

A Meta Analysis of Phonological-Based Interventions on Reading Comprehension

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Introduction

Studies that examined the extent of association between various measures of phonological awareness (PA) and reading comprehension (RC) have shown that PA is an important predictor of reading ability. Ehri and colleagues (2001) conducted a meta analysis of experimental studies to evaluate the strength of PA instructions on various reading outcomes. They found that PA instructions have a small to moderate impact on children's reading comprehension. However, many of studies focusing on the association of PA and RC do not have an experimental design. A recent meta analysis study indicate a strong association of phonological awareness and reading comprehension using cross-sectional and longitudinal design (Yaghoub Zadeh et al., 2008). It is important to examine to what extent recent intervention studies (conducted between 1995-2007) have been improved and reflect the PA-RC association in non-experimental studies.

Objective

The present study is designed to evaluate the effectiveness of phonological-based interventions on the development of reading comprehension.

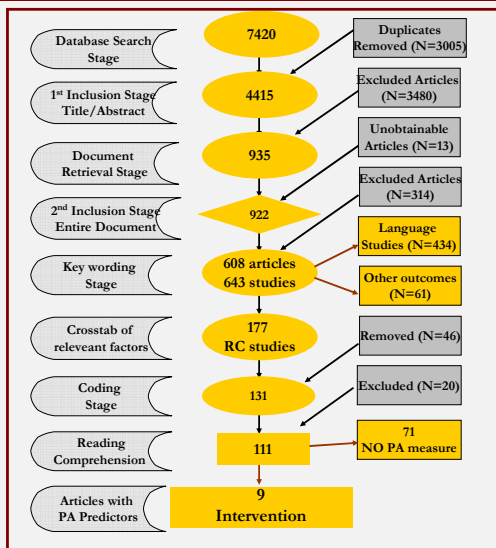
The data used here is part of a large systematic review of the literature on language acquisition and reading comprehension development. The following procedures were followed.

Inclusion Criteria

- empirical studies
- written in English language in peer reviewed journals
- reading comprehension measures as outcome
- one or more risk factors
- sample size equal or above 30 per group
- Years covered by search: 1995-2007

Search Engines

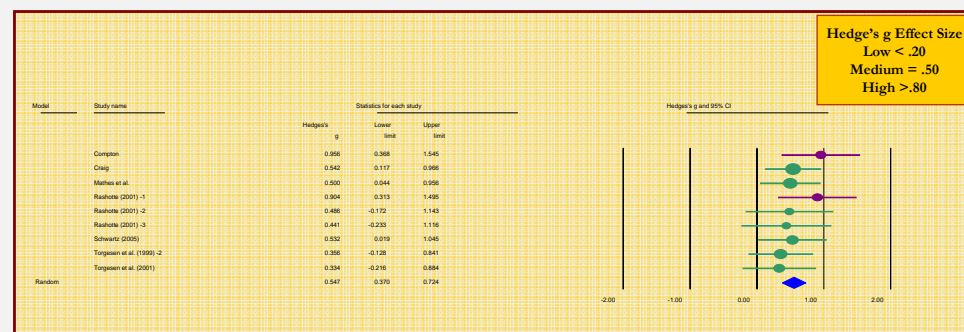
- Academic Search Premier
- Education Index Full Text
- ERIC
- International ERIC (Australian & British)
- Linguistics and language Behavior Abstracts
- PsycINFO
- PubMed
- Web of Science



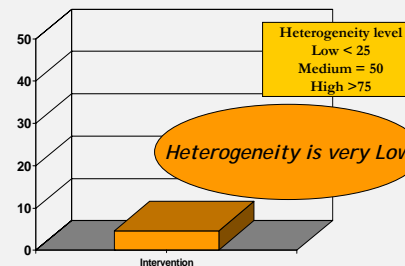
Results

We used Comprehensive Meta-Analysis II to analyze the data. Hedge's g was used as the effect size for the intervention studies. The effect size associated with intervention (Hedges' g=.55) studies were in medium range. Q test (Q=4.60, df=8, p=.80) and I² values (I²=0) indicated that the heterogeneity was very low among effect sizes for the intervention studies indicating that the effect size is representative of all the studies.

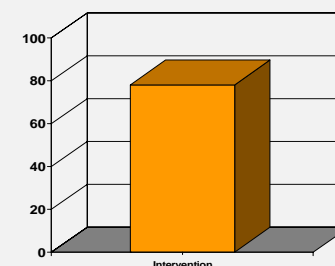
Effect Sizes for PA-based Intervention Studies



Heterogeneity



Fail-Safe N: number of missing studies



Conclusion

Phonological awareness associates with measures of reading comprehension regardless of the study design. Compared to the previous meta analysis on the effect of PA instruction on reading comprehension (Ehri et al. 2001), we found a stronger effect for interventions using a phonological awareness component on reading comprehension (effect sizes .55 vs. .34) and a much lower heterogeneity. This might be due to improvement in phonological-based interventions. However, the current meta analysis includes smaller number of intervention studies than the meta analysis conducted by Ehri and colleagues (9 vs. 20). Overall, although cross-sectional and longitudinal studies indicate that the association of phonological awareness and reading comprehension is strong (Yaghoub Zadeh et al., 2008), experimental studies point to a medium impact of phonological awareness on reading comprehension. This gap may indicate that phonological-based interventions could be improved even further to have a higher impact on reading as non-experimental studies have shown that phonological awareness has potentially higher impact on reading skills.