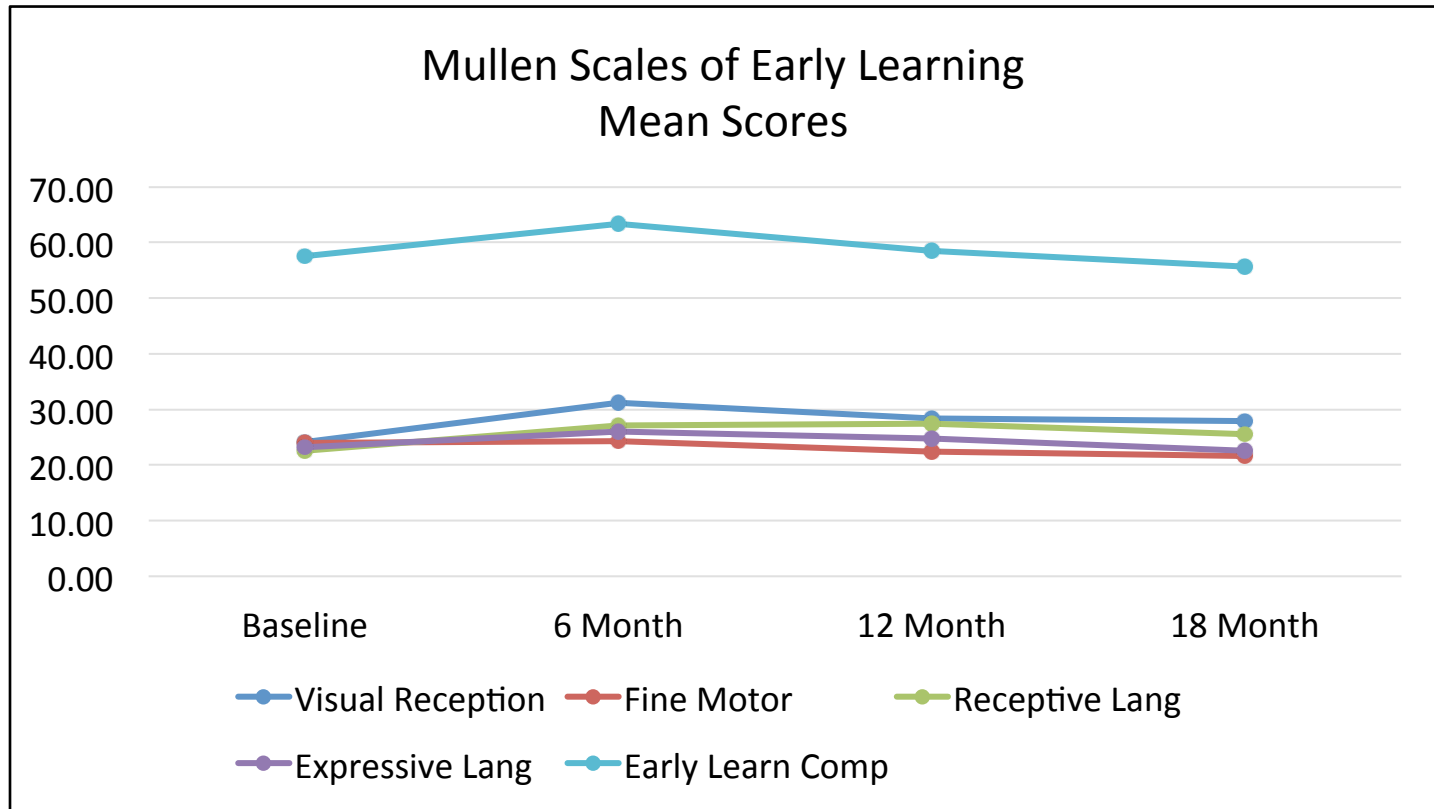Each skill is tested by multiple items of equal difficulty

