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## The Effects of Early Intervention on the Expressive Language Outcomes of Children with Autism Spectrum Disorder: A Systematic Review

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# The Effects of Early Intervention on the Expressive Language Outcomes of Children with Autism Spectrum Disorder

## A Systematic Review

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### Background

- Autism Spectrum Disorder (ASD) is characterized by persistent challenges in social communication as well as restricted and repetitive behaviors, and is often observable in early childhood.
- Expressive language delays are common in young children diagnosed with ASD.
- Early intervention can lead to positive outcomes in the symptoms of children with ASD.
- Early intervention is being considered any speech and language services provided before a child is 5 years (60 months) of age.

### Objective

To determine whether early intervention of ASD in children between 0-59 months of age has positive effects on expressive language development.

### Methods

- Databases Searched: PubMed, PsychINFO, LLBA, CINAHL, ERIC
- Articles were hand-selected based upon relevance.
- Selected studies were required to meet the inclusionary and exclusionary criteria, then 'graded' based on their quality and rigor
- Inclusionary criteria:** Children between 0 and 59 months of age with a diagnosis of ASD, early intervention speech and language services provided, behavioral interventions, and expressive language (i.e., verbal skills, use of AAC devices, sign language) as an outcome measure.
- Exclusionary criteria:** English language learners, bilingual speakers of English, other developmental disabilities as a primary diagnosis (e.g., genetic disorders, acquired brain injuries), PT, OT, or Special Education early intervention services in the absence of speech/language services, and single-case studies.

### Results

Figure 1. PRISMA Flowchart

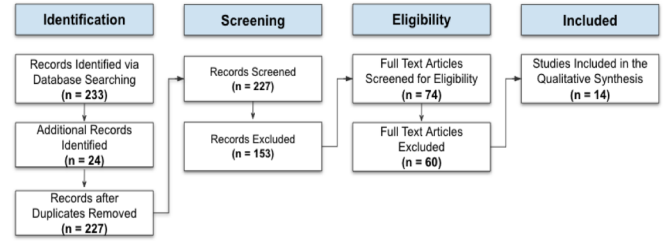


Figure 2. Study Characteristics Table

Author	n	Age at Intervention (mos)	Study Design	Method	Average Frequency of Intervention	Outcome Measures	Conclusions	Limitations and Biases	Level of Quality
Casenhiser et al. (2011)	51	24-59	RCT	2 groups: MEHRT and COM to target social development in young children with ASD	MEHRT: 2 hrs/wk; CT: 3.9 hrs/wk for 12 mos	High inter-rater reliability; blinding used to grade outcomes	Social engagement, IA tx-increased EL in children with ASD. DSP > community interaction tx.	Defining boundaries for the CT group, cost of intervention (\$5000 for MEHRT); selection bias; timing of intervention bias, variable amount of tx.	High
Dawson et al. (2010)	48	18-30	RCT	2 groups: ESDM (parent training and control (tx as usual' from EI clinicians)	ESDM: 20hrs/wk, plus 3hrs/wk of parent-mediated tx.	ADOS; MSEL; VABS; RBS	Greater language & behavioral gains in ESDM than control group.	Conducted by some of the creators of the ESDM (i.e., confounding bias).	High
Estes et al. (2015)	48 - 39	18-30	Longitudinal	2 groups: ESDM and COM to target social development	ESDM: 2.4 hrs/wk; COM: 4.36 hrs/wk for 2 yrs	MSEL; VABS; ADOS-WPS; RBS; ABC; ADI-R.	"Traditional" EI may be adequate, but ESDM may be preferred.	Enhanced protocols for longitudinal follow-up; attentional bias, experimental bias, no blinding, service time in-between-intervention bias.	Moderate
Howard et al. (2014)	61	Before 48 mos.	Longitudinal	Follow-up at 1-, 2-, and 3-yr post-intervention comparing eclectic intervention to behavior intervention looking at cognitive, language, and adaptive functioning	Behavioral: 25-30 hrs/wk; Eclectic: 15-17 hrs/wk	IQ tests, adaptive rating scales, and language measures.	Most gains observed in yr 1 post-onset tx, maintenance effects in yr 2 & yr 3	Selection bias; tx groups were switched in year 2 and year 3; inconsistent tx delivery.	Moderate

Key: ABC: Aberrant Behavior Checklist; ADI-R: Autism Diagnostic Interview-Revised; ADOS: Autism Diagnostic Observation Schedule; COM: Community-Based Intervention; CSBS: Communication and Symbolic Behavior Scales; DAS: Differential Ability Scales; Dx: Diagnosis; EL: Expressive Language; EOWPVT: Expressive One Word Picture Vocabulary Test; ESCS: Early Social Communication Scales; ESDM: Early Start Denver Model; EVT: Expressive Vocabulary Test; IA: Joint Attention; LENA: Language Environment Analysis; MEHRT: Miles and Ethel Harris Research Initiative Treatment; MSEL: Mullen Scales of Early Learning; N/A: Not Applicable; PL-ADOS: Pre-linguistic Autism Diagnostic Observation Schedule; PDI: Parenting Stress Index; RBS: Repetitive Behaviors Scale; RCT: Randomized Controlled Trial; RDS: Reynell Developmental Language Scale; RFLRS: Rho-Freeman Real Life Rating Scale; RC: Receptive Language; SDCD-R: Sequenced Inventory of Communication Development-Revised; SPT: Symbolic Play Test; Tx: Treatment; VABS: Vineland Adaptive Behavior Scales.

### Discussion

- The overall quality of the studies was moderate.
- Early intervention may lead to positive outcomes in expressive language development.
- Intervention is most effective when intervention occurs before the child is 40 months old.
- Intervention is most effective when administered at least 25 hours/week by trained clinicians.
- Long-term gains in expressive language are associated with behaviorally-based interventions.

### Recommendations

- When investigating the effects of early intervention on language development, future research should prioritize high-quality study designs (i.e., randomized control trials) with larger sample sizes.
- Clinicians working with young children with ASD should implement behaviorally-based, empirically-supported interventions, such as the Early Start Denver Model (ESDM) or Pivotal-Response Training (PRT).
- Additional intervention (e.g., ESDM) provided outside of community-based intervention (e.g., preschool) often supports improved developmental outcomes for children with ASD.

### Selected References

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