The Effects of Parent-Implemented Intervention on Child Linguistic Outcomes: A Meta-Analysis

Vanderbilt University, East Tennessee State University, George Washington University, and Northwestern University

Introduction
- Intervening early is important to minimize persistent difficulties in language and related domains in children with or at-risk for language impairment (LI) (Rescorla, 2009).
- Because language is first learned in caregiver-child interactions, parent-implemented interventions are potentially an important early intervention for children with or at-risk for LI.
- One of the most frequent recommendations for closing the word gap between children from low SES and middle-income backgrounds is to begin by improving parent talk and interactions with their children (Hoff et al., 2013).
- Roberts and Kaiser’s (2011) meta-analysis examining the impact of parent-implemented interventions for children with primary and secondary LI found significant effects for child linguistic outcomes and for parent responsiveness.
- Although these findings support the effectiveness of parent-implemented intervention, their meta-analysis did not include children at-risk for LI due to low SES.
- The purpose of this meta-analysis was to replicate and extend results from Roberts and Kaiser (2011) by including studies conducted since 2011 and including children at-risk for LI due to low SES.

Research Questions
(1) Are parent-implemented language interventions effective for improving children’s receptive and expressive vocabulary?
(2) Do the effects of parent-implemented language intervention on expressive vocabulary vary by the type of intervention?
(3) Are parent-implemented language interventions effective for improving children’s global expressive and receptive language skills?
(4) Do parent-implemented language interventions increase parent use of language-facilitating behaviors?
(5) Do the effects of parent-implemented language interventions vary by the etiology of children’s LI?

Methods
- A systematic review and meta-analysis approach was used.
- Studies were identified through database searching.
- 25 randomized control trial studies examining linguistic outcomes met criteria for inclusion.
- A random effects meta-analysis (Borenstein et al., 2009) was conducted to calculate the overall pooled effect size and confidence interval for each outcome.
- Subgroup analyses examined the impact of context and population on each outcome.

Inclusion Criteria
- Participants: Children 0-8, with or at-risk for language delays
- Intervention: Parent-implemented Language Intervention
- Design: RCT
- Counterfactual: Parent Education, BAU, Waitlist/Non-treatment
- Outcomes: receptive/expressive vocabulary, receptive/expressive language

Results: Participant and Study Characteristics

- Parental Characteristic N N %
  - Language Delay 13 52%
  - Autism Spectrum Disorder 9 36%
  - Developmental Delay 1 4%
  - Hearing Impairment 1 4%
  - Typically Developing 1 4%
  - Average Parent Education
    - Toddler 15 60%
    - High or less 4 16%
    - Not Required 6 24%
  - Mean Child Age (years) 0.3 9 36% 0.3-0.9 5 20%
  - 1.0-1.9 1 4%
  - 2.0-2.9 1 4%
  - 3.0-3.9 1 4%
  - 4.0-4.9 1 4%
  - 5.0-5.9 1 4%
  - 6.0-6.9 1 4%
  - 7.0-7.9 1 4%
  - 8.0-8.9 1 4%

- Study Characteristics N N %
  - Comparison Group
    - BAU 13 48%
    - Waitlist 10 40%
    - Minimal Parent Training 3 12%
  - Waitlist & BAU 5 20%
  - Total Sample Size 50 78%

- Most studies (68%) had sample sizes of less than 50 participants.
- 52% of studies reported the SES of included parent/child dyads.
- 24% of studies (6325) specifically targeted children at-risk; 4 shared book reading, 2 routine/play based intervention.

Results: Child Effects

- **Child Expressive Vocabulary**
  - Significance overall effect size for expressive vocabulary (g=.31), but not for receptive vocabulary (g=.12, ns).
  - Effect size was larger for shared book reading interventions than for routine/play based interventions (g=.29), which approached significance (95% CI [.00,.59]).

- **Child Receptive Vocabulary**
  - There was a significant overall effect size for expressive language outcomes (g=.27), but not for receptive language (g=.07, ns).

- **Child Global Language**
  - A subgroup analysis indicated that expressive vocabulary (g=.78) and expressive language (g=.66) effects were moderate to large and significant for children with LI, but small and non-significant for children with ASD.

Results: Parent Effects

- **Parent Responsivity**
  - When examined by etiology, the effect size for parent responsivity remained significant for both children with LI (g=.19) and children with ASD (g=.82).
  - The small sample of studies measuring this construct made it difficult to draw conclusions based on this analysis.

Discussion
- Findings were generally consistent with the Roberts & Kaiser (2011) meta-analysis indicating parent implemented interventions can be effective with a range of children.
- Too few studies measured the same construct to examine the differential impact of intervention for children with an identified LI relative to children at-risk for LI due to low SES, indicating a critical need for more studies with this population.
- Although results suggested a larger magnitude of effect on expressive vocabulary for parent-implemented shared book reading interventions than for play/routine based interventions, this finding is confounded with population and measurement differences and should be interpreted with caution.
- Longitudinal studies are needed to identify the long-term benefits of intervention.
- Limited measures of parent training procedures and varied measures of parent outcomes limited the analysis of how child outcomes were achieved.

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More Information

Jodi Heidlage 
jodi.k.heidlage@vanderbilt.edu