The Effects of Literacy Interventions on Single-Word Reading for Individuals who use Aided AAC: A Systematic Review

Kelsey Mandak, MA, CCC-SLP, Doctoral Candidate, Penn State University
Janice Light, Ph.D., Penn State University, David McNaughton, PhD, Penn State University

Introduction

- In today’s world, the acquisition of literacy skills is necessary to participate successfully in education, employment settings, and society.
- The acquisition of literacy skills is especially important for individuals with complex communication needs (CCN) who use augmentative and alternative communication (AAC) (Foley & Wolker, 2010; Light & McNaughton, 2013).
- Up to 90% of individuals with CCN enter adulthood without functional literacy (Foley & Wolker, 2005).
- Without the acquisition of literacy, individuals who use AAC are bound to be restricted in their participation.

Inclusion Criteria

Each study had to:

(a) have at least one participant who used aided AAC or an entire treatment group that used aided AAC.
(b) be a peer-reviewed publication or dissertation
(c) employ an experimental design
(d) investigate the effects of literacy instruction with at least one dependent variable related to single-word reading.

Several skills play a role in literacy development (e.g., phonological awareness skills, letter-sound correspondences, decoding, etc.). Ultimately, individuals need to integrate these skills to read a wide range of texts fluently with comprehension.

One critical step of literacy learning is instruction in reading single words.

If decoding, the individual looks at the letters, retrieves the sound of each letter, blends the sounds, and thus determines the word.

Or an individual may focus primarily on the orthography of the word and ignore it with its referent by sight.

Single word reading is vital, as once an individual with CCN can decode or recognize a few words by sight, the opens the door to meaningful reading experiences (Light, McNaughton, Weyers, & Karg, 2008).

Methods

Electronic Database Search

ERIC, PubMed, PsycInfo, and Proquest Dissertations and Theses

Search term categories

(a) “intervention” or “Instruction”, AND
(b) “AAC” or “Augmentative communication” or “Alternative communication”, AND
(c) “decoding” or “word identification” or “word recognition” or “word reading” or “sight words”.

Reliability Check

(a) study identification
(b) participant characteristics
(c) intervention and independent variables
(d) dependent variables
(e) outcome measures
(f) quality of evidence

Results

The systematic search identified 24 individuals across 9 single-case experimental design studies. Across participant, intervention, and outcome characteristics, these individuals were able to acquire single-word reading skills.

Participant Characteristics

Across all ages

Elementary (6-144 mo)

Adolescent (11-19 years)

Adult (18 years)

Across all Diagnoses

ASD, DS, CP, Intellectual Disability, Other

Very Large Effects

Intervention Characteristics

Very Large Effects across all intervention approaches, all interventions, and interventions using various instructional strategies:

But, the largest effects were those studies that:

- Used a Phonological approach or Combination approach
- Included error correction and error analysis
- Had intervention implemented by educators, rather than researchers
- Included 15 or more intervention sessions
- Used the following measurement tasks
  - Text-spoken choices
  - Picture-text choices
  - Spoken-word Text-choices

Intervention Approach

- 4 studies took a phonological approach, 4 studies took a sight-word approach, 1 study took a combination approach
- All in one-on-one setting
- Averaged 12 intervention sessions per participant
- Educators served as interventionists in 4 studies, Researchers in 5 studies
- Various instructional strategies were used

What was being measured?

- All studies had same dependent variable: Accuracy of reading single words
- Studies varied in measurement task used (see below)

Text-Spoken Choices

Instructor presents written word. Instructor presents four spoken choices. Learner chooses from the spoken choices.

Text-Picture Choices

Instructor presents written word. Learner chooses a picture.

Spoken Word-Text Choices

Instructor says a word. Learner chooses a written word.

Picture-Text Choices

Instructor presents a picture. Learner chooses a written word.

Various measurement tasks

Effects?

- Across all ages
- Elementary (6-144 mo)
- Adolescent (11-19 years)
- Adult (18 years)
- Across all Diagnoses
- ASD, DS, CP, Intellectual Disability, Other

Discussion & Implications

Participants

It is not well understood which participants benefit most from which interventions:

Most participants were elementary-school-aged children or adolescents with ASD.

Educators must not allow individuals’ ages, prior literacy experiences, and current language skills to impact their expectations for future skill acquisition.

- More research is necessary for specific groups and diagnoses, with increasing specificity when describing participants.
- Highlights the need for research on the effects of interventions for children and adults who use AAC.

Intervention

Instructional Approach

The effects of interventions including phonological awareness and phonetics instruction were greater than those that focused on sight-word instruction alone.

- Without fluency in foundational phonological skills, reading will require significant cognitive resources for individuals with CCN.
- There is still the need for sight-word identification, as not all words are decodable. Although both approaches were individually effective, the combination of both bolstered the intervention effectiveness.

Intervention Strategies

- The instructional strategies across the studies reveal the importance of direct and indirect instruction, appropriate scaffolding (e.g., modeling, time delay, etc.), feedback, and the use of error correction and error analysis.
- Corrective feedback provides increased opportunities for learners to respond and practice new skills.
- Identifying learners’ patterns of responses through error analyses can provide valuable information on how to adapt instruction as well as future interventions.

Alternative Response Modes

Learners with CCN are unable to participate via spoken responses and thus instructors must use adaptations to measure intervention outcomes and progress. There were four distinct tasks used to assess single-word reading across the studies.

- The demands of the tasks vary.
- LEAST DEMANDING → do not require phonological recording
- Text-Spoken Choices
- Spoken-Word Text-Choices
- MOST DEMANDING → require phonological recording
- Picture-Text Choices
- Text-Picture Choices

With both approaches, evidence-based instructional strategies are necessary to ensure success.

Conclusion

- Across participant, intervention, and outcome characteristics, individuals who used aided AAC successfully acquired single-word reading skills with appropriate instruction.
- It is essential that professionals provide opportunities for individuals who rely on AAC to develop foundational literacy skills in order to increase their likelihood of becoming successful readers and participating fully in life.

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