

Spelling with DLD: A cross-linguistic analysis of the spelling errors produced by French and English students at the end of primary school

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Introduction

- ✓ Approximately 2 children in every classroom present with a Developmental Language Disorder (DLD) (Norbury et al., 2016). These children experience difficulties expressing and/or understanding ideas using language (Bishop et al., 2016).
- ✓ DLD affects language but also literacy and academic achievement. Spelling in particular relies on language skills that may be hindered in DLD (Apel & Masterson, 2001).
- ✓ Yet DLD often goes unrecognised and children with DLD may go through the primary school years with no specific literacy support.
- ✓ In English, children with DLD are reported to have specific difficulties marking verb and noun endings such as -ed (watch-ed) or -s (come-s, animal-s) in their oral language and in their spelling (Windsor & Scott, 2000).
- ✓ We know little about how language difficulties continue to affect spelling skills at the end of primary school. We also know little about the spelling skills of children with DLD in languages other than English. Assessing spelling errors can provide a novel way to investigate language difficulties in children at the end of primary school.

Research questions

1. Do children with DLD produce different spelling errors than
 - Peers of the same age?
 - Younger peers with the same spelling level?
2. What is particularly difficult to spell for children with DLD and their peers
 - In English?
 - In French?

Participants

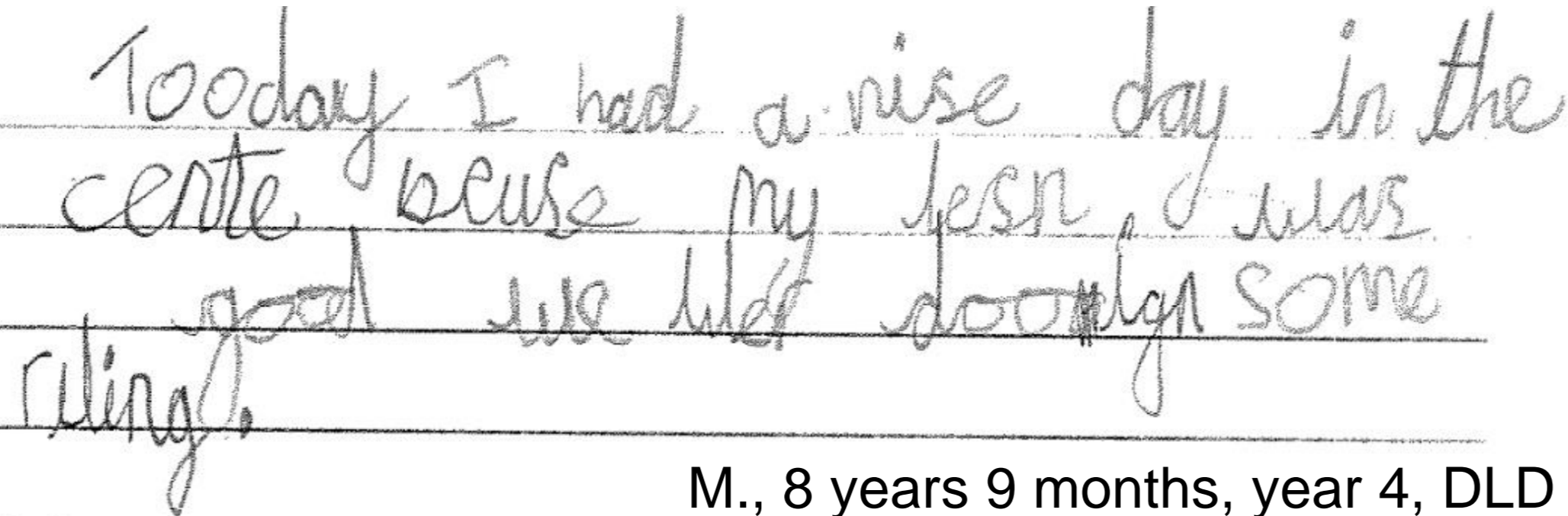
102 participants from French and English mainstream schools with a language unit

- 17 French children with DLD (8-11, FR-DLD)
 - 17 age-matched TD children (FR-CA)
 - 17 spelling-matched TD children (FR-SA)
- 17 English children with DLD (8-11, UK-DLD)
 - 17 age-matched TD children (UK-CA)
 - 17 spelling-matched TD children (UK-SA)

Procedure

Children were given 5 minutes to write following the prompt:

« One day, I had the best/worst day at school... »



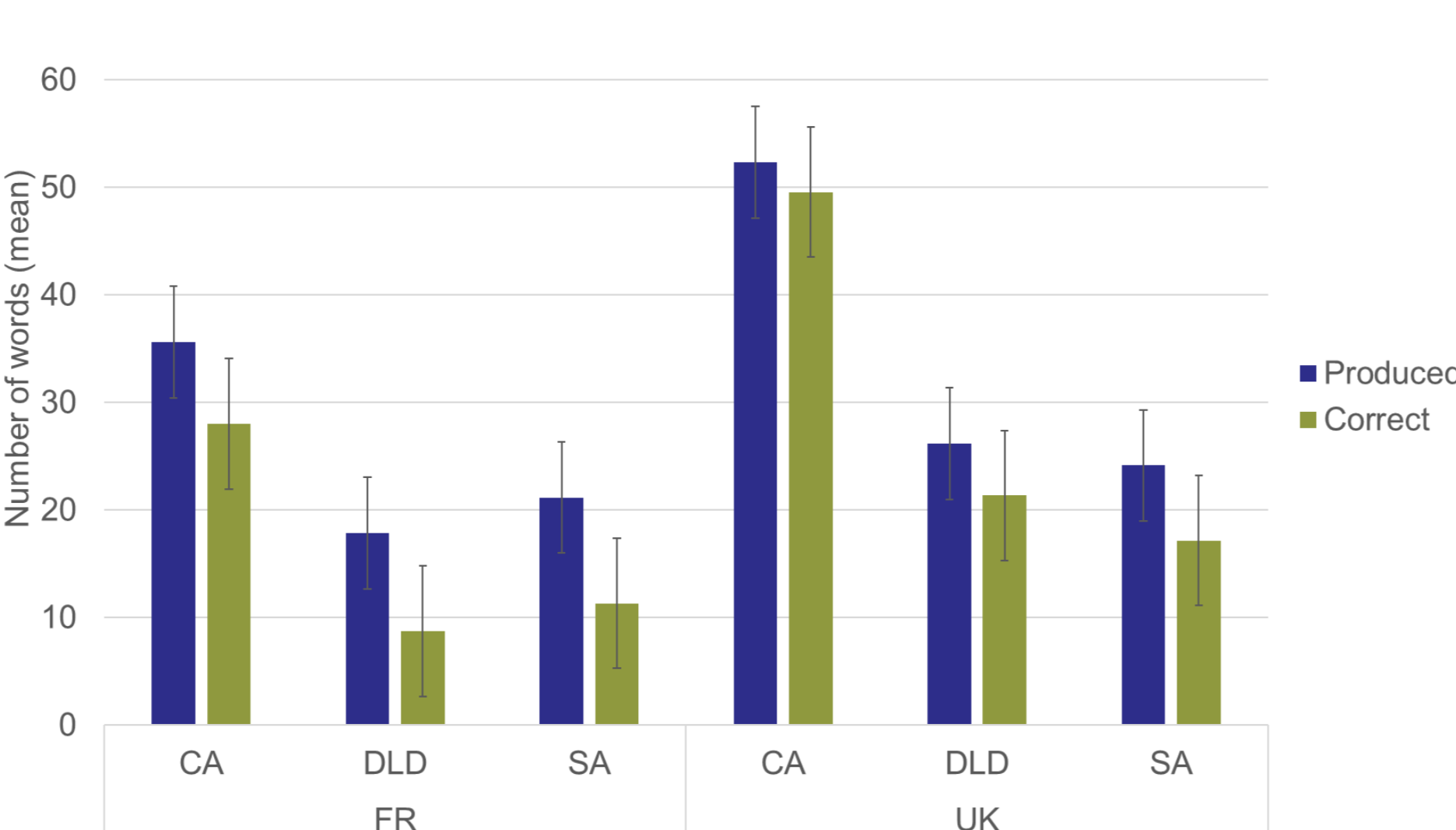
M., 8 years 9 months, year 4, DLD

Children's texts were transcribed and analysed for the number of words produced, proportion of spelling errors and type of spelling errors. Each error was classified into 1 of 5 categories. There could be more than one error per word.

