



HAL
open science

Measuring lexical diversity in discourse of children with and without DLD in free-play

Christine da Silva-Genest, Loïc Liégeois, Caroline Masson, Marine Le Mené Guigourès, Christophe Benzitoun

► To cite this version:

Christine da Silva-Genest, Loïc Liégeois, Caroline Masson, Marine Le Mené Guigourès, Christophe Benzitoun. Measuring lexical diversity in discourse of children with and without DLD in free-play. XVIth International Congress for the Study of Child Language, Jul 2024, Prague, Czech Republic. . hal-04645079

HAL Id: hal-04645079

<https://hal.univ-lorraine.fr/hal-04645079v1>

Submitted on 11 Jul 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

Measuring lexical diversity in discourse of children with and without DLD in free-play

Christine da Silva-Genest¹, Loïc Liégeois², Caroline Masson³, Marine Le Mené Guigourès⁴, Christophe Benzitoun⁵

¹Université de Lorraine, UR 3450 DevA³ & UMR 7114 MoDyCo; ²Université Paris Cité, UMR 7110 LLLF & EA 3967 CLILLAC – ARP; ³Université Sorbonne Nouvelle EA 7345 CLESTHIA; ⁴Université du Québec à Montréal, CRBLM & ISC; ⁵Université de Lorraine, UMR 7118 ATILF

Developmental Language Disorder (DLD) & Lexical development

Temporal gap in comparison between DLD and TD children (McGregor, 2009)

Comparable distribution of grammatical categories (Hick et al., 2002)

Restricted vocabulary: chronological age or linguistic level (Leonard et al., 1999; McGregor et al., 2002)

What about verbs?

Lexical poverty of verbs (Conti-Ramsden & Jones, 1997 for English; Parisse & Le Normand, 2002 for French)

Frequent use of General All-Purpose (GAPs) verbs (Kambaranos & Grohmann, 2015; Rice & Bode, 1993; Watkins et al., 1993)

But inconsistent data in the literature (Thordardottir & Weismer, 2001)

Importance of intervention on lexical disorders to reduce communication disabilities

Standardized test Vocabulary test (labelling) e.g. PEABODY Picture Vocabulary test (Dunn & Dunn, 2007)

Language sample analysis recommended but lack of tools and data (da Silva-Genest et al., 2023; Klatte et al. 2022)

Parent report e.g. CDI / IFDC in French (Fenson et al., 1993; Kern, 2003) BUT < 3 y.o.

