Early Social Interaction Project: Improving Developmental Trajectories of Toddlers with Autism Spectrum Disorder

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College of Medicine, Florida State University

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August 2, 2016 State College, PA

Outline

1. What does the research tell us about early intervention for toddlers with ASD?

2. Can we change developmental trajectories of toddlers with ASD?
   • Findings from the Early Social Interaction Project

3. How do we bridge the research-to-practice gap?
   • Lessons from Implementation Science—Strategic Planning for Sustained Fidelity of Implementation
   • Rolling out Autism Navigator in Pennsylvania
Financial & Nonfinancial Disclosures

- Amy Wetherby is employed by FSU and has received grant funding to support research on early detection and early intervention from NIH, USDOE, & the CDC.
- Amy Wetherby is author of the Communication and Symbolic Behavior Scales (CSBS) and the SCERTS Model published by Brookes Publishing and receives royalties.
- Amy Wetherby is an owner of Autism Navigator, LLC. No salary is earned and 100% of the profits are donated to a nonprofit to support the courses & tools.

Naturalistic Developmental Behavioral Interventions: Empirically Validated Treatments for Autism Spectrum Disorder

Laura Schreibman · Geraldine Dawson · Aubyn C. Stahmer · Rebecca Landa · Sally J. Rogers · Gail G. McGee · Connie Kasari · Brooke Ingersoll · Ann P. Kaiser · Yvonne Bruinsma · Erin McNerney · Amy Wetherby · Alycia Halladay

- Consensus statement developed by a group of autism researchers on naturalistic developmental behavior interventions (NDBIs).
- The increased ability to identify and diagnose ASD earlier has led to designing interventions for very young children.
- Empirical data on the efficacy of toddler interventions has emerged based on behavioral interventions that utilize naturalistic approaches and developmental orientations.
Common Features of Evidence-Based NDBIs


- Three Part Contingency
- Manualized Practice
- Fidelity of Implementation
- Individualized Treatment Goals
- Ongoing Measurement of Progress
- Child-Initiated Teaching Episodes
- Environmental Arrangement
- Natural Reinforcement to Enhance Motivation
- Use of Prompting and Prompt Fading
- Balanced Turns within Play Routines
- Modeling
- Adult Imitation of Child’s Behavior
- Broadening Attentional Focus of the Child

What do we know about toddler treatments?

Clinician-Implemented Interventions

- RCTs of clinician-implemented interventions have had promising effects on child outcomes of developmental level & adaptive behavior but modest effects on autism symptoms
- Require considerable amount of professional time, ranging from to 20 hours/week over 2 years to 10 hours/week for 6 months

Dawson et al., 2010; Landa et al, 2011

Parent-Implemented Interventions

- RCTs of parent-implemented interventions have increased parent responsivity, synchronization, and interaction skills but have not found significant effects on child outcomes.
- Very low intensity ranging from 11-24 sessions over 3 to 12 months

Carter et al., 2011; Green et al., 2010; Rogers et al., 2012; Siller et al., 2012; Solomon et al., 2014
### Background: *Parent Implemented RCTs*

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Age (months)</th>
<th>Duration</th>
<th>Intensity</th>
<th>Proximal Effects</th>
<th>Distal Effects</th>
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<tbody>
<tr>
<td>Carter et al., 2010</td>
<td>62</td>
<td>20</td>
<td>3.5 months</td>
<td>8 group / 3 ind sessions</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Green et al., 2010</td>
<td>152</td>
<td>24-59</td>
<td>12 months</td>
<td>18 sessions</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Kasari et al., 2010</td>
<td>42</td>
<td>30</td>
<td>2 months</td>
<td>3 X week</td>
<td>X</td>
<td>NA</td>
</tr>
<tr>
<td>Rogers et al., 2012</td>
<td>98</td>
<td>21</td>
<td>3 months</td>
<td>1 X week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solomon et al., 2014</td>
<td>128</td>
<td>30-71</td>
<td>12 months</td>
<td>1 X month</td>
<td>X</td>
<td>ADOS % Δ in ASD/Autism</td>
</tr>
</tbody>
</table>

**Intensity matters...**

...so how do we achieve 25 hours per week in which the child is engaged *actively* and *productively* in meaningful activities?

*(National Research Council, 2001)*

- Developmental surveillance at every well-child visit from 9 to 30 months
- Screen all children for ASD at 18 and 24 months
- Autism can be diagnosed by 18-24 months, yet the median age of diagnosis of is 4-5 years
- Children of minority, low income, and rural families are diagnosed a year and a half later.

Funded by NICHD, CDC, & NIDCD

www.FirstWordsProject.com

PI: Amy M. Wetherby, Ph.D.
Florida State University
Examined the utility of the SORF as an observational level-two screening measure using the CSBS behavior sample. Psychometric properties were examined in 274 16-24 month olds: 130 with ASD, 61 with developmental delay, & 56 with typical development. Results indicated significant group differences with large effects for the Composite, both Domain scores and the total number of red flags. These findings provide support for the SORF as an observational screening measure for toddlers with good discrimination, sensitivity, and specificity.


*Autism: International Journal of Research and Practice*

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<table>
<thead>
<tr>
<th>SORF</th>
<th>Cutoff</th>
<th>AUC</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Red Flags</td>
<td>8</td>
<td>.86</td>
<td>0.79</td>
<td>0.75</td>
<td>0.78</td>
<td>0.76</td>
</tr>
<tr>
<td>SC Domain Score</td>
<td>14</td>
<td>.85</td>
<td>0.80</td>
<td>0.72</td>
<td>0.76</td>
<td>0.76</td>
</tr>
<tr>
<td>RRB Domain Score</td>
<td>4</td>
<td>.79</td>
<td>0.79</td>
<td>0.66</td>
<td>0.72</td>
<td>0.73</td>
</tr>
<tr>
<td>Composite Score</td>
<td>20</td>
<td>.87</td>
<td>0.80</td>
<td>0.78</td>
<td>0.81</td>
<td>0.78</td>
</tr>
</tbody>
</table>
Community-viable intervention model for toddlers with ASD & their families

Teach parents how to use supports and strategies in everyday activities at home and in the community

**Early Social Interaction Project**

ESI Theoretical Principles

1. A *family-centered* approach to meet the family’s needs, concerns, and priorities throughout the assessment and intervention process

2. Embedded intervention in *natural environments* to enhance generalization for the child and family


4. Intensity of programming for at least **25 hours of active engagement** per week

5. Systematic instruction using individualized and *evidence-based strategies* with monitoring

6. Developmental approach targeting core deficits of autism—social interaction, communication, play, and emotional regulation using the *SCERTS* curriculum
RCT of Early Social Interaction (ESI) Project

Wetherby, Guthrie, Woods, Schatschneider, Holland, Morgan, & Lord, 2014

82 children entered study at 18 months with diagnosis of ASD
Compared effects of 2 parent-implemented intervention conditions (9 months)

- **Individual ESI**
  - High Intensity
  - 3 individual sessions per week (2 at home and 1 in clinic playroom); reduced to 2 sessions per week in last 3 months

- **Group ESI**
  - Low Intensity
  - 1 group session per week (1 education meeting and 3 playgroup sessions per month)

Employed a crossover design so that all families received both treatments.
Measuring Treatment Outcomes
Child Active Engagement

- Is the child well regulated?
- Is the child actively participating in a productive role?
- Is the child engaging in reciprocal social interaction?
  - socially connected
  - shifting gaze to face
  - responding to verbal bids for interaction
  - initiating communication
- Is the child’s behavior flexible & generative?

The 3 Layer Cake:
Teaching strategies & supports to parents to promote child active engagement in everyday activities

Supports for better skills
- Model and build language, play & interaction
- Extend activity, child’s roles, & transitions
- Adjust expectations & supports
- Balance of interaction and independence

Supports for social reciprocity
- Promoting initiation
- Balance of turns
- Natural reinforcers
- Clear message to ensure comprehension

Supports for a common agenda
- Motivating activity
- Productive roles
- Predictability
- Follow child’s attentional focus
“Everyday Activity Categories” to promote learning in the natural environment

<table>
<thead>
<tr>
<th>Play with People</th>
<th>Play with Toys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Games like Peek-a-boo, Rough and Tumble, Songs &amp; Rhymes</td>
<td>Blocks, Puzzles, Sand box, Playdough, Cars and Trucks, Ball Games, Baby Dolls</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meals and Snacks</th>
<th>Caregiving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation, Eating, Cleanup</td>
<td>Dressing, Diaper Change, Bath, Washing Hands, Brushing Teeth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Book Sharing</th>
<th>Family Chores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mailbox, Laundry, Care for Pets, Plants</td>
</tr>
</tbody>
</table>
Support Learning in Everyday Activities and Multiple Contexts to Promote Generalization

Summary of RCT Findings

Wetherby, Guthrie, Woods, Schatschneider, Holland, Morgan, & Lord, 2014

- Significant time-by-condition interaction effects with children in individual-ESI showing significantly greater improvement on:
  - Social Communication - CSBS Social Composite
  - Adaptive Behavior - Vineland Comm, Social & Daily Living
  - Developmental Level - Mullen Receptive Language and significant time effects on other measures

- Significant main effects of time (no interaction) with children in both ESI conditions showing similar rates of improvement:
  - Improvement on: CSBS Speech & Symbolic; ADOS Social Affect; Mullen Expressive Language
  - Worsening on: ADOS RRB, Vineland Motor, & Mullen Fine Motor
Measure of Active Engagement and Transactional Support (MAETS)

Parent Transactional Supports

1. Promote Participation & Productive Role
2. Make Activity Predictable
3. Follow Child’s Focus of Attention
4. Promote Child Initiations
5. Provide Balance of Turns
6. Support Child Comprehension
7. Provide Verbal and Nonverbal Models
8. Adjust Expectations & Demands
EARLIER INTERVENTION IS BETTER FOR TODDLERS WITH ASD:
EVIDENCE FROM A RANDOMIZED CONTROLLED TRIAL OF THE EARLY SOCIAL INTERACTION PROJECT

- Evaluated the effects of timing of intervention and is the first study of its kind to truly test whether ‘earlier is better’
- 82 children with ASD were enrolled at 16-20 months of age
- Randomized to start with ESI Individual or Group then crossover
- ESI Individual led to better gains when started at 18 vs 27 months for Receptive Language (MSEL), Expressive Language (VABS), Social Composite of CSBS and VABS Daily Living Skills
- Earlier was better, regardless of condition for Expressive Language (MSEL) and Symbolic skills (CSBS)
- Findings highlight the importance of early screening and referral to autism-specific interventions by 18 months and counter the USPSTF recommendation

Next Steps

- Sorting out active ingredients of treatment and treatment responders
- Collaborating with Dr. Ami Klin, PI of the Emory ACE, to study the effects of ESI with younger sibs starting at 12 months
- Comparing mobile coaching with face-to-face coaching and combinations of the two.
- Developing treatments that are feasible for families of diverse cultures and communities of modest resources
- Studying community implementation strategies to bridge gap between research and common practice in both early detection and early intervention
Keeping an Eye Toward Community Uptake

- Embedded intervention in natural environment to minimize clinician time and maximize parent role, consistent with Part C EI services
- Feasible for families of diverse cultures and communities of modest resources
- Developing web-based professional courses and family tools to support community implementation strategies to bridge gap between research and practice
  - Early detection
  - Early intervention

Early Social Interaction Project: Improving Developmental Trajectories of Toddlers with ASD

Autism Navigator is a unique collection of web-based tools and courses that uses extensive video footage to bridge the gap between science and community practice.
About Autism in Toddlers

- Our first online course is FREE to the public.
- For families, professionals, or anyone interested in learning about autism spectrum disorder (ASD).
- Video clips of over a dozen toddlers with ASD at 18-24 months of age.

Courses for professionals, parents, and anyone interested in learning about autism.

About Autism in Toddlers

Our first online course is FREE to the public. It is for families, professionals, or anyone interested in learning about autism spectrum disorder (ASD). You will learn about the core diagnostic features and early signs of autism in toddlers - the importance of early detection and early intervention, and current information on prevalence and cause of autism. This self-paced course has video clips of over a dozen toddlers with ASD at 18-24 months of age. It takes about 2 hours to go through all of the slides and videos or spend a few minutes a day and complete the course.

Course Introduction

1. Core Diagnostic Features
2. Prevalence and Cause
3. Early Detection
4. Collaborating with Families
5. Screening & Referral
6. Early Intervention Basics

This 7-hour course launched in Summer, 2015.
Early Social Interaction Project: Improving Developmental Trajectories of Toddlers with ASD

Amy M. Wetherby, PhD

August 2, 2016

Language Learning
16 Gestures by 16 Months

Imagination
16 Actions with Objects by 16 Months

Social Connectedness
16 Ideas to Communicate by 16 Months

Cooperation
16 Ways to Manage Emotions by 16 Months

Critical Thinking
16 Messages to Understand by 16 Months
Social Communication Development in Infants and Toddlers (SC•DIT)

Knowledge and Skills Level

- Explore Function
  - 5 Developmental Domains
  - Hundreds of Videos clips illustrating 80 SC milestones

- Study-Guide Function
  - 15 Self-Guided Lessons
  - 5 Learning Assessments

Mastery Level

- Home Visitors Guide to support families in the SC Growth Charts

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www.AutismNavigator.com
Early Social Interaction Project: Improving Developmental Trajectories of Toddlers with ASD

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August 2, 2016

National Autism Conference
State College, PA
Embedding intervention strategies into everyday activities provides the context for deliberate practice… for the parent and child.
Everyday Activities of Toddlers and Their Families Making Every Moment Count

All families of toddlers spend some time in everyday activities in the following 8 activity categories:

1. **Play with People**
   - Include social pretend play activities. Use props and simple toys to create scenes and stories that are meaningful to children with ASD. This encourages social interaction and play development.

2. **Play with Props**
   - Include simple, everyday objects that can be manipulated and personalized. These activities help children improve their attention and focus.

3. **Mazes and Snacks**
   - Use simple mazes and snacks to encourage children to complete tasks and develop fine motor skills.

4. **Caregiving Activities**
   - Include simple, everyday tasks that can be performed independently. These activities help children develop independence and self-care skills.

5. **Is the child well regulated?**
   - The child is able to manage their emotions and maintain focus.

6. **Is the child socially connected?**
   - The child is able to interact and engage with others.

7. **Is the child responding to bids for interaction?**
   - The child is able to respond to social cues and engage in social interactions.

8. **Is the child flexible?**
   - The child is able to adapt to changes and new situations.

The Lens of Active Engagement:

- **Productive?**
- **Leaking at focus?**
- **Initiating directed communication?**
- **Using generative language?**
The 3 Layer Cake:

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**Supports for a common agenda**
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- Productive roles
- Predictability
- Follow child’s attentional focus

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Mastery

Introduction

1. Library of Everyday Activities
2. Library of Transactional Supports
3. Library of Active Engagement
4. Library of Children and Families
5. Library of Coaching Practices

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Successful implementation requires purposeful matching of “STAGES OF IMPLEMENTATION”:

1. **Exploration**: identify need and determine innovation
2. **Installation**: acquire resources/ prepare implementation
3. **Initial Implementation**: put new practices in place at selected sites with feedback loops and improvement cycles
4. **Full Implementation**: assure practices are used with high fidelity and achieving expected outcomes at all initial sites and begin scale up and sustainability activities
5. **Expansion and Scale-Up**: increase number of sites

ECTA Center: Smith, Hurth, Pletcher, Shaw, Whaley, Peters, & Dunlap, 2014
Strategies for Sustainable System Change

1. Regional Team Supports and Strategies to Engage Users
   - Establish peer partners in your region
   - Encourage intentional discussion groups
   - Identify “Autism Navigator Specialists” to complete Mastery level
   - Support feeling successful

2. Autism Navigator Learner Community
   - Webinars on 1st & 3rd Tuesday of each month to focus on topics identified by users and application of content
   - Annual face-to-face meetings to engage users

3. E-Coaching to Support Fidelity of Implementation
   - Autism Navigator LLC will offer e-coaching to provide feedback and support to teams of Autism Navigator Specialists
   - Video review and feedback on SORF, MAETS, fidelity of implementation, and problem solving on specific cases

Tiered Structure for Professional Development of Autism Navigator Specialists

Tier 1: Complete K&S Course & Join Learner Community
Tier 2: Local Team Leadership Roles in Mastery Course
Tier 3: Certification to Document Implementation Fidelity
Tier 4: Certification as an AN Regional Specialist
Tier 5: Certification as a Master Coach / Global Trainer
Rolling out Autism Navigator in Pennsylvania

Are you providing early intervention services in Pennsylvania? Do you need an outstanding, no-cost, online, video-rich, and practical professional development opportunity for supporting young children with autism? If so, Autism Navigator might be for you!

The Autism Navigator for Early Intervention Providers: Knowledge and Skills is a 30 hour, online course developed by the Florida State University Autism Institute with a commercial value of $625. It integrates the most current research on early identification and early intervention of Autism Spectrum Disorder (ASD) and provides practice based guidance and resources for intervention. It is geared to Infant-Toddler Early Intervention providers, but has relevance for Preschool Early Intervention.

To find out if you are eligible for free PA enrollment through EIITA and how to enroll, read the “FAQs: AN Enrollment PA” and “About the Course” documents available on the EIITA Portal page. Go to: https://www.etta.pa.org/autism, scroll to the Professional Development section on this page, and then click the “Autism Navigator” button to download these documents.

Don’t miss this outstanding professional development opportunity.