Efficacy of Morphological Awareness Intervention and Fast Forward Software to increase Reading Fluency in Children with Dyslexia

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Introduction

• Developmental dyslexia is a disorder characterized by deficits in reading skills in children with normal intelligence. Specific reading skills affected by dyslexia include phonological awareness, memory, and coding skills that allow the child to decode printed words (Paul, 2012).
• Phonological awareness, the ability to think about and manipulate the sound structure of a spoken word (i.e., onset-rhyme), is critical to word recognition, or the reading of single words in isolation (McCaulley & Fey, 2006). Previous studies have demonstrated that morphological intervention has been shown to improve decoding and phonological awareness skills in children with reading disabilities.
• The goal of morphological awareness intervention is to stimulate the skills that will positively influence literacy: the ability to read and write, listen, speak, discuss, plan and acquire information (McCaulley & Fey, 2006).
• The purpose of this investigation is to determine the efficacy of two types of treatment for improving reading skills in school-aged children with dyslexia.

PICO (patient, intervention, comparison and outcome) framework (Gilliam & Gilliam, 2008) was used to develop the following research question:

Does morphological intervention (I) or Fast ForWord Language software (C) lead to higher reading fluency (measured by words per minute (WPM) in school-aged children (P)?

Case Scenario

I am a graduate student clinician at the University of Nevada, Reno.

Currently working with a 10 year old student who has developmental dyslexia.

Two types of interventions used to treat clients with dyslexia include morphological awareness intervention and Fast ForWord language software.

Fast ForWord Language (FWF-L) program: computer program with language-based audio-visual games intended for use with 4 to 14 year old children with language difficulties.

Morphological awareness intervention: teaching units of meaning related to grammar, spelling, in order to increase reading skills.

Methods

Search Terms

• Dyslexia
• School-aged children
• Reading Intervention
• Fast ForWord Language Software

Databases

• PubMed
• PsychINFO
• Found 40 articles relevant to PICO

Articles

• Four highly appraised articles were used to guide evidence-based decision
• Each study had interrater reliability of 85%

Rating System

• 15 point Critical Appraisal of Treatment Evidence (CATE)
• 11 point Critical Appraisal of Systematic Review or Meta-analysis (CASM)
• 10 articles were appraised used the CATE and CASM forms in order to determine clinical significance and relevance to PICO question

Results

Authors, Date, Research Design

<table>
<thead>
<tr>
<th>Authors</th>
<th>Date</th>
<th>Research Design</th>
</tr>
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<tbody>
<tr>
<td>Bowers &amp; Kirby</td>
<td>(2010)</td>
<td>Systematic Review</td>
</tr>
<tr>
<td>Strong, Torgerson, &amp; Hulme</td>
<td>(2011)</td>
<td>Meta-analysis</td>
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Purpose

• Systematic review of evidence about the effects of instruction on the morphological structure of words on literacy learning.
• How morphological interventions affect literacy outcomes with a special focus on children with challenges in literacy achievement.
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• Meta-analysis of all studies of Fast ForWord identified as using an appropriate design to determine the effectiveness of reading intervention.

Description of Participants

• Participants were coded as: Formal ( Dyslexic, SLD), Informal (less able), Unidentified, Grade level.
• Participants were coded as: LD (learning disability), ID (reading disability), SLD (speech and language delayed), Poor readers, Struggling readers, Poor readers/speakers, ELL (English language learners).
• Participants were coded: Pre-school to grade 8, Participants were coded: Pre-school to grade 8.
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Outcome Measure

• Literacy outcomes: Reading, Spelling, Vocabulary
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Discussion

External Evidence

• Morphological instruction can improve phonological & morphological awareness, leading to increased reading skills.
• Findings cast strong doubt on the clinical effectiveness of the FFW-L program for reading.
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• Exclusion: hearing loss, emotional/social impairment, gross neurological impairment

Measurement of Reading Skills

• WRM-III subtests: Word Identification, Passage Comprehension
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Evidence Internal to Clinical Practice

• Evidence has not demonstrated a strong support for the use of FFW-L in improving reading rate.
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Evidence Internal to Client

• Due to my client’s deficits in understanding meanings of words (prefix, suffix) and research from external evidence, I do not intend to use FFW-L in therapy.
• I plan to continue use of morphological instruction to improve reading skills.

Evidence Based for Reading Rate

Loeb, Gillam, Hoffman, Brundel, & Marquis (2009) developed a morphological intervention program for children with dyslexia. Their intervention was found to be effective in improving reading skills in school-aged children with dyslexia.

Strong, Torgerson, & Hulme (2011) conducted a meta-analysis of all studies of Fast ForWord identified as using an appropriate design to determine the effectiveness of reading intervention. Their findings suggest that morphological instruction can improve reading skills in school-aged children with dyslexia.

Selected References


