

# Changing the Developmental Landscape for Autism Spectrum Disorders



**Rebecca Landa, Ph.D., CCC-SLP**  
**Towson University**  
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Center for Autism and Related Disorders  
at Kennedy Krieger Institute



# Today... The Children... Our World



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# Today's topics

- Defining autism spectrum disorders
- Developmental landscape of ASD
  - Findings from prospective, longitudinal study
  - Early signs video tutorial
  - Novel means of early detection of risk for ASD
- Effectively educating children with ASD: Opportunity to change the developmental landscape
- Support options for parents, educators, and care-givers





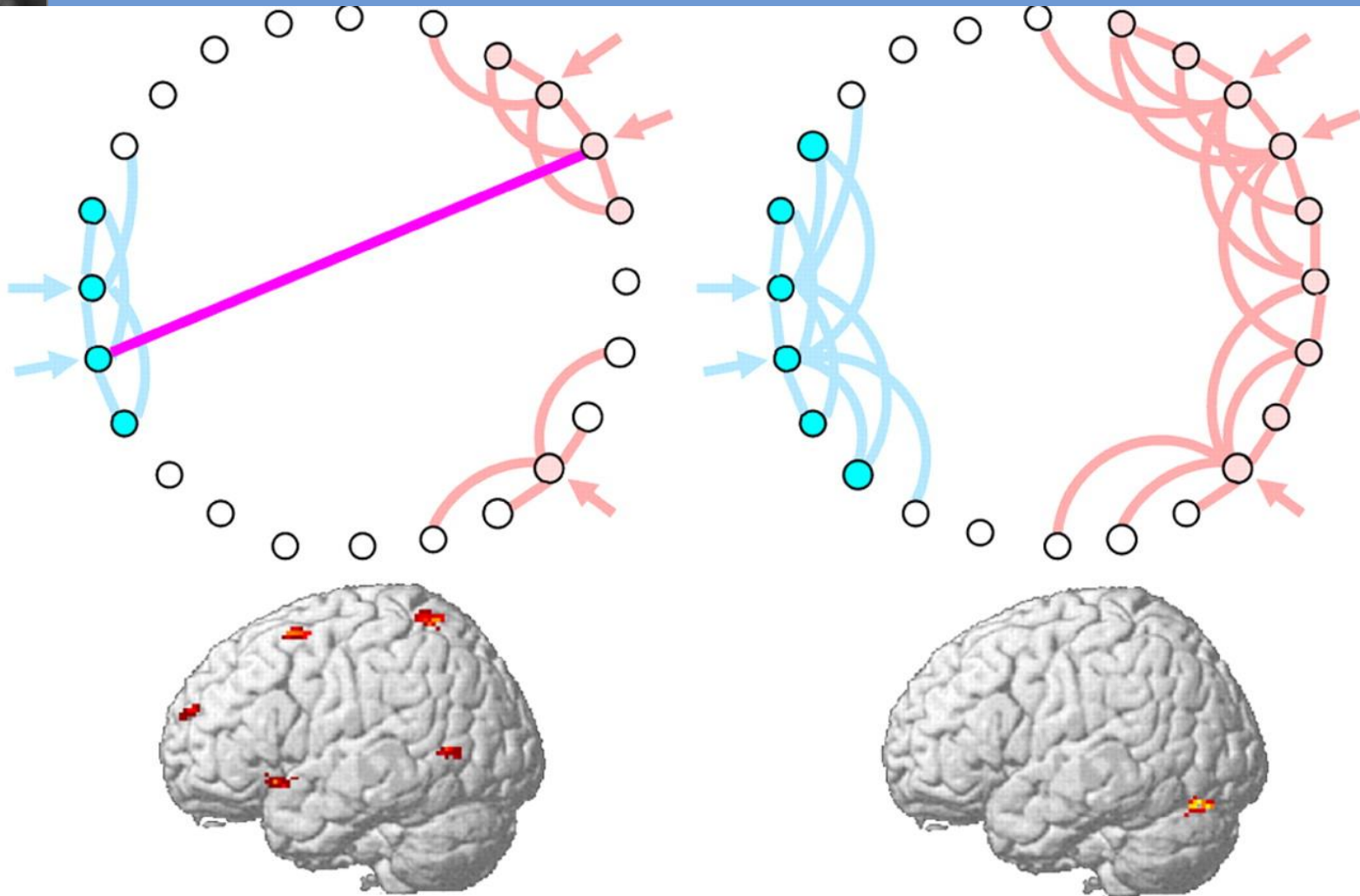
# Insights into Autism Spectrum Disorders



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# Autism: A disconnectivity syndrome



Belmonte M K et al. J. Neurosci. 2004;24:9228-9231



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A black and white photograph showing several hands of different skin tones stacked on top of each other, symbolizing unity and support.

# Defining ASD

- **Social information processing**
  - Understanding nonverbal social cues
  - Understanding others' perspectives
  - Knowing how to reciprocate conversationally, socially
  - Anticipating consequences
  - Modulation of eye contact
  - 'Reading' scenes
- **Communication processing**
  - 'Reading between the lines' (innuendo)
  - Understanding non-literal language
  - Getting the 'gist'
  - Concept formation
  - Linguistic flexibility
  - Narrative – especially re characters' perspectives



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# Defining ASD

- ‘Sticky’ attention
- Unusual and intense interests
- Different sensory processing
- Difficulty with change in routine





# First hand description of experience



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# Accomplishment

“This is about building a life that we want.”

