The Effects of Baby Sign on Speech Segmentation in Infants

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Disclaimer

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Baby Sign

- Baby sign is a popular new phenomenon among parents of typically hearing infants
- An augmentative communication approach using key word signing to enhance communication and facilitate spoken language development
Baby Sign Appeal

• Claims include:
  – Facilitation of language development
  – Reduction of problem behaviors
  – Improved parent-child relationships
  – Increased joint visual attention during parent/child interaction
  – Enables infant to focus on the topic and context of conversation
  – Increases discussion and clarification of concepts
  – Promotes added practice with symbolic function
  – Increases intelligence
Speech Segmentation

• Infants are active meaning makers
• The ability to segment words from fluent speech is a critical step for acquiring a native language vocabulary
• This is significant as it
  – Creates a foundation for early vocabulary acquisition
  – Supports the learning of the phonological system
  – Contributes to latter grammar knowledge
Literature review

- Without cues 7.5 month olds can segment words from fluent speech
- 6 month olds can use familiar words to aid in speech segmentation
- Hollich, et al. found that 7.5 month olds can use a speaker's face to aid in speech segmentation
• Used a modified head-turn preference procedure with supplemental video information
  – Video recording consisted of a face of a female speaker as she read passages in infant directed speech
• Video stimulus enabled the infants to succeed in segmenting the speech stream when it matched the auditory signal
• Concluded
  – Infants benefited significantly by having audiovisual information operate as a cue, aiding the infants’ attention to certain aspects of the auditory signal
The research questions asked were:

– (1) Can six-month-old infants segment speech when provided with additional visual cues (sign + face, sign only and face only)?

– (2) What is the effect of baby sign on an infants’ ability to segment speech?
Methods

• Participants
  – 17 typically developing infants
  – 3 exposed to baby sign (less than 5 signs)

• Setting
  – Familiarization
    • Infants and parents viewed 2 familiarization passages in a clinic room
  – Testing
    • Audio booth was set up to resemble the traditional three-sided booth used in the head-turn preference procedure (Nelson et al., 1995)
    • Occurred in a double-walled 6’x6’ audiometric booth, animated VRA toys
    • One corner of the audio booth was covered with a white sheet to avoid distractions
• **Stimuli**
  
  – 6 familiarization passages
    • 6 sentences with mean length of 25.67 seconds
  
  – Nonsense words paired with ASL signs
    • Machine
    • Medicine
    • Friend
    • Area/Region
  
  – Videos created with a female speaker in child-directed speech
  
  – Speech stimuli (nonsense word said continuously for 30 seconds) was created by same female speaker
Videos – Face + Sign
Video – Sign Only
Procedure

• Familiarization
  – Infants were presented with 2 videos

• Testing
  – Infant orient toward midline
  – Trial onset began
  – Infant orient toward animated VRA toy at least 30°
  – Individual nonsense words played for a maximum of 30 seconds at 60 dB HL
  – The trial ended when the 30 seconds had lapsed or when the infant looked away for longer than 2 seconds
• Parents listened to music through headphones during the testing portion in the audio booth
• Familiarization for next condition followed
Results

Table 1. Mean Orientation Times for all 17 Participants and T-test

<table>
<thead>
<tr>
<th></th>
<th>Face+Sign Control</th>
<th>Face+Sign Test</th>
<th>Face Control</th>
<th>Face Test</th>
<th>Sign Control</th>
<th>Sign Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>5.701176</td>
<td>5.231515</td>
<td>5.273137</td>
<td>8.340098</td>
<td>6.365098</td>
<td>6.740098</td>
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<tr>
<td>T-test</td>
<td>0.372482</td>
<td>0.029881*</td>
<td>0.420809</td>
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</tbody>
</table>

*p < .05

Table 2. Results for The Three Infants with Baby Sign Exposure

<table>
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<tr>
<th></th>
<th>Face+Sign Control</th>
<th>Face+Sign Test</th>
<th>Face Control</th>
<th>Face Test</th>
<th>Sign Control</th>
<th>Sign Test</th>
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<tbody>
<tr>
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<td>T-test</td>
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</table>
Conclusions and Implications

• Hollich findings replicated and extended
  – 6 month old infants are capable of segmenting words from fluent speech when provided with a visual cue (face)

• Infants exposed to baby sign can use sign as a visual cue to segment speech to the same extent as the face
  – Future research is necessary to determine how much baby sign exposure is necessary for it to be effectively used to segment speech


