Using LENA to Evaluate the Effectiveness of a Parent Training Program

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**Significance**
- Children who are deaf and hard of hearing (DHH) face challenges with the acquisition of language and literacy
- Vast majority of DHH literacy research focused on practices with teachers because of a history of late-identification
- Recent changes create a greater potential for parents as the ‘first teacher’ for emergent literacy
  - *newborn screening* means early identification
  - *earlier intervention*
- Shared reading is a robust practice for the development of language with hearing children
- Minimal research with children who are DHH

**Overview**
12-week single-case design study (multiple baseline across content) examined changes in parent behavior in three target areas that foster language development in children who are DHH. Four mother-child dyads participated. All children wore cochlear implants and were between 3.5-5.11 years of age. The parent training intervention was community based, interactive, and included opportunities for parents to practice with their own child.

**Specific targeted strategies & General principles of the intervention:**
- Provided tools for choosing developmentally appropriate books
- Encouraged use of a quiet reading area
- Provided tips for targeting vocabulary in each read
- Encouraged use of repeated readings

**Parent Training Intervention**

*“Lunch Bunch”*
- Three parent trainings
- General information on importance of shared reading
- Direct instruction on one strategy per training
- 1 ½ hour sessions
- Free childcare and lunch provided
- Opportunity to interact with/ask questions of other participants
- Age-appropriate books present and available for check-out
- Strategy practice time (with their child) with guided feedback

**Procedures**
Lead researcher conducted the three parent trainings. Parents were asked to audio record four shared reading sessions a week (with one book) using LENA. Parents returned DLP at the end of the week for downloading and DLP was returned to the parents with a new book via child’s book bag.

**Coding**
1. Conversational turns
2. Open-ended prompts: e.g. open-ended questions, fill-in-the-blank, either/or questions
3. Language expansion: parent adding a word(s) or grammatical structure(s) to child’s utterance
4. Scaffolding: open-ended question followed by a simplification of the question (fill-in-the-blank, either/or, modeling the answer)

**Results**

<table>
<thead>
<tr>
<th></th>
<th>Mean Baseline</th>
<th>Mean Intervention</th>
<th>Mean Difference</th>
<th>PND (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyad 1</td>
<td>1.86</td>
<td>4.26</td>
<td>2.40</td>
<td>79%</td>
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<tr>
<td>Dyad 2</td>
<td>2.94</td>
<td>2.91</td>
<td>-0.03</td>
<td>27%</td>
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<tr>
<td>Dyad 3</td>
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<td>2.56</td>
<td>1.16</td>
<td>72%</td>
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<tr>
<td>Dyad 4</td>
<td>1.70</td>
<td>3.19</td>
<td>1.49</td>
<td>77%</td>
</tr>
</tbody>
</table>

- As a result of the intervention, three of the four dyads showed increases in parent behavior that support language development in children who are DHH.

For families with children who are DHH, this parent training intervention is effective to increase open-ended questions and conversational turns; preliminary results suggest effectiveness for scaffolding.