Preliminary Data

VB-MAPP: All Participants

NOTE: Higher scores reflect gains in skill

Preliminary Data

VB-MAPP
Mean Scores

Preliminary Data

Mullen Scales of Early Learning
Mean Scores

Legend: Visual Reception, Fine Motor, Receptive Lang, Expressive Lang, Early Learn Comp

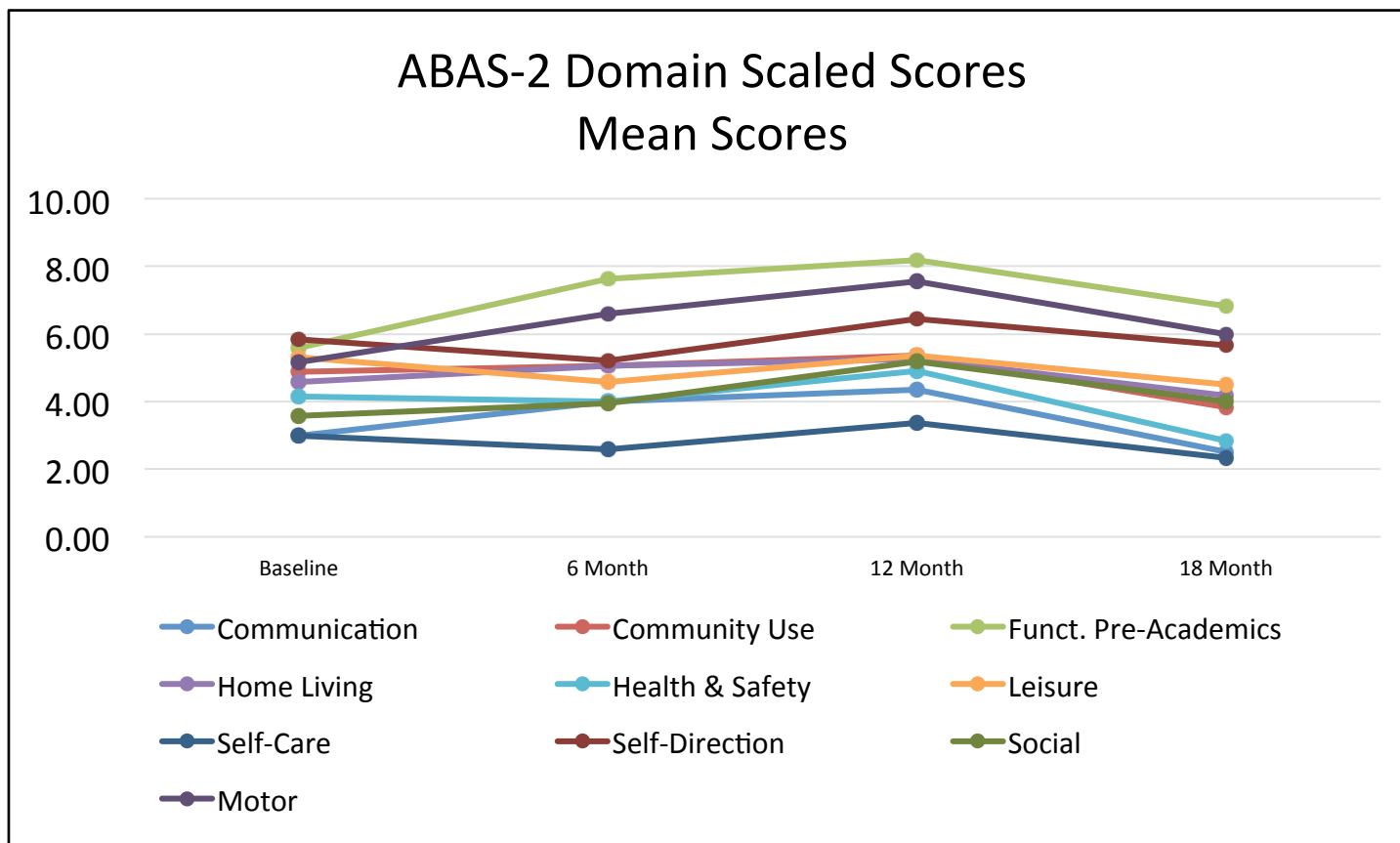*Note: Domain scores are represented as T-scores (M = 50; SD = 10).
Early Learning Composite is a Standard Score (M = 100; SD = 15).
Number of participants varied across time
Baseline: n = 32   6-mo: n = 25   12-mo: n = 13 18-mo: n = 7   24-mo: n =3

