

Evaluating Intervention Programs for Preschoolers with Autism Spectrum Disorder

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What do we know about effective early intervention for young children with ASD?

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❖ Use of behavioural methods

- Naturalistic behavioural methods improve generalization of skills Schreibman & Koegel (2005)

❖ Intensity

- Optimal level subject to debate; 20 hours / week often cited e.g., NRC (2001)

❖ Parent involvement

- Promotes both generalization and enhances intensity Steiner et al. (2011)

❖ Quality of supervision is critical Reichow et al. (2012)

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Research & Practice for Persons with Severe Disabilities
2007, Vol. 32, No. 2, 142-153

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TASH

Large Scale Dissemination and Community Implementation of Pivotal Response Treatment: Program Description and Preliminary Data

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J Autism Dev Disord
 DOI 10.1007/s10803-014-2345-x
 ORIGINAL PAPER

2015

Effectiveness of Community-Based Early Intervention Based on Pivotal Response Treatment

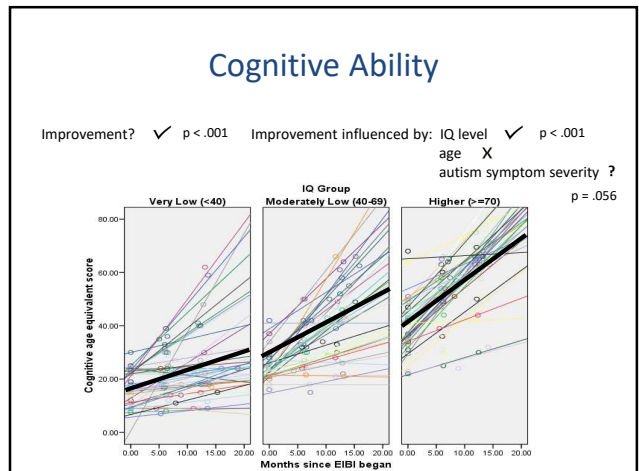
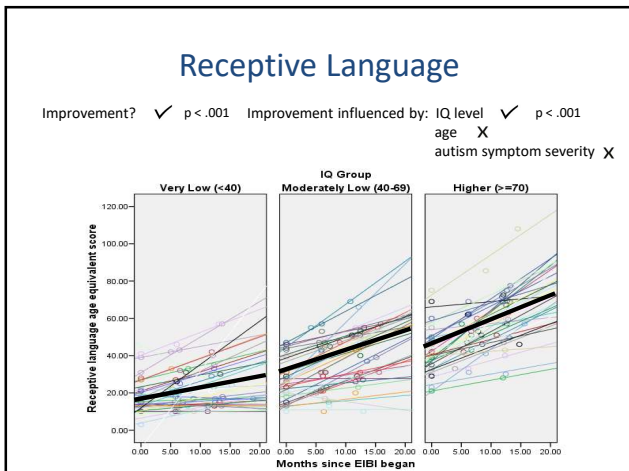
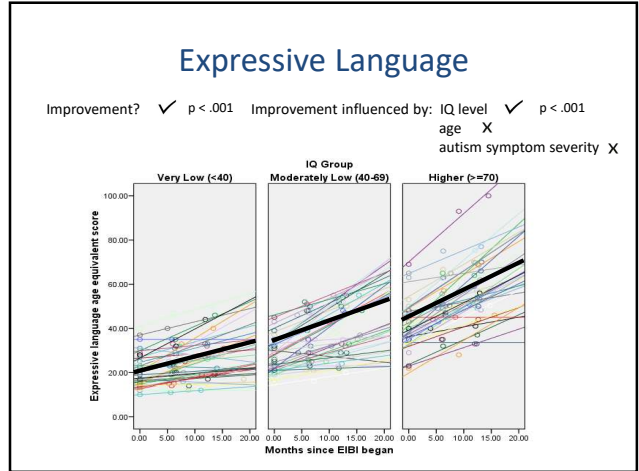
Isabel M. Smith · Helen E. Flanagan · Nancy Garon · Susan E. Bryson

118 children with ASD (86% boys)
 Age: 2 to 6 years (mean = 49 mo)
 IQ (M-P-R): mean = 55

Initial IQ level

- Higher IQ (≥ 70)
- Mod. Low IQ (50-69)
- Very Low IQ (< 40)

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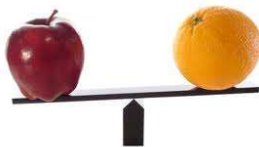
NS EIBI program was *designed* to be cost-effective

Is it?



