THE EFFECTS OF AIDED AAC MODELING ON THE EXPRESSION OF MULTI-SYMBOL MESSAGES BY CHILDREN WHO USE AAC

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Introduction

- Over 11% of preschoolers who receive special ed services in the U.S. require AAC (Binger & Light, 2003).

- Preschoolers who require AAC are at risk for all aspects of development, including language development (e.g., Lund, 2001).
• Finding ways to support the language acquisition of children who use AAC is a primary goal of intervention (e.g., Light, 1997)
• One critical stage of language development is the transition from single-to multi-symbol messages
• Many children who use AAC
  – have difficulty transitioning from single-symbol to multi-symbol messages
  – rely on telegraphic messages to communicate
    (e.g., Light, Binger, & Kelford Smith, 1994; Smith & Grove, 2003; von Tetzchner & Martinsen, 1996)
• Aided AAC models may help children with this transition
  – Use the child’s AAC system to model use of AAC
  – Provide spoken input too (typically grammatically complete)
    • E.g., \{More MORE\}\{Cookie COOKIE\} Giraffe has more cookies
• Many intervention programs recommend providing models using the child’s AAC system (e.g., Goossens', 1989; Johnston et al., 2003; Kent-Walsh, 2003; Romski & Sevcik, 1996)

• However, no one has isolated the impact of aided AAC modeling
  – Don’t know if aided AAC modeling is a critical component of intervention programs

• Further, no one has designed Ix to specifically facilitate early multi-symbol messages
Research Questions

• What is the effect of using aided AAC models on
  – the use of multi-symbol messages by preschoolers who use AAC
  – the participants’ generalization of multi-symbol messages to new play scenarios when aided AAC models are no longer provided
  – the participants’ generalization of multi-symbol messages to new play scenarios with the continued support of aided AAC models
  – the participants’ maintenance of multi-symbol messages after intervention has ceased?
Method

• Design
  – Single subject, multiple probe research design (Tawney & Gast, 1984) across one set of three participants
    • All used voice output systems
  – Second study using same design with two additional participants
    • Both used light tech communication boards
• Participants
  – Were between 3;5-4;6
  – Required AAC to communicate
  – Had congenital speech disorders
    • Variety of disabilities
  – Had expressive vocabularies of at least 25 words
  – Comprehended 2-symbol utterances
  – Identified target graphic symbols
  – Had adequate vision and hearing
• **Materials**
  – Play scenarios used as context for ix
  – AAC Systems
    • 15 symbols per scenario
    • Photos and PCS
<table>
<thead>
<tr>
<th>more</th>
<th>lion</th>
<th>blow</th>
<th>balloon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child signing MORE</td>
<td>Child signing ALLDONE</td>
<td>Child signing ALLDONE</td>
<td></td>
</tr>
<tr>
<td>monkey</td>
<td>give</td>
<td>present</td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>tiger</td>
<td>play</td>
<td>game</td>
</tr>
<tr>
<td>Child shaking head ‘no’</td>
<td>Nathan</td>
<td>Picture of Child (head &amp; shoulders)</td>
<td>Child signing WANT</td>
</tr>
</tbody>
</table>
• **Ix Procedures**
  
  – Researcher provided aided AAC models by
    
    (a) touching two-symbol combinations of key words on the child’s AAC system
    
    (b) providing a spoken model that reflected
      
      – the child’s communicative intent and/or
      
      – the events taking place during play
• Measures
  – Dependent Variable
    • frequency of multi-symbol messages produced by the participants during each 15-minute play period
Results

• Four of the five preschoolers met the criterion for success
  -- 2 = voice output; 2 = communication board
• All produced a variety of unique symbol combinations
• All produced a range of semantic-syntactic categories
Word Order

• Most participants adhered to English word order patterns for most of their productions
• Timmy demonstrated difficulties with agent + action + object combinations
A Special Case: Robyn

• Did not meet criterion
• Two additional intervention phases conducted
  – Ix 2: New play routines, switched to light tech communication boards
  – Ix 3: Multimodal AAC models
• No notable improvements in performance
Discussion

• Aided AAC modeling successful for 4 of 5 participants
  – Support for the need to include aided AAC models in ix programs
  – Support for the ability of preschoolers who use AAC to produce symbol combinations
• Effective for 2 children using voice output systems and 2 using communication boards

• Most participants adhered to English word order patterns
  – Difficulties quickly resolved with Timmy

• A range of variables may have affected Robyn’s performance
• Children produced a wide range of
  – semantic-syntactic categories
  – different symbol combinations
Generalization & Maintenance

• All 4 participants who met criterion
  – Generalized to new play contexts
  – Maintained ability to produce symbol combinations 2 months after ix
Limitations

• Few participants
• Did not control for type of model
  – E.g., expansion versus recast
• Same instructor for each child
• Generalization contexts very similar
Directions for Future Research

• Include children with different profiles  
  – Significant motor impairments  
  – Significant cognitive impairments  
  – Autism

• Instruct other interventionists

• Investigate use of prompts

• Teach other linguistic structures
Conclusions

• Aided AAC modeling
  – Effective for teaching some preschoolers who use AAC to produce symbol combinations
  – Can promote maintenance and generalization of symbol combinations
  – Effective for promoting generative language production