

**Review of Evidence-Based Practices for Language Intervention of  
School-Age Children: Implications for Treatment, Research, and  
Personnel Preparation in Speech-Language Pathology**

Prepared for the Center on Personnel Studies in Special Education

EXECUTIVE SUMMARY

by

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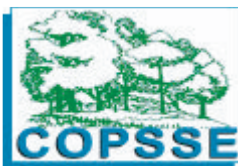
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COPSSE research is focused on the preparation of special education professionals and its impact on beginning teacher quality and student outcomes. Our research is intended to inform scholars and policymakers about advantages and disadvantages of preparation alternatives and the effective use of public funds in addressing personnel shortages.

In addition to our authors and reviewers, many individuals and organizations have contributed substantially to our efforts, including Drs. Erling Boe of the University of Pennsylvania and Elaine Carlson of WESTAT. We also have benefited greatly from collaboration with the National Clearinghouse for the Professions in Special Education, the Policymakers Partnership, and their parent organizations, the Council for Exceptional Children and the National Association of State Directors of Special Education.

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## INTRODUCTION

The purposes of this paper were: (a) to identify effective language intervention practices used by SLPs that lead to positive outcomes for school-age children with language disorders, (b) to identify gaps in the evidence base and areas in need of further research, and (c) to discuss implications for personnel preparation based on what is known about effective practices for language intervention in schools.

We conclude that the effectiveness of many language intervention practices that are currently being used with school-age children with language disorders has not been directly tested. We outline specific areas where there are significant gaps in the evidence and discuss the implications of evidence-based practices for personnel preparation in Speech-Language Pathology [SLP].

## METHODS

- Computer searches of electronic databases and hand searches of other sources were conducted.
- This systematic review focuses on peer-reviewed articles published in the past 20 years that assessed the outcomes of language therapy for school-age students with language disorders.
- Studies had to focus on experimental measures of the effectiveness of language intervention practices for students with language disorders. Descriptions of language intervention programs without objective measures of treatment effectiveness were not included.
- Studies had to include school-age students with language disorders as a primary disability. To be considered school-age, students had to be in kindergarten through 12th grade and/or over the typical age for kindergarten entry (over 5 years).
- Studies had to be one of the following design types: Level 1 (which includes randomized clinical trials [RCTs] and systematic reviews of RCTs); or Level 2 (which includes nonrandomized comparison studies and single-subject design studies).
- Studies had to be published between 1985 and 2005 in peer-reviewed journals.
- Studies that had reading/writing skills as intervention targets as the main focus were not included. Studies on the production or comprehension of written/read vocabulary were not included.
- Effect sizes were calculated and reported when sufficient data (i.e., pretest and posttest means and standard deviations) were provided for group and single-subject designs.
- Group effects were calculated using Cohen's  $d$ , in which  $\text{effect size} = \frac{M(\text{posttest score of the experimental group}) - M(\text{posttest score of the control group})}{\text{pooled standard deviation}}$ .

## RESULTS

A total of 19 studies that met the five criteria were located and reviewed. The language intervention studies reviewed in this paper according to the specific aspects of language that were the target of the intervention were:

- Syntax/Morphology (2 studies)
- Semantics/Vocabulary/Concepts/Word Finding (6 studies)
- Phonological Awareness/Metalinguistics (4 studies)

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- Computer-Based Language Intervention (5 studies)
  - Pragmatics/Conversation/Discourse/Narratives (2 studies).

### **Syntax/Morphology**

The main limitations of research on intervention for syntax or morphological problems are the lack of a sufficient number of studies with school-age children and a lack of any Level 1 evidence to guide SLPs' clinical decisions about treating this common language problem.

### **Semantics/Vocabulary/Concepts/Word Finding**

There are relatively few studies on semantic, vocabulary, concept, and word-finding interventions and no Level 1 evidence. The studies report good outcomes and relatively large treatment effects for children with language impairments who receive intervention that targets vocabulary and analogical reasoning. The research base needs to confirm the effectiveness of intervention programs for older students with semantic and vocabulary problems.

### **Phonological Awareness/Metalinguistics**

Our search yielded four studies of the effects of phonological awareness instruction with school-age children with language impairments. All four studies were Level 2 nonrandomized comparisons of experimental and control groups or cohort studies. The four studies demonstrated improved performance on phonological awareness measures following treatment. Three of the studies yielded large effect sizes. The main limitations of the research on phonological awareness instruction are that there are too few studies on phonological awareness intervention and no Level 1 evidence to support clinical decisions in which SLPs could have a high degree of confidence. The studies reported good outcomes for children with speech and language impairments who received intervention that targeted phonological awareness.

### **Computer-Based Language Intervention**

Our search yielded five studies of the effects of computer-based language intervention on children with language impairments. One study was an RCT; three studies were Level 2 nonrandomized comparisons of experimental and control groups; and one study was a Level 2 multiple-baseline, single-subject design. The results of all five studies indicated improved performance on language or phonological awareness measures following treatment with computer software. The main limitation with the research on computer-based language instruction is that there are too few studies to support decisions in which clinicians could have a high degree of confidence. However, there is consistent evidence supporting the use of computer-based language intervention in school settings.

### **Pragmatics, Conversation, Discourse, and Narratives**

Our search yielded two studies of interventions designed to treat aspects of pragmatics, conversation, discourse, and narratives in school-age children. Both studies employed multiple-baseline, single-subject designs. The results of both single-subject studies indicated improved performance on peer group entry and language measures. The effect sizes of the comparisons between baseline and treatment phases in these studies varied between moderate and quite large. The main limitations with the research on pragmatics, conversational discourse, and narratives are that there are so few studies with school-age children with language disorders, no studies with children over 6 years old, and no studies with Level 1 evidence to support SLPs' clinical decisions.

## **DISCUSSION**

### **Caveats**

- This systematic review should not be viewed as practice guidelines or recommendations for clinical practice. Given the timelines, resources, and scope of the present review, it was not

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possible to grade the evidence in studies or to adhere to all the recommended procedures to construct impartial practice guidelines.

- There is a possibility that RCT studies may not prove to be the design of choice for studies on effective speech-language intervention methods.
- Most systematic reviews to date have excluded children with language disorders as a secondary disability, including children with autism or developmental delay. Students with these disabilities make up a substantial proportion of children seen by SLPs in schools.

## Gaps in the Literature

The following are specific areas where there are significant gaps in the evidence on the effectiveness of language intervention with school-age children:

- Eleven of the 19 studies we found limited participants to children in kindergarten and first grade, and no studies were located that looked at students with language disorders in middle grades or in high school. The studies we reviewed had very few children beyond 5<sup>th</sup> grade as participants.
- Efficacy studies that examine the language outcomes of specific intervention procedures are needed.
- A major gap in the research is the lack of research on interventions for “complex syntax” (e.g., complex sentences, elaborated noun phrases, elaborated verb phrases, interrogatives).
- We found no research examining the effectiveness of various language goal attack strategies.
- Only one of the 19 studies examined treatment effect *maintenance*. The lack of research on whether various language interventions produce lasting positive effects in school-age children is a major gap in the evidence.
- The effectiveness of specific intervention procedures on students’ language outcomes needs to be systematically examined in the area of semantics and vocabulary/concepts.
- We found only three studies, all in the domain of Semantics/Vocabulary/Concepts/Word Finding, that included receptive language outcome measures.
- One major gap in language intervention outcome research for school-age children is in the area of narrative treatment strategies. SLPs who work in schools would benefit from efficacy studies on narrative outcomes.
- Research is needed on the effects of various service delivery models on language treatment outcomes for school-age children, including the effectiveness of different service delivery models on outcomes for different language targets.
- The lack of evidence on the use of curriculum-relevant materials and standards in language intervention (i.e., ecologically relevant therapy) and on the effects that language therapy has on students’ progress in the general education curriculum (reading, writing, math) is especially problematic for SLPs who work in schools and must relate intervention to student progress in the general education curriculum as per IDEA requirements.
- Another major gap in the evidence is that no studies were found that examined the amount and frequency of intervention required to make significant progress on language targets for children in schools.

## Implications for Personnel Preparation: Evidence-Based Practices Skill Set

SLPs and graduate students in training who intend to work with school-age children need a solid foundation in EBP process and content in order to provide effective services to students in schools with communication disabilities. A priority for ASHA is to help establish the skill set for EBP throughout the SLP workforce as well as to provide resources to make EBP as practical as possible in the workplace. Clinical education programs in universities must begin to routinely

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instruct beginning clinicians in the principles and procedures of EBP.

### **Implications for Personnel Preparation: Knowledge of Evaluation and Intervention Techniques That Are Supported by Scientific Evidence**

SLPs entering the workforce need to come to the job with a firm knowledge about the specific language treatment methods that are proven to be effective and that are supported by evidence. For SLPs already working in schools, continuing education providers must be encouraged to develop continuing education activities that address current best evidence for language intervention and critically assess the quality of that evidence in the course of educational offerings.

### **Implications for Personnel Preparation: Development of Action Research Protocols with School-Age Children and Collaborative Arrangements with Universities and Schools**

Applied research conducted in actual school environments may be more relevant than RCTs to the provision of language intervention than research carried out in university labs or other controlled settings. Universities should train and research funding agencies should give preference to clinician-researchers to conduct action research in real-life school settings.

## **CONCLUSIONS**

This systematic review of EBP of language intervention for school-age students with language disorders presented a narrow sample of what needs to be done given the extensive scope of practice of communication disorders in schools.