

# Evidence That Speaks: Prioritizing Proven Communication Supports for Non-Speaking Autistic Children



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# Disclosures

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OAR, NIH (NICHD, NIDCD), HRSA

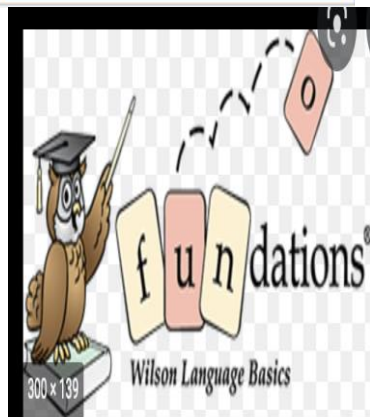
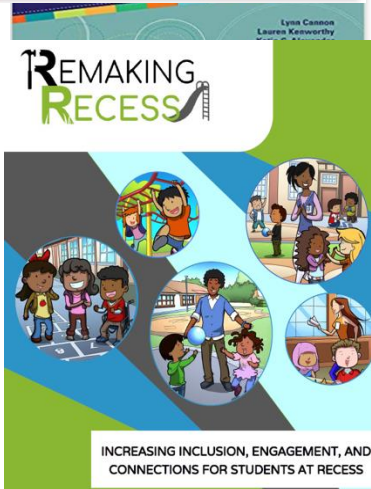
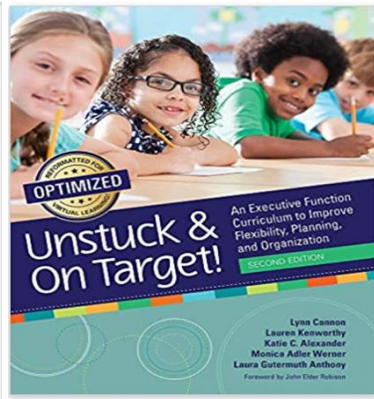
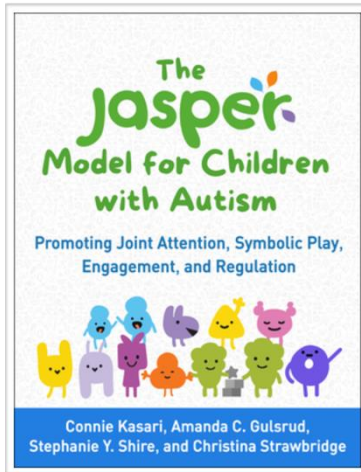
Who are the  
minimally verbal?

Practice  
implications



Intervention  
examples

# We have learned much about early interventions for autistic children over the past 2 decades+



Early interventions likely responsible for improved language outcomes in autism....from 70% minimally verbal entering school in the 1980s to about 30% today (Tager-Flusberg & Kasari, 2013)

More rigorously tested interventions using **randomized controlled trials**

More individuals accessing inclusive education and community settings

More individuals experiencing 'optimal outcomes' (Georgaides & Kasari, 2018, JAMA Pediatrics)

# Recognition of the importance of focusing on malleable intervention targets

## Recognition of the developmental nature of autism

While specific targets change with development and context, nearly all children require intervention on:



Engagement



Imitation



Joint attention



Play

# Importance to Development

**Language\*** by age 5-6 best social outcomes

(Lord, 2000; Rutter, 1978)

**Joint attention** predicts to language

(Kasari et al, 2008; Kasari et al, 2012; Mundy et al., 1986; Mundy, Sigman, & Kasari, 1990)

**Play skills** associated with cognitive abilities

(Kasari et al, 2012)

**Engagement and regulation** necessary for learning

(e.g. Shih et al, 2023; Smith, et al 2009)

\*Speaking in phrases

# Goal of Early Intervention

Reduce the number of children with autism who have significant language impairment by the time they start school!

**LANGUAGE IS THE SINGLE BEST PREDICTOR OF LONG-TERM OUTCOMES**

# We also recognize.....

## **A single intervention not effective for all individuals**

### Heterogeneity in how individuals present

Across a broad range of health, behavior, genetics, and background demographics

### Heterogeneity in response to interventions

Including in the moment changes to health and behavior

# What we know we don't know

## **For whom** does an intervention work?

We are unable to reliably recommend the best intervention for a particular child with confidence.

## **Why** does the intervention provide benefit?

What are the active ingredients (the important components) that make the intervention work?

# What are the core challenges that might trigger intervention?

**Typical 18 mo.-old**



**18 mo.-old with autism**



# Early Core Challenges: Interactions can be difficult



Play can feel frustrating or  
not enjoyable



Difficulty engaging the  
child in an activity

Interventions important for most children  
identified early

Questions are in how we intervene and  
what we intervene on?



# Children less likely represented in research studies

We know the least about children who are most delayed....low DQ, limited language

These children often excluded from research studies

As well as children whose families have less access to information about studies in their community

Early  
Interventions



Importance to  
practice

Intervention  
examples

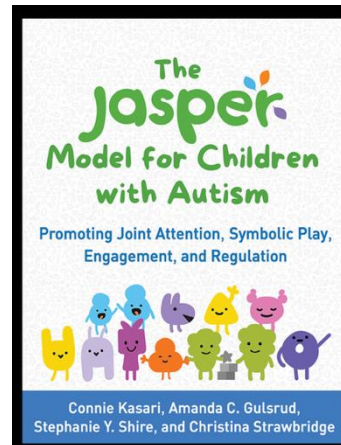
# Modular interventions

To address some of these early developmental and practical concerns:

**modular interventions** conducted in community (schools) may push the field further along

# Example intervention: JASPER

Improving language skills through gestures, play and engagement



# Research Evidence

Journal of C

## Caregiver-Mediated Intervention for Low-Resourced Preschoolers With Autism: An RCT

Journal of Consulting and Clinical Psychology

© 2015 American Psychological Association  
0022-006X/15/\$12.00 http://dx.doi.org/10.1037/a0039080

### Randomized Comparative Efficacy Study of Parent-Mediated Interventions for Toddlers With Autism

Connie Kasari, Amanda Gulsrud, Tanya Paparella,  
Gerhard Helleman, and Kathleen Berry  
University of California Los Angeles

**Objective:** This study compared effects of two parent-mediated interventions on joint engagement outcomes as augmentations of an early intervention program for toddlers with autism spectrum disorder (ASD). **Method:** Participants included 86 toddlers (range 22–36 months) with ASD and their primary caregiver. Caregiver-child dyads were randomized to receive 10 weeks of hands-on parent training in a naturalistic, developmental behavioral intervention (joint attention, symbolic play, engagement and regulation—JASPER) or a parent-only psychoeducational intervention (PEI). Dose was controlled in terms of researcher-parent contact and early intervention services received by the child. **Results:** Results yielded significant effects of the JASPER intervention on the primary outcome of joint engagement. The treatment effect was large (Cohen's  $f^2 = .69$ ) and maintained over the 6-month follow-up. JASPER effects were also found on secondary outcomes of play diversity, highest play level achieved, and generalization to the child's classroom for child-initiated joint engagement. The PEI intervention was found to be effective in reducing parenting stress associated with child characteristics. All secondary effects were generally small to moderate. **Conclusions:** These data highlight the benefit of a brief, targeted, parent-mediated intervention on child outcomes. Future studies may consider the combination of JASPER and PEI treatments for optimal parent and child outcomes. Trial registry no. NCT00999778.

#### What is the public health significance of this article?

To improve outcomes associated with core impairments of toddlers with ASD, this study highlights the impact of direct, hands-on parent coaching of techniques to facilitate child social development. Parents also benefit from expert-delivered educational consultation, as shown by reduced parenting stress, but this treatment is less likely to improve child outcomes.

**Keywords:** autism toddlers, early intervention, parent training, JASPER, parenting stress

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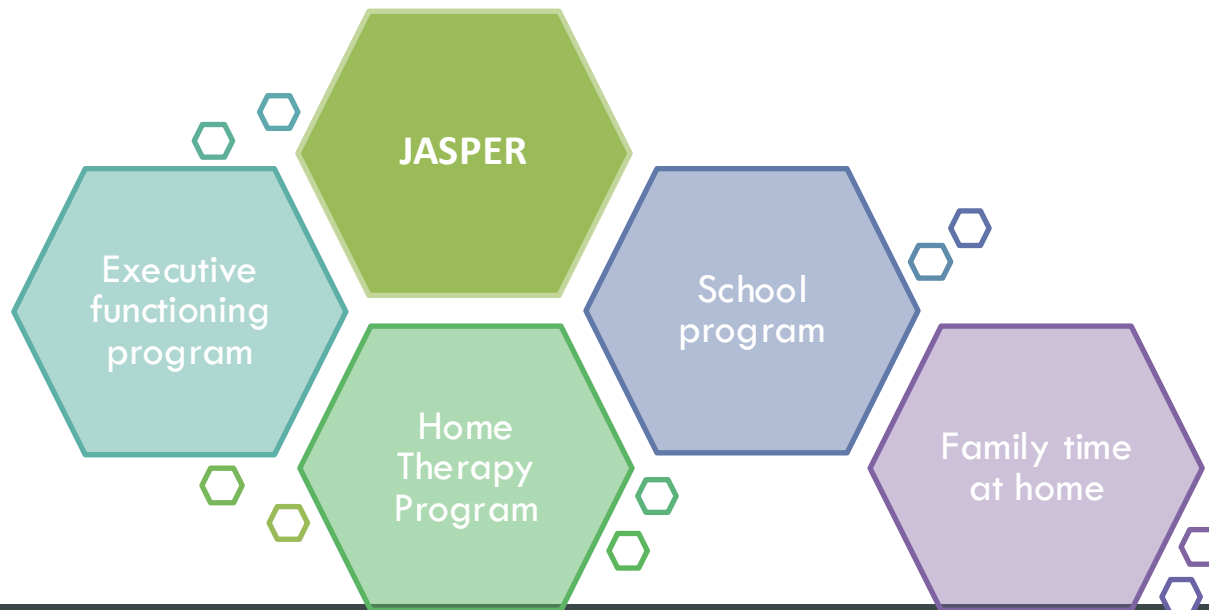
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interventions that teach these skills can improve spoken

# Modular interventions can begin to address questions of for whom and why

JASPER is a **module**---a comprehensive social communication/language intervention that can float inside other interventions, used on its own, or used sequentially.



# Focus on non-speaking, minimally verbal autistic children

DOI: 10.1007/s10803-012-1644-3

BRIEF REPORT

## Preschool Based JASPER Intervention in Minimally Verbal Children with Autism: Pilot RCT

Kelly Stieckles Goods · Eric Ishijima ·  
Ya-Chih Chung · Connie Kasari

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RESEARCH ARTICLE

## Spoken language outcomes in limited language preschoolers with autism and global developmental delay: RCT of early intervention approaches

Connie Kasari<sup>1</sup> | Stephanie Shire<sup>2</sup> | Wendy Shih<sup>1</sup> | Rebecca Landa<sup>3,4</sup> |  
Lynne Levato<sup>5</sup> | Tristram Smith<sup>6</sup>

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## Communication Interventions for Minimally Verbal Children With Autism: A Sequential Multiple Assignment Randomized Trial

Connie Kasari, PhD, Ann Kaiser, PhD, Kelly Goods, PhD, Jennifer Nietfeld, MA,  
Pamela Mathy, PhD, Rebecca Landa, PhD, Susan Murphy, PhD, Daniel Almirall, PhD

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NEW RESEARCH

## Adaptive Intervention for School-Age, Minimally Verbal Children With Autism Spectrum Disorder in the Community: Primary Aim Results

Connie Kasari<sup>a\*</sup>, PhD, Stephanie Shire<sup>b</sup>, PhD, Wendy Shih<sup>a</sup>, DrPH, Ann Kaiser<sup>c</sup>, PhD,  
Catherine Lord<sup>d</sup>, PhD, Lynne Levato<sup>e</sup>, PhD, Tristram Smith<sup>f,g</sup>, PhD, Daniel Almirall<sup>h</sup>, PhD

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DOI: 10.1093/qjz/hnq013

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Tris Smith



Becky Landa

## Traditional ABA (DTT) versus JASPER

- Comparative efficacy study
- 164 autistic 3-4- year- old children
- DQ average 45 (Mullen)
- Majority minority children (60%)
- Interventions delivered in school settings by research staff
- <30 single words at baseline
  - Average 17 words

# Comparison between JASPER and DTT



# Spoken language outcomes in limited language preschoolers with autism and global developmental delay: RCT of early intervention approaches



Tris Smith



Becky Landa

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## Both groups make significant language gains

- Over 6 months of intervention, children made on average 6 months gain on standardized language tests
- 45% of sample moved to word combinations or phrase speech at exit
- A goal was to avoid label of MV at school aged or later Profound Autism

# High Likelihood Profound Autism?

**Definition:** Children with IQ below 50, aged 8 or older, poor adaptive skills (often minimally verbal, non-speaking)

# How early can we predict High Likelihood of Profound Autism (HPA)?

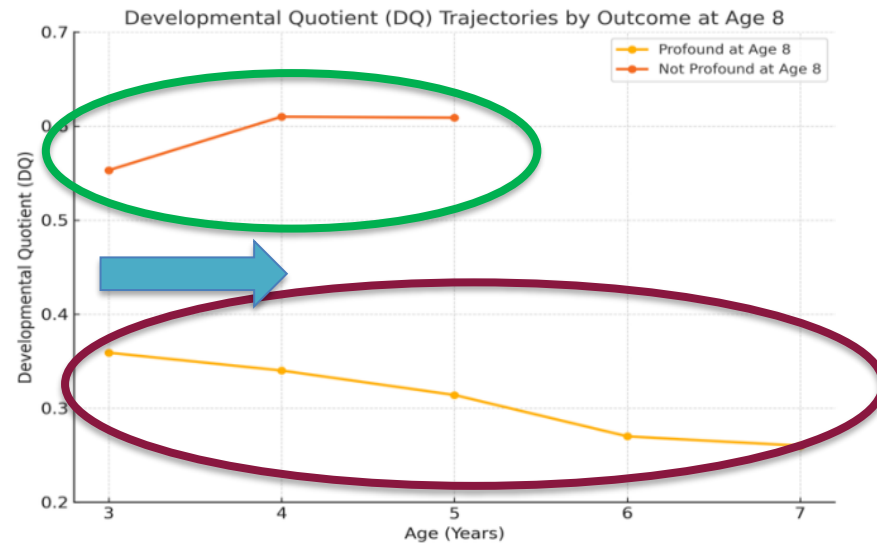
**DQ at various ages—who meets PA criteria?**

DQ: Mean (SD)	DQ at 8 years < 0.5 Profound	DQ at 8 years >=0.5
Age 3	0.359 (0.07)	0.553 (0.14)
Age 4	0.34 (0.06)	0.61 (0.15)
Age 5	0.314 (0.07)	0.609 (0.129)
Age 6	0.27 (0.09)	
Age 7	0.26 (0.09)	

Below 50 across ages predicts PA

>50 not PA at age 8

**N=246 HPA child trajectories**



53% fit criteria of PA at age 8

47% do not, AND 25% of these children had DQ <50 at age 4

# Take aways.....

- DQ does predict later development and especially by age 4, but DQ alone is not perfect
- Early intervention at age 3 may be especially critical for children with DQs below 50
- Understanding the 25% who moved off the trajectory toward PA, and increasing the potential of others is a critical area of future research

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**Heterogeneity in response to interventions**

Methodologies are needed to **personalize,**  
**tailor and target** interventions

Address for whom the intervention works, and  
why.....

# Next questions

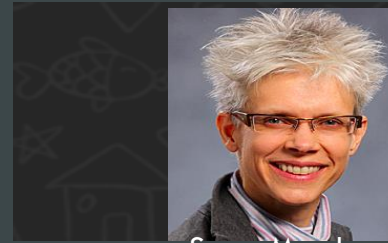
Can we improve on these trajectories with children who are already at school age, but still minimally verbal (fewer than 20 words)?

# Personalization of interventions

Sequence of interventions with adaptations  
based on individual response

# Adaptive Intervention designs systematize clinical practice

**DEFINITION:** A sequence of decision rules that specify whether, how, when (timing) and based on which measures, to alter the dosage (duration, frequency or amount), type or delivery of treatment(s) at decision stages in the course of care.



Susan Murphy



Danny Amirall

# Sequential Multiple Assignment Randomized Trial

# Intervention for minimally verbal children

Primary Question: Would AAC support spoken language?

61 children aged 5 to 8 years

Minimally verbal (fewer than 20 functional words)

Had already received 2 years of intensive early intervention

ALL received JASPER plus a spoken language intervention (EMT)

HALF randomized to also receive Speech Generating Device (iPad)





Ann Kaiser

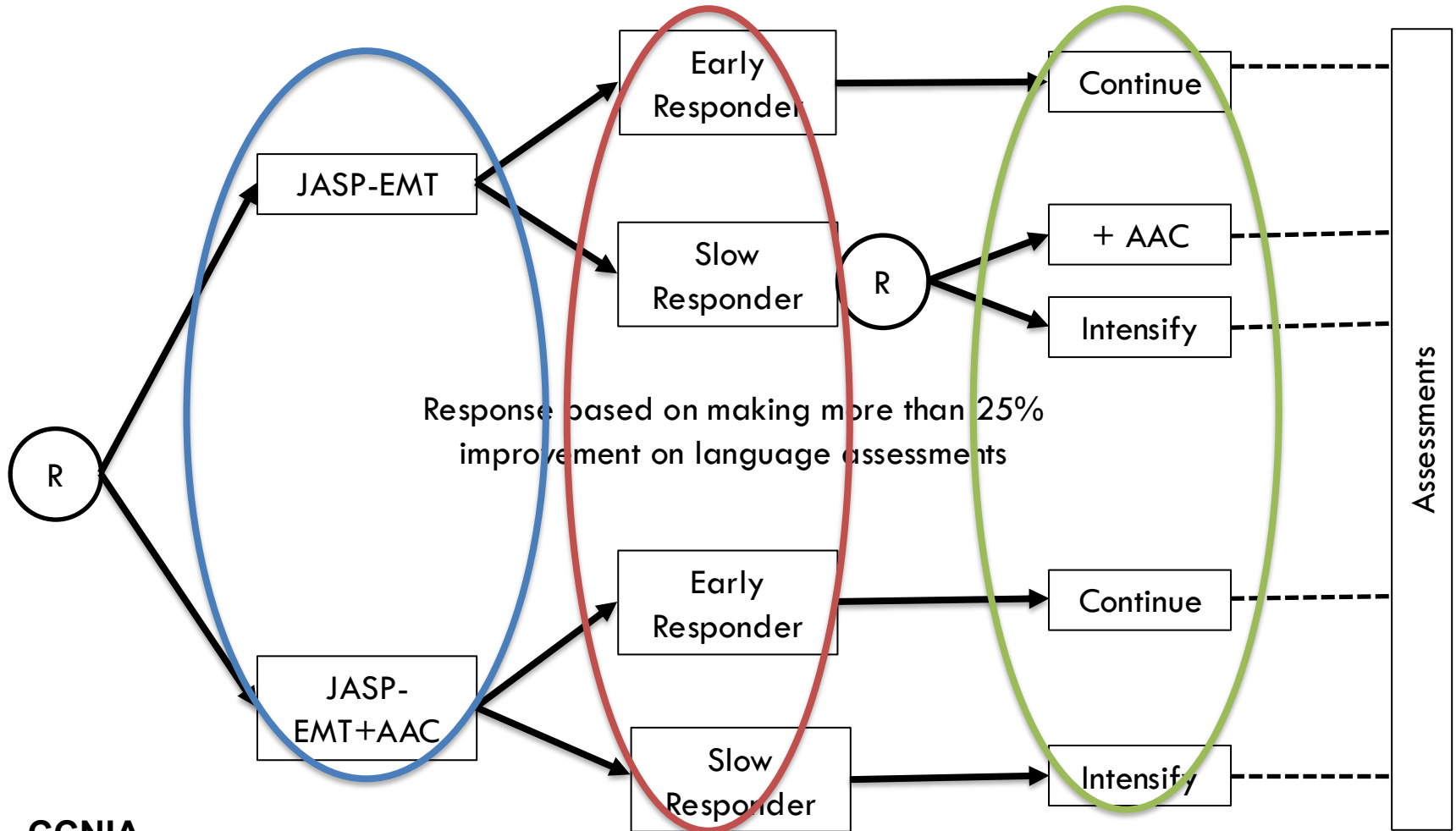


Becky Landa

Week 0

Week 12

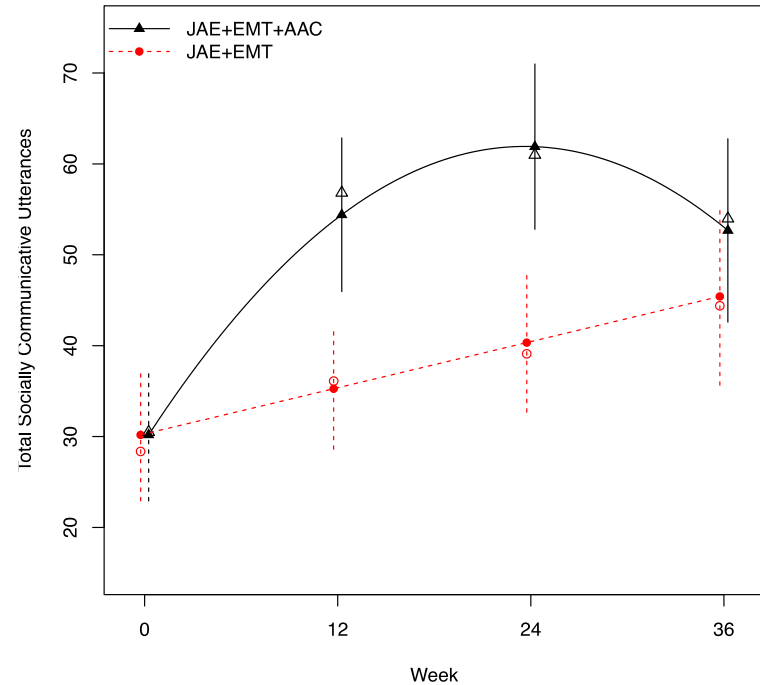
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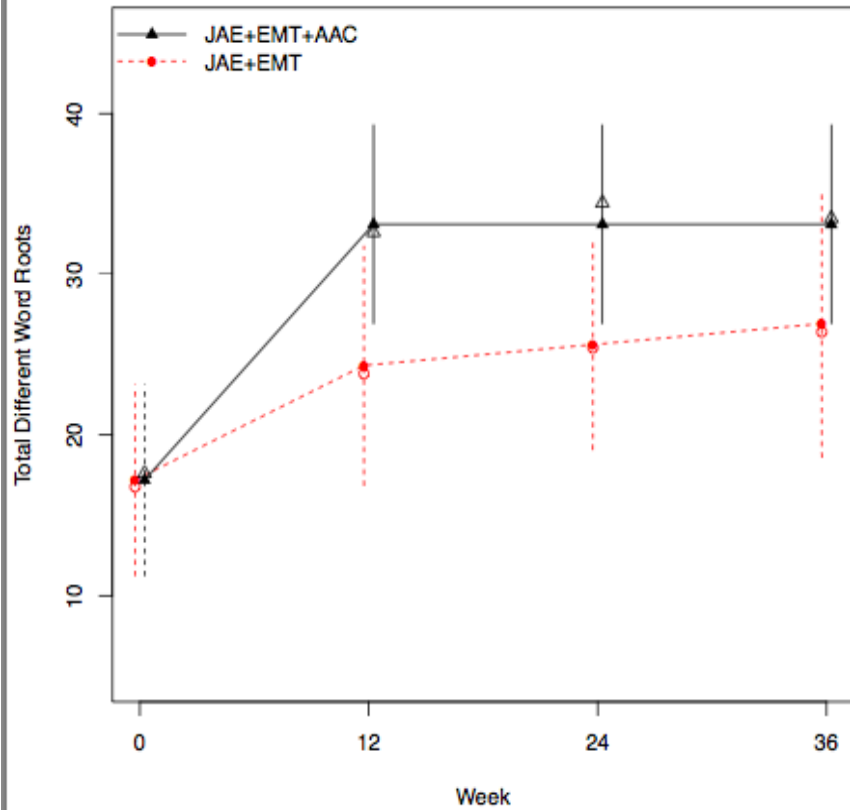
# Minimally verbal and meaningful outcomes: Socially communicative utterances



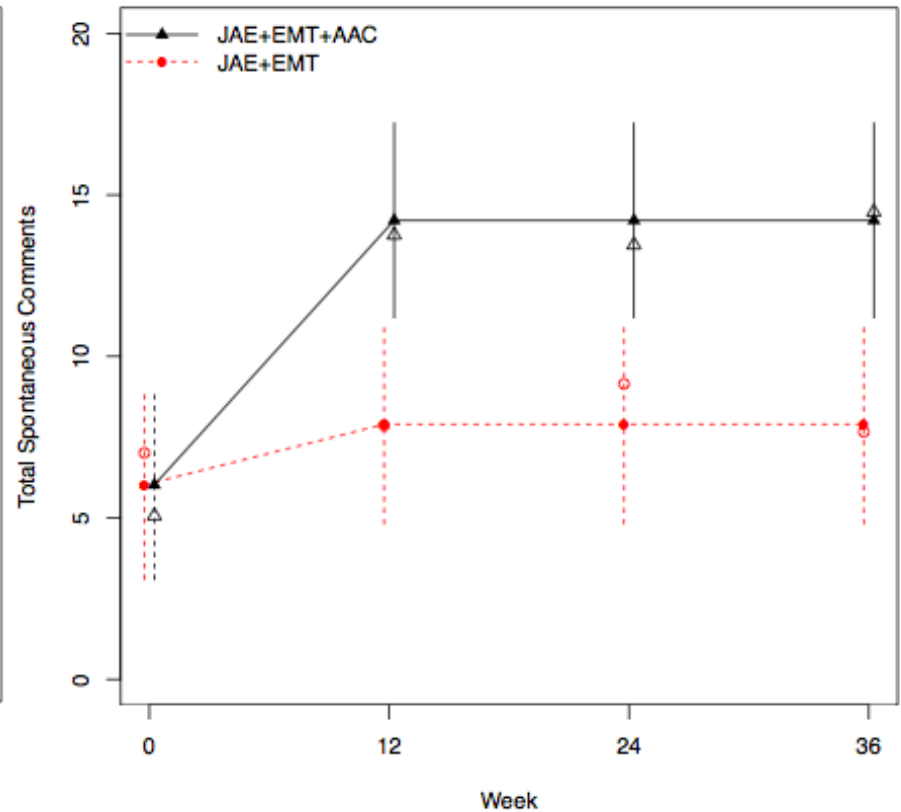
Socially communicative utterances



# Novel words



# Comments

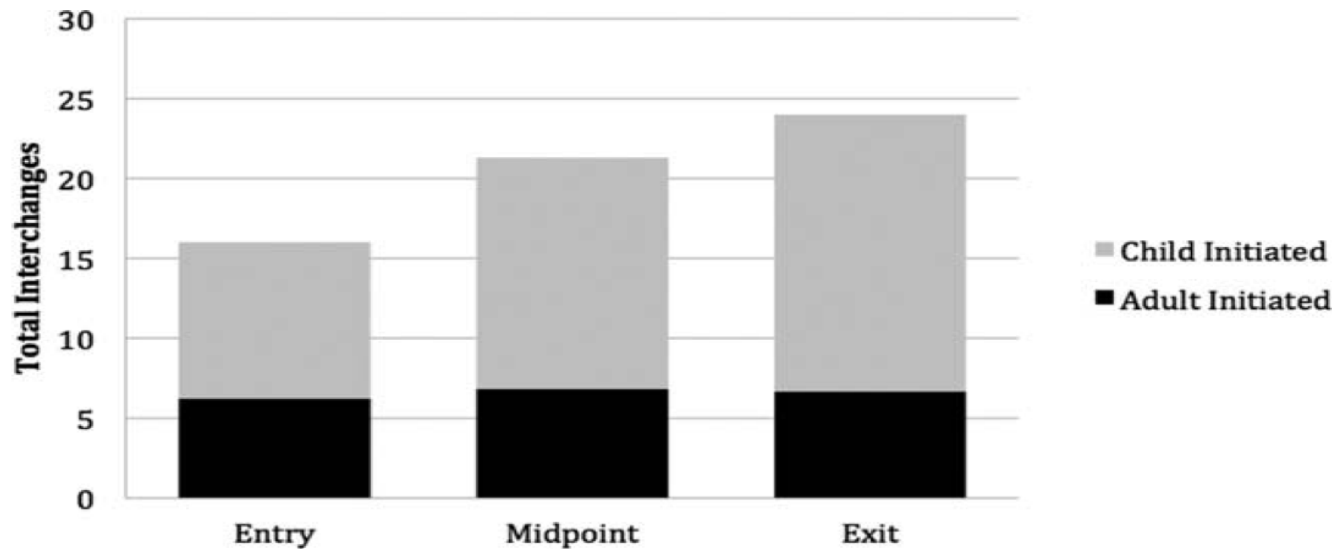


## Communication Growth in Minimally Verbal Children with ASD: The Importance of Interaction

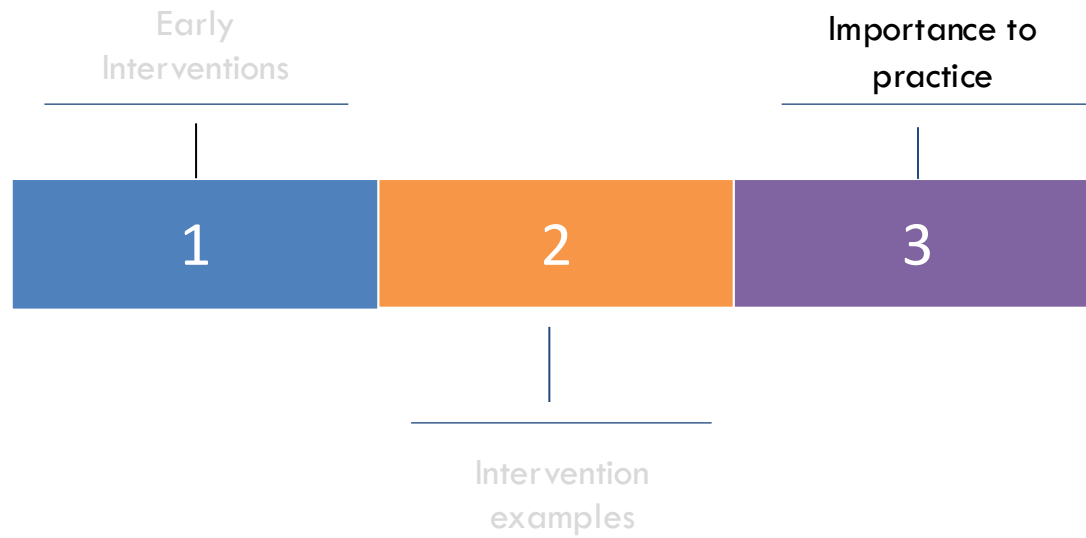
Charlotte DiStefano, Wendy Shih, Ann Kaiser, Rebecca Landa, and Connie Kasari



Charlotte  
DiStefano



**Figure 2.** Child- and adult-initiated interchanges. The number of interchanges initiated by child and adult are presented for entry, (month 0), midpoint (month 3), and exit (month 6).



# We now regularly add AAC into intervention with younger children

Age 3—NO WORDS, NO BABBLE



Day 1



Day 2



2 weeks later



Age 7

# Some children make fast progress, use AAC as transition to speech

Start of intervention



End of intervention--6  
Months



Halfway through  
intervention



12 months from start



# Summary

## We have learned:

- We can improve critical social communication and language outcomes for very developmentally delayed autistic children
  - These early skills should be direct targets of early intervention
- It matters what and how we target these skills: AAC assists in the transition to spoken language AND provides access to communication
- Research methods matter.... we need to pay close attention to how we are conducting research for rigor, replication and reach in order to inform practice
- Future: Personalizing intervention and learning from application of new designs testing various active ingredients

# APPRECIATION...



**Autism Intervention Research  
Network On Behavioral Health**