Preliminary Data

ABAS-2 Domain Scaled Scores
Mean Scores

Legend:
- Communication
- Community Use
- Funct. Pre-Academics
- Home Living
- Health & Safety
- Leisure
- Self-Care
- Self-Direction
- Social
- Motor

X-axis: Baseline, 6 Month, 12 Month, 18 Month
Y-axis: 0.00, 2.00, 4.00, 6.00, 8.00, 10.00

*Note: Scaled scores have a mean of 10 and standard deviation of 3.
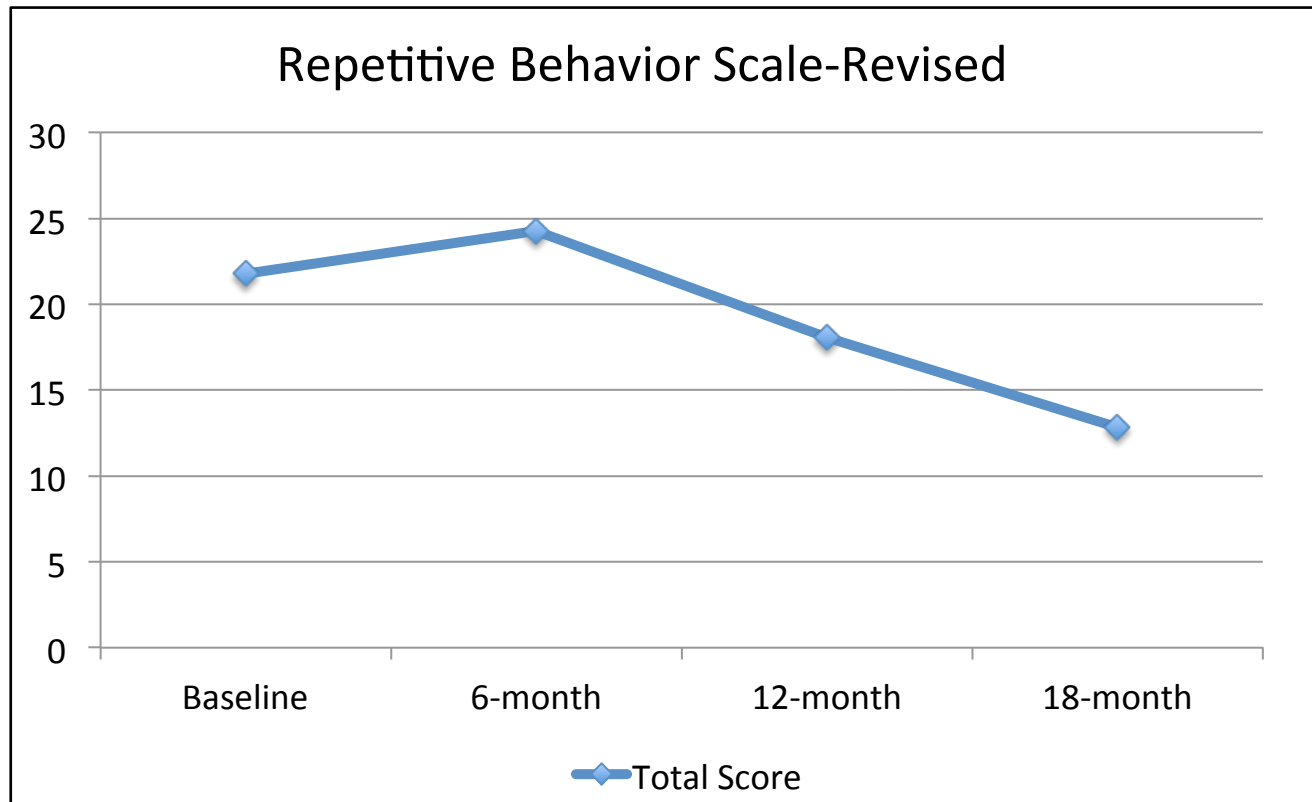   Average range: 7-13.
        Number of participants varied across time
        Baseline: *n* = 21   6-mo: *n* = 21   12-mo: *n* = 13   18-mo: *n* = 6
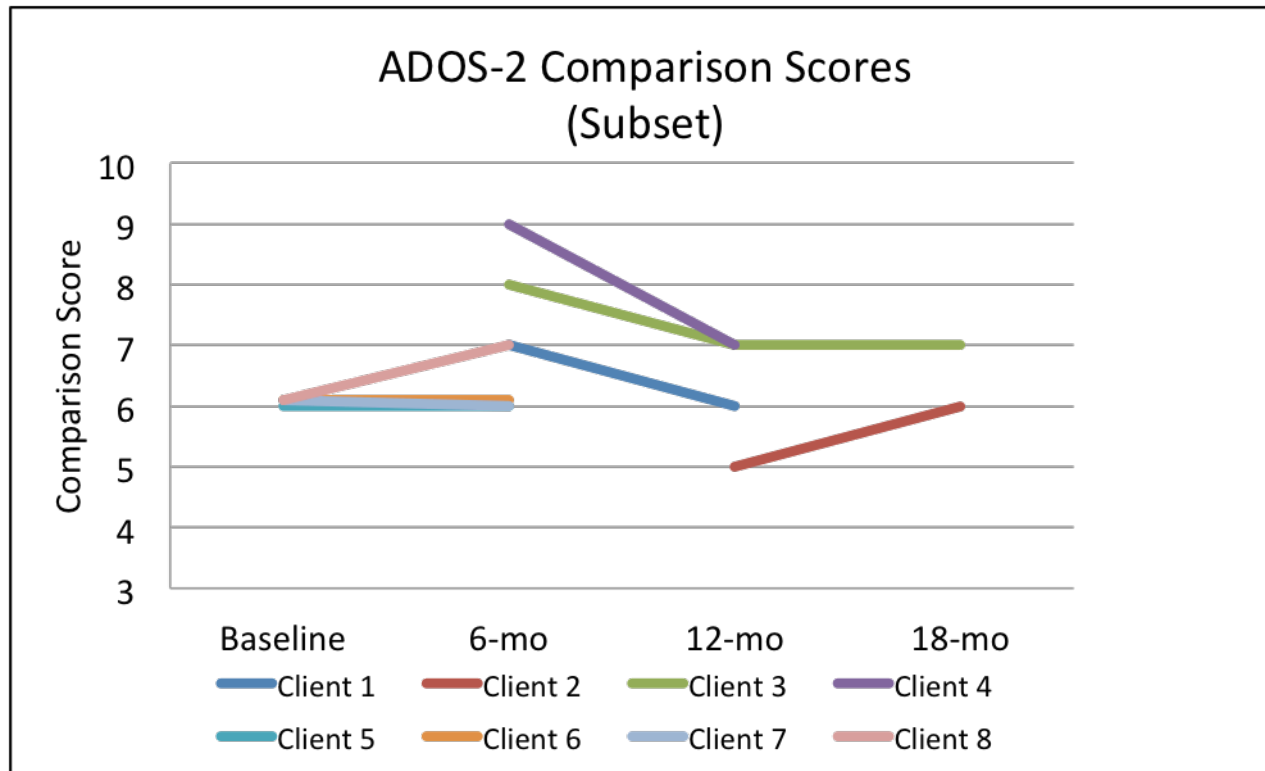
Preliminary Data

Repetitive Behavior Scale-Revised

Total score reflects number of different behaviors observed and parents' perceived severity (mild, moderate, severe).