- *Partnerships for Health System Improvement (PHSI)*
- Researchers, policy decision-makers, knowledge users
- Goal of PHSI funding program: to address questions important for health policy

High need for *comparative* information, on both *effectiveness* and *cost-effectiveness* of ASD interventions



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Preschool Autism Treatment Impact



Impact du traitement de l'autisme préscolaire



Goal: Compare *effectiveness* and *cost-effectiveness* of early intervention programs for children with ASD in two provinces

- Examine children's outcomes after 12 months, and at school entry
- Establish relative costs of achieving those outcomes



EI Program Features

	NB Education & ECD	NS Health & Wellness
Diagnosis	Physician or psychologist	Regional ASD team (including 'provisional' diagnosis)
Start time	Eligible immediately; no wait	Wait list, with school eligibility as priority
Location	Services based at home / daycare / centre	Services based at home / daycare No centre-based services
Treatment team	Agencies (6): Clinical supervisor – Senior therapist – Autism support worker	Provincial (9 teams): Clinical leader – Clinical interventionist – Speech-Language Pathologist – Autism support worker / Program implementer

EI Program Features

	NB	NS
Treatment goals/ Intervention model	Comprehensive, using ABA principles	Pivotal Response Treatment (social communication skills = priority target); PECS & Positive Behaviour Support as appropriate
Parent involvement	Parent involvement in IPP and program decisions	Parent coaching in PRT at start of treatment; boosters
Treatment hours	Up to 20 hours / week from diagnosis until school entry	1 year: Up to 15 hours for 6 mo / 10 hours for 3 mo / 6 hours for 3 mo
School consultation	School transition plan; 1 month of facilitation	Consultation on transition to school


Recruiting Parents

Initial invitation by service providers

Options for participation

	Information shared
A	Research interview and information on child's progress
B	Child's progress information only
C	Opt out (no information shared)

Children's progress before and after intervention



- Adaptive behaviour
- ASD symptoms
- Challenging behaviour

Parental Perceptions

Questionnaires

- Parenting self-efficacy
- Satisfaction with EI service delivery



INTERVIEW

- Services accessed since child's diagnosis of ASD, before and during EI
- Out-of-pocket costs to family



EI Service Providers

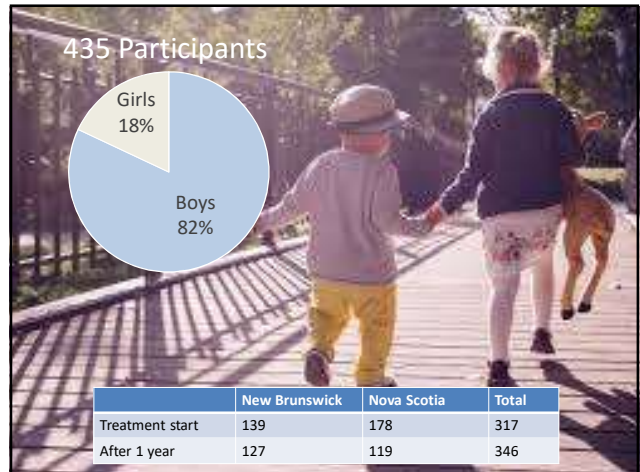
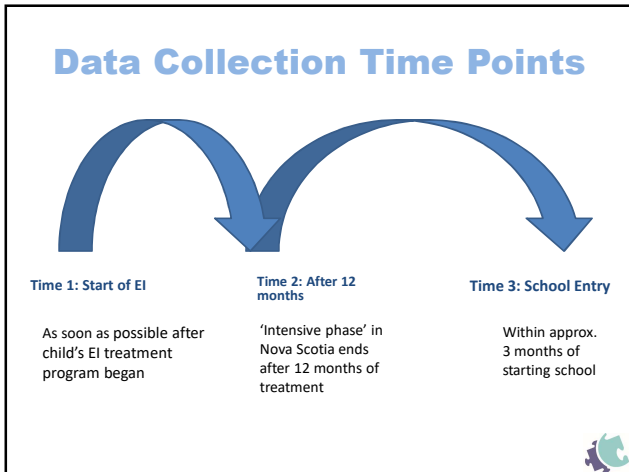
- Treatment logs for children (with parents' consent)
- Own training, experience in ASD intervention, job satisfaction



