

A Systematic Review of the Efficacy of Phonics-Based Literacy Interventions for Children with Hearing Loss



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Introduction

Phonemic awareness is defined as, “the ability to notice, think about, and work with the individual sounds in words,” while phonics is “the understanding that there is a predictable relationship between phonemes... and graphemes” (National Reading Panel 2000). The reading difficulties that are seen in children who are deaf and hard of hearing may be closely connected to the inability to adequately address the phonological components of reading instruction, especially phonemic awareness and phonics skills (Leybaert, 1993).

According to the most recent data from the National Center for Educational Statistics (2013), approximately 75% of children with hearing impairments spend 40% or more of their day in the regular education classroom. As Trezek (2007) discussed, “given this current placement arrangement, coupled with the move toward instructional strategies that include phonemic awareness and phonic skills, identifying successful means of accessing this type of instruction for students who are deaf or hard of hearing is critical.”

Despite this need, there are currently no published systematic reviews on phonics-based literacy intervention for school age children with hearing loss. Therefore, this systematic review set out to fill this gap in the literature and address the following question: **“What is the efficacy of phonics-based literacy interventions for school age children with hearing loss?”**

Methods

Databases searched:

- CINAHL, ERIC, PsycINFO, Education Full Text, Pubmed

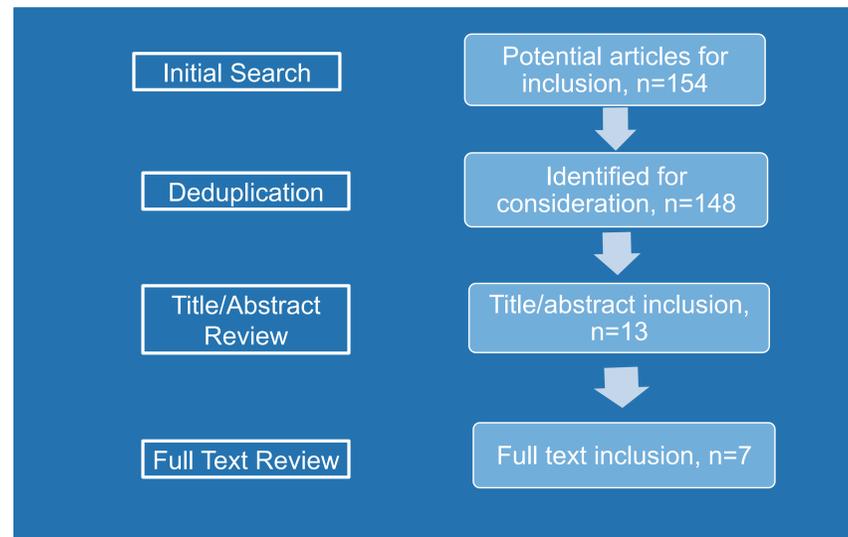
Search terms utilized:

- Hearing loss, hearing impairment, deaf, hard of hearing
- Phonics, phonemic awareness, phonological awareness, phoneme-grapheme, letter sound awareness, letter sound correspondence, letter knowledge
- Intervention, therapy, treatment, program

Inclusion criteria:

- Peer-reviewed
- Articles written in English
- Published before 2017

Results



| Author, Year | Design | Participants | Intervention |
|------------------------------------|--------------|--|--|
| Guardino et. al, 2011 | Case Series | HL: n=6 | Teach Your Child to Read in 100 Easy Lessons |
| *Naveka et. al, 2013, 2014, & 2015 | Case Control | 2013, 2014 HL: n=32 NH: n=16 2015 CI: n=11 NH: n=11 | Graphogame, a computer-assisted reading intervention with a phonics approach |
| Susan et. al, 2009 | Case Report | HL: n=1 | Teach Your Child to Read in 100 Easy Lessons |
| Trezek & Yang, 2006 | Case Series | HL: n=13 | Direction Instruction Reading Mastery I |
| Trezek et. al, 2007 | Case Series | HL: n=20 | Literacy Across the Curriculum for an Equitable Society (LACES) |

HL = Children with Hearing Loss
 NH = Children with Normal Hearing
 CI = Children using Cochlear Implants

*The authors of this study analyzed data from the same sample for three different articles

Results cont.

Critical appraisal results (utilizing Joanna Briggs appraisal tools):

- Results ranged from adequate – moderate
 - Moderate, n=5 (Naveka et. al 2013-2015, Trezek et. al 2006-2007)
 - Adequate, n=2 (Guardino et. al 2011, Susan et. al 2009)

Statistical results of the studies:

- Statistical significance found (Naveka et. al 2013, 2014, 2015, Trezek et. al 2006 & 2007)
- Moderate – Large effect sizes found (Naveka et. al 2013, Trezek et. al 2006 & 2007)
- Inability to compute statistics (Guardino et. al 2011, Susan et. al 2009)

Areas of improvement post phonics-based interventions:

- Non-word decoding
- Phoneme-grapheme correspondence
- Broad range of phonological skills
- Word decoding
- Passage comprehension

Discussion

With the evidence that was obtained, it is not possible to completely affirm or deny the efficacy of phonics-based literacy interventions for children with hearing loss. While, in general, the studies in this systematic review did find improvement across phonological and literacy skills, the studies were of lower quality and thus lead the authors to question their applicability overall. There is a lack of high quality studies related to phonics-based interventions for children with hearing loss, which is an area that should be addressed in the future.

Conclusions

In general, phonics-based literacy interventions did show positive effects on the literacy and phonological outcomes of children with hearing loss.

Further research requires more experimental designs for higher-level evidence to aid in evidence-based practice for speech-language pathologists working with children with hearing loss.