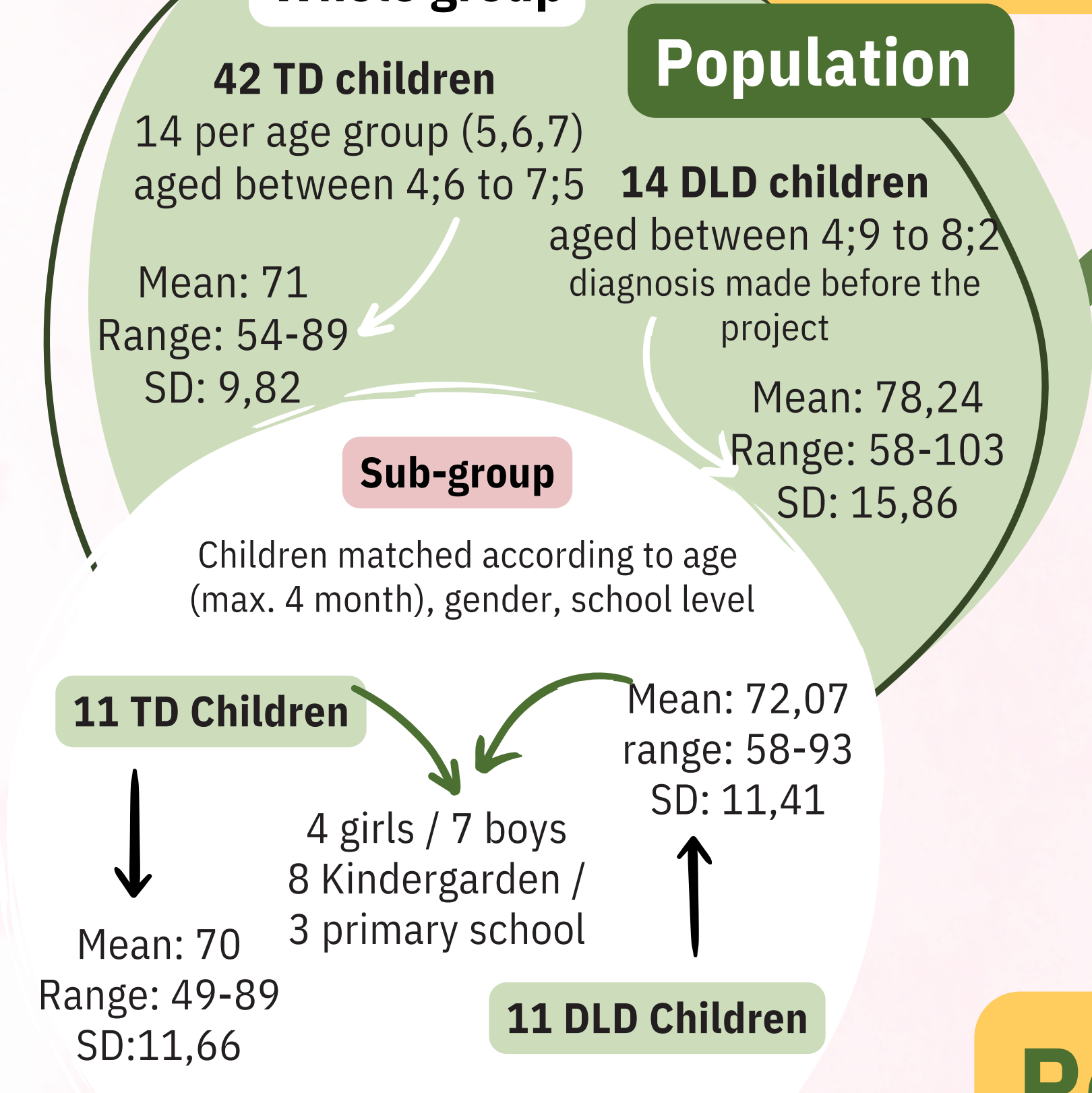
Objectives

- Greater knowledge of DLD children's lexical profile
- Better understanding of the differences between DLD and TD children's lexical profile
- More efficient functional assessment of lexical skills through free-play activities