“I got as much strengths from my brain as I did challenges. It has been hard to develop those things [challenge areas] in practice that they [the challenges] would have the meaning that I and others would like them to.”



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## Emotional challenges: Michael Shor, MSW

- One of my tendencies as a person on the autism spectrum is to go through emotional perseveration. I have an emotional response and it keeps going. It is ruthless until you solve it or otherwise dissipate it.
- I have taken cognitive approaches ... the other way is to use mindfulness, mind-body approaches... that has been more helpful. [Need both approaches.] What I do now...say I have a lot of adrenaline in me where I feel it in my body. I go where I notice it. I pay attention to the places in my body where I don't notice much of anything, where I feel blank. I try to let those experiences come and not try to suppress it. I try to let it go through extinction and not reinforcement. I feel one sense of emotion then that clears and I move to another one and another one and eventually that clears.”



# What can a teacher do to help?

## Michael's suggestions:

- Realize that processing is a real issue.
- Student needs to just go through these emotions and cool down.
- Recognize difficulty and reduce difficulty.
- Can you still achieve the objective with less homework?





# Understanding developmental landscape of ASD

- Prospective, longitudinal research
  - Infant siblings of children with ASD (high risk for ASD)
  - Infants with no siblings with ASD (low risk for ASD)
  - Preterm infants (increased risk for developmental delay)

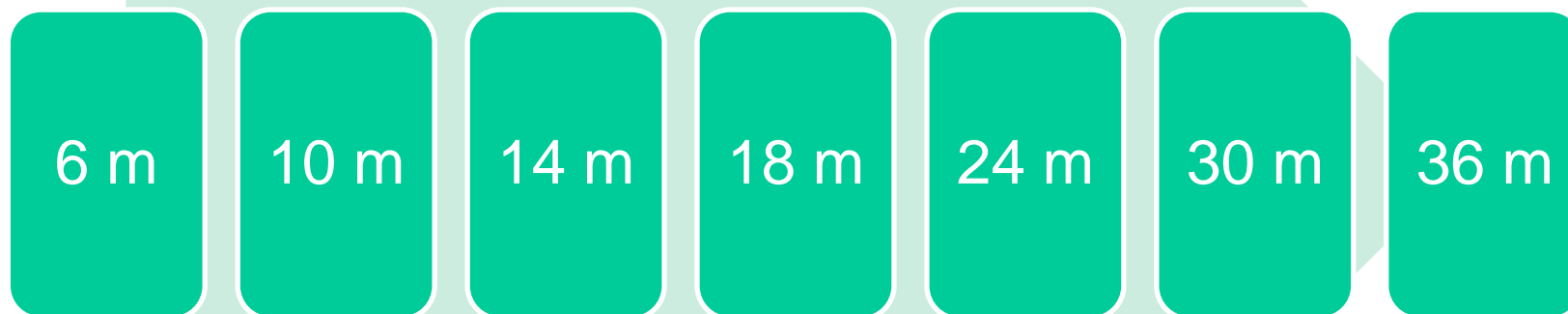




# Assessment ages

High Risk (HR for ASD; other DD)  
Low Risk (LR)

Outcome  
Diagnosis



Rate confidence of presence of  
ASD at each age





# Outcome classifications

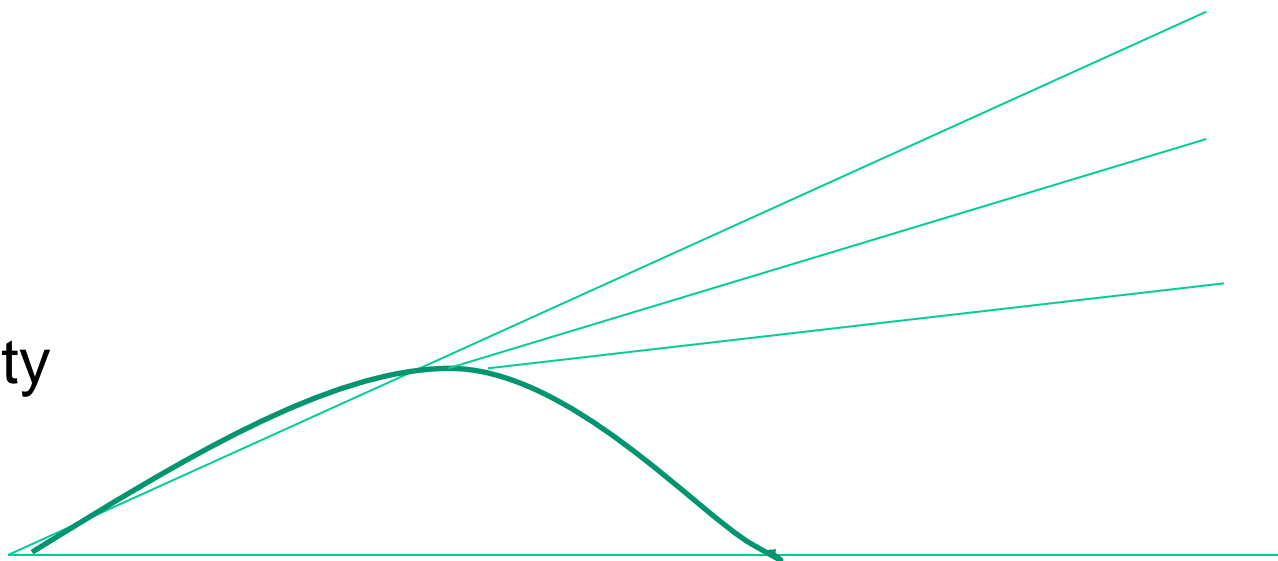


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# Developmental landscape

Degree  
of  
Atypicality



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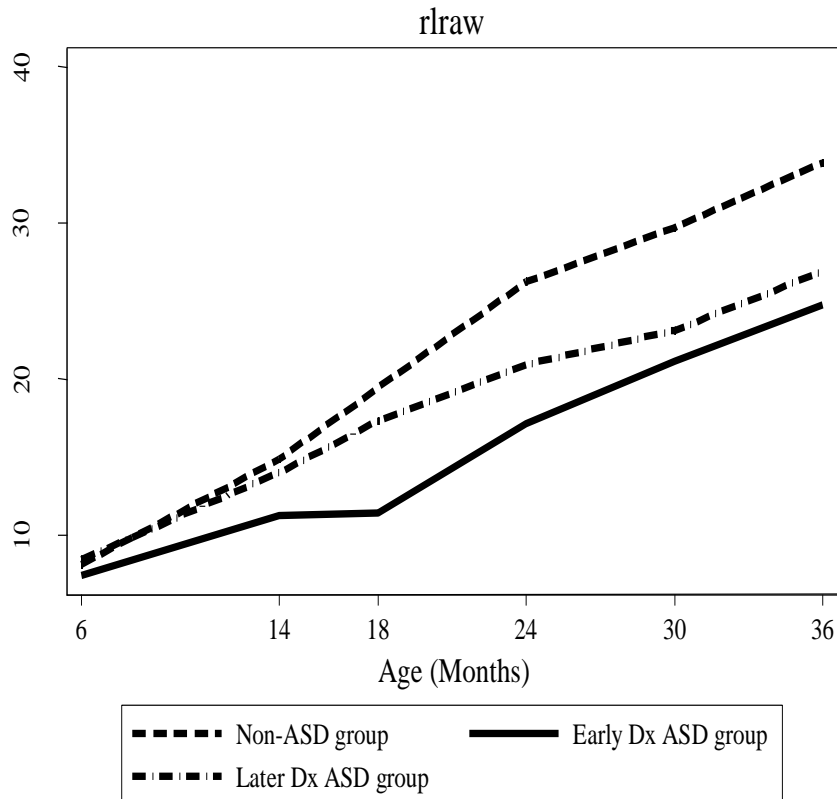
# Patterns

- Most infants later diagnosed with ASD seem pretty typical through mid infancy
  - Except motor (postural control, grasping), possibly sensory, temperament; not ASD specific
- By late infancy, alterations appear in social initiation via gaze (roots of joint attention); also communication delays. Not ASD specific.
- At 14 months, most who go on to have ASD show some sort of delay
  - ~half with ASD are identifiable
  - ~half will show a later onset of ASD signs
  - Some who show ASD signs get ‘better’ and don’t develop ASD





# Plateau in Language Development: Raw scores



- All groups score WNL at 6 months
- Absence of typical language growth spurt in ASD
- Virtual plateau in Early dx group

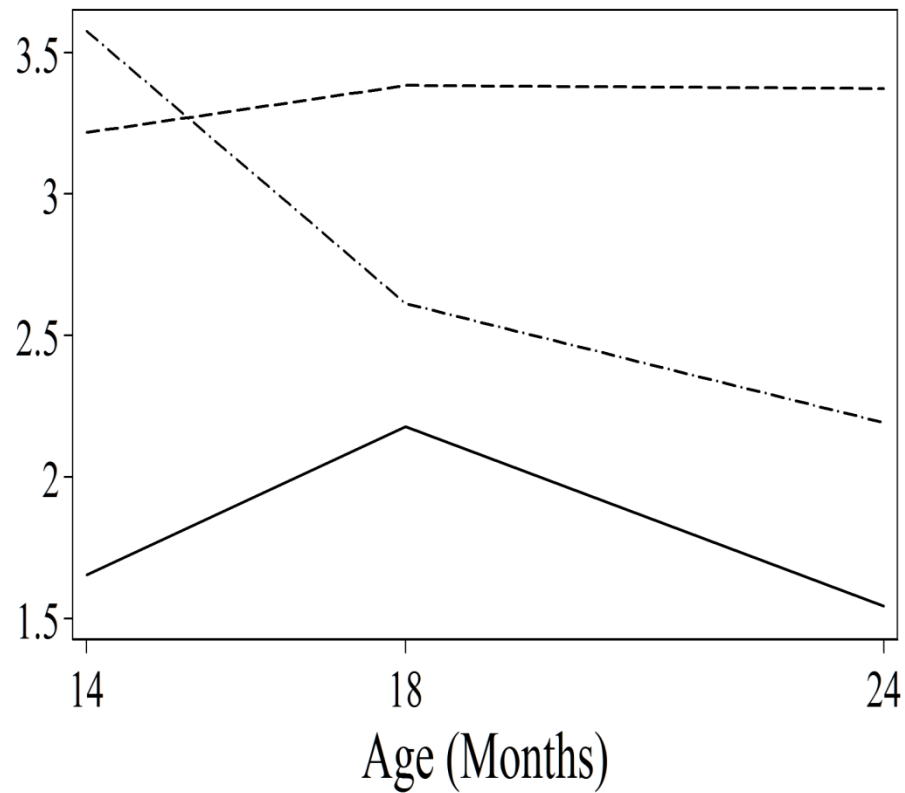
Landa, Gross, Stuart, Faherty. (2013). Child Development





# Frequency

## Shared Positive Affect



Landa, Gross, Stuart, Faherty. 2013. Child Development



A black and white photograph showing several hands of different skin tones stacked on top of each other, symbolizing support and community.

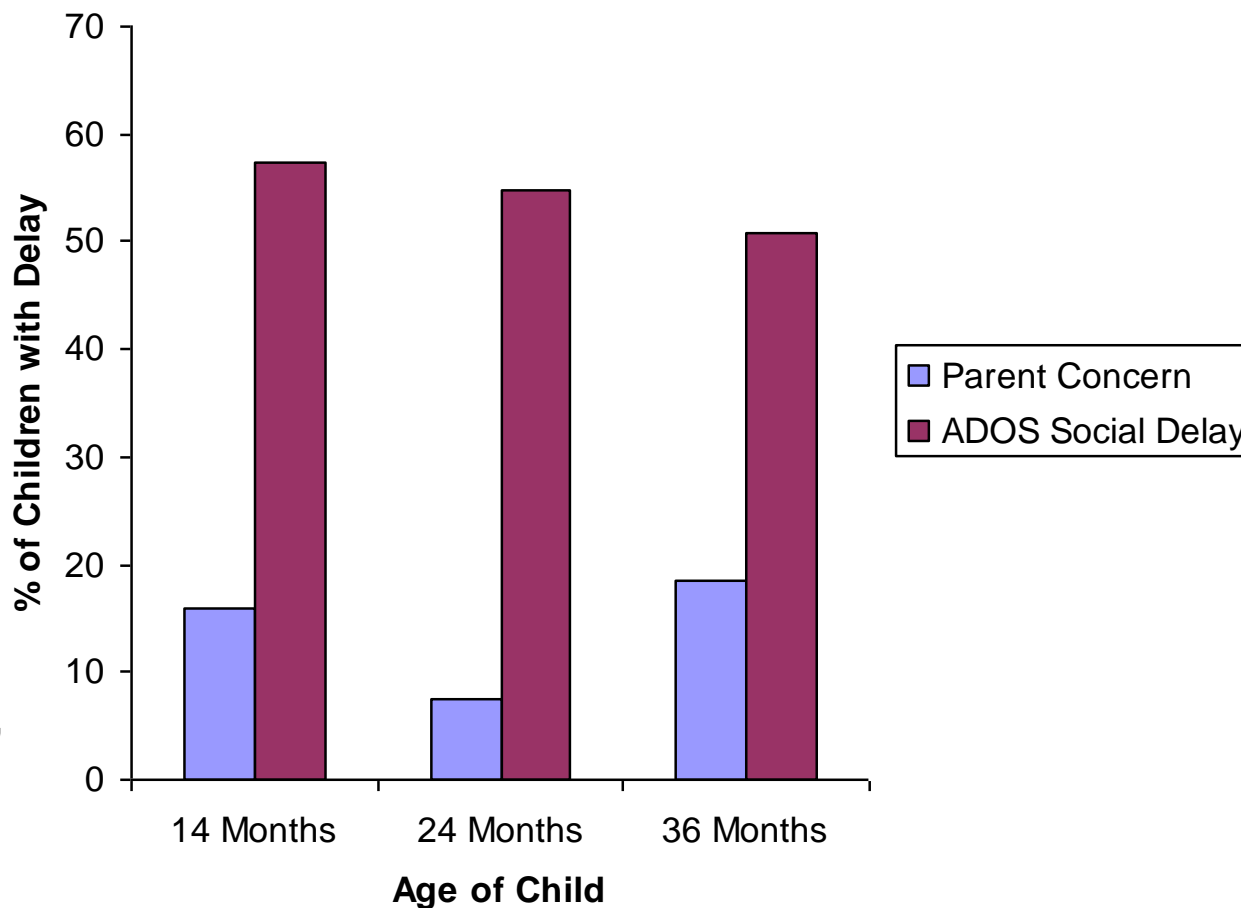
# 14-month Signs of ASD Risk

- Poor eye contact (except when tickled)
- Reduced self-generated social smiling
- Reduced self-generated social bids for others' attention
- Reduced response to others' bids for joint attention
- Infrequent response to name
- Language delay
- May show stereotypic behaviors; odd play





# Sensitivity of parent report: Shows need for direct assessment of child



Hess & Landa,  
2011 JADD





# Dissemination of new knowledge NIH → Parents' Place/AAP → Community

## Bringing the Early Signs of Autism Spectrum Disorders into Focus



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Bringing the Early Signs of Autism Spectrum Disorders Into Focus

KennedyKrieger

210,792

Hi Becky,

Just wanted to let you know that an alumnae of my alma mater, XXX College, used the early signs video over the weekend as she processed some concerns about her son. She reached out to a parents board we are both members of with her concerns, and not fewer than 3 other alums recommended the videos as a tool in addition to making very helpful suggestions for evaluation and discussing the benefits of early intervention. The videos are definitely out there in the wide world doing good work and it was wonderful to see them helping a member of my community so directly.



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[Autism.kennedykrieger.org](http://Autism.kennedykrieger.org)



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# Neuroplasticity – Impact of Early Intervention



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# Early Intervention

- Developmental enrichment for all infant-toddler siblings of children with ASD
- Emphasize:
  - Self-generated action (motor)
  - Highly motivating & rewarding to child (child responsive)
  - Routines-infused (Hebbian principle, predictability)
  - Supporting families – using adult learning models







# Early Achievements Pre-Treatment Data

<b>Domain</b>	<b>Non IS mean (sd) (n=25)</b>	<b>IS mean (sd) (n=24)</b>
<b>Age</b>	<b>28 (2.7)</b>	<b>27 (2.9)</b>
<b>Visual Reception</b>	<b>31 (11.6)</b>	<b>27 (8.8)</b>
<b>Receptive Language</b>	<b>22 (7.2)</b>	<b>24 (9.7)</b>
<b>Expressive Language</b>	<b>24 (7.0)</b>	<b>23 (6.1)</b>

Landa, Holman, O'Neill, & Stuart, 2011, JCPP

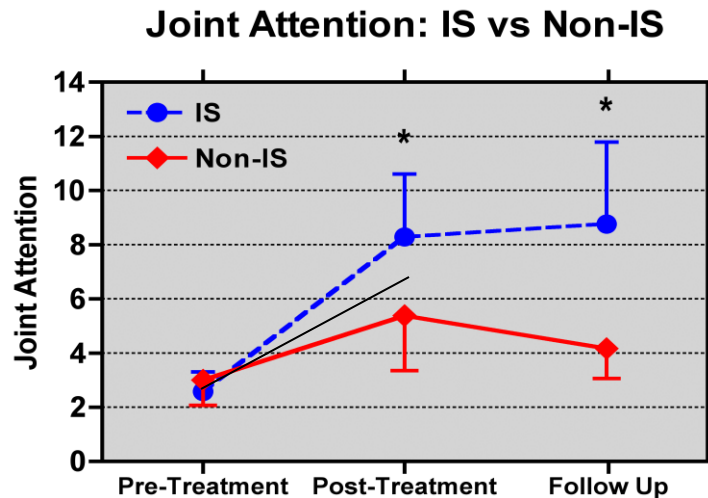


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# 2-Year-Olds: Treatment results

IS group made significant gains in frequency of IJA ( $p < .01$ ) and shared positive affect (CSBS DP) ( $p < .05$ )



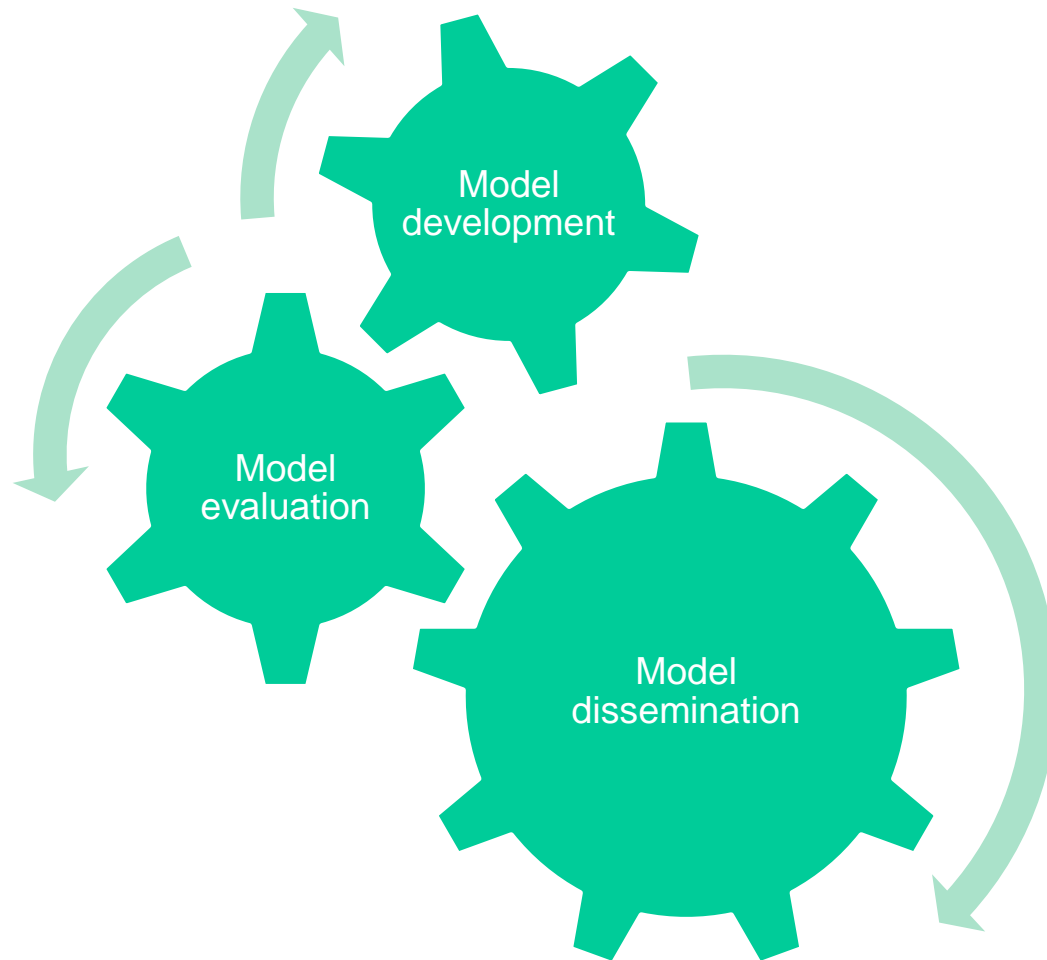
Landa et al.  
2011 JCPP





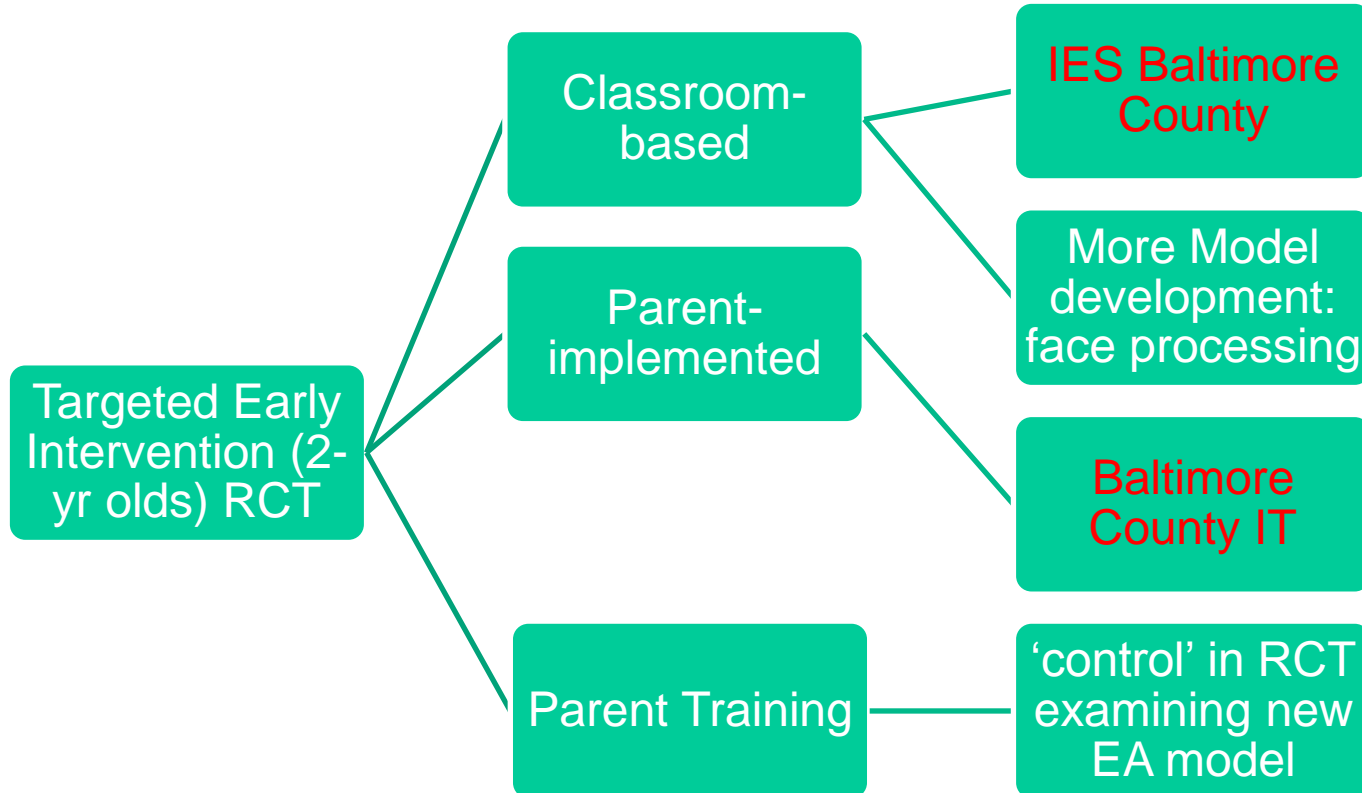



# Innovation and Impact





# Example: Within a specific focus



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# Federally funded studies in public schools and Infants and Toddlers

- Parent-implemented early intervention for children with ASD In low SES minority homes (HRSA AIR-B)
- Developing friendships and social skills in school-based settings (HRSA AIR-B)
- Multiple Baseline Single Subject Design of 5- to 8-year-olds seen for 1 hour per week, four days per week for six months at school (NIH)
- RCT: Minimally verbal 3- to 5-year-olds 5 days per week at school for 6 months (NIH)
- RCT: Infants and Toddlers providers being trained in Evidence-Based Practices in parent-implemented intervention (HRSA)





