Predicting Oral Reading Comprehension Abilities

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Disclosures

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Introduction

Reading and Single-Word Reading

• The Simple View of Reading breaks down reading into two main components:
  – Decoding
  – Linguistic Comprehension
• Single-word reading, or decoding, involves:
  – Phonological representation (sounding out words)
  – Visual representation (sight-word reading)
• Single-word reading is thought to be a better predictor of reading comprehension in children.

Introduction

Reading Fluency

• Reading fluency: the number of words read correctly in an amount of time
  – Textual reading fluency: word reading fluency in the presence of surrounding text
  – Single-word reading fluency: word reading fluency with no surrounding text
• Research suggests that textual reading fluency is a better predictor of reading comprehension than single-word reading fluency or context accuracy in children.

Introduction

Reading Comprehension

• Reading comprehension: extracting meaning and understanding from the text while simultaneously reading the text
• Reading comprehension is an abstract skill, meaning it is difficult to assess accurately.
• Research suggests that the Simple View of Reading accounts for reading comprehension well in adults with low reading abilities.

Purpose

• Discussion of predictors of reading comprehension and research findings have been aimed to the pediatric population, leaving much to be investigated in the adult population.
• The study investigated the experimental question: what is the relationship between a single-word reading accuracy assessment tool, single-word reading fluency assessment tool, and textual reading fluency assessment tool to reading comprehension?
Participants

- Participants included four college-aged individuals meeting the following criteria:
  - No previous exposure to testing materials
  - Native English speakers
  - No known diagnosis of reading disabilities

Materials

- *Test of Word Reading Efficiency-2 (TOWRE-2)* was used to assess
  - Sight Word Fluency
  - Phonological Decoding Fluency
- *Woodcock Reading Mastery Tests-Third Edition (WRMT-III)* was used to assess
  - Sight Word Reading Accuracy
  - Phonological Decoding Accuracy
  - Overall Reading Accuracy
- *Gray Oral Reading Tests-Fifth Edition (GORT-V)* was used to assess
  - Textual Reading Rate
  - Textual Fluency
  - Textual Accuracy
  - Textual Comprehension
  - Overall Textual Reading Abilities

Methods

- Each assessment tool was administered to each participant.
- Test order was counterbalanced.
- Each participant completed the necessary components for each assessment in one sitting.
- Data collection was completed in real time.

Methods

- Standardized scores were obtained based upon raw data according to the test manuals.
  - All TOWRE-2 scores: average range = 85-115
  - All WRMT-III scores: average range = 85-115
  - GORT-V Rate, Fluency, Accuracy, and Comprehension: average range = 7-13
  - GORT-V Oral Reading Index: average range = 85-115
- A step-wise linear regression model was utilized on the GORT-V comprehension scores with the TOWRE-2, WRMT-III, and GORT-V subtests’ measures entered into the model as potential predictors.

Results

When assessing which independent subtest predicted reading comprehension:
- WRMT-III Word Identification subtest significantly predicted comprehension scores, β=0.980, t= 6.96, p<.02.
- When including all composite scores (GORT-V Oral Reading Index, TOWRE-2 Total Word Reading Efficiency, and WRMT-III Basic Skills) into the model:
  - Basic Skills composite score from WRMT-III best predicted reading comprehension scores, β=0.997, t= 17.50, p<.003
  - WRMT-III Word Identification subtest alone significantly predicted oral reading comprehension abilities by 98%
  - WRMT-III Word Identification and Word Attack subtests predicted oral reading comprehension by 99.7%.

Means and Standard Deviations of Scaled Scores from GORT-V and Standard Scores from GORT-V, TOWRE-2, and WRMT-III

<table>
<thead>
<tr>
<th>Subtest</th>
<th>Mean (SD)</th>
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<tbody>
<tr>
<td>GORT-V Rate</td>
<td>11.50 (3.0)</td>
</tr>
<tr>
<td>GORT-V Accuracy</td>
<td>9.25 (9.6)</td>
</tr>
<tr>
<td>GORT-V Fluency</td>
<td>10.25 (2.2)</td>
</tr>
<tr>
<td>GORT-V Comprehension</td>
<td>8.50 (1.7)</td>
</tr>
<tr>
<td>GORT-V Overall (Oral Reading Index)</td>
<td>96.00 (8.7)</td>
</tr>
<tr>
<td>TOWRE-2 Sight Word Efficiency</td>
<td>106.50 (15.6)</td>
</tr>
<tr>
<td>TOWRE-2 Phonemic Decoding Efficiency</td>
<td>108.50 (15.6)</td>
</tr>
<tr>
<td>TOWRE-2 Overall (Total Word Reading Efficiency)</td>
<td>108.25 (15.7)</td>
</tr>
<tr>
<td>WRMT-III Word Attack</td>
<td>91.75 (4.8)</td>
</tr>
<tr>
<td>WRMT-III Word Identification</td>
<td>106.00 (8.6)</td>
</tr>
<tr>
<td>WRMT-III Basic Skills</td>
<td>98.50 (6.8)</td>
</tr>
</tbody>
</table>
Interpretation

• Data suggests WRMT-III Word Identification subtest predicts oral reading comprehension more so than textual reading fluency or single-word reading fluency measures.
• Compared to TOWRE-2 and GORT-V subtests, WRMT-III subtests were more predictive of reading comprehension.
• Oral reading tasks rely heavily on decoding abilities, more specifically on single-word reading abilities, which is supported by the findings of this study.

Limitations

• The current study researched assessment tools as indicators of oral reading comprehension in a population that normally reads silently.
• The literature included is targeted at pediatrics or the low literate population.

Conclusion

• However, the current results are important due to the fact that adult silent readers rely more heavily on higher mental processes.
• Future studies in this area would provide:
  • More reliable results
  • More generalizable results
  • Further evidence of the benefits of more focal and efficient reading assessment
• Future studies also should focus upon treatment in addition to assessment.

Interpretation

• Broad batteries of assessment tools are often time and resource consuming and can lead to conflicting test results.
• Results imply that assessing reading comprehension may be focused on the remediation of one skill.
• Reading comprehension is an abstract skill that is difficult to accurately assess.
  – However, results indicate that assessment of reading comprehension could potentially focus on one’s ability to read words based on sight.

Conclusion

• This study aimed at investigating which assessment tool was the best predictor of reading comprehension abilities.
• The best indicator of reading comprehension is thought to be obtained by administration of a single subtest or a combination of two subtests.
• This is an important finding due to the inherent difficulty in terms of validity and resources associated with the assessment of reading comprehension.
• Findings are limited in explaining oral reading comprehension ability to a small portion of a large population known to read silently.

References

• Cain, K., Oakhill, J, & Bryant, P. (2004). Children's reading comprehension ability: Concurrent prediction by working memory, verbal ability, and component skills. *Journal of Educational Psychology, 96*(1), 31-42. doi: 10.1037/0022-0663.96.1.31