Preliminary Data

ADOS-2 Comparison Scores (Subset)

- ADOS-2 Data
  - Data analysis in progress
  - Difficult to compare across modules
  - Limitations
    - Lack of consistency in examiners
    - Lack of Comparison Score for Toddler Module

Evaluation Procedures

- Characteristics of ASD that impact the assessment process
  - Rapport
  - Limited flexibility
  - Level of language (receptive and expressive)
  - Interfering and challenging behaviors
- Unique learning profiles
  - "Splinter skills" may not be reflected in score because of ceiling rules
  - Deficits in attention
  - Difficulty generalizing skills

Durocher, 2010

Evaluation Procedures

- Myths
  - Many people with autism are unmotivated during testing but are actually quite intelligent
  - People with autism are frequently "untestable" on standardized tests
  - It's not fair to use verbally-laden measures with nonverbal people

Perry et al., 2002

Best Practices

• Maintain a developmental approach

• Understand how/when to adapt standardization rules

• Include information from multiple sources and settings.

- Review of records
- Interview - developmental and medical history
- Observations in multiple settings
- Standardized and informal tools

DAYC-2 vs. Mullen

- Goal- Critically evaluate assessment procedures and revise protocol as needed to best reflect progress

- Pilot project- Investigating the DAYC-2 as a progress monitoring and program evaluation tool for toddlers with autism in early intervention

- Research questions
  - Do participants show growth in developmental domains across 6-month intervals as evidenced by scores on the DAYC-2?
  - How do change scores on the Mullen compare to change   scores on the DAYC-2 across participants?

| Mullen	Both	DAYC-2
• Very strict administration protocol	• Comprehensive developmental assessment	• Flexibility in administration format- interview, naturalistic observation, direct administration
• Requires specialized training	• Adequate reliability, validity	• Requires less "specialized training"
• Significant attentional demands on child	• Norm-referenced	• Minimal demands on child
• Parent input is minimal and requires parent present		• Allows for greater parent involvement
• Cost of kit: $900		• Cost of kit: $345
		• Flexibility in selecting assessment materials.

Voress, L. & Maddox, T (2013)

