**Aims**

- What we know:
  - Average reading development for children with hearing loss is consistently poorer than for children with normal hearing. At 5 years, children's (poor) PA performance is significantly associated with their early reading skills.

- What we don’t know:
  - Can children with hearing loss benefit from explicit PA intervention? (What influences their PA development?)

**Design**

- Pre Assessment
- Intervention (6 Weeks)
- Post Assessment

**Measures**

<table>
<thead>
<tr>
<th>Standardised Measures</th>
<th>Experimental Measures</th>
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</thead>
<tbody>
<tr>
<td>Non Verbal IQ: Wauclier (WIV)</td>
<td>Vocabulary: Receptive test of 20 CVC items used in intervention. (12 items likely to be unfamiliar to pre-schoolers)</td>
</tr>
<tr>
<td>Working Memory: Digit Span</td>
<td>Explicit PA Training: Focussing on teaching Rhyme, Initial sound, Final sound, and Blending (Onset-Rime: C-V-C)</td>
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<tr>
<td>Phon. Processing: PIPA</td>
<td>Protocol: All participants received weekly one-on-one sessions using specifically developed tablet games. Homework activities were also provided.</td>
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<tr>
<td>Letter Knowledge (Name, Sounds)</td>
<td>Vocabulary Control: Introduction of matched vocabulary items through shared reading and extended instruction.</td>
</tr>
<tr>
<td>Audiological History</td>
<td>Explicit PA Instruction: Focussing on teaching Rhyme, Initial sound, Final sound, and Blending (Onset-Rime: C-V-C)</td>
</tr>
</tbody>
</table>

**Participants**

- Average Age (months): 4.9 vs. 4.8
- Males : Females: 5 : 9 vs. 6 : 4
- Hearing Loss (Better Ear: 2 kHz): 59 db vs. 73 db
- WNV Percentile: 49 vs. 69
- Digit Span: 3 vs. 3.8
- PPVT Percentile: 38 vs. 51

**Results**

**Take Home Messages**

- Children with hearing loss CAN benefit from PA training
  - Explicit PA Training participants started the intervention with generally poorer cognitive and vocabulary skills. However, they showed equivalent vocabulary, and significantly higher PA learning following intervention than Vocabulary-controls.
  - PA learning appears associated with hearing level
    - Planned inclusion of speech-based measures – speech reading/perception/production
  - Pre-schoolers with hearing loss, regardless of group, generally performed better on blending tasks than for phoneme matching (Initial/Final).
  - Plans for PA training to be modified to make use of earlier emerging blending skills
    - Comparison study of pre-schoolers with normal hearing currently underway
  - The Vocabulary-control group were the only participants to receive specific semantic instruction for “unfamiliar” items. However, both groups showed significant levels of improvement on the Experimental Vocabulary measure.

**Significant difference, p<0.05**

**Legends:**

- Vocabulary Control: Pre-Intervention vs. Post-Intervention
- Explicit PA Training: Pre-Intervention vs. Post-Intervention

**Additional:**

- For the PA training group: Improvement in Blending CVC was correlated with hearing loss, (11) r = -0.96, p=0.008

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