CREATING A SOUND START TO LITERACY:
How tablet-based intervention can improve DHH pre-schoolers’ phonological awareness skills

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What is Phonological Awareness?

The [explicit] awareness of the phonology (sound structure) of language.

PA includes awareness of:

- Syllables
- Rhyme
- Individual sounds of words (phonemic awareness)

[Note: PA ≠ Phonics (The relationship between sounds and letters)]

Phonological Awareness (PA) is generally considered a very important skill for reading.
Children with Hearing Loss

**WHAT WE KNOW**

**Reading**
- Poorer average development
- Gap widens with age

**Phonological Awareness (PA)**
- [LOCHI 5 year data](#)
  - Poorer than average performance
  - Results associated with early reading performance

**WHAT WE DON'T KNOW**

- Can intervention successfully improve PA?
- What factors influence effectiveness?
Aims: To investigate effectiveness of explicit PA intervention

Part I

**Researcher-Led**

Comparing:
- Direct PA Instruction
- Vocabulary Instruction

**Vs**

Part II

**Parent-Led**

*PA Instruction at home*

Examining:
- PA skill improvement
- Engagement with intervention
- Parental experiences
## Part I: Researcher-Led

<table>
<thead>
<tr>
<th>Pre Assessment</th>
<th>Intervention (6 weeks)</th>
<th>Post Assessment</th>
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### PROTOCOL

*All participants received weekly one-on-one sessions using specifically developed tablet games.*

*Homework activities were also provided*

### Vocabulary Control

Introduction of matched vocabulary items through shared reading and extended instruction

### Explicit PA Instruction

Focussing on teaching Rhyme, Initial Sound, Final Sound, and Blending (Onset-Rime; C-V-C)
Teaching Apps Developed by NAL

Included forced choice tasks....

Semantic match

.... And selection tasks

Sound Matching
<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Vocabulary</th>
<th>PA Group</th>
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<tbody>
<tr>
<td>Age</td>
<td>4;8</td>
<td>4;9</td>
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<tr>
<td>Vocabulary:</td>
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<tr>
<td>Sound</td>
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<tr>
<td>Cognition:</td>
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<tr>
<td>PIPA raw /60</td>
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(Syllable Segment; Rhyme Awareness; Alliteration Awareness; Phoneme Isolation; Phoneme Segmentation)
Which word rhymes with phone?

mop, bone, mug

Which word starts with the same sound as bear?

Bug, leak, mop
PA Assessment – Blending (2 subtests – 10 items)

What word do these sounds make? l-op

What word do these sounds make? m-u-g
Results: Intervention PA test, scores

**Pre-Intervention PA Score /50**

- **Vocabulary Condition**
- **PA Condition**

**Mean PA score Improvement**

Experimental Condition
Conclusions

These results provide evidence (possibly the strongest to date) that children with hearing loss may benefit from explicit PA instruction.

Potential Applications

Results showed some developmental trends

• Rhyme-level skills developed before phoneme-level skills
• Blending developed prior to phoneme matching skills

Research Questions

(1) Is parent-led delivery of a tablet-based PA training program effective for pre-schoolers with hearing loss?

(2) What are parents’ experiences when delivering tablet- based PA programs?
Sub-Study: Research Design

**Pre Assessment**

**Intervention**
*(4 weeks)*

**Post Assessment**

Families provided with:
- A pre-loaded loan tablet
- Suggested structure for game presentations
- Advice and instruction for teaching PA

**Participants:**
Seventeen families in Melbourne, Victoria.
## Participants – Part I

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<th>Researcher-led</th>
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*(Syllable Segment; Rhyme Awareness; Alliteration Awareness; Phoneme Isolation; Phoneme Segmentation)*
Families spent between approximately 36 minutes and 5.5 hours on the tablets (mean 2 hours)
PA Results – Mean Improvement following intervention

Mean Improvement

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Results: Parent Feedback

(Survey response: 12 Families)

- **Ipad presentation**

  “It was great having an ipad. J__ loved it!! He really did grasp some concepts that I hadn't been able to teach him prior to now (e.g rhyming).

  “… I had to read a bit to work out the concept and what the game was trying to achieve”.

- **Parent Skill Development**

  “It gave me an idea on what skills to work on that we then did in other ways that didn't involve the tablet”.

  “Made me think about a word, I need to teach it in different ways for child to understand to help with reading and spelling”
Encouraging results: At home interventions can be effective for promoting Phonological Awareness for children with hearing loss.

**Potential Application**

- Benefit may result not just from the intervention itself, but also as a result of parents with increased confidence/knowledge.

- Level of learning varies. How can we identify who is most suitable for home-based interventions?
Acknowledgements

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