Preliminary DAYC-2 Data
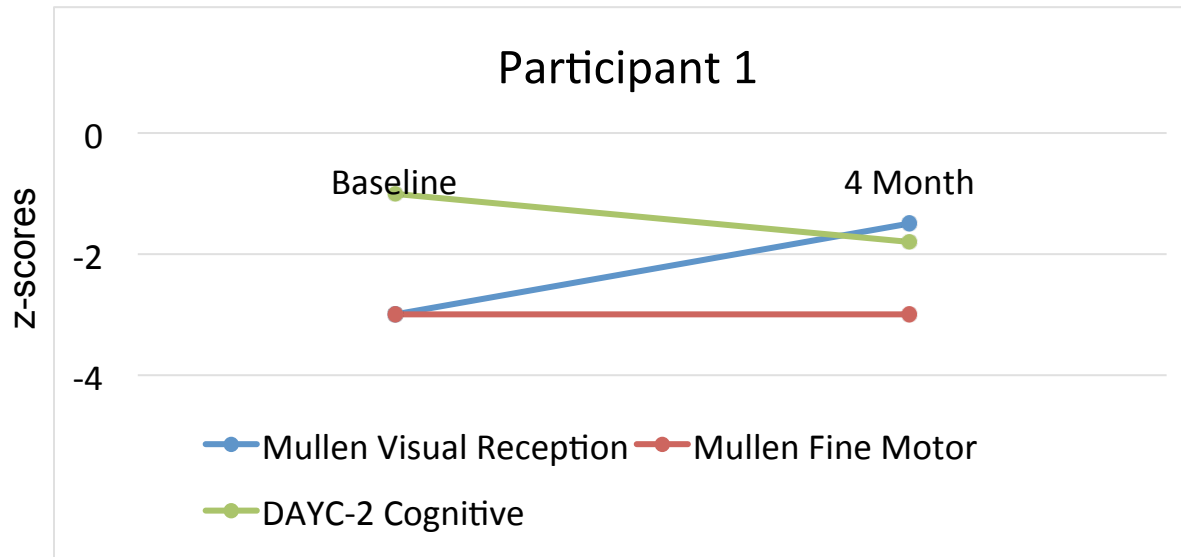
Scores (Y-axis) are transformed to z-scores to reflect the how many standard deviations their score is from the mean.
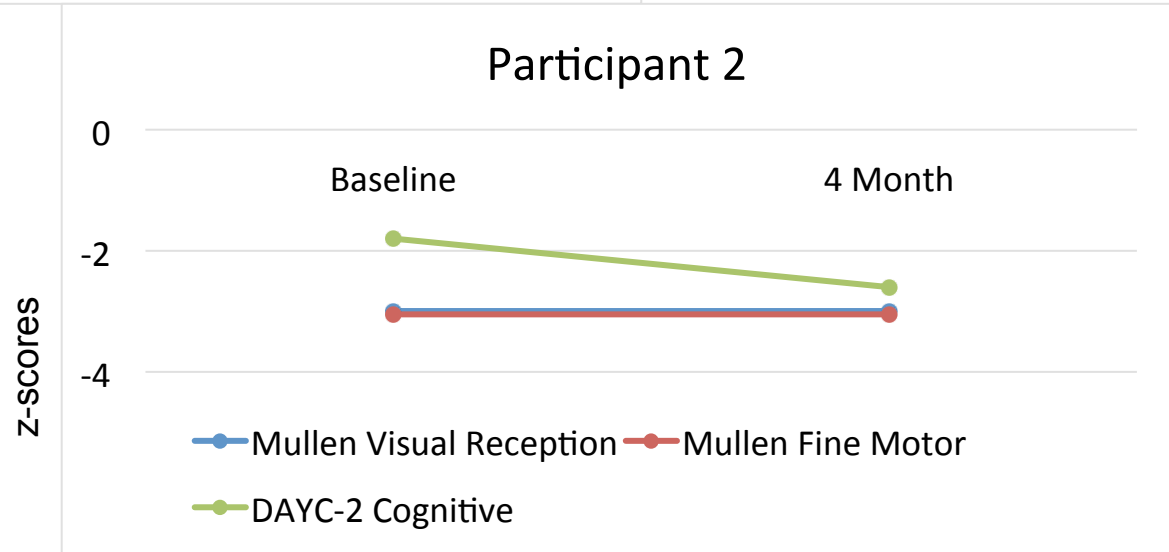
Preliminary DAYC-2 Data
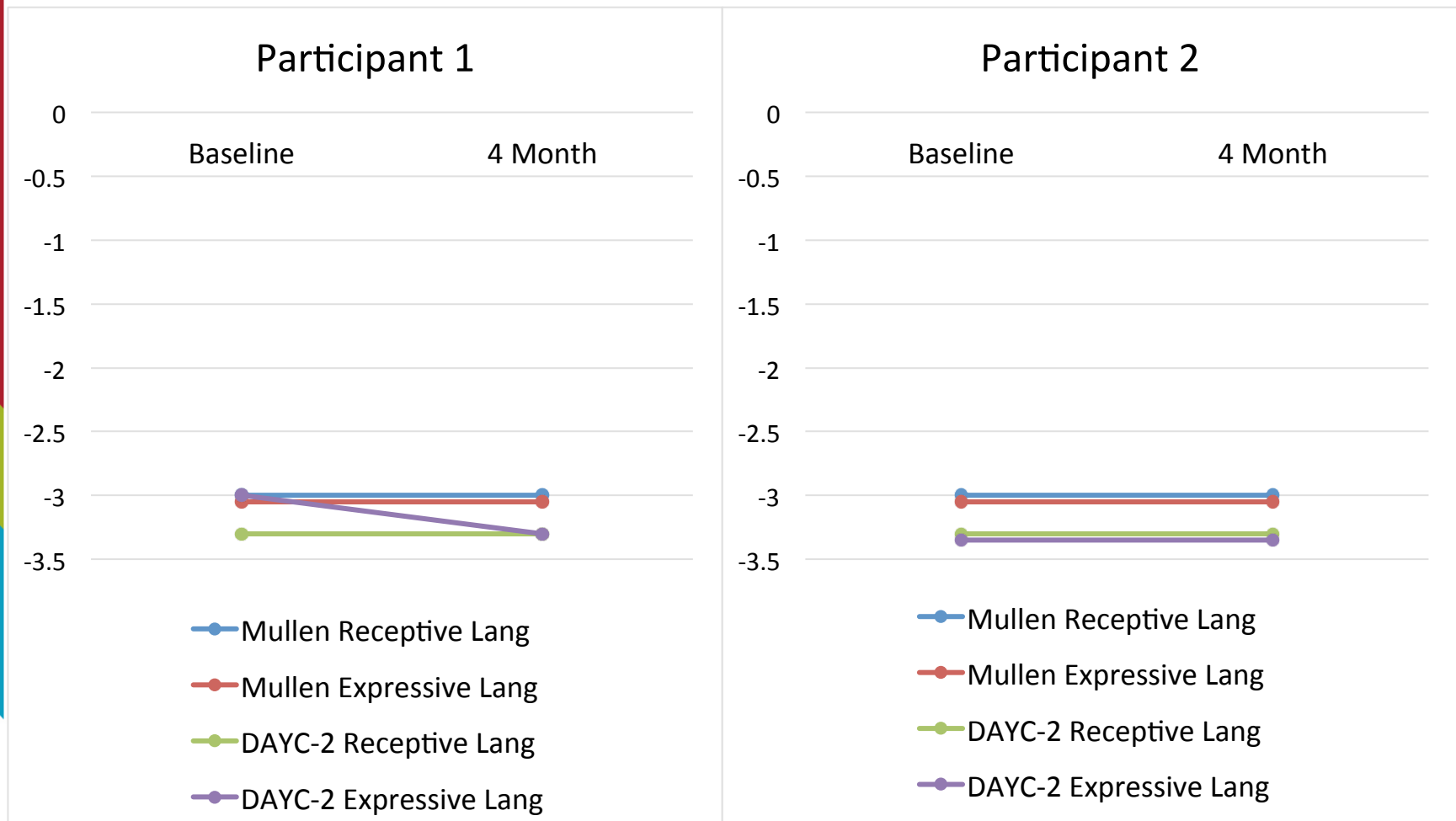
NOTE: Scores are represented as z-scores to indicate how many standard deviations a score is from the mean. All scores fall at the "floor" of the test norms.

DAYC-2 Preliminary Data

- Final conclusions
  - DAYC-2 holds some promise as an alternative norm-referenced developmental measure for toddlers with Autism Spectrum Disorders
  - It is critical for program evaluators to examine all sources of data, especially criterion referenced tests.

Conclusions

- 35 children and families served in the past 3 years
- Approximately 10 hours of direct services per week
  - Recommended dosage: 25-40 hours per week
- Substantial gains in VB-MAPP and ADOS-2 scores
- Need for greater access to early intervention services though center-based or school services
  - Barriers exist in spite of insurance mandates

Conclusions

- Limitations in outcome data
    - Inconsistent evaluators
    - Lack of comparison groups in ADOS-2 modules from Toddler Module to Module 1
- Future research
    - Evaluate additional tools with greater sensitivity to developmental change and progress
    - Identify and evaluate state system models to improve access to early intervention for rural and other underserved children
        - Communication, collaboration, and training

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