Form priming in German children with poor reading skills

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Background

- Lexical tuning hypothesis (Castles et al., 1999; 2007): children go from broadly to more finely tuned lexical representations as their reading experience grows.
- Supporting evidence from lexical decision tasks with masked priming paradigm: younger children identify words faster when primed by similar looking nonwords (2 letter substitution and transposed letters), because their lexical representations are still coarse grained (Castles et al., 2007).
- These form priming facilitation effects decrease as reading development advances and lexical representations become more fine-tuned (Castles et al., 2007).
- In French, a more regular orthography: same pattern at a later stage of reading development. Children rely on recoding strategies for a longer time and so lexical representations are fine-tuned at a later stage (Lété et al., 2013).

Research questions

Does lexical tuning occur even at a later stage of reading development in

- German, a predominantly regular orthography?
  Hypothesis: Yes, in coherence with Lété et al. (2013)

- children with atypical reading development?
  Hypothesis: Yes, because poor readers have been shown to have difficulties in building orthographic knowledge (Coltheart, 2015)

Methods

Participants

<table>
<thead>
<tr>
<th></th>
<th>Typical readers</th>
<th>Poor readers¹</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>M_age (SD)</td>
</tr>
<tr>
<td>Grade 3 and 4</td>
<td>18</td>
<td>8.93 (0.63)</td>
</tr>
<tr>
<td>Grade 5 and 6</td>
<td>32</td>
<td>11.03 (0.56)</td>
</tr>
<tr>
<td>Adults</td>
<td>10</td>
<td>25.54 (1.45)</td>
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</tbody>
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Note. ¹Participants with a performance below the 21st percentile on the SLRTII word efficiency reading test were defined as poor readers.

Materials

24 words and 24 nonwords e.g. LICHT
- 5-6 letters
- High frequency words – M² 252.58
- M Neighborhood size 2.71

3 types of form primes
- 2 letter substitution e.g. LIKVT
- Transposition e.g. LIHT
- All letter different e.g. GAKVD

Note. ²Normalized type frequency per million in database CHILDEX (2015)

Results

Lexical priming effects based on accuracy measures

Conclusions

- Lexical tuning seems to occur at an earlier stage in a predominantly regular orthography, as German, than in more opaque orthographies as English.
- This finding contrasts with Lété et al. (2013) and opens new questions on the impact of orthographic depth on lexical tuning.
- Poor readers in grade 5-6 showed an inhibition instead of a facilitation form priming effect.
- This might be an indication of poor readers’ difficulties in inhibiting similar word forms.