Agencies / EIBI Teams & Government Partners

Costs of providing EI services





Participants' Ages

of children at treatment start

	New Brunswick	Nova Scotia
Age 2	47	0
Age 3	53	9
Age 4	30	142
Age 5	9	27
Average Age	3 years, 5 months	4 years, 7 months

3 Key Outcomes

- Adaptive Functioning
- ASD Symptom Severity
- Challenging Behaviour

Measures:
Parent ratings

Research Questions

Did children in the two provinces show similar skills / behaviour *when treatment started?*



Did childrens' skills / behaviour *change during treatment?*



Multilinear Mixed Analyses

- Allowed us to include children with partial data
- Controls for age difference between provinces



Adaptive Functioning

Vineland Adaptive Behaviour Scales - 2nd ed.
Children's abilities as shown in everyday settings

Domain	Skill areas
Communication	Understanding communication Using words and sentences Letters, reading, and writing
Socialization	Eating, dressing, personal hygiene Household tasks Community skills
Daily Living Skills	Interacting with others Play skills Coping
Motor Skills	Using hands and fingers Using arms and legs

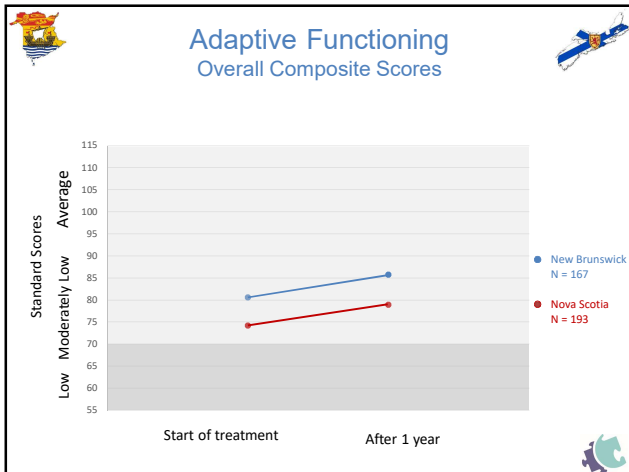


Adaptive Functioning

Standard scores

- Shows skills *compared to same-aged peers*
- Usually stable over time
 - Exactly average at age 3, score = 100
 - Still exactly average at age 4, score = 100
- Scores can be classified into ranges
 - Low, Moderately Low, Average

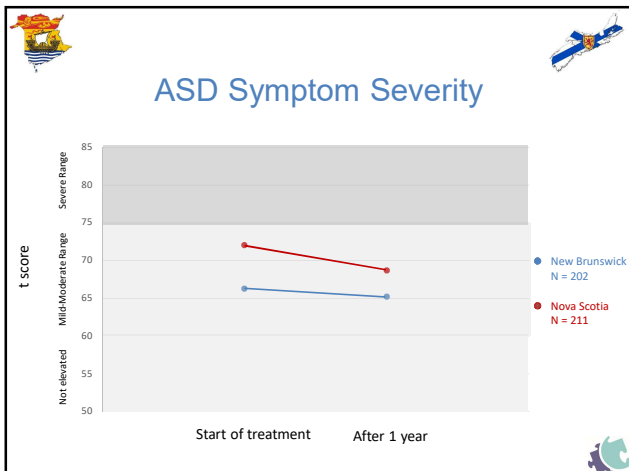




ASD Symptom Severity Social Responsiveness Scale

Presence and severity of ASD symptoms in categories:

- *Social awareness*
- *Social cognition*
- *Social communication*
- *Social motivation*
- *Restricted interests*
- *Repetitive behaviour*



Challenging Behaviour

Frequency and severity of maladaptive behavior:

