An exploration of presentation modality effects on derived word knowledge

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Abstract

This study explores the effects of presentation modality, frequency, and phonological transparency on fifth-graders’ vocabulary knowledge of derived words. Children produced sentences to demonstrate understanding of the meaning of derived words presented in either a visual or verbal modality. Results indicated a main effect for frequency, with children performing better on words with a high frequency than low frequency. Frequency and phonological transparency did not affect vocabulary performance. These results support prior research findings that frequency is an important aspect of vocabulary learning.

Introduction

Vocabulary knowledge contributes to reading comprehension and academic achievement. Derived words are important for vocabulary development from 3 rd to 6 th grades. Vocabulary knowledge is multidimensional, incremental, interrelated, and heterogeneous. Factors that may affect derived word knowledge include:

- Frequency
- Transparency
- Semantic Translucency
- Phonological Translucency
- Modality

Vocabulary Knowledge

- Frequency
- Semantic properties
- Phonological properties
- Modality

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Research Question

- Does presentation modality affect vocabulary knowledge, and if so, how?

Method

Participants

36 Fifth Grade Students (13 males, 23 females)
Mean age = 11.1
Hearing and language were within typical limits

Stimuli

- 48 semantically transparent derived words
- High and low frequency
- Transparent and opaque

Table 1. Examples of Derived Word Stimuli by Frequency and Phonological Transparency

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Phonological Transparency</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Transparent</td>
</tr>
<tr>
<td>Low</td>
<td>Opaque</td>
</tr>
</tbody>
</table>

Table 2. Semantic Coding Scale for Sentence Use Question

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Example of Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The meaning of the target word was definitely known by the speaker.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The meaning of the target word was probably known by the speaker.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The meaning of the target word may or may not have been known by the speaker.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>The meaning of the target word was definitely not known by the speaker.</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Sentence Score for Frequency and Phonological Transparency

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Phonological Transparency</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Transparent</td>
<td>3.70</td>
</tr>
<tr>
<td>Low</td>
<td>Opaque</td>
<td>3.35</td>
</tr>
</tbody>
</table>

Results

- 2 x 2 MANOVA
- Independent variables:
  - Frequency (High, Low)
  - Phonological Transparency (Transparent, Opaque)
- Dependent variables:
  - Sentence Score for Visual Presentation
  - Sentence Score for Verbal Presentation

- Main effect for Frequency was significant. (Wilks' \( \Lambda = .851 \), \( \eta^2 = .149 \), \( p < .001 \))
- Main effect for Transparency was not significant. (Wilks' \( \Lambda = .998 \), \( \eta^2 = .019 \), \( p > .20 \))
- Frequency x Translucency interaction was not significant. (Wilks' \( \Lambda = .987 \), \( F(1,44) = 1.67 \), \( p = .20 \))

Procedure

Half of the stimuli words were presented auditory, half were presented visually.
Reliability

- Two independent coders scored all sentences.
- Where 1-point discrepancies were found, the average between the two scores was used in the analysis.
- A consensus was reached for discrepancies greater than 2 points.

For further information

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References


Summary

- Children knew high frequency words better than low frequency words.
- Presentation modality did not affect vocabulary performance.
- Phonological transparency did not affect performance.
- The amount of exposure rather than type of exposure plays a bigger role in children’s ability to learn and use vocabulary.
- Lexical frequency affects how well fifth-grade children know derived words.
- Auditory and visual modalities are both useful to children.