LONG-TERM IMPACTS OF AN EFFECTIVE EARLY GRADE READING INTERVENTION IN SOUTH AFRICA

Jonathan Stern, Matthew Jukes, Jacobus Cilliers, Brahm Fleisch, Stephen Taylor & Nompumelelo Mohohlwane
Motivation

- Foundational literacy has become a major development priority
  - Reading is considered an essential building block for learning

- Yet by some estimates more than half of 10-year-olds in low and middle-income countries cannot read for meaning (World Bank, 2019).
  - South Africa: 81% of children not reaching low PIRLS benchmark

- But the ultimate cost-effectiveness of early learning programmes depends on persistence of impacts on learning and later outcomes;
  - Theoretical reasons to expect compounding or fadeout
  - Very few studies measure long run impacts or track evolution of skills
## Study design

<table>
<thead>
<tr>
<th>Research Contribution:</th>
<th>Program Components:</th>
<th>Intervention Timeline:</th>
<th>Previous Findings:</th>
<th>Current Study:</th>
</tr>
</thead>
</table>
| • Presents findings from a long-term follow-up of a randomized evaluation (EGRS) | • SLP targeting HL Reading & Literacy, providing teachers with:  
  • Lesson plans  
  • Teaching materials  
  • On-site coaching | • Spanned 3 years:  
  • Grade 1 in 2015  
  • Grade 2 in 2016  
  • Grade 3 in 2017 | • 0.24 SD increase in HL Literacy (Cilliers et al., 2021)  
• Sustained impacts on teaching and learning 1 year later (Cilliers et al., 2022a) | • Assesses the same group of students after 7 years  
• 5 waves of data (start of grade 1 in 2015 to grade 7 in 2021) |
Attrition and grade progression

Control:
- Grade 7: 32.3%
- Grade 6: 15.2%
- Grade 5: 4.8%
- Attrited (student): 2.5%
- Attrited (school): 1.0%

Coaching:
- Grade 7: 37.9%
- Grade 6: 12.5%
- Grade 5: 5.6%
- Attrited (student): 34.8%
- Attrited (school): 8.2%
## Results: Differences in means

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Coaching</th>
<th>Number of observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setswana Text 1 Reading Fluency</td>
<td>56.9</td>
<td>59.0</td>
<td>1,370</td>
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<tr>
<td>Setswana Text 2 Reading Fluency</td>
<td>75.6</td>
<td>80.4</td>
<td>1,368</td>
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<tr>
<td>Setswana Text 1 Comprehension (% correct)</td>
<td>29.7</td>
<td>31.9</td>
<td>1,370</td>
</tr>
<tr>
<td>Setswana Text 2 Comprehension (% correct)</td>
<td>41.2</td>
<td>44.3</td>
<td>1,369</td>
</tr>
<tr>
<td>Setswana Written Comprehension (%) correct)</td>
<td>49.2</td>
<td>51.6</td>
<td>1,308</td>
</tr>
<tr>
<td>Setswana Vocabulary (% correct)</td>
<td>62.0</td>
<td>65.8</td>
<td>1,309</td>
</tr>
<tr>
<td>English Text Reading Fluency</td>
<td>77.9</td>
<td>79.5</td>
<td>1,366</td>
</tr>
<tr>
<td>English Text Comprehension (% correct)</td>
<td>52.2</td>
<td>53.7</td>
<td>1,366</td>
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<tr>
<td>English Written Comprehension (% correct)</td>
<td>40.3</td>
<td>42.1</td>
<td>1,288</td>
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<tr>
<td>English Vocabulary (A)(^{10}) (% correct)</td>
<td>25.7</td>
<td>25.0</td>
<td>1,287</td>
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</table>
Impact of coaching on a sample of students who were assessed in both Wave 4 and Wave 5

<table>
<thead>
<tr>
<th></th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Setswana Text 2 Reading</td>
<td>Setswana Written Comprehension</td>
<td>English Written Comprehension</td>
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<td></td>
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<tr>
<td>Coaching</td>
<td>Wave 4</td>
<td>Wave 5</td>
<td>Wave 4</td>
<td>Wave 5</td>
<td>Wave 4</td>
<td>Wave 5</td>
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<tr>
<td></td>
<td>6.038**</td>
<td>5.929**</td>
<td>4.309***</td>
<td>4.654**</td>
<td>0.423</td>
<td>4.552***</td>
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<tr>
<td></td>
<td>(2.826)</td>
<td>(2.843)</td>
<td>(1.536)</td>
<td>(1.948)</td>
<td>(1.480)</td>
<td>(1.634)</td>
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<td>Observations</td>
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<td>1,200</td>
<td>1,166</td>
<td>1,166</td>
<td>1,147</td>
<td>1,147</td>
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<tr>
<td>R-squared</td>
<td>0.158</td>
<td>0.153</td>
<td>0.061</td>
<td>0.187</td>
<td>0.048</td>
<td>0.205</td>
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<tr>
<td>Control mean</td>
<td>59.56</td>
<td>77.70</td>
<td>22.78</td>
<td>49.67</td>
<td>20.17</td>
<td>40.77</td>
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<tr>
<td>Effect Size</td>
<td>0.153***</td>
<td>0.152**</td>
<td>0.191***</td>
<td>0.173**</td>
<td>0.0191</td>
<td>0.171***</td>
</tr>
</tbody>
</table>

Notes. ***p < .01; **p < .05; *p < .1.

The sample is restricted to students who were assessed in both Wave 4 and Wave 5
Impacts across the performance distribution
Quantile regressions in Grade 2

Setswana Letter Sound Recognition

Setswana Oral Reading Fluency
Impacts across the performance distribution

A. Setswana Oral Reading Fluency

B. Setswana Written Comprehension

C. English Written Comprehension
Discussion: Main findings

Sustained impact to Year 7:

- Treated students had better progression to Grade 7
- Sustained Impact on Literacy
  - Setswana Oral Reading Fluency (ORF)
  - Setswana Written Comprehension
  - English Written Comprehension Skills (Larger than in Year 4)
- Impacts across the distribution
  - On zero scores
  - Though different impacts depending on the skill and time

These results are promising for the potential long-term impacts of well-implemented early grade reading SLPs
Discussion: Implications

- Long term impact not as simple as fadeout or growth
  - Depends on what skill you look at, and when
- Thresholds in earlier skills like ORF for impact on higher order skills that comprehension?
- Raises questions for future long-term follow-up studies: which early skills beget the most important later skills and educational outcomes?
  - E.g. Target HL Literacy skills for later L2 acquisition
Future Plans

- We plan to track EGRS cohort through to secondary school leaving exams
  - *Impact on school attainment*
  - *Impact on key subjects (mathematics, languages, sciences)*