# Institute of Educational Sciences

- **Early Achievements model** – NIH – designed to target core deficits of ASD in toddlers (Landa et al., 2011; Landa & Kalb, 2012)
- Redesign for feasible and scalable implementation by teachers in public preschools (inclusive and non-inclusive settings)





Schools, Teachers, Children



9<sup>TH</sup> BIENNIAL

# CONFERENCE ON RESEARCH INNOVATIONS IN EARLY INTERVENTION (CRIEI) 2014

*A forum for those involved in all aspects of research  
on children with disabilities, birth to 8 years, and their families*

February 20-22, 2014

Hyatt Regency Mission Bay, San Diego, CA

**CRIEI 2014 PROGRAM COMMITTEE**

CRIEI is a *unique* research meeting



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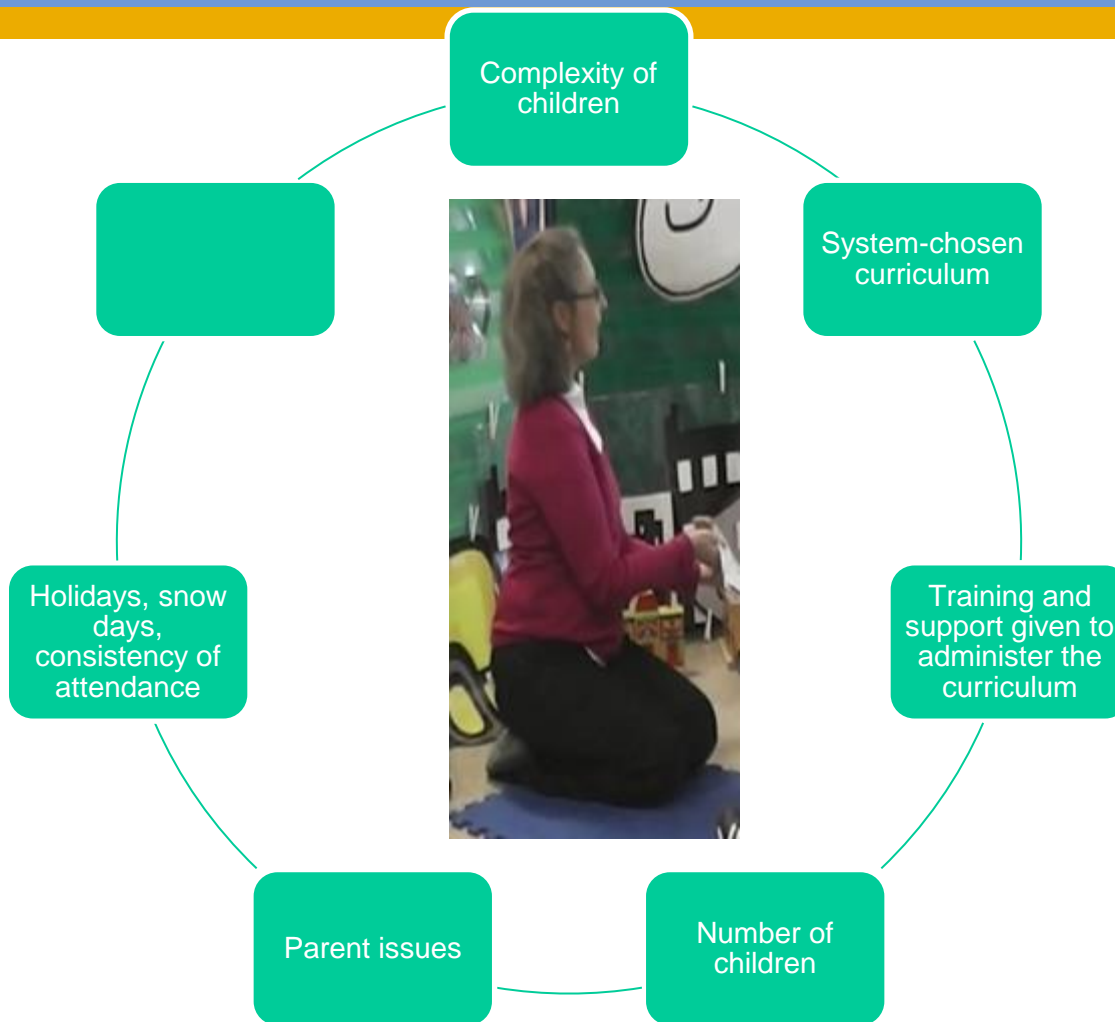
# Findings across groups: Somber news

- Teachers are having great difficulty reaching fidelity on evidence-based instruction measures
- Training teachers to fidelity takes much creativity in the training design
- Intensive training is needed for ‘small’  
Gains in new knowledge/implementation





# Many factors impact a teacher's instructional behavior





# And evidence-based practices must be integrated with fidelity?

Developmentally appropriate goals

Embedded instruction

Motivating and engaging students

Well engineered classroom



EB instructional strategies

Monitoring progress

Differential instruction

Adhere to curriculum





# Achievement



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Our goals are to equip teachers to help children learn more, more effectively, and more efficiently

- Concept development
- Social cognition and peer engagement
- Language and purposeful communication
- Reduce or eliminate maladaptive behavior
- Improve attention to relevant salience
- Generalization of knowledge
- **Learning and reduced need for special education supports**





# Training IAs and teachers

## IES:

- 6 days of didactic and interactive training
- In-classroom coaching with fidelity checks and feedback

## MSDE Technical Assistance:

- Eastern Shore
- Less intensive training





# IES: Training the teachers of Baltimore Co





# Book Sharing Protocol: Easy Delivery of Active ingredients

- ✓ Embodied cognition
- ✓ Concept formation
- ✓ Active engagement
- ✓ Focused attention
- ✓ Planful search
- ✓ Social cognition
- ✓ Language
- ✓ Literacy
- ✓ Much more







# Principles implemented in public schools



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# Children's data

- Significant improvement in all areas



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# September 2014: Started the RCT in Baltimore County Public Schools



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# This is about shaping children's destinies



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# Pearls of Wisdom from Michael Shor

- “After going to a small private school since preschool, I went to school at a public junior high school, where I experienced severe stress and anxiety, as well as depression.”
- “I had very limited relationships with people at school, and I was subject to bullying and social harassment.”
- “...problems with academics and the structure of school work ... were a basis for schools providing work that did not really educate me to the level that matched what I was otherwise capable of.”
  - Variation in developmental profile- at what level is education pitched? At what level do peers ‘match’?



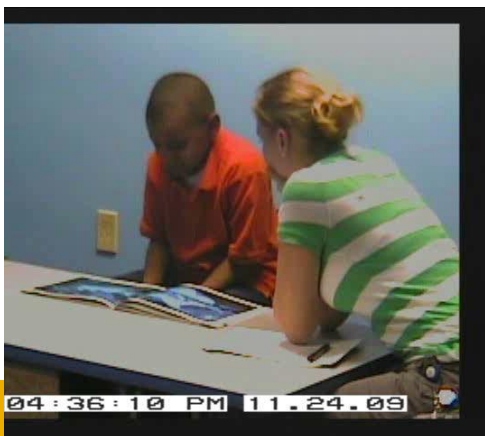
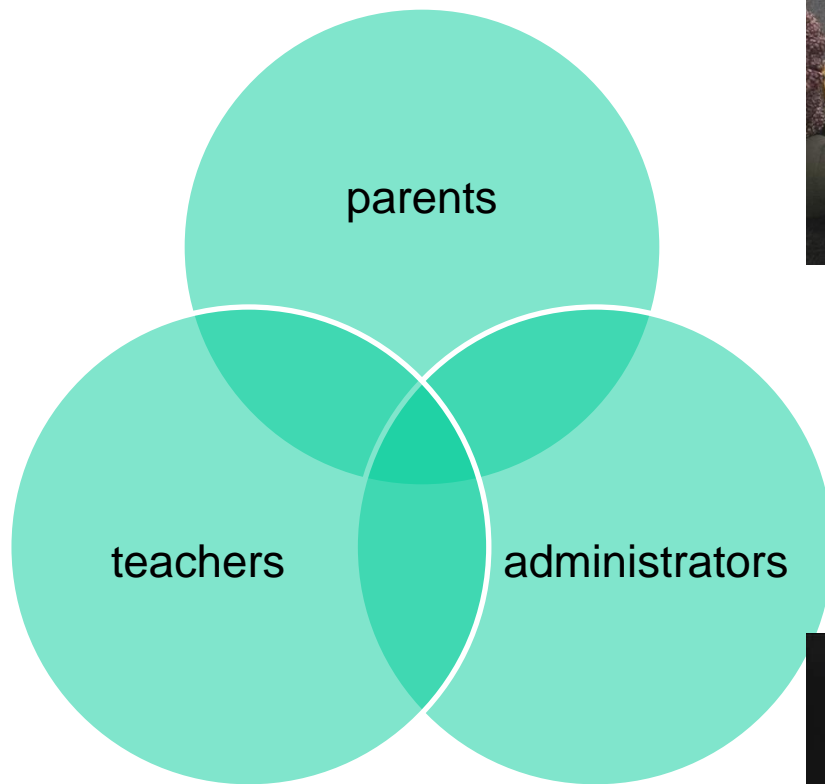


## Michael Shor, MSW

- “I left Junior High because of daily migraines and burnout, due to problems with the school environment.”
- “I was home-schooled, and most of my education occurred through independent study.”



# Supporting parents, teachers, administrators





# The field of education

- Lessons from autism- implications for children with other disabilities
- Teacher training
- Pre-service preparation
- Curriculum – considerations for children with autism
- Implications for a lifetime
  - Quality of life
  - Fulfillment
  - Emotional well-being and sense of self
  - School experience
  - Employability and employment options
  - Behavior







# Change



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# Must be

- Informed
- Strategically planned and implemented
- With GREAT CARE
- Need more bottom up
- Beware of trends
- Science matters but beware of the emperor's new clothes





# Which have implications for

- Resource utilization
- Determining policy
- And \$





# Ready to launch to next level



Together, we are powerful.

We can change the world.





So much more is possible





# Insights: Personal stories

- Ms. Deborah Page: Mother of a son on the spectrum
- Ms. Jamie Haugh: Special Educator, BCPS
- Mr. Tom Whalen: Self Advocate





Thank you



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