Phonological Decoding and Reading Comprehension in Deaf Children.

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DCU Institute of Education
Acknowledging our funders…

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The “most long-term and vexing challenge for deaf education” (Spencer & Marschark, 2010, p. 81)

Historically, poor results:
- average reading age of deaf school leavers (n=468) was reported to be age 9 (Conrad, 1979),
- Holt (n=6500) sample of school leavers median reading age of 9.5 (Holt, 1993)
Some improvements recently for those who are early identified, have CI fitted, don’t have additional needs and have supportive, informed parents (Johnson & Goswami, 2010; Geers, 2003; Dillon, de Jong and Pisoni, 2012; Mayer et al, 2016).

But pattern of poor findings still evident (Traxler, 2000; Albertini & Mayer, 2011; McDonald Connor & Zwolan, 2004 Thoutenhoofd, 2006).
Factors associated with deafness

Impoverished access to phonological information

Overall language delay

Skill domains needed for reading

Processing print domain

The knowledge domain

Trezek, Wang and Paul, 2010
## Manifestation of reading difficulties

<table>
<thead>
<tr>
<th>Complex and multifaceted difficulties</th>
<th>Gap that widens over time</th>
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<tbody>
<tr>
<td><strong>Word recognition</strong> <em>(Kyle and Harris, 2011)</em></td>
<td>Dillon et al., 2012; Geers, Mitchell, Warner-Czyz, Wang, &amp; Eisenberg, 2017; Harris &amp; Terlektsi, 2011; Harris, Terlektsi, &amp; Kyle, 2017a; Kyle &amp; Harris, 2010; Mayer et al., 2016; Thoutenhoofd, 2006; Vermeulen, van Bon, Schreuder, Knoors, &amp; Snik, 2007; Walker, Munro, &amp; Rickards, 1998</td>
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<td><strong>Vocabulary</strong> <em>(Luckner &amp; Cooke, 2010)</em></td>
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<td><strong>General knowledge</strong> <em>(Convertino, Borgna, Marschark, &amp; Durkin, 2014)</em></td>
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<td><strong>Inferential comprehension</strong> <em>(Kyle and Cain, 2015)</em></td>
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<td><strong>Phonological awareness, vocabulary size and syntactic knowledge</strong> <em>(Spencer and Marschark, 2010)</em></td>
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Rationale for the study

• Last large scale examination of literacy and deaf children in Ireland was 1992

• Significant changes to the system since then (Mathews, 2018)

• Increased focus on spoken language attainment and phonics, but anecdotal evidence from teachers about surprising gaps in comprehension.
Research questions:

This study addresses two distinct questions:

(a) how is progress in reading for D/HH pupils measured by teachers? *(interviews)*

(b) what are the current reading outcomes for D/HH pupils in primary school? *(reading tests)*
The sample

Non-random sample of DHH children enrolled in mainstream schools using English to access the curriculum (i.e. no specialist deaf education provision within the school).

The children

– 40 children (1st class to 6th class)
– 19 (out of 26) counties represented
– 19 boys 21 girls
### The sample

<table>
<thead>
<tr>
<th>Level of deafness</th>
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<tr>
<td>Profound</td>
<td>-13</td>
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<tr>
<td>Severe</td>
<td>-8</td>
</tr>
<tr>
<td>Moderate</td>
<td>-16</td>
</tr>
<tr>
<td>Mild</td>
<td>-2</td>
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<th>Class group (age)</th>
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<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;/2&lt;sup&gt;nd&lt;/sup&gt; (7/8)</td>
<td>– 14</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;/4&lt;sup&gt;th&lt;/sup&gt; (9/10)</td>
<td>– 14</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt;/6&lt;sup&gt;th&lt;/sup&gt; (11/12/13)</td>
<td>– 12</td>
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<table>
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<tr>
<th>Technology</th>
<th></th>
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<tr>
<td>14 CI (6 Bilateral)</td>
<td></td>
</tr>
<tr>
<td>20 HA</td>
<td></td>
</tr>
<tr>
<td>4 None</td>
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</table>
The tests

Phonological decoding
The Nonword Reading Test (Crumpler and McCarty, 2004)

- Wheesh
- Slomph

Reading Comprehension
The Edinburgh Reading Test (University of Edinburgh, 2002a, 2002b, 2002c)

- 4 subtests assessing a broad range of comprehension skills
Interpreting scores

- **Average Performers (68%)**: 95% of the scores fall within this range.
- **Poor Performers (16%)**: 2% and 0.1% fall below this range.
- **High Performers (16%)**: 2% and 0.1% fall above this range.
SPOILER ALERT!
Key finding 1
On average, children from the sample* reading within normal range (85 and above)

Key finding 2
Phonological decoding skills surpassing ERT skills considerably

Key finding 3
Some evidence that the gap is widening with age

*More highly educated and affluent parents compared with national norms
Findings - NWRT

Nonword reading test:
• Mean* = 111
• SD = 20
• Range = 65

*Standard score
Findings - ERT

Edinburgh Reading Test

- Mean 91
- SD = 14
- Range = 55
NWRT v ERT results
Trend emerging

- Decoding skill surpassing comprehension more prevalent
  - 28 children (mean gap = 21)
- Comprehension surpassing decoding
  - 7 children (mean gap = 5)
- Biggest gap for an individual child - 123 on the NWRT and 83 on the ERT
“Now this is hard to understand or describe! She is a very fluent reader but doesn’t understand what she’s reading.” (024)

“But yet when her standardised test scores came through at the end of May, I suppose wasn’t expecting the score that she got. I felt that she scored far lower than what I would have anticipated her to get” (004)

Phonological decoding for deaf children does not necessarily lead to comprehension…but, considerable classroom emphasis on phonics…
Teacher practices

- Phonological decoding

We would have been constantly reviewing them [phonics skills]

Yeah, her phonics will be [assessed] on a weekly basis

So at the end of Senior Infants we did the MIST test and that would look at your phonics, what letter sounds you know and then in 1st class … we’d assess her using the jolly phonics program…
Ok and do you assess this pupil’s comprehension?

R: No, I wouldn’t say I do, no. [then later added] it’s informal, she comes up to me and reads for me.
I assess her phonics – let’s say [the resource teacher] would do the Toe by Toe…so she spends 20 minutes with that a day…I would do…letter sounds, isolating letter sounds, blends…I started back doing the Newel programme…etc

I wouldn’t have any specific tests, formal tests obviously you have at the end of the year.
Summary of main findings

• On average, the sample were reading within normal ranges
• Gap between decoding skills and comprehension skills a noticeable trend
• Classroom focus on phonics without equivalent focus on comprehension will not lead to long term achievement
• Underlying concern – do teachers (generally) understand the nature of deafness and its implications for language delay?
Implications

• Further research (preferably longitudinal) needed to monitor attainment over time
• Large scale study needed in Ireland with a random sample – sampling frame?
• CPD needs of teachers working with deaf children to understand the implications of language delay and the difference between speech as a mechanical skill and language.
Thank you

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Irish National Teachers’ Organisation. (2004). Language in the Primary School: an INTO discussion document. Published online at https://www.into.ie/ROI/Publications/LanguageInThePrimarySchool.pdf:


