Children with developmental language disorder (DLD) have difficulties with the development of their expressive and/or receptive language, in the absence of other known sensory or neurological conditions (Bishop et al., 2016). Spelling development is related to linguistic skills that may be hindered in DLD (Apel & Masterson, 2001). Few studies have analysed written language in DLD, most of them in English. They point to difficulties with productivity and accuracy of written texts (Dockrell & Connelly, 2015), as well as specific difficulties with morphological inflections (Windsor, Scott, & Street, 2000). To our knowledge, only one study assessed the spelling errors of children with DLD in French (B roc et al., 2014). The data show phonological but not morphological difficulties in the spelling of French children with DLD as compared to age-matched peers in primary school. However, it is unclear whether the development of spelling abilities in DLD differs qualitatively from typical development in French.

By directly comparing the spelling errors of children with DLD in the last three years of primary school to that of younger children matched on spelling ability, the present study aims to assess the patterns of spelling development in DLD in French. Specifically, we explored the phonological, morphological, semantic and orthographic knowledge involved in spelling. We examined whether:

- The quality of spelling errors produced by children with DLD differed from those produced by a) age-matched and b) spelling matched peers
- Specific mistakes are made by children learning to spell in French

### Sample

75 children recruited from French mainstream schools in their 3rd, 4th and 5th year of education
- 25 children with DLD
- 25 typically-developing children matched on age (TD-AGE)
- 25 typically-developing children matched on spelling errors (TD-SPELL)

### Procedures

Children were asked to produce a free text following the curriculum-based measures for writing (Dockrell, Connelly, Walter, & Critten, 2014). They were given 5 minutes to write about their best or worst day at school.

Child aged 9 years, 6 months with DLD

A multilingual framework of analysis was used to code their spelling errors. Error patterns were classified in 5 categories (adapted from Apel & Masterson, 2001 and McCarthy, Hogan, & Cats). 10% of the sample was read for interrater reliability. Cohen’s kappa was .76.

### Results

<table>
<thead>
<tr>
<th>Error Type</th>
<th>TD-AGE</th>
<th>DLD</th>
<th>TD-SPELL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthographic</td>
<td>0.3</td>
<td>0.25</td>
<td>0.3</td>
</tr>
<tr>
<td>Phonological</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Semantic</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Morphological</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Inflectional</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Children with DLD produce fewer errors of each type in similar proportions to their TD-SPELL but in higher proportions than TD-AGE. However, in the morphological category, children with DLD and their age-matched peers have a similar proportion of errors (F1, 48 = .01, p = .94, r² = .01) whereas TD-SPELL makes a higher proportion of errors in this category (F1, 48 = 5.4, p < .05, r² = .10).

Phonological errors were primarily to do with omissions and substitutions of phonemes. Orthographic errors were primarily to do with long vowels, silent letters and unmastered regular spellings. Morphological errors were primarily related to contractions and tense and number marking. Semantic errors were to do with segmentation mistakes. The majority of mixed errors were on grammatical homophones.

High proportions of errors were found across groups with:
- Grammatical homophones (/a/ et /o/, etc.)
- Contractions (m’a/m)
- Long vowels and diphthongs (au, ef, in, ill, etc.)
- Long and complex vowels (ou, oi, on, ill, etc.)

in the TD-AGE and TD-SPELL groups with:
- Segmentation (on an action start) in the TD-AGE group with:
  - Tense marking (aller/aire)

### Discussion

Quantitatively, children with DLD produce fewer words and a higher proportion of spelling errors per text, as compared to their age-matched but not their spelling matched peers.

Qualitatively, children with DLD produce similar proportions of errors to younger spelling-matched peers, in all categories but the morphological category. In this category, children with DLD obtain a performance commensurate with that of age-matched peers. Children with DLD may have benefitted from a longer exposure to explicit teaching of morphological rules and a longer exposure to written language as compared to younger peers. Shorter and less complex texts in DLD children may also give fewer opportunities for morphological spelling errors. The complexity of orthographic morphemes in French may also hinder spelling development in the oldest peers.

Future studies may focus on direct cross-linguistic analysis of spelling errors in order to assess the role of morphological skills in the spelling development of children with DLD.

### Reference list