Conceptual Language Discrimination by Preschool Children Using a Bilingual AAC iPad App

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Background Summary:

◦ Bilingual children are not at a disadvantage in terms of linguistic and cognitive outcomes
◦ Codeswitching is a frequent and important aspect of language use among bilingual children and adults
◦ Codeswitching is related to cognitive flexibility and categorization
◦ Bilingual AAC options are increasingly available and several allow language switching

BUT

◦ Little is known about language discrimination (i.e., codeswitching) using a communication modality other than spoken language
◦ Little is known about the cognitive and linguistic factors required to discriminate languages using an AAC system

Method

<table>
<thead>
<tr>
<th>Question</th>
<th>Hypothesis</th>
<th>Analysis</th>
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</thead>
<tbody>
<tr>
<td>1. Which factors significantly predict bilingual children’s ability to conceptually discriminate between English and Spanish vocabulary displays on a graphic symbol-based SGD?</td>
<td>Cognitive abilities, language skills, current language input/output, and age will be significant predictors</td>
<td>multiple linear regression</td>
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<td>2. How much support do bilingual children require to conceptually discriminate between English and Spanish vocabulary displays using a graphic symbol-based SGD within a graduated prompting hierarchy?</td>
<td>Moderate degree of support (i.e., predominantly levels 2-3 in the graduated prompting hierarchy)</td>
<td>Frequency chart of children’s performance at each level of prompting</td>
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<td>3. Are there significant differences in performance in ability to conceptually discriminate between English and Spanish vocabulary displays on a graphic symbol-based SGD when bilingual children without disabilities are compared to bilingual children with disabilities?</td>
<td>Bilingual children without disabilities will demonstrate lower levels of support required than bilingual children with disabilities</td>
<td>multiple linear regression</td>
</tr>
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Participants:

◦ 50 preschool-aged children
  • 30 Children with typical development, 20 children with cognitive and linguistic impairments

Measures:

• Bilingual English Spanish Assessment (BESA)
  • Bilingual Input-Output Survey (BIOS)
  • Subtests: morphosyntax, semantics
  (Peña, Gutiérrez-Clellen, Iglesias, Goldstein, & Bedore, 2014)
• Leiter-3 International Performance Scale, Third Edition (Leiter-3)
  • fluid reasoning
  • Attention/memory
  • (Roid, Miller, Pomplun, & Koch, 2013)

Experimental Task: Graduated Prompting Hierarchy

<table>
<thead>
<tr>
<th>Level</th>
<th>Prompt</th>
<th>Explanation/Example</th>
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<tbody>
<tr>
<td>Level A (5 points)</td>
<td>Indirect elicitation prompt in target language</td>
<td>Spanish speaking puppet: Pelota. English speaking puppet: I don’t understand. What did he say?</td>
</tr>
<tr>
<td>Level B (4 points)</td>
<td>Directed spoken prompt</td>
<td>Show him ball</td>
</tr>
<tr>
<td>Level C (3 points)</td>
<td>Spoken explanation</td>
<td>You showed him pelota in Spanish, but he doesn’t understand Spanish. You need to tell him ball in English.</td>
</tr>
<tr>
<td>Level D (2 points)</td>
<td>Gestural cue and spoken prompt in target language</td>
<td>You need to press the button here (points) to tell him ball in English.</td>
</tr>
<tr>
<td>Level E (1 point)</td>
<td>Direct aided model + elicitation statement</td>
<td>Tell me BALL.</td>
</tr>
</tbody>
</table>

Materials: Proloquo2Go™ customized display

Discussion Questions:

1) What will the findings of this study tell us about code-switching using a modality other than speech? How do expressive vs. receptive language roles differ?

2) What if the child codeswitches using speech and not the AAC app? How do I make the AAC use obligatory in the context of the experimental task?

3) How can the results of this research be extended to children who use AAC?

4) What are the greatest challenges in AAC intervention with children who are bilingual?

5) How can AAC design be improved to best support bilingual children and adults who use AAC?