PHON	ORTH	MOR	SEM	Mixed
Omission substitution or addition affecting the phonological skeleton of the word. (*luch-lunch)	Irregular or long vowels (*hed-head) Unpredictable silent letters (*chocolate-chocolate) Regular orthographic patterns (*cookie-cookie)	Inflections : gender, tense, person, number (*happend-happened) Derivations : word base, prefix, suffix (*prinsis-princess) Word contractions (*wasnt-wasn't)	Homophones within the same grammatical category (*peace-piece) Segmentation (*some thing-something)	PHON-ORTH (phoneme-grapheme conversion rules) MOR-ORTH (rule-based inflections and derivations) MOR-SEM (grammatical homophones) PHON-SEM (near homophones)

Results: Productivity and accuracy

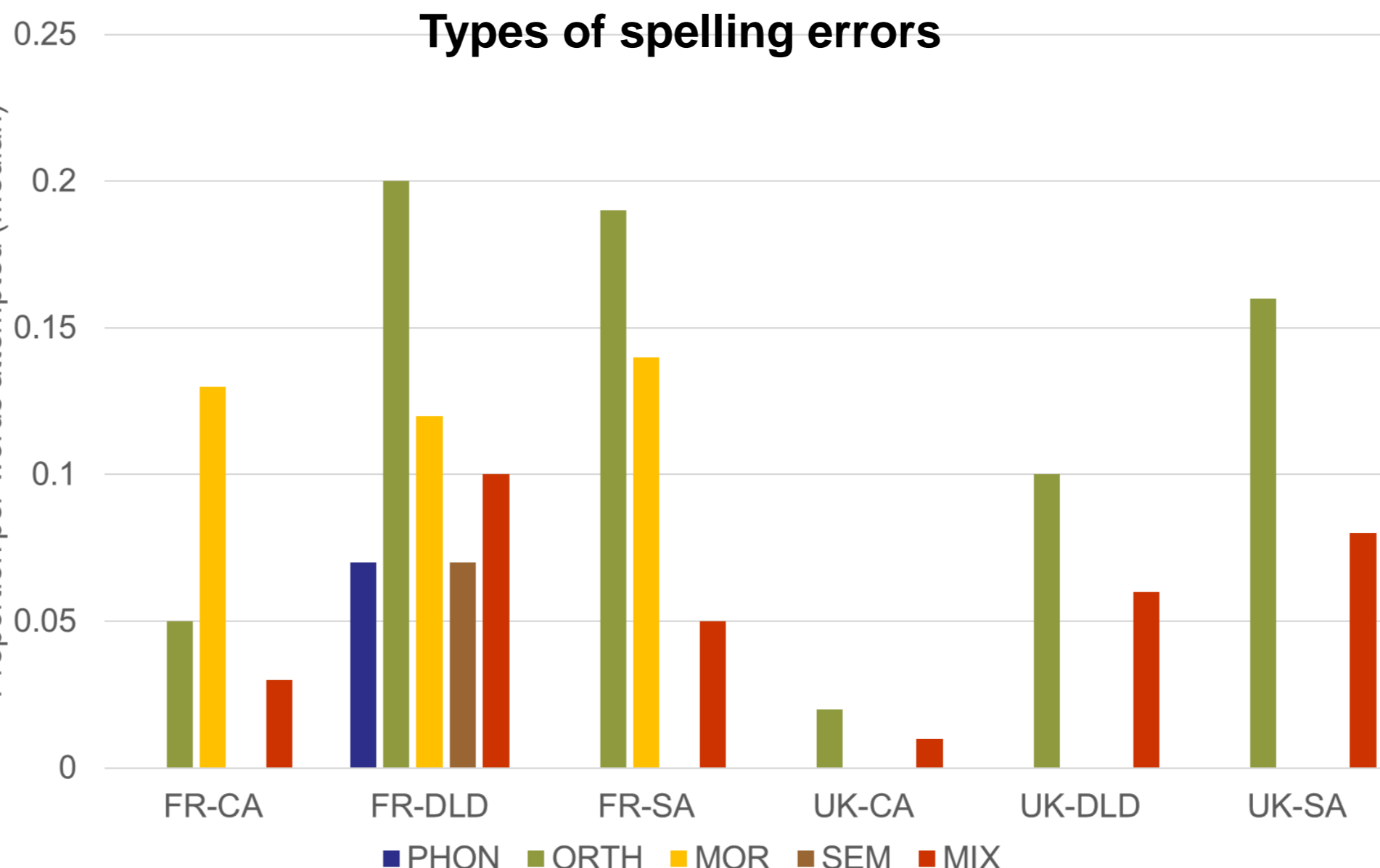
Number and correctness of words produced



Results: Productivity and accuracy (2)

French children produced shorter (robust $F = 6.7$, $p = .013$, $\xi = .32$) and less accurate texts (robust $F = 50.15$, $p = .001$, $\xi = .79$) than English children. On average, French texts were 10 words shorter than the English texts. English children produced a misspelling every 6 words, whilst the French children produced a misspelling every other word. Children with DLD produced shorter (robust $F = 39$, $p = .001$, $\xi = .71$) and less accurate texts (robust $F = 53$, $p = .001$, $\xi = .65$) than their CA but not SA peers. On average, the texts of children with DLD and SA peers were half the length of those written by CA peers, and contained a misspelling every 2-3 words (vs every 7-8 words).

Results: Spelling error types



Results of the Wilcoxon sum-rank tests:

Proportion of phonological errors (PHON)

W	p	r	Comparisons
1463.5	.22	.41	FR>EN (DLD)
336	<.001	.40	DLD>CA=SA (FR) DLD=SA>CA (EN)

In both languages, omissions were most frequent on consonant clusters (*sarted-started), and substitutions were most frequent on similar patterns (*den-then).

Proportion of orthographic errors (ORTH):

W	p	r	Comparisons
1535.5	.11	.16	FR=EN (DLD, SA, CA)
303	<.001	.41	DLD=SA>CA (FR) DLD=SA, DLD=CA (EN)

Error rate was high on long (*showted-shouted) and unstressed vowels (*presonts-presents) in English and inconsistent vowels (*tramper-tremper), final silent letters (*tros-trop) and accents (*l'ecole-l'école) in French.

Results: Spelling error types (2)

Proportion of morphological errors (MOR):

W	p	r	Comparisons
2260	<.001	.66	FR>EN (DLD, SA, CA)
573.5	.95	.01	DLD=SA=CA (FR, EN)

Errors mostly related to silent tense (*aller-allait) and number (*boule-boules) inflections. They were the most frequent error type for FR-CA.

Proportion of semantic errors (SEM):

W	p	r	Comparisons
1819.5	<.001	.40	FR>EN (DLD, CA) FR=EN (SA)
432	.041	.25	DLD>CA=SA (FR) DLD=CA=SA (EN)

Semantic errors appeared on word segmentations, in particular in the context of word "liaisons" (*on na-on a).

Proportion of mixed errors (MIX):

W	p	r	Comparisons
1170.5	379	.08	FR=EN (DLD, SA, CA)
319	.001	.39	DLD>SA>CA (EN) DLD=CA=SA (FR)

Mixed errors affected:

- in EN-DLD/EN-SA: PHON-ORTH, *brok-broke
- in EN-SA/EN-CA: MOR-ORTH, *rideing-riding
- in EN-DLD: word choice, PHON-SEM, *where-were
- in EN-DLD: PHON-MOR, *slap-slapped
- in French (especially CA): MOR-SEM, *et-est

Conclusion

- ✓ Children with DLD produce shorter and less accurate texts than CA but not SA. French texts were also shorter and less accurate than English texts.
- ✓ Children with DLD made a higher rate of errors than CA but not SA in ORTH and MIX. They made higher rates of errors than CA and SA in PHON and SEM. Cross-linguistic differences appeared in MOR, French children producing a higher rate of errors than English peers.
- ✓ Specific errors were found in FR-DLD with:
 - A range of sound omissions and substitutions
 - Word segmentation (*on n'était/on était)
 and in French overall with:
 - Grammatical homophones (*et-est)
 - Silent morphological markers (*aller-allait)
- ✓ Specific errors were found in EN-DLD with:
 - Word choice (*where-were)
 - Audible morphological markers (*slap-slapped)
 and in English overall with:
 - Unstressed and long vowels (*presonts)
 - Orthographically-constrained patterns (*brok)
 - Rule-constrained inflections (*rideing-riding)