

## Abstract

There is less research on spelling than on reading (Büttner & Hasselhorn, 2001). However, proficient spelling is crucial in convincing someone of one's expertise and spelling problems are common in languages with regular and irregular orthographies (Angelelli, Notarnicola, Judica, Zoccolotti, & Luzzatti, 2010). In Belgium and the Netherlands, in the case of healthcare, reading ability is being assessed by means of reading real words and pseudowords. Some children with dyslexia (DL) show different results on reading real words or pseudo words. In this study, we want to find out if the dual route theory also can be applied on spelling skills. This study analyses the Dutch spelling skills of elementary school children with dyslexia.

## Objectives

- (a) Do children of elementary schools with dyslexia perform better on spelling existing words than on pseudowords?
- (b) Is there a difference on spelling existing words versus pseudowords between children with isolated dyslexia and children with dyslexia with a comorbid disorder?

## Method: instruments and participants

- EMT: reading quickly existing words aloud (Brus & Voeten, 1999)
- Klepel: reading quickly pseudowords aloud (Van den Bos et al., 1994)
- ST 1-6 (Van Vreckem & Desoete, 2016): spellingtest 1<sup>st</sup> – 6<sup>th</sup> grade with existing words and pseudowords
  - ☐ Pseudowords: words with phoneme-grapheme correspondence (e.g. oos), rule based words (e.g. kronnen) and orthographically based words (e.g. verdroei)  
All pseudowords are 'Dutch based words'.
  - ☐ Validity:
    - Correlation ST 1-6 existing words with Teacher Ratings:  $r=.43-.72$  ( $p<.01$ )
    - Correlation ST 1-6 existing words with other standardised spelling tests:  $r=.45-.81$  ( $p<.05$ )
    - Correlation existing words with school results (spelling):  $r=.27-.76$  ( $p<.01$ )
  - ☐ Reliability: Cronbach's alpha: existing words .73-.92  
Reliability: Cronbach's alpha: pseudo words .63-.80
  - ☐ Test group: 3656 children: 1856 boys and 1800 girls
- WISC III

Table 1: Participants: children with dyslexia (DL): grade and gender

N	GRADE					GENDER	
	2nd	3th	4th	5th	6th	M	F
	4	11	17	18	10	44	16
60							

Table 2: Participants: isolated or comorbid DL

N	Isolated DL or comorbid DL				
	Isolated	Comorbid			
		DL&DC	DO&DC	DL & ADHD	DL&DO &DC
		4	2	7	1
60	46	14			

DL=dyslexia; DC= dycalculie; DO= dysorthographia (spelling disorder)

## Results

Table 3: Correlations reading – spelling pseudowords and existing words

	EMT	De Klepel	ST 1-6 Existing	ST 1-6 Pseudo	IQ
EMT		.43**	.48**	.05	-.23
De Klepel	.43**		.35**	.13	-.22
ST 1-6 Existing	.48**	.35**		.29**	-.22
ST 1-6 Pseudo	.05	.13	.29**		-.20
IQ	-.23	-.22	-.22	-.20	

\*\* $P \leq .01$

Table 5: Spellingresults pseudowords & existing words children DL

		ST 1-6 Existing			N
		Pc.1-10	Pc. 11-25	Pc.26-100	
ST 1-6 Pseudo	Pc.1-10	15	1	0	16
	Pc. 11-25	14	1	1	16
	Pc.26-100	21	4	3	28
N		50	6	4	60

Table 4: Spelling pseudowords & existing words within children with isolated or comorbid DL

	DL ISOLATED M (SD)	DL COMORBID M (SD)	F(1,58)
ST 1-6 Pseudo	24.5 (19.51)	32.86 (16.96)	2.08
ST 1-6 Existing	6.13 (12.14)	9.36 (9.26)	0.84

## Discussion and conclusion

In this study we found

- significant positive correlations between writing pseudowords and existing words (explained variance of 8%; Table 3)
  - that children with isolated and non-isolated DL perform better on spelling pseudo words than on existing words. There were no significant differences between the 2 groups ( $F(2,57)=1.16$ ;  $p=.319$ ; Table 4)
  - that spelling pseudowords can't be predicted from results on tests like measuring reading existing words or reading pseudowords, nor by intelligence. There is a small, but significant correlation between spelling pseudowords and spelling existing words (explained variance of 8%). If one wants to know if children are able to transfer learned spelling skills, he should assess spelling pseudowords in addition to spelling existing words. There are children who fail on both subtests: on spelling existing words and on pseudowords while others don't and only experience problems with spelling existing words. Do children with different spelling profiles need another approach? More research is needed on this subject.
- This study contributes to the research on spelling skills within children with dyslexia.

## References

- Angelelli, P., Notarnicola, A., Judica, A., Zoccolotti, P.L. & Luzzatti, C. (2010). Spelling impairments in Italian dyslexic children: Phenomenological changes in primary school. *Cortex*, 46, 1299-131
- Buttner, G., & Hasselhorn, M. (2011). Learning Disabilities: Debates on definitions, causes, subtypes, and responses. *International Journal of Disability, Development and Education*, 58 (1), 75-87
- Brus, B.Th., & Voeten, M.J.M. (1997). *Een Minuut Test*. Harcourt: Amsterdam.
- Van den Bos, K.P., Spelberg, H.C., Scheepstra, A.J.M., & De Vries, J.C. (1998). *De klepel pseudowordentest*. Harcourt: Amsterdam.