



Evidence and Promising New Trends in Early Intervention

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Early Intervention: What do we know?

- Comprehensive interventions
 - Covers all areas of development (core deficits?)
- Targeted interventions
 - Focused on specific issue/domain of development (core deficits?)
- Who is left out?
 - Studies not including.....
- What is new?

Early Intervention: Comprehensive Interventions

- Comprehensive interventions are generally high dose
 - In hours per week and in length, often years
- Active ingredients?
 - Dose—recommended 25 hrs per week
 - Approach—some aspect of ABA
 - Content?
 - Delivery
- Outcomes
 - IQ
 - Adaptive behavior, Language, School placement
 - Diagnosis





Early Intervention 'Comprehensive' Studies RCTs

Different methods, dose, delivery, outcome
measures?

Author	N/CAs	X=IQ/ELA	Treatment	Outcomes- EXP TX
Dawson, Rogers 2009	48 (23 mo)	61 (13 mo)	25 hrs wkly	↑ 17 pts IQ, 16 mo ↑ ELA in 2 yrs
Lovaas, 1987	38 (32 mo)	53	10 vs 40 hrs wk	↑ IQ 24 pts in best outcome
Smith et al, 2000	28 (36 mo)	51 (15 mo)	DDT 25 hrs	↑ 16 pts IQ in 2+ yrs

Comprehensive Interventions

- Some (half?) of children do extremely well...improving 17-25 points in IQ over 2 years
- Studies EXCLUDE children who are lowest functioning (< 35 IQ; < 12 months mental age)
- Dose seems to matter....more is better
- Approach typically ABA
- Delivery (therapist, teacher, school, home)
- Pre-treatment characteristics matter
 - IQ>50, echolalia, toy play

Comprehensive Interventions

- *No studies* have compared one approach to another
 - *Cannot say one approach is superior to another*
- Other popular interventions –no RCTs
 - PRT, DIR, RDI
 - Evidence is single subject design or case studies
- Most are small scale but long lasting
 - 2+ years
 - Much can happen in this time period

Targeted Interventions

- Focus on a specific issue or developmental problem
- Often added in to services
 - Parent training
 - Therapist driven
- Many single subject designs
 - Reflects the individual nature of issue
 - Test of novel, or innovative intervention practice
 - These need to be then tested in larger scale studies (often they are not)
- Recent focus on core deficits (group RCTs and single subject designs)

Importance of Focusing on Core Deficits

- What are these core problems?
 - Language
 - Social skills
 - Social communication (e.g., joint attention, imitation)
- Core deficits lead one to an autism specific intervention
 - Otherwise just general early intervention is appropriate
 - Interventions for ASD should lead to improvement in core deficits
- Outcome measures of current studies rarely report change in core deficits
- Targeted interventions can lead to modules that will transform practice.....

What are the core problems? Social-Communication

Joint Attention

- Develops in infants between 6 and 14 months
- Consists of several skills used to share an object or event with another
- Can be *responding* to JA in another, or *initiating* JA to someone
- Distinguishes autism from other developmental disorders

Assessment of JA



Confusion over Definitions

- Behavior regulation (protoimperative gestures) DIFFER from joint attention (protodeclarative gestures) in function but not always form
- Most studies have limited their focus on JA to a single skill
 - Particularly true of single subject designs, and using ABA methods
- Method for teaching attempts to miss the social nature of the gesture, and the meaning of the construct

Other developmental tasks: Imitation and play



Early Intervention Targeted Interventions: "Added-in" Studies---RCTs

Different methods, dose, delivery, outcome measures

Author	N/CAs	X=IQ/ELA	Treatment	Outcomes-Language
Aldred et al 2004	28 (48 mo)	NA/ ELA parent report	Low intensity added in to existing services; monthly	↑ 14 mo Vineland (1 yr)
Drew et al 2002	24 (21-24 mo)	66-88 (11 of control = 0 words)	Low intensity Parent training 32 mo	↑ Words - parent report
Jocelyn et al, 1998	35 (44 mo)	58 (25 mo)	12 wk--low intensity added in to day care services	↑ 5 mo ELA
Kasari et al, 2006; 2008	58 (43 mo)	58 (21 mo)	30 minutes daily inserted into ABA 30 hrs/wk--5-6 wks	↑ 15-17 mo over 12 mo
Yoder & Stone, 2006	35 (33 mo)	55	30/wk 20 min for 6 mo.	NS Grp differences; moderator effects

Core Deficit Focus—UCLA study



Joint Attention Initiations:

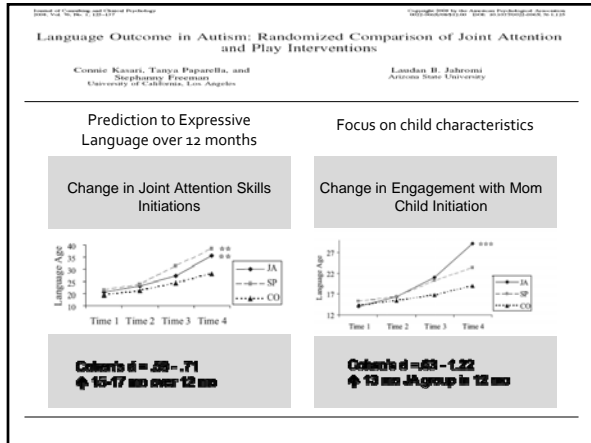
← Point to share,

Show →



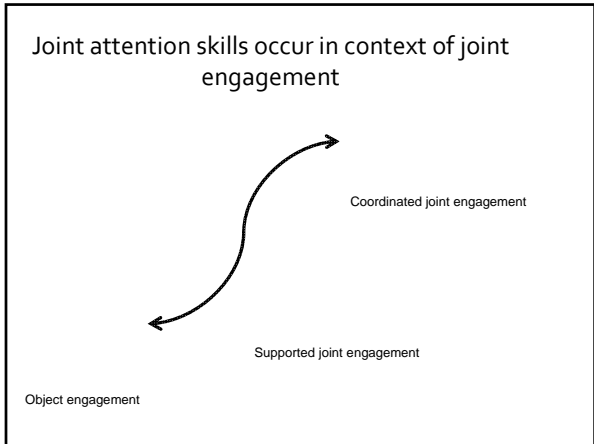
Symbolic Play →





What we learned.....

- That adding in a module on core deficits (joint attention and symbolic play) greatly enhanced language outcomes
- Particularly true for children with minimal language to begin with.....



Parent Mediated Treatment Model

- 10 modules
 - Generally one topic per week
 - Individualized to dyad—visual handouts
 - Each session involved parent coaching, practiced interactions, and videotaping of free play session
 - Therapist scored involvement -buy-in rating (alliance)
- Homework
 - Parents encouraged to bring strategies into typical daily routine
 - Asked to fill out diary each week
 - Extent to which strategies used, opinion about how the intervention was going

Engagement is foundational

Baseline—child is not yet talking (22 mo CA; 8 mo LA)	Parent Mediated interaction after 20 sessions over 10 weeks
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Engagement is foundational

Baseline—child is verbal (30 mo CA; 30 mo MA)

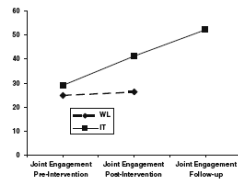
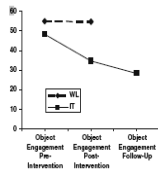
Parent Mediated interaction after 20 sessions over 10 weeks

Randomized Controlled Caregiver Mediated Joint Engagement Intervention for Toddlers with Autism

Cassie Kautz · Amanda C. Colwell · Cassie Wang · Susan Kwon · Jill Leach

Decrease in Object Focused

Increase in Joint Engagement



Parent Mediated Intervention

Difference between parent education and parent mediated TX

- Most studies are parent education
 - HANEN
 - PACT
- Hands on coaching from interventionist, parent practice matters
- Results moderated by parental buy in

Why is direct instruction necessary for parent mediated models?

Limited evidence of change in child outcomes from parent education models

Change in parental responsiveness

From Parents to Teachers

- Direct instruction, hands-on interventions are effective for helping parents
- What about teachers and school settings?
 - How can we help teachers incorporate a focus on core deficits in curricula that typically do not include these areas of development?

Teacher Intervention

Lawton, 2010

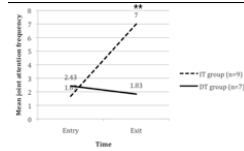
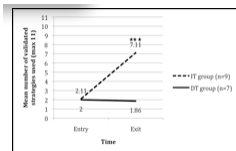
Teacher pre
intervention

Teacher at end of 12
sessions, 6 wks

Teacher Intervention

Teacher use of
validated strategies

Child initiation of Joint
Attention in Class



Who Is Left Out?
Underserved and Underrepresented

**Racial/Ethnic Disparities in the Identification of
Children With Autism Spectrum Disorders**

David S. Mandell, ScD, Lisa D. Wiggins, MS, Laura Arnstein Carpenter, PhD, BCBA, Julie Daniels, PhD, Carolyn DiGiuseppe, MD, PhD, Maureen S. Durkin, PhD, DPH, Ellen Garelli, EdD, Michael J. Marrier, MA, BCBA, Joyce S. Nicholas, PhD, Jennifer A. Pinto-Martin, PhD, Paul T. Shattuck, PhD, Kathleen C. Thomas, PhD, Marilyn Yeargin-Allsopp, MD, and Russell S. Riley, PhD

- Ethnic minority children not included in most studies
- Later identification and access to intervention
- Are current interventions as effective with different cultures?

Autism Intervention Research Network for
Behavioral Health (AIR-B)

- Focus on underserved and underrepresented populations
- Low income families
- Geographical considerations
- Cultural considerations

Who Is Left Out?
Underserved and Underrepresented

**Speech Acquisition in Older Nonverbal Individuals
With Autism**

A Review of Features, Methods, and Prognosis

Erin Pickett, MA, CCC-SLP,* Olivia Pullara, MA,* Jessica O'Grady, MEd,*
and Barry Gordon, MD, PhD*†

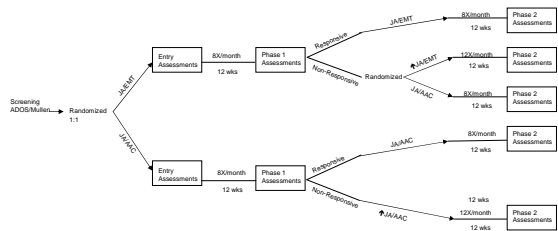
- Quarter to half of children still nonverbal at age 5 years
- Review suggests individuals with ASD can learn to speak after age 5
 - Most between 5-7 years (none older than 13 years)
 - Most with IQs above 50
 - Clear not enough description in most studies

CCNIA Intervention for Nonverbal Children with ASD

- 5-8 year old children
- Not 'talking' after 2 years of intensive intervention
- Alternating treatment design
 - JA/JE and EMT
 - JA/JE and AAC



Sequential Multiple Assignment Randomization Trial (SMART)



Screening	Entry Assessments	Phase 1 decisions	Outcomes
1. ADOS (ADI) 2. Nonverbal IQ 3. Nonverbal 4. Access to tx	1. Letter (> 24 mo) 2. PPVT-IV 3. Oral Motor 4. Imitation/praxis 5. Joint attention 6. Play 7. MCX	Responder—20 spontaneous words, 5 functions, across partners	1. Words, functions, generalization 2. Engagement 3. Moderators: initial receptive language, motor control

CCNIA study Characterizing Cognition in Nonverbal Individuals with Autism Intervention Study

Pre-Intervention

8 sessions later

16 sessions later

Underserved but Promising New Trends

- Very Young and At-Risk Populations

- Early identification
- Delivery
- Parent involvement, parent mediated

- Toddler Treatment Network

- Baby Sibs Network



How targeted treatments on core deficits can be informative to early interventions: Distillation and Matching Model

- Need to understand active ingredients of interventions

- Targeted interventions may get us there.....

- Focus on components of treatment that can be matched to child
- Focus on core deficits
 - Need to have outcomes that reflect these core deficits
- Beginning to tease apart important components of intervention
 - Need active comparisons; no question any intervention is better than nothing (or community control given no standard of practice)

Active Ingredients

- Why *not* comprehensive treatments?

- Blending of interventions over time
 - Many components of treatment are similar, unclear if these components are active ingredients
- Difficult to tease apart active ingredients.....
- Even more difficult to achieve fidelity and wide spread application of a comprehensive package

Summary

- Early interventionimpressive results
 - Comprehensive and targeted interventions
 - Need to focus on underserved/under represented
 - New promising trends
 - Younger children
 - Nonverbal
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