

## **Testing 'The Social ABC's' Parent-Mediated Intervention for Toddlers with Autism Spectrum Disorder**

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### **Background**

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by impaired social communication and restricted repetitive interests and patterns of behavior. ASD is considered a highly heterogeneous disorder. This heterogeneity is reflected in the child's characteristics, including clinical variability in the severity of autism symptoms, (DSM-5; American Psychiatric Association, 2013). Substantial individual differences are also apparent in treatment outcomes (Howlin, Iliana, & Tony, 2009). Current clinical recommendations are that children receive at least 25 weekly hours of targeted, intensive, early intervention in order to achieve optimal outcome (National Research Council, 2001; Zwaigenbaum et al., 2009). Unfortunately, most children with ASD in Israel and throughout the world do not receive such treatment due to limitations in time, financial resources, and insurance coverage (Symon, 2001). Increased waiting times for services due to the growing number of children being diagnosed with ASD further contributes to difficulties in accessing services (Nevill, Lecavalier, & Stratis, 2016).

Recent studies have suggested that intervention may be performed by parents after training in specific techniques that can be utilized in the home environment (Nevill et al., 2016). Providing parents with the skills to effectively cope with their child's developmental delays can also increase the parents' sense of competence, reduce stress, and improve family cohesion (Koegel, Symon, & Kern Koegel, 2002). This motivates the development of models for parent-mediated interventions that can reduce ASD symptoms (Nevill et al., 2016), particularly in low resource or isolated communities where other alternatives are less viable (Divan et al., 2015). Accordingly, there has been rapid growth in research examining the effectiveness of parent-mediated interventions in the past 15 years (Guralnick, Hammond, Neville, & Connor, 2008; Nevill et al., 2016).

The Social ABCs is one such parent-mediated intervention program, which has been shown to be feasible, cost-effective and sustainable. A cross-site RCT study revealed that even a relatively brief parent-mediated intervention using this technique yielded improvement in several social communication domains (Brian, Smith, Zwaigenbaum, & Bryson, 2017). The program primarily targets two early areas of difficulty in ASD: early *functional verbal communication* and *positive affect sharing* (Brian, Smith, Zwaigenbaum, Roberts, & Bryson, 2016). *Functional (verbal) communication* is considered to be one of the defining deficits in ASD. Moreover, language development has been identified by parents as a key area of concern (Coonrod & Stone, 2004), particularly in the first two years of life, and language ability is a strong predictor of later outcomes in children with ASD (Brian et al., 2016). *Positive facial affect* (i.e., smiling) is thought to have innate hedonic value that serves to motivate the development of very early social-communication skills such as eye gaze and reciprocal social smiling, which are often impaired in ASD (Brian, Bryson, & Zwaigenbaum, 2015). Moreover, learning is facilitated by positive emotion, suggesting that positive affect sharing may play a facilitating role in the development of other skills (e.g., functional communication), and may thus be a pivotal element of ASD intervention (Brian et al., 2016).

## **Aim**

The present study will evaluate the effectiveness of a short parent-mediated intervention (The Social ABCs program) on children's behavior and several parent measures. Participants will be 12-36-month-old children with ASD. Several measures of behavior and ASD symptoms will be collected once before and twice after the intervention to allow measurement of short and long term outcome. The study will also explore whether individual child (e.g., gender, age, autism severity, language ability) or parent characteristics (e.g., education level, income) have an impact on treatment success.

## **Research Design**

Up to 100 children 12-40 months old with ASD will be recruited for this study by Prof. Meiri and Co-Investigators at the Pre-School Psychiatry Unit as well as by Dr. Analya Michaelovski at the Child Development Center at Soroka University Medical Center (SUMC). All data collection and research procedures will be performed at the National Autism Research Center of Israel (NARCI), located in the Psychiatry Building at SUMC. Participating families in the current research will be selected from those already recruited to the large longitudinal ASD study carried out by NARCI, which has already been approved (SOR-14-0222).

**Inclusion criteria:** Children with the following inclusion criteria will be recruited to the study:

- Those who meet ASD criteria according the DSM-V, as evaluated both by a psychologist and by one of the following professions: child psychiatrist, developmental physician or child neurologist.
- Diagnosis was completed before the child turned 36 months old.
- History of full pregnancy, born at 36-42 weeks gestation age with a birth weight >2500 gram.
- Absence of identifiable neurological, genetic, or severe sensory or motor conditions.
- Primary language at home is Hebrew.
- Parents are willing to come to SUMC for training.

**Recruitment:** Identified families will be contacted by Tanya Nitzan, a current PhD student in the Psychology department at BGU (mentored by Drs. Meiri, Dinstein, and Koller), and a Speech Language Pathologist with over 5 years of expertise in treating children with ASD. Tanya will call the parents and explain the intervention program so that they can decide whether to participate in the research. Note that our existing Helsinki approval (SOR-14-0222) allows us to re-contact the families and offer them an opportunity to participate in additional research. Additionally, we will recruit more participants through social media (e.g., Facebook) and distribute pamphlets in special education kindergarten's.

**Baseline assessment:** Recruited families will be asked to complete a combination of questionnaires and participate in standardized behavioral assessments before the beginning of the intervention.

1. Consent form for the study.

2. Questionnaires:

- Intake questionnaire containing general socio-demographic questions and family history.
- Parenting Stress Index – Short Form (PSI-Short; Abidin, 1995). This questionnaire quantifies the amount of stress that is associated with parenthood activities.
- Parental Self-Efficacy Scale (Hastings & Brown, 2002). This questionnaire quantifies the parent's view of their parenting capabilities.
- Family Accommodation Scale (FAS-RRB). Measurement of how accommodating parents are towards challenging behaviors of their children.
- Communication and Symbolic Behavior Scales Developmental Profile (CSBS-DP). Parent report regarding the child's abilities.
- Adaptive Behavior Assessment System 2 (ABAS-2). Parent report regarding the abilities of the child in daily activities and independence.

3. Standardized assessments:

- Autism Diagnostic Observation Schedule (ADOS-2). In this semi-structured assessment, a clinician interacts with the child using predefined games and tasks and scores the severity of ASD symptoms including social difficulties and repetitive behaviors.

- Developmental assessment: Mullen Scales of Early Learning. This is a developmentally integrated assessment that quantifies language, motor, and perceptual abilities, measures cognitive ability and motor development quickly and reliably.
- Language assessment: Preschool Language Scales, Fourth Edition (PLS™-4). This is an interactive assessment of developmental language skills.

### **The intervention**

6-week intervention program: The families will receive Social ABCs coaching from Tanya Nitzan, Tamar Matz Vaisman, or Tamar David, who have successfully completed training in administering this intervention program with the developers of the program in Canada. All three therapists have extensive background in autism care and research. Parent training using the Social ABCs (see Group Social ABCS Protocol on NIH website: [REB # 17-745](#)) will be conducted either at NARCI or online (i.e., communicating with the parents at home using the zoom software). All intervention meetings will be recorded with audio and video for further research purposes.

Training will last six weeks and include group sessions where the strategies of the Social ABCs manual modules ('didactics') will be explained as well as individual sessions with the parents and child to practice the strategies and discuss each particular family's needs. The 6-week program includes multiple 1.5-hr appointment according to the following schedule: weeks 1-3: 3 visits per week, weeks 4-5: 2 visits per week, week 6: 1 visit. The appointments will include didactic group sessions based on the manual, followed by parent-child practice with live coaching. See Appendix A for a detailed schedule of these visits.

Training modules are as follows:

Week 1: Module 1: The ABCs of Learning –this module covers the basics of the three-part chain of antecedent-behavior-consequence within the context of child vocal communication.

- Week 2: Module 2 & 3.
  - Module 2: Enhancing Communication, which further elaborates on the integration of the ABCs into the context of fostering child communication development
  - Module 3: Sharing Positive Emotion, which highlights the importance of, and strategies for, developing positive connections between parent and child.
- Week 3: Module 4: Motivation and Arousal –this module teaches parents to identify and foster child motivation, and helps parents optimize their child's arousal levels to enhance learning and social connection.
- Week 4: Module 5 & 6.
  - Module 5: Play and The Social ABCs provides information on integrating the strategies into developmentally appropriate and meaningful play routines

- Module 6: Daily Caregiving Activities provides instruction on how to use the Social ABCs in everyday caregiving contexts.
- Week 5: Module 7: Managing Challenging Behavior

Week 6: Module 8: Taking Care of Yourself

### **Outcome Assessment:**

1. Questionnaires: questionnaires and parent reports will be administered at 2 time-points: at the beginning of the intervention and 12 weeks after. These will include the same questionnaires described in the baseline assessment (see above) in addition to:
  - Social ABCs Satisfaction Questionnaire (unpublished): developed specifically to evaluate parents' experiences in Social ABCs training. To be completed at post-intervention only.
2. Standardized assessments: the same behavioral assessments described in the baseline assessment will be administered 12 weeks after the beginning of the intervention.

### **Data analysis:**

We will examine correlations across initial and outcome behavioral measures including the ADOS-2 severity score, developmental assessment, pre-school language scale and other questionnaires described above. We will also calculate differences in scores before/after intervention to determine change over time. Statistical significance of differences across study time-points will be assessed using multi-variance two-way mixed-design (M)ANOVAs and t-tests for continuous variables and  $\chi^2$  tests for categorical variables.

### **Risk and comfort**

There is no risk associated with participating in this research. However, some parents may find it difficult to attend the intensive schedule at SUMC. The intervention will also require parents to change their behavior and to continue applying the principles of the intervention at home. As with any change in a parent's behavior, this will require self-discipline and persistence. Successful completion of the intervention is likely to have beneficial impact on children's functional verbal communication and positive affect sharing.

### **Summary**

Despite the need for a feasible intervention for children with ASD diagnosis, and the long waiting lists to treatment, there is currently very little structured research regarding the efficacy of short-

term behavioral interventions, particularly in Israel. The research will expand our understanding regarding the individual and family factors that might predict the success of the treatment.

## Appendix A: Schedule of Visits for Social ABCs Group Participants

Week	G/I?	Visit Topic	Visit Length	Activities	Data Collection
Baseline	I	Study Consent + Intro Module	1.5 hour	• Consent • Intro Module	• Questionnaires
				•	• PLS-4 (baseline) • ADOS-2 (baseline) • Mullen (baseline)
Week 1	G	Module 1	1.5 hour	• Module 1 Didactic • Video examples	
	I	Module 1	1 hour	• 15-min tips • Live coaching	
	I	Module 1	1 hour	• 15-min tips • Live coaching	
Week 2	G	Module 2 & 3	1.5 hour	• Module 2 & 3 Didactic • Video examples	
	I	Module 2	1 hour	• 15-min tips • Live coaching	
	I	Module 3	1 hour	• 15-min tips • Live coaching	
Week 3	G	Modules 4	1.5 hour	• Module 4, 5, & 6 Didactic • Video examples	
	I	Module 4	1 hour	• 15-min tips • Live coaching	• 15-min video • Live coding
	I	Module 4	1 hour	• 15-min tips • Live coaching	
Week 4	G	Module 5 & 6	1.5 hour	• Module 7 Didactic • Video examples	
	I	Module 5 & 6	1 hour	• 15-min tips • Live coaching	
Week 5	G	Module 7	1.5 hour	• Module 8 Didactic • Video examples	
	I	Module 7	1 hour	• 15-min tips • Live coaching	
Week 6	I	Module 8 Future Goals	1 hour	• 15-min tips • Live coaching	• 15-min video • Live coding • Questionnaires

G=Group Sessions, I=Individual Sessions

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