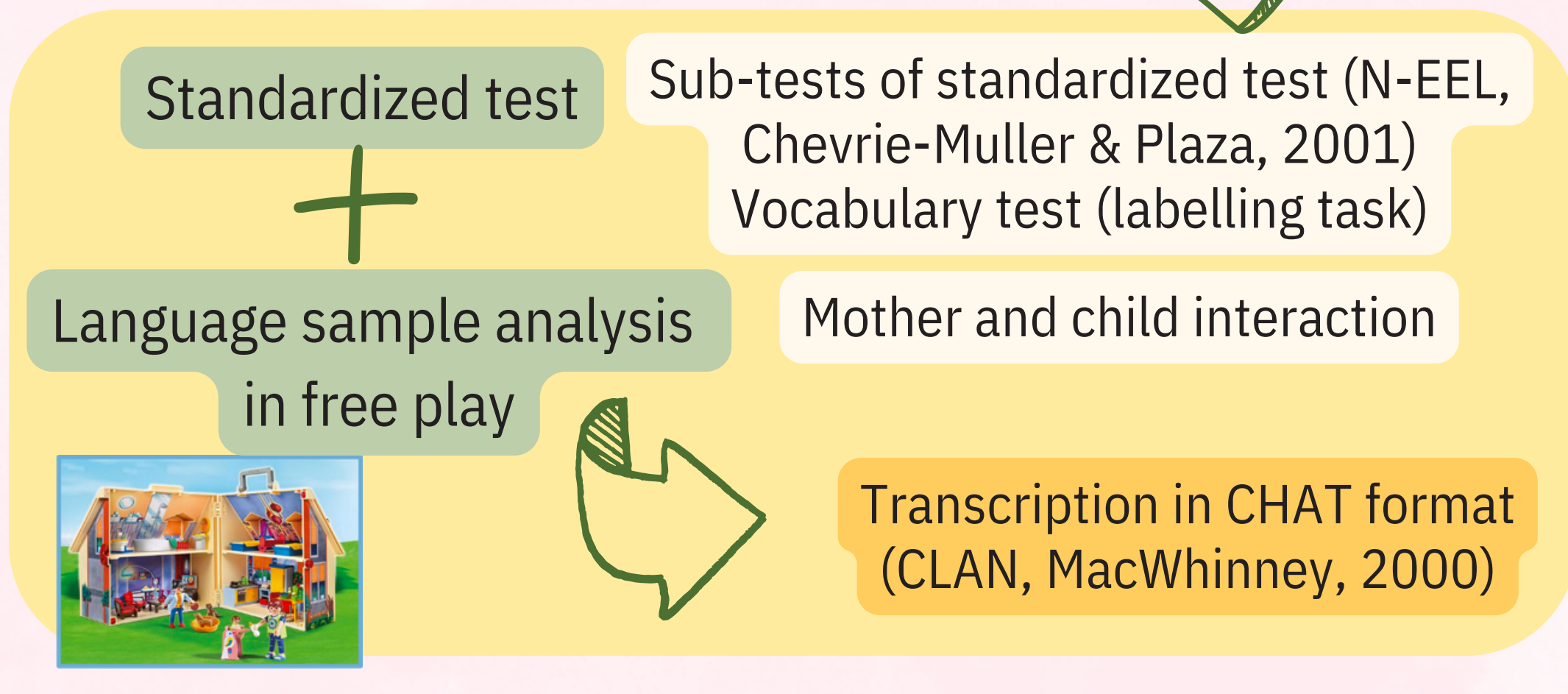
Is lexical diversity a relevant measure for french-speaking children over the age of 4?

What factors (among age, gender, school level, children's profile [TD or DLD]) should be considered?

Methodology



Data Each child was observed in 2 situations

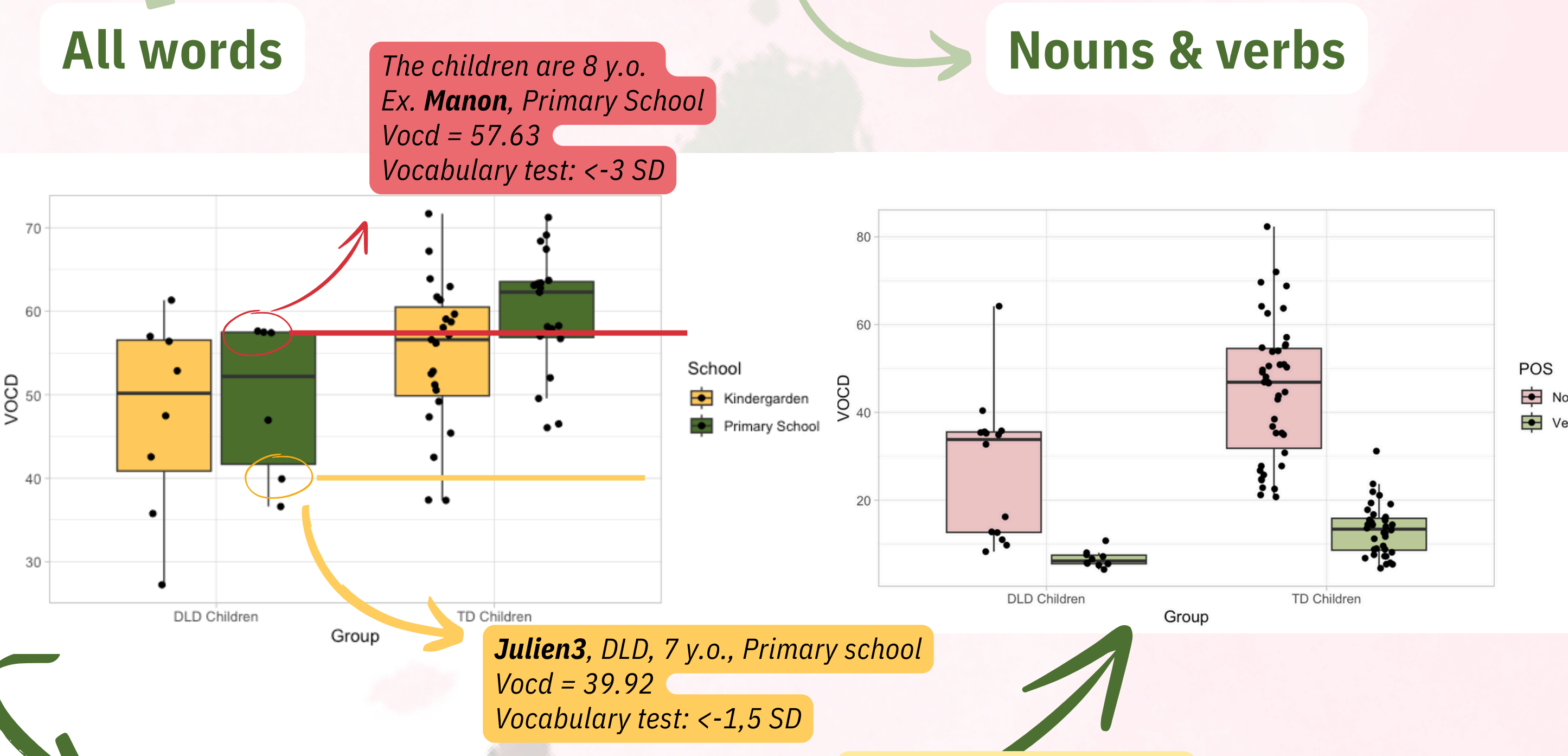


Analysis

- Lexical diversity (D score)**: Use of Vocd (vs. TTR) recommended for clinical assessment (Charest et al. 2020)
 - for all words,
 - for nouns & verbs according to group (TD vs. DLD) and school level
- Verbs description**: For the whole group and for the sub-group:
 - number of high-frequency verbs
 - formalized frequencies of verbs with a focus on GAPs Verbs

Results

1. Lexical diversity: D score



Lexical diversity (for all words) is significantly lower for:

- DLD children (vs. TD children)
- kindergarden children (vs. primary school) $W = 144, p\text{-value} = < 0.005$

Also applies to:

- nouns $W = 130, p < 0,005$
- verbs $W = 47,5, p < 0,005$

Wilcoxon rank sum exact test

- No difference according to age or gender, both for TD & DLD children; no difference according to school level for DLD children.
- No correlation between D score and vocabulary test (N-EEL, labelling task) and verbal involvement.

2. Verbs description

Table 1 Number of high-frequency verbs and frequency of use by group of children in both corpora. High-frequency verbs are those that occurred with a frequency twice or more the average verb frequency (in accordance with definition of the Thordardottir & Weismer, 2001).

	Whole group		Sub-group	
	TD (42)	DLD (14)	TD (11)	DLD (11)
Number of high-frequency verbs	21	17	13	15
Average verb frequency (all verbs)	30,39	16,17	14,3	13,3
Number of different verbs	344	164	176	143
Number of verbs	10453	2651	2518	1896

- Children with DLD produce fewer verbs and fewer different verbs than TD children
- The number of high-frequency verbs does not differ according to the children's profiles, whether for the whole group or the sub-group ($\chi^2 = 2.3305; p > 0.05; \chi^2 = 0.60086; p > 0.05$)

GAPs verbs are not always high-frequency verbs Ex. ouvrir (open) et jouer (play) Influence of the activity

Higher frequency of specific verbs in DLD children's discourse

Higher frequency of specific verbs in TD children's discourse

Relatively few differences between the 2 groups of children for high-frequency verbs

Differences observed in the use of verbs according to children's profiles Ex. For DLD Children, Savoir (know) → je sais pas (I don't know) (TD vs. DLD; $\chi^2 = 5.8984; p < 0.005$)

Table 2 – Frequencies of High-frequency verbs and GAPs verbs Relative verb frequencies for 10 000 verbs

Verbs	Whole group		Sub-group	
	TD (42)	DLD (14)	TD (11)	DLD (11)
être (be)	1901,85	1520,18	2021,45	1508,44
aller* (go)	1536,40	980,76	1382,05	891,35
avoir* (have)	842,82	814,79	901,51	864,98
mettre* (put)	650,53	652,58	627,48	701,48
faire* (do)	484,07	505,47	492,45	448,31
attendre (wait)	336,75	641,27	444,80	595,99
pouvoir (can)	242,04	282,91	242,26	200,42
regarder* (look)	158,81	430,03	162,83	527,43
dire (say)	216,21	177,29	270,06	158,23
dormir (sleep)	204,73	192,38	139,00	232,07
savoir* (know)	186,55	264,05	242,26	311,18
falloir (must)	157,85	282,91	353,38	353,38
manger (eat)	168,37	218,79	258,44	258,44
vouloir* (want)	131,06	139,57	142,97	142,97
tomber (fall)	102,36	245,19	131,06	268,99
prendre (take)	118,63	181,06	181,06	181,06
voir* (see)	106,19	147,11	179,33	179,33
venir (come)	79,40	73,66	73,66	73,66
réveiller (wake up)	73,66	73,66	73,66	73,66
rentrer (come back)	70,79	70,79	70,79	70,79
arriver (arrive)	62,18	62,18	62,18	62,18
Mean	372,92	451,55	553,86	500,00
SD	493,59	373,17	572,20	369,03

Discussion

1. DLD Knowledge

- Lexical abilities**: DLD children exhibit a lower lexical diversity for all types of words, and for both nouns and verbs; High-frequency verbs are not more frequent in the speech of DLD children than in the speech of TD children, thereby confirming the results of Thordardottir & Weismer (2001).
- Pragmatic & dialogic profile**: The analysis of high-frequency verbs reveals that DLD children use more regulation verbs (attendre wait, regarder look) and show their difficulty answering questions with a more frequent use of 'je sais pas' (I don't know) than TD children.

- Accessibility of lexical diversity data** to the research community and speech-language therapists, offering reliable measures for a more functional analysis of language.
- Perspectives**: automatic analysis tools should be developed and made more reliable for effective use in clinical settings.

References

Charest M., Skoczylas M. J., Schneider P. (2020). Properties of lexical diversity in the narratives of children with typical language development and developmental language disorder. *Am. J. Speech Lang. Pathol.* 29 1866-1882. / Chevrie-Muller, C. & Plaza, M. (2001). N-EEL : Nouvelles épreuves pour l'examen du langage. ECPA. / Conti-Ramsden, G., & Jones, M. (1997). Verb use in specific language impairment. *Journal of Speech, Language, and Hearing Research*, 40(6), 1298-1313. / da Silva-Genest, C., Masson, C., & Le Mené Guigourès, M. (2023). Évaluer les compétences morphosyntaxiques et discursives d'enfants d'âge scolaire: Analyse d'une situation de jeu libre. *Éta. Études de linguistique appliquée*, 210(2), 179-195. / Dunn, L. M., & Dunn, L. M. (1981). *Peabody Picture Vocabulary Test-Revised: Manual for forms* (American Guidance Service). / Fenson, L., Dale P., Reznick, S., Thal D., Bates, E., Hartung, J., Tethick, S., Reilly, J. (1993). *MacArthur Communicative Development Inventories: User's guide and technical manual*. Singular Publishing Group. / Hick, R. F., Joseph, K. L., Conti-Ramsden, G., Serratrice, L., & Faragher, B. (2002). Vocabulary profiles of children with specific language impairment. *Child Language Teaching and Therapy*, 18(2), 165-180. / Kambaranos, M., & Grohmann, K. K. (2015). More general all-purpose verbs in children with specific language impairment? Evidence from Greek for not fully lexical verbs in language development. *Applied Psycholinguistics*, 36(5), 1029-1057. / Kern, S. (2003). Le compte-rendu parental au service de l'évaluