Critical Review: Is parent based intervention equally as effective for improving language outcomes as clinic based therapy for preschool children with language impairment?

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This critical review examines the existing evidence for implementing parent based intervention (PBI) as an alternative to traditional therapy for preschool children. Studies included English speaking children with expressive and/or receptive language impairment. Five randomized clinical trials and two nonrandomized clinical trials are reviewed. Overall, research suggests that PBI can be an effective alternative to clinic based therapy. However, there are certain populations that may not benefit from PBI. Clinical implications for decisions regarding implementing PBI are discussed.

Introduction

Early childhood language disorders place children at risk for negative effects that can last into adulthood and impair social, academic and functional outcomes (Beitchman et al., 2001). Expressive language delay alone has been estimated to have a prevalence of as high as 17.5% in children between 30 and 36 months old (Horwitz et al., 2003).

For children with language impairments, early language intervention delivered by a trained clinician has been shown to increase linguistic development and functioning (Law, Boyle, Harris, Harkness, & Nye, 1998). Parental involvement in treatment has also been shown in the research to be important for success as it positively affects treatment outcomes (Law et al., 1998).

Increased wait times for intervention, as well as the high cost of treatment, are a challenging reality in many preschool speech and language programs (Barnett, Escobar, & Ravsten, 1988; Gibbard, 1994). These factors have resulted in increased interest in both the research and clinical communities toward finding alternate models of service delivery for these programs. One model that has been implemented in some facilities is parent based intervention (PBI). PBI for children with language impairment involves a speech language pathologist (SLP) training a parent or group of parents to use various language facilitation and elicitation methods in order for the parents to carry out intervention with their own children (Baxendale & Hesketh, 2003). In this model, parents are the sole providers of therapy.

Previous studies have indicated that participation in PBI is preferable to being on a waiting list because language outcomes are better for those in PBI than those in a wait period (Buschmann et al., 2009). However, there is no current research based consensus concerning the effectiveness of PBI in comparison to traditional therapy. If PBI were shown to be as effective as traditional therapy, it could change the current model of preschool intervention and allow speech language pathologists to indirectly provide services to a much larger group of children in considerably less time than is possible in current practice models.

Objectives

The primary purpose of this paper is to critically review the existing literature regarding the effectiveness of PBI in comparison to traditional clinic based therapy for preschool children with expressive and/or receptive language impairments. The secondary purpose of this paper is to provide implications for clinical practice.

Methods

Search Strategy

Relevant articles were found by searching online databases including CINAHL, ProQuest, and PubMed. Several search strategies were used with various key terms including: (preschool), (language impairment), (parent based intervention), (language disorder), (early childhood intervention), (parental role), and (language therapy). The search was limited to English journal articles published since 1980.

Other relevant studies were obtained using the reference lists of articles yielded during the search.

Selection Criteria

In order to be included within this review, studies were required to: 1) compare child outcomes for parent and clinician based intervention; and 2) focus on a preschool age population with expressive and/or receptive language delay or impairment with no known etiology, or otherwise normal development. No limits were set for demographic characteristics.

Data Collection

Seven articles found in the literature search met the criteria for inclusion in this review. The articles

included five randomized clinical trials (RCTs) and two nonrandomized clinical trials. One of the RCTs used the same sample of children as another RCT but repeated outcome measures following an immediate additional five months of treatment.

Results

All of the included studies are considered Level 1 or 2a research evidence. Results are organized from least to most compelling evidence.

Barnett et al. (1988) conducted an RCT which examined language outcomes among 39 participants of 2;11-4;11 years of age that were randomly assigned to either center based intervention, PBI, both center based intervention and PBI, or a no treatment control group. All children were diagnosed with a mild to moderate language disorder. There were 10 children assigned to each intervention group and 9 children assigned to the control group.

The center based intervention group participated in a combination of individual, small group and large group therapy for a total of 2½ hours a day, 4 days a week for 13 weeks. The PBI group parents attended four 2½ hour training sessions during the first three weeks of intervention as well as an additional five sessions during the treatment period. Training consisted of teaching parents techniques for facilitating language development. Parents were given assignments and expected to deliver intervention at home twice a day for 15 minutes, over the course of 13 weeks.

Language was pre-tested and post-tested using the *Preschool Language Scale–Revised* (*PLS-R*) and the *Arizona Articulation Proficiency Scale* (*AAPS*). A two-way analysis of covariance (ANCOVA) was used to compare groups post-treatment while controlling for pretest scores. It was found that PBI produced significant improvements in language development as measured by the *PLS-R* ($p < .01$) and the *AAPS* ($p < .05$) while the center based intervention did not.

The results of this study should be interpreted with caution. While the authors state that all the participants had a mild to moderate language disorder, they define a language disorder as a delay of 20% or more in at least one of expressive language, receptive language or articulation. Hence, several children were included in the study that had both language and articulation disorders or had only articulation disorders. As not all of the children involved in the study had language impairments, and the type of language impairment (expressive/receptive) was not specified for those who did, it is difficult to generalize outcomes of the study for future clinical practice.

Law, Kot, and Barnett (1999) conducted an unpublished RCT comparing clinic therapy, PBI based on the *Hanen Parent Program* model, and a delayed treatment control group for a population with low socioeconomic status (SES) and low maternal age. The participants consisted of 38 children of 2;9 to 3;3 years of age who had severe expressive and receptive language impairments. The clinic therapy group of 17 children participated in group therapy for 2.5 hours a day, 3 days a week, for 6 weeks (24.7 hours total). The 11 parents in the PBI group participated in weekly 2.5 hour sessions for 10 weeks (25 hours total). An additional 10 children were placed in the delayed treatment control group.

Children were assessed at the three time points, pre-intervention, post-intervention, and 6 months after the first assessment, using the *Leiter International Performance Scale* (*LIPS*), the *PLS*, the *Reynell Developmental Language Scales* (*RDLS*), the *British Picture Vocabulary Scale* (*BPVS*), the *MacArthur Communicative Development Index* (*MCDI*), and counts of mean length of utterance in morphemes (MLU), nouns and verbs from language samples. A repeated measures analysis of variance (ANOVA) showed no differences in language outcomes between the intervention and control groups at any point in time. The authors commented that the parents in the PBI group had low motivation and low levels of carry-over of activities into the home and concluded that both types of therapy used (group and PBI) were not appropriate for the study population.

As this study is unpublished, due caution must be used in interpretation of results. However, the use of a population with both dual severe impairments and low SES families are important areas of knowledge that are currently lacking in the available research. The mothers' average age at the birth of their child in this study was 17 years, while the majority of studies have focused on older parents who are part of middle class, middle income families. There are some components of the study design that could be improved. The authors controlled for total time spent on each intervention type by the SLP, but not intensity effects. Weekly time spent with the SLP for the clinic group was more frequent than in most clinical practices and there was no method of tracking the amount of parental implementation of skills in the home. As well, considering the poor outcomes of the study, it would have been useful to determine if a one-on-one approach would have had more success in the clinic setting. Also the authors did not consider that the severity of the children's language disorders may have been more resistant overall to

treatment and may have required a longer period of treatment. If the results of this study were to be replicated with a similar participant population, it may indicate that factors such as severity of diagnosis, multiple language impairments or family factors such as SES and maternal age or education, need to be considered when deciding on a treatment model.

Gibbard, Coglan, and MacDonald (2004) employed a nonrandomized clinical trial to compare general care (a less intense program than typical for clinic treatment) and PBI. Twenty-two children aged 1;10-3;0 years old who were diagnosed with language impairment participated in the study, with the first half being offered PBI and the second half offered general care. The groups were evenly matched for parental age, birth order and SES.

Ten children received general care, which consisted of two one-on-one sessions of 60 minutes of language stimulation advice for their parents. Twelve children received PBI. Parent training for PBI involved eleven 90 minute group sessions in which language objectives were set.

Participants' language abilities were assessed pre- and post-therapy (8 months apart) using general length of utterance in words, parental report of child language, the *RDLS*, the *Preschool Language Scale* (*PLS-3*) and MLU. Data was analyzed both parametrically and non-parametrically and analysis revealed greater language gains for PBI than for general care, even when controlling for age and pre-intervention scores. As well, there was no difference between the outcomes for the two PBI training groups, which had four and eight children, respectively.

There are several limitations to this study including the lack of a control group, and different sized parent training groups. As well, general care is not equivalent to the intensity of traditional clinic therapy. However, for clinical settings in which general care is the standard, this study provides suggestive evidence for PBI being an effective alternative.

Baxendale and Hasketh (2003) carried out a nonrandomized clinical trial to examine the effectiveness of the *Hanen Parent Program* (*HPP*) in comparison to traditional clinic therapy for an inner-city population. The participants were 37 children 2;6-3;6 years of age with a diagnosis of expressive or expressive and receptive language impairment who were allocated on a geographical basis to receive *HPP* (n = 19) or clinic based intervention (n = 18).

Clinician therapy consisted of one-to-one weekly sessions of 45 minutes for 8-12 weeks. *HPP* weekly group sessions for parents focused on parent language and interaction style and were conducted for 2 hours and 15 minutes for 8 weeks. Families also received three home visits of 30-45 minutes.

Language was pretested and posttested at both 6 and 12 months using the *PLS-3* as well as MLU obtained from audio-taped language samples. As data was not normally distributed, non-parametric procedures were used. Although 73% of children across both groups improved their language skills by the 12-month reassessment, there was no significant difference between the means of the two groups at any of the assessment points as determined by a Mann-Whitney *U*-test. As well, a chi-squared test revealed there was no significant difference between the number of children that improved in each group. The number of children that showed improvement in each treatment group was also documented by type of language impairment. Further the authors commented that the *HPP* produced better language scores in children with expressive/receptive impairments while those with only expressive language impairment showed more improvement in the clinic setting.

Inclusion of a comparative control group in this study to control for maturational change would have been beneficial, however the authors state the participants' improvement on standard scores indicates improvement relative to typically developing peers. Unlike many of the other studies, the majority of the mothers involved in this study had left school at 16 years of age, allowing for generalization of the results to families from a lower SES bracket. This study has several strengths, including the use of a mixture of formal and informal language measures and home visits to ensure parents were properly implementing the skills being taught within the program. Overall, this study suggests that PBI may be a viable alternative to clinic therapy.

Fey, Cleave, Long, and Hughes (1993) conducted an RCT comparing clinic therapy, PBI and a delayed treatment control group. The 30 child participants between the ages of 3;8 and 5;10 years old were all diagnosed with expressive language impairment. The 11 children in the clinic therapy group received weekly individual 1 hour sessions and two 1 hour group sessions for 4½ months. The 10 parents who participated in the PBI group attended weekly 2 hour sessions for 12 weeks and monthly 2 hour sessions for the following two months. Three home visits and two clinic visits were also conducted over the course of the study. Nine children were assigned to a delayed treatment group.

Language samples were collected prior to intervention and immediately following the intervention period and analyzed using Developmental Sentence Scoring (DSS). A one-way ANCOVA used to compare groups with pre-intervention scores used as the covariate revealed the scores of both treatment groups were not significantly different from each other but were significantly higher than the control group. The effect sizes for this trend were large, .81 and .96 for clinic therapy and PBI, respectively.

Fey, Cleave, and Long (1997) also published an immediate follow-up to Fey et al. (1993), using the same participants and group assignments for an additional 5-month intervention phase. Their hypothesis was that the time it took to train the parents at the beginning of the initial study may have produced a lag in effect for intervention results. The only change to the methods in this study was that the no treatment control group was composed of 10 dismissed participants from the clinic and PBI treatment groups who had received the first 5 months of treatment.

Since within-group variance was large and there was not a normal distribution, nonparametric analysis, in the form of a Wilcoxon Matched Pairs Test, was used for within-group comparisons. Both the PBI and clinic group scores were significantly higher at the end of the second phase ($p = .04$) and ($p = .01$), respectively, while the dismissal group was not. The authors commented that improvements, although occurring, were not as strong as during the first phase of treatment. Further, although between group analyses were not completed, they also commented that gains were larger and more consistent for the clinic group than for the PBI group.

While the frequency of the clinic based therapy for these two studies was higher than is typical of most practices, and there were no standardized measures used, these studies had several strengths, including the use of a control group, home visits and high effect sizes. Overall, these two articles provide persuasive evidence that PBI can be as effective as clinic based therapy.

Gibbard (1994) conducted an RCT which compared clinician intervention, PBI and a control group that received parent administered non-language cognitive therapy. The 25 participants between the ages of 2;3 and 3;3 years old were all diagnosed with expressive language delay. Eight children received clinician therapy for 30 minutes a week for 6 months. Nine children received PBI. Parent training for PBI consisted of 1 hour language training sessions every 2 weeks over a 6-month period. Another 8 children received the parent non-language control therapy.

A mix of formal and informal measures, including the *RDLS*, language samples, the *Renfrew Action Picture test*, the *Derbyshire Language Scheme Picture Test*, and parental report were used to assess language during pretest and posttest. An ANCOVA was used to compare the three treatment groups with pre-therapy scores as the covariate factor. Analysis revealed greater language gains for both the clinician and parent group than for the control group. Results did not differ significantly for the clinician and parent language groups.

This study had several strengths, including the use of both formal and informal language measures, a non-language intervention control group, and good randomization and matching of subjects for gender, age, birth order and SES. The authors also controlled for non-verbal cognitive abilities. This study provides compelling evidence that PBI is as effective as clinic based therapy for children with expressive language delay.

Summary of Findings

Overall, six of the seven studies identified in this review indicated that PBI resulted in language gains that were either roughly equivalent to or better than clinic based therapy. Although populations of inconsistent type and severity of language impairment were used across studies, the seventh study (Law et al., 1999) which showed no difference between PBI, clinic based therapy and the control group, involved a population who had severe language impairments and multiple risk factors.

Discussion

Overall, the critical appraisal of available research suggests that PBI may be an effective alternative to clinician based therapy. Results of the studies included in this review are not completely consistent, and this discrepancy may be linked to several factors that differed between studies, such as the inconsistent grouping of receptive and/or expressive language issues, amount of intervention, parental factors such as interest, ability and SES, the type of parent training program implemented and differing outcome measures. As well, all studies had to contend with fairly small participant groups. However, the results do suggest that in the right environment, PBI can be as effective as clinic based therapy for young participants and in the short term.

The inconsistent use of children with expressive and/or receptive impairments is one limitation of these studies that does not allow a certain conclusion to be drawn regarding who may be most appropriate for the type of treatment. The severity of impairment also varied

between studies, further increasing the difficulty of making broad generalizations for practice.

Many of the studies included used diverse amounts of intervention by clinicians and parents, and this was often inconsistent both across and within studies. As well, it is difficult to determine with any certainty in many studies the amount that parents were actually implementing the trained skills at home and, if they were, whether they were doing so properly. Parents may feel more or less comfortable implementing techniques on their own and even if a parent was properly prepared, factors such as a stressful home environment may affect actual implementation of the techniques at home. The studies that included home visits and homework assignments made attempts to control for this variable, but use of other measures, such as home videotaping, may provide a more accurate accounting of parental use of techniques taught thus increasing the rigor of the results.

A potential confounding variable is the SES of the parents involved in PBI. While many of the studies involved well-educated, middle-income parents, who may have been more motivated than low SES parents to participate and complete homework assignments, a few studies involved families from a lower SES bracket, yielding conflicting evidence as to whether PBI was as successful as clinic based therapy for these families.

Another factor to consider is that the studies analyzed used a variety of parent training programs. The length of time the program was administered and the format of training sessions (i.e., weekly, monthly) also varied by study. Some programs may be more effective than others, or more appropriate for some families or types of language disorders than others.

The length of the studies analyzed also varied. It is possible that one therapy or type of training program produces better outcomes longitudinally or as parents' knowledge grows. Fey et al. (1997) tried to ascertain longitudinal outcomes with an additional five months of treatment, but longer time periods may be necessary to be truly certain of long-term effects of therapy. This is made more difficult by the ethical dilemma surrounding using a control group for a prolonged period of time, and thus denying treatment to those who need it.

A final limitation is that the studies used different outcome measures, with some choosing either standardized, informal or a combination of measures. The use of standardized tests allows for better study comparison, but raises reliability of measurement issues when standardized tests are administered multiple times within a short period of time, as had been done in several studies.

Conclusion and Clinical Implications

In conclusion, this critical review suggests that PBI may be a suitable alternative to clinician based therapy for certain families. Based on these studies, PBI may be better for children in families that are highly motivated to participate. Family factors may need to be taken into consideration while deciding the appropriate type of therapy for a child with a language disorder.

Further research concerning PBI is needed in order to examine factors such as the optimal age for initiating intervention, parental factors that may affect suitability for PBI, such as SES, child and parental age and stress, the amount of intervention that is required, the long term outcomes following completion of a program and its suitability for receptive and/or expressive impairments.

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