- *Self harm*
- *Withdrawal*
- *Unusual*
- *Socially offensive*
- *Uncooperative*
- *Aggressive*
- *Destructive*
- *Disruptive*



Summary

Children differ at the start of treatment

New Brunswick children:

- Younger
- Higher adaptive skills
- Less severe ASD symptoms




Summary

Children differ at the start of treatment

Important gains during therapy:


- Communication
- Socialization
- ASD symptom Severity
- Challenging behaviour



Summary

Gains are similar for children in the two provinces

- ❖ Common elements of ASD interventions have important effects that may outweigh differences between models



Parent Questionnaires

- Satisfaction with child's EI program
- Family distress
- Parental self-efficacy

Questionnaires completed August 2013 to March 2016

Satisfaction with EIBI

- 15 questions (each rated on 5-point scale)
- 4 open-ended questions:
 - Impact of program on family stress, most/least helpful aspects of program
- Questionnaires collected at end of intensive year &/or at school entry



Self-Efficacy

“One’s belief in one’s ability to succeed in specific situations or accomplish a task.”

- Albert Bandura



Parental Self-Efficacy

Measured for 3 domains:

- Communication and Social Skills
- Daily Living Skills (e.g., eating, dressing, toileting)
- Challenging Behaviour

7-point scale:

1 = no strategies, not at all confident
7 = many strategies, very confident



Parental Self-Efficacy

For each domain:

1. Have you learned specific strategies to develop your child’s communication and social skills?
2. How often do you use specific strategies you’ve learned to build your child’s communication and social skills?
3. How confident are you in building your child’s communication and social skills?
4. Do you think that the way you try to build your child’s communication and social skills has a positive effect?



EIBI Staff Measures:

i. Background Information (role, training, experience)

ii. Work-related satisfaction

NB - 172
NS - 98



Ratings: 1 to 5

Staff Satisfaction

- Role clarity
- Role respected
- Supervision frequency & quality
- PD opportunities: frequency & quality
- Work environment
- Salary & benefits
- Confidence meeting job requirements
- Confident implementing treatment procedures
- Confident supporting others
- Making a difference for children & families
- Overall job satisfaction

PATI Economic Evaluation

W. Ungar, PhD

1. What types of community, education, health, and social services do families with a child with ASD use?
2. What do these services cost the provinces (NS, NB)? the families?
3. How do types of services used and costs of services differ between NS and NB?
4. Is higher spending in one province associated with better functional outcomes for children?

Data Collection

- Child and family demographics
- Detailed resource use questionnaire administered by telephone to parents of children with ASD in NS and NB

Time 1
From diagnosis to start of EIBI

➔

Time 2
From start of EIBI to 12 months later

Out-of-pocket costs

Most parents purchased additional services or resources for their children, especially *prior to* EIBI

Most common costs:

- behavioural therapy (other than provincial EIBI)
- speech-language pathologist
- additional programs
- educational materials



- Review NB data
- Calculate cost per child for NS and NB
- Compare between NS and NB: resources used and costs (both provincial and family payer perspectives)
- Perform cost-effectiveness analysis to compare difference in costs between provinces to any observed difference in functional outcomes

❖ Participating NB & NS Families

❖ Nova Scotia EIBI Teams

❖ New Brunswick Preschool Autism Program Agencies

Preschool Autism Treatment Impact  Impact du traitement de l'autisme préscolaire

- ❖ Patricia Murray NS Dept of Health & Wellness
- ❖ Wendy Ungar SickKids Hospital / U of Toronto
- ❖ Susan E. Bryson IWK Autism Research Centre
- ❖ Barbara D'Entremont University of New Brunswick
- ❖ Jeff Den Otter NB Dept of Education & Early Childhood Development
- ❖ Helen E. Flanagan IWK Health Centre
- ❖ Nancy Garon Mount Allison University
- ❖ Charlotte Waddell Simon Fraser University
- ❖ Paul McDonnell University of New Brunswick

IWK Autism Research Centre – Noreen Millar & Jennifer Fox
PATI NB – Lyne Fackenthall

Preschool Autism Treatment Impact Impact du traitement de l'autisme préscolaire

Our Funders



Our Research Partners



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