

Critical Review: Does Parent-Implemented Early Intervention Improve Language Outcomes in Preschoolers with Language Impairments?

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This critical review examines the evidence regarding parent implemented early intervention, and the effects on language outcomes in preschoolers with language impairments. This review was limited to studies using a randomized controlled trial design only. Overall, the evidence gathered from this review is compelling for the efficacy of parent implemented intervention in improving vocabulary, grammatical abilities, and language development in preschool children. Recommendations for future research and clinical practice are discussed.

Introduction

During the second year of life, the majority of children experience an explosion of expressive vocabulary growth, and begin to combine two words together in sentences (DeVeney et al., 2017). However, about 15% of children in this age group show delayed language development. This early language delay has been variably described including the terms “late talkers”, specific expressive language delay (SELD), expressive language impairment/delay, and persistent language delay. In addition, some children may have expressive language delays as well as receptive language delays, for the purpose of this review, all varying forms of terminology were included. Late talkers are usually considered to be developing as expected in other domains, but have language difficulties largely confined to the expressive domain with no causal factor. In other words, their language delay is not a result of a cognitive delay, genetic syndromes, hearing disorders, or pervasive developmental disorders. (DeVeney et al., 2017, Buschmann et al., 2015). Nevertheless, language development can be highly variable at this age, so it is common for children with expressive language delays to spontaneously normalize and “catch up” to their peers by the time they turn five years of age. For this reason, the “wait and see” approach to intervention is often recommended, resulting in children not receiving speech and language intervention before age four in many cases. However, studies have demonstrated that the “wait and see” method may be overly optimistic, and at least 50% of children with early language delays do not resolve on their own and continue to experience residual problems in school (Buschmann et al., 2009; McDade and McCartan, 1998).

Research suggests that persisting language deficits put children with early language delays at risk for long-term delays in later language and literacy skills. Early language delay is associated with negative outcomes in literacy development and reading, school readiness, and

communication skills (DeVeney et al., 2017; Roberts and Kaiser, 2015). Therefore, early identification and intervention are vital for these children, to prevent further cognitive, linguistic, and learning problems (McDade and McCartan, 1998).

It is widely recognized that young children learn language in their natural environment with typical communication partners. Parents are often acknowledged as children’s first language teachers, and can have a unique advantage and opportunity to facilitate language growth with their children. Given the crucial role parents play in their children’s language development, incorporating parents into treatment is an important aspect of successful early language intervention (Roberts and Kaiser, 2011). Therefore, it is important to examine the current research to discover if parent implemented early language interventions can improve language outcomes in preschoolers with delayed language.

In order to make an important decision regarding when to provide intervention to children with early language delay, clinicians require reliable, empirical evidence. A randomized clinical trial (RCT) is the most rigorous method of determining a cause-effect relationship between treatment and outcome. As such, RCTs are considered the gold standard in determining the efficacy of treatment. Evidence from RCTs has the potential to inform clinicians about best practice methods for late talkers, and evaluate the effectiveness of parent based treatment, as an alternative to the “wait and see” approach.

Objectives

The primary objective of this paper is to critically review the available evidence from RCTs to determine whether parent implemented early language interventions can improve language outcomes in preschoolers with delayed language. The secondary

objective is to describe clinical implications and evidence based recommendations for early intervention practice.

Methods

A search strategy concept map was developed based on the research questions and detailed search queries were written for five electronic databases: MEDLINE, Embase, CINAHL, PsycINFO, and ERIC. Searches were completed in October, 2017, and limits placed on the searches included (1) English Language; and (2) Preschool aged children. Search queries were specific to the requirements of each database and complete queries are available upon request. Generally, searches identified (1) speech and/or language impairment; (2) speech and/or language and/or communication intervention; (3) preschool-aged children; and (4) Randomized controlled trials.

The original search yielded 401 citations, and 259 remained after duplicates were removed. Titles and abstracts for the 259 articles were independently reviewed by two researchers to determine whether they met 5 inclusion criteria: (1) Published in English; (2) Included preschoolers (defined as at or under 5 years of age); (3) RCT study design for a speech/language/communication intervention (with wait-list controls not a different intervention); and (4) Implemented general speech-language therapy interventions (i.e., interventions using high-tech devices were excluded); and (5) Peer-reviewed.

Forty-one citations remained after title/abstract screening and full-text review was completed independently by two researchers for those citations. The same inclusion criteria were applied. After full-text review, 27 papers were identified, and a further 2 inclusion criteria were applied: (1) parent-implemented intervention; and (2) language impairment. After exclusion based on these latter criteria, 8 papers were included in the present review.

Results

Buschmann et al. (2009) conducted a RCT which examined the effectiveness of a parent based language intervention group program for treating early language delay in 2-year-olds by comparing 29 children who received the intervention to a 12-month wait list control. Comparisons were made with a well-matched language normal group (n=36), recruited separately. Mothers in the intervention group participated in a 3 month parent-based language intervention focusing on interacting and modelling language. Outcome measures included appropriate standardized measures of language, and

were completed prior to, and post intervention, as well as 6 and 12 months later. Results revealed a significantly higher proportion of children with typical expressive language abilities and greater developmental gains in vocabulary and grammatical abilities in the children in the intervention rather than waiting group. As a group, the language skills of the intervention group remained significantly lower than that of the language normal group.

Strengths of the study included appropriate inclusion and exclusion participant criteria, blinding of assessors, and implementation of a manualized intervention program. Baseline equivalence was demonstrated for the groups with language impairment. Appropriate statistical analyses and effect sizes were reported.

This study offers compelling evidence for the effectiveness of a parent based language intervention group at improving vocabulary and grammatical abilities in 2 year old children with expressive language delay.

Follow up data to the Buschmann et al. (2009) RCT was provided by **Buschmann, Multhauf, Hasselhorn, and Pietz (2015)** who evaluated the 43 of the original 47 participants two years after the RCT intervention when participants were 4 years of age. Outcome measures included standardized measures of receptive and expressive language abilities as well as related memory skills. The results demonstrated significantly better language comprehension, and related memory skills in the intervention group than in the control group. The odds of “catching up” to same age peers were 2.83 times higher for the children whose parents had been trained in the intervention group.

Participant eligibility criteria were well specified, and the groups were similar at original baseline in terms of demographics, clinical data, language scores and cognitive abilities. Appropriate outcome measures and statistical tests were completed. A limitation acknowledged by the authors involved the lack of control regarding individual language therapy received by participants during the 1 year period between the follow up at age 3 and 4. Another weakness of the study is the lack of pretest measurements of memory.

This study provides compelling evidence for the long term effectiveness of a parent based language intervention group for children with SELD, for both language and memory outcomes.

Girolametto, Pearce, and Weitzman (1996)'s RCT investigated the effects of parent administered interactive language/focused stimulation intervention to

teach specific target words to their toddlers identified as late talkers assigned either to a treatment group (n=12) or a control group (n=13). Mothers in the treatment group received training in a manualized language program over a 11 week period. Vocabulary targets based on the child's phonetic repertoire and parent-reported vocabulary development were selected for each toddler. Child outcome measures included talkativeness, vocabulary, and complexity. Parent outcome measures included amount of talk, complexity of language input, and use of labels. The results indicated slower, less complex, more focused language input from mothers in the treatment group compared to the control. Children in the treatment group made more developmental gains in vocabulary, the use of multiword phrases, early morphemes, and grammatical complexity when compared to the control group. Children who received treatment used more target words in interactive play contexts, and made significantly greater gains in the structural complexity of their language. Finally, parent report of vocabulary development and the number of untrained words used in semi-structured tasks indicate that the intervention generalized to untrained words.

Strengths of the study included appropriate participant eligibility criteria, although allocation to groups was not clearly described. Assessors were blind to allocation, and families in the treatment group were blinded to the existence of control words. Appropriate statistical tests were employed. Potential biases include the researchers being authors of the intervention program, and the self-selection inherent in recruiting study volunteers.

The positive effects of treatment on overall language acquisition provide compelling evidence for the short-term efficacy of early intervention targeting lexical learning in combination with commenting and expanding. The results also support using parent interaction styles to provide a better language learning environment, fostering accelerated vocabulary and language development of late talkers.

Giralometto et al. (1996) completed a second study exploring the effects of a focused stimulation model of parent interactive language intervention to target specific vocabulary in preschoolers with language delays, and the effects on the child's behavioral/emotional development and play. Sixteen children and their mothers were assigned to treatment (n=8) and control (n=8) groups, and vocabulary targets were selected for each individual child in the treatment group. Outcome measures included semi-structured probes and a parent report. Following intervention, children who received treatment produced significantly more target words during semi-structured probes and used more symbolic play gestures than children in the

control group. Children in the treatment group used twice as many words as children in the control group. According to parent report, there was a reduction in aggressive/destructive behaviors in children following treatment.

Eligibility criteria for participants was specified, with no significant differences between the groups at baseline, and there was blinding of assessors. Appropriate statistical analysis were employed. Limitations acknowledged by the authors include possible undetected differences and variables, and insufficient sensitivity of parent-administered measures to detect treatment effect sizes of smaller magnitude. As previously mentioned, a potential bias exists within the involvement of author Weitzman (an employee of the Hanen Center) in this study.

This study provides compelling evidence for the use of parent implemented interactive models of language intervention to enhance vocabulary development of children with language impairments.

Roberts and Kaiser (2012) evaluated the effects of a parent-implemented language intervention in improving language skills of children with language impairments. A total of 34 children with language impairments were allocated to a treatment (n=16) or control group (n=18). Comparisons were made with a matched typically developing group (n=28). Parents were individually trained to implement enhanced milieu teaching (EMT), and specific language targets were selected for each child. The researchers obtained outcome measures for both children and their parents, and used observational and norm-referenced measures. Results indicate that children with language impairments in the treatment group had greater expressive and receptive language skills than children in the control group. They used 50 more total words, gained 15 more total words each month, and they had significantly higher global expressive language scores than children in the control group. Although children in the treatment group had lower language scores than children with typical language following intervention, the rate of language growth was not significantly different between groups. As well, parents in the treatment group used more EMT strategies than parents in the typical language group after intervention.

Strengths of the study included specified eligibility criteria for participants, similarities between all 3 groups at baseline, and the use of appropriate statistical measures. Weaknesses included unclear use of concealment for allocation and blinding of participants and assessors, and small sample sizes (less than 20 children in each group).

Overall, the results of this study offer compelling evidence for EMT being a promising intervention for children with receptive and expressive language impairments.

Wake et al., (2013) presented findings of a randomized trial which sought to determine the effectiveness of a population-based intervention for 4 year olds with language delays. 200 children with expressive and/or receptive language scores more than 1.25 SD below the mean were placed into intervention (n=99) or control (n=101) groups. The home-based intervention with parents focused on narrative skills, vocabulary and grammar, and phonological awareness and pre-literacy skills. Outcome measures included standardized tests, parent report, and questionnaires. Results demonstrated benefits to secondary outcomes including phonological awareness skills and letter knowledge. There was weak evidence for improvements in expressive language, and little evidence for improvements in receptive language.

Eligibility criteria for participants was quantified, and appropriate adjustments were done to account for baseline differences. This study included blinding of assessors, however participants were not blinded once allocated. Appropriate statistical tests were utilized.

Overall, the study has high internal and external validity, and provides compelling evidence for the use of home-based interventions to improve long term consequences of early language delay. It also provides important information about the effectiveness of targeting related early literacy skills such as phonological awareness and letter knowledge.

Gibbard (1994) investigated the effectiveness of parent-based therapy with language delayed preschool children. 36 children were assigned to a treatment (n=18) or control (n=18) group. Mothers of children in the treatment group attended parental language training sessions, which focused on increasing their child's linguistic complexity from producing single words to producing 3-4 word utterances. A second experiment was designed to compare 3 different approaches: parental involvement, individual treatment, and non-specific parent training. 25 children were assigned to either a direct individual speech and language therapy group (n=8), an indirect group parental-based therapy group (n=9), or an indirect group parental based control group focusing on cognitive skills other than language development (n=8). Several formal and informal (parent-report, language sample) assessment measures were used. The results demonstrated significantly greater gains in expressive language skills of children in the experimental group compared to the control group,

as well as children in both the parental language training group and individual therapy groups in comparison with the non-specific training group.

Detailed inclusion and exclusion criteria, similarities of groups at baseline, blinding of participants, and appropriate statistical analysis are all strengths of this study.

The evidence from this study is compelling for the benefits of parental based intervention in improving language outcomes. In addition, the findings indicate that parental language training is as effective as individual speech and language therapy.

Roberts and Kaiser (2015) conducted a randomized controlled trial to examine the impacts on language outcomes of a caregiver-implemented communication intervention for toddlers at risk for persistent language delays. 97 children with expressive and receptive language delays were assigned to an intervention (n=45) or control (n=52) group. Caregivers in the intervention group were trained to use Enhanced Milieu Teaching, with the goal of promoting early language acquisition in everyday interactions over a 3 month period. Specific language targets were selected for each child based on their performance during the baseline assessments. Outcome measures included standardized tests, observations, and parent scales. Results showed significantly better receptive language skills of the children in the intervention group compared to the control group. Children in the intervention group used 11 more different words in a 20 minute structured play interaction than toddlers in the control group. Caregivers in the intervention group improved their use of all language facilitation strategies.

Participant eligibility criteria was stated, however minor baseline differences favored the intervention group. Participants were blinded to allocations, although assessors were not blinded. Appropriate statistical analysis were employed.

Overall, this trial provides compelling evidence for positive changes in caregiver use of language facilitation strategies and the subsequent short term improvements in children's language skills.

Discussion

Findings were consistently positive, with compelling evidence from all 8 articles for the effectiveness of parent implemented intervention for improving language development of preschoolers with language delays.

The high caliber study design type (i.e., RCT) used in all investigated studies likely influenced the strength of the evidence. All studies necessitated the use of a wait-list control group for accurate comparison of measured outcomes, which further validated the level of evidence. The studies evaluated the effects of treatment on children with expressive language delays (late talkers), as well as children with a combination of expressive and receptive language delays. Five of the eight studies included children exclusively with expressive language impairments, and all five studies had positive outcomes suggesting improvements in expressive language abilities (Buschmann et al., 2009; Buschmann, Multhauf, Hasselhorn & Pietz, 2015; Girolametto, Pearce, & Weitzman, 1996; Giralometto et al., 1996; Gibbard, 1994). Three of the eight studies included children with expressive and/or receptive language impairments, with results showing consistent positive outcomes for expressive language skills, and mixed outcomes for receptive language skills (Roberts & Kaiser, 2012; Roberts & Kaiser, 2015; Wake et al., 2013). Of the studies which included children with both expressive and/or receptive language impairments, those which incorporated intervention with specific vocabulary targets for each child resulted in receptive language improvements. For example, Roberts and Kaiser (2012, 2015) used enhanced milieu teaching techniques in their studies, and the results revealed greater receptive language skills of children in the treatment group. Implementation of a more general treatment method which did not include individualized vocabulary targets (such as the home-based intervention used by Wake et al., 2013) resulted in little improvement of receptive language skills. The children who received treatment in the Wake et al., (2013) study were also 4 years of age, which may have influenced their gains in receptive language skills. Children who made significant improvements in receptive language abilities from the Roberts and Kaiser studies were slightly younger, between 24-42 months of age.

Parent intervention approaches ranged from highly structured programs, to modelling techniques aimed at promoting early language acquisition. A variety of goals were targeted across the programs, including increasing linguistic complexity, expanding mean length of utterance, narrative skills, vocabulary and grammar, and phonological awareness. A modified Hanen program, focused stimulation, and enhanced milieu teaching are examples of types of programs included in the analysis for this paper. Improvements in specific language outcomes such as vocabulary and grammar were a common finding. Regardless of the type of intervention implemented, results from all studies collectively indicated positive parental behavior changes and improved use of language facilitation strategies.

Clinical Implications

The findings from these studies have important implications for clinical practice. First, SLPs should be encouraged to adopt alternative therapy approaches. Traditional methods involving individual direct treatment in a clinical setting may be more often replaced with indirect models such as parent training programs. Utilizing parent training approaches may be advantageous particularly when working with children with expressive language impairments, because it provides an opportunity for the clinician to administer group therapy to parents. This would potentially be a more cost-effective service, and would decrease the number of children on wait-lists. Training a group of parents who have children with expressive language impairments would give the clinician time to treat other children with complex needs, and provide therapy to more children on his or her caseload.

The findings from these studies also illustrate the relationship between systematic parent training procedures, changes in parent behavior, and subsequent changes in child language. It is possible for parents to learn and implement strategies with their children at home, which results in increased generalization of skills. With this knowledge, SLPs should involve parents in treatment whenever possible in order to maximize the effects of intervention and promote early language development.

Future Research

It is recommended that long term outcomes of parent implemented intervention be further explored. The majority of the selected studies demonstrated short-term improvements in language, but there is limited evidence available looking at whether gains in language skills are sustained over time. Additional research surrounding intervention for receptive language impairments would be beneficial as well. The literature is not clear regarding the specific type of parent implemented intervention that is the most effective for children with expressive and/or receptive language impairments.

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