

Comprehensive Early Intervention & Communication Outcomes for Children with Autism Spectrum Disorder

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INTRODUCTION

* Children with ASD are at severe risk for poor language development because of inherent and defining deficiencies in important social communication skills that often linger till later childhood when, children typically have developed language competence.

* Deficiencies may include:

- a) joint attention
- b) gestures
- c) symbolic play
- d) language

* Appropriate early intervention:

- * Ensures that young children with ASD develop important foundational skills to ameliorate future deficient development
- * Should address evidence-based predictors to support:
 - * Developing social communication cognition
 - * Subsequent language development
 - * Social-pragmatic language

* Teaching foundational social communication remains a major treatment challenge for clinicians.

- * Hybrid interventions with a social-pragmatic focus affect the frequency of turn taking and initiated joint attention in toddlers & preschoolers with ASD, as well as with other early language disorders (Leew, 2001; Yoder & Stone, 2006).

* **Problem:** There is limited evidence of early social based interventions affecting important language and functional communication outcomes of preschool children with ASD

- * Social, preverbal, and verbal communication skills are critical to children’s foundational learning abilities (Dawson & Osterling, 1997; Koegel et al., 2001).

METHODS

* A retrospective exploratory pre-post comparison study investigated changes in children’s communication skills related to STA’s comprehensive early intervention program.

* Participants:

- a) Attended Society for Treatment of Autism’s Early Intervention Program between 2002-2010;
- b) Received standard-of-care intervention for a minimum of 1.5 years;
- c) Were administered the Communication and Symbolic Behavior Scales (CSBS) at intake and 12-18 months post-intake;
- d) According to the REB agreement, parents retrospectively signed informed consent to allow investigators to access stored standard treatment program data.

PARTICIPANTS

Participant Intake Scores					
Mullen Scales of Early Learning (MSEL) N=23			Preschool Language Scale - 4/5 (PLS-4/5) N=24		
	Mean	SD		Mean	SD
Total Developmental Quotient	54.35	20.25	Total Language Score	56.88	8.94
Non-Verbal Developmental Quotient	61.22	18.98	Auditory Comprehension	56.79	9.95
Verbal Developmental Quotient	47.00	25.40	Expressive Communication	62.04	10.62

STA INTERVENTION

* Play/activity based behavioural intervention;

* For children aged 24 - 72 months;

* Trans-disciplinary Intervention Team:

- * Early Intervention Therapists (EIT)

* Professional Staff

* Within home, centre, community, and preschool environments;

* Six hours a day, 5 days a week, 12 months a year;

* Essential integration opportunities:

- * Community classes (e.g., YMCA classes, gymnastics, dance classes)
- * Preschool with typical children

* Based on an Individualized Program Plan (IPP), developed at intake and for each subsequent year created by the team:

- * Parents
- * Psychologist and behavioural consultant
- * Speech-language pathologist
- * Occupational therapist
- * Educational consultant
- * Family support worker
- * EIT

* Daily therapy was delivered by a team of EIT;

* Consultative support from the trans-disciplinary treatment team includes:

- * Modelling, observing, and training for EIT;
- * Help to implement discipline specific objectives in a variety of environments;
- * Help for parents to learn skills;
- * Help to ensure consistent expectations of each child;

* Based on STA’s Behaviour Modification Guidelines (Society for Treatment of Autism, 2010), including:

- * Total programming:
 - * Reduces maladaptive or problematic behaviours;
 - * Increases the frequency or quality of positive and adaptive behaviours; and

* Education:

- * Teaches alternative, appropriate ways of behaving;
- * Enhances community participation, habilitation, and/or social functioning;
- * Behavioural principles are applied in varied ways to facilitate teaching and acquisition of new skills.

* STA’s speech language pathology communication philosophy includes strategies and guidelines to ensure consistent teaching for social-communication skills:

* **Form & Function**

Ensure the ways to communicate fit the reasons to communicate.

* **Developmental Approach**

Social-communication skills are taught based on a child’s assessment social-communicative level.

* **Total Communication Approach**

Primary focus is on teaching social-communication skills rather than verbal expressive communication skills.

* **Visual Supports**

Used to prompt a child’s understanding of directions, ensure understanding of behavioural expectations, and to assist in teaching sequential tasks.

Used to teach children with verbal abilities to increase their functional use of words and word combinations, and to decrease echolalia.

Used as an alternative expressive communicative mode

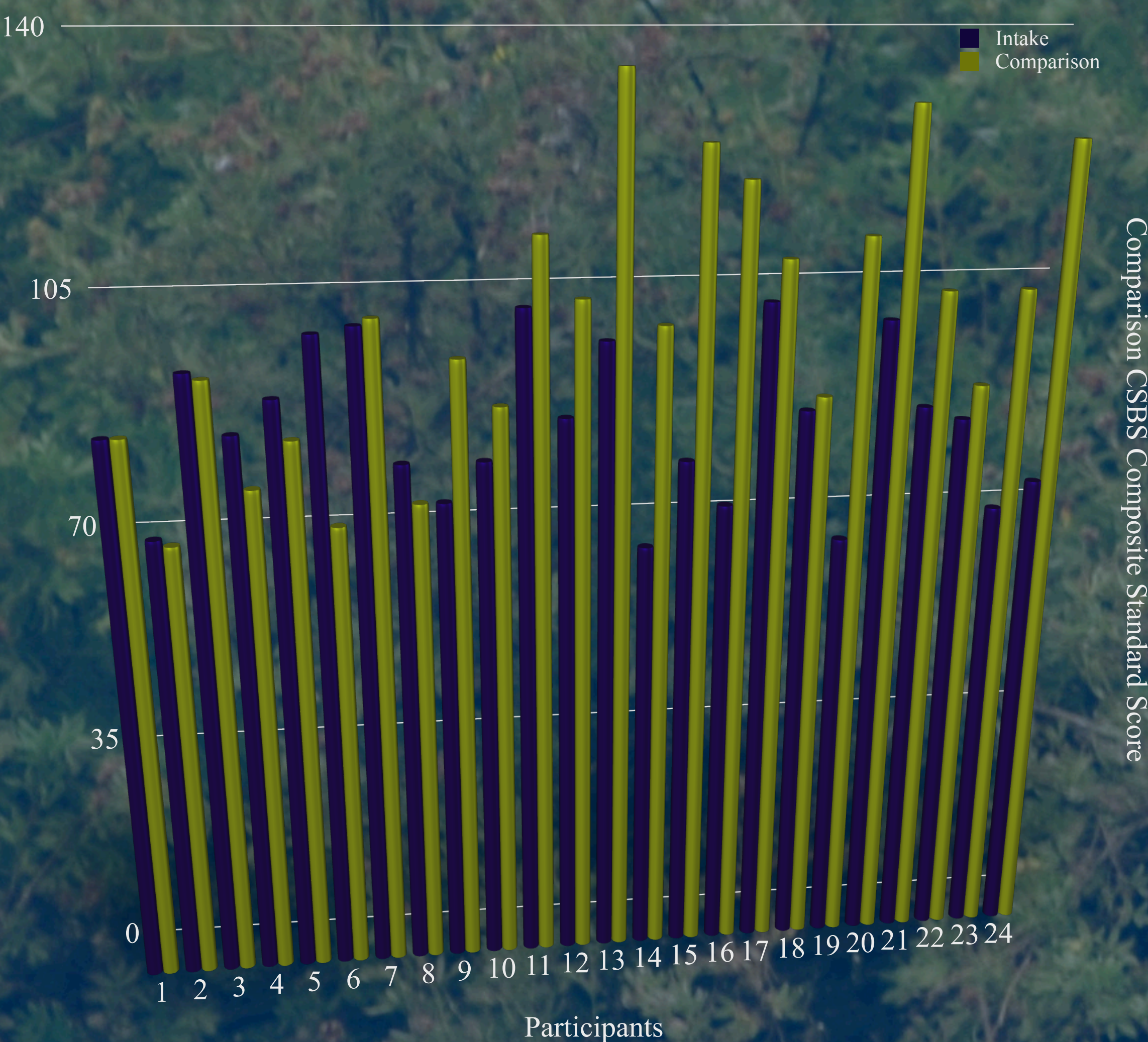
* **Functional Language Development & Echolalia Management**

Visual supports and a consistent colour coding system to assist children in “seeing” how language works.

Prompting and fading of adult modelling is essential in decreasing echolalia while increasing functional language.

RESULTS

CSBS Composite Standard Score Change from Intake



* Significant change ($p = 0.05$) in mean CSBS composite standard scores:

- * Increased language level for for 15 of the participants;
- * Six participants’ intake language level were at the highest level measured by the CSBS;

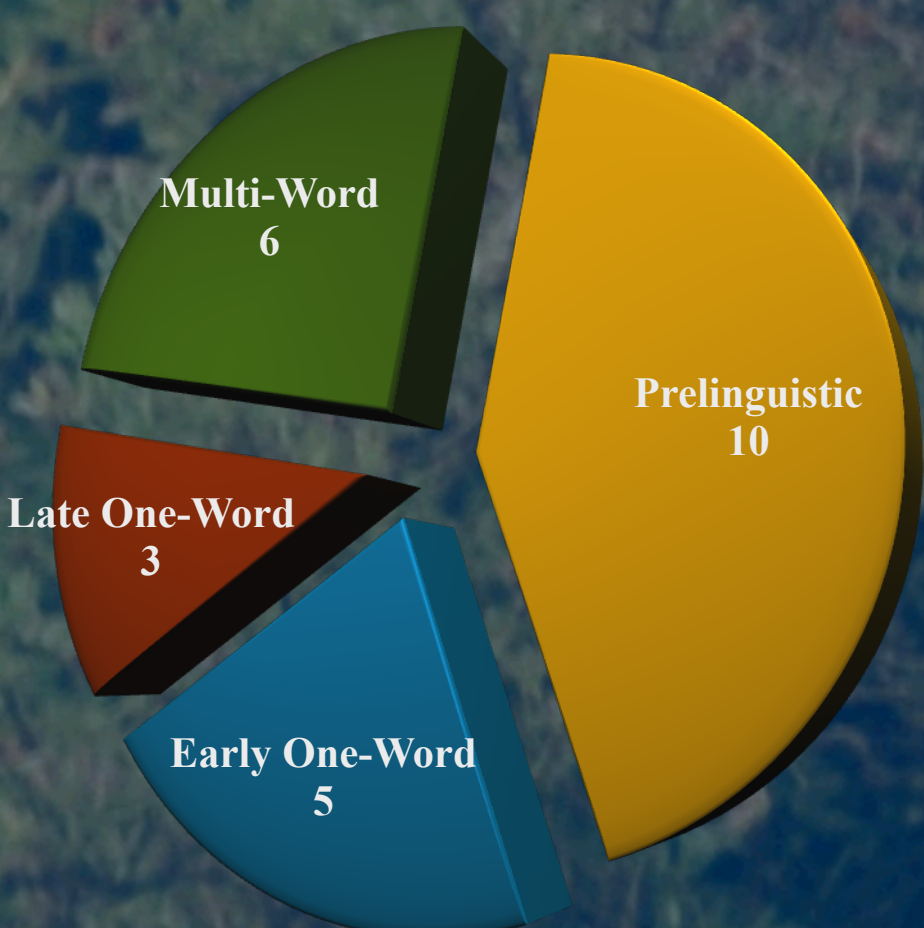
* Increased composite scores for 5/6 of the participants whose intake language level was at the Multi-Word Stage;

* Increased composite scores for participants whose comparison language level remained at the Prelinguistic Stage.

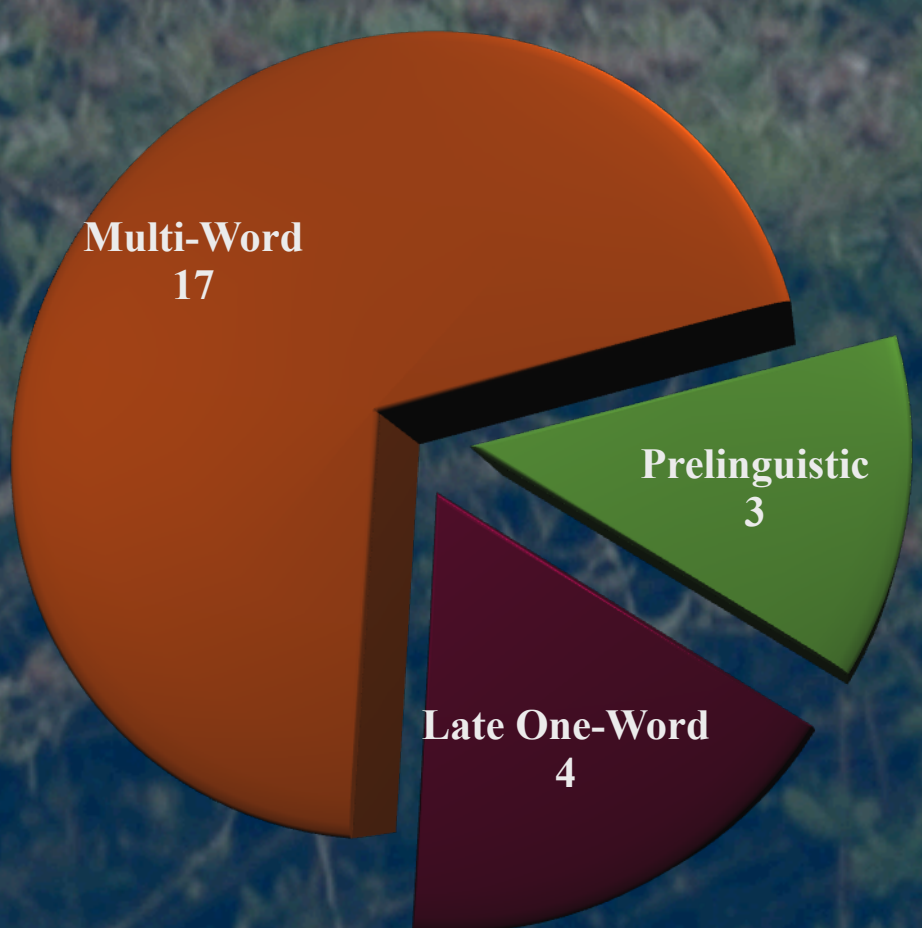
CSBS Mean Raw Score Change				
	INTAKE		COMPARISON	
	Mean	SD	Mean	SD
Behaviour Regulation*	21.63	7.49	31.33	9.53
Social Interaction*	2.83	3.73	8.04	5.50
Joint Attention*	4.79	7.32	18.38	23.24
Conventional Gestures*	5.04	2.49	7.13	2.42
Distal Gestures*	0.92	4.19	4.33	4.19
Vocalizations + Gestures*	8.38	7.76	20.96	17.21
Vocalizations - Gestures*	8.46	9.85	23.71	21.02
Words Spoken*	10.46	19.20	42.63	47.91
Word Combinations*	5.46	9.70	25.96	27.85
Rate of Communication*	1.60	0.83	2.90	1.18
Repair Strategies*	7.25	4.77	10.21	2.86
Gaze Shifts*	7.88	10.42	17.63	21.06
Positive Affect	7.29	6.47	11.21	11.49
Language Comprehension*	7.67	9.37	16.08	8.44
Different Action Schemes*	4.04	2.88	6.48	3.82
Complexity of Action Schemes	10.91	12.03	13.74	9.93

* $p = 0.05$

Participant Intake Language Level (CSBS)



Participant Comparison Language Level (CSBS)



DISCUSSION

* Children with ASD who received 1 - 1.5 years of standard-of-care treatment form STA demonstrated significant gains in social-communication and language skills.

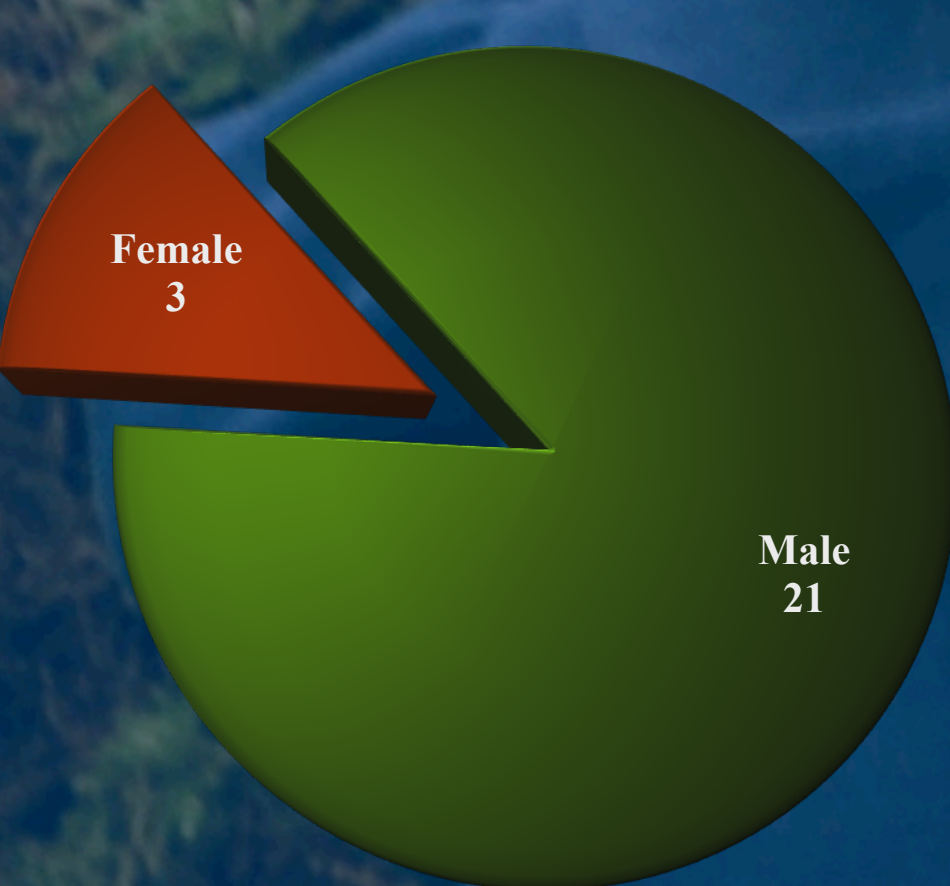
* Those children who did not demonstrate changes in language level did demonstrate increased Composite standard scores on the CSBS, indicating increased functional communication skills.

* Targeting joint attention and gesture use (predictors of future language development) can have a positive effect on social-communication outcomes.

* Treatment fidelity is important to examine interventions: the intervention at STA is well documented, the interventionists are well trained, and they are regularly supervised by trained clinicians. There is therefore, confidence in treatment fidelity at STA.

* Prospective study is required (and planned) to investigate STA’s intervention effectiveness and treatment fidelity.

Participant Gender



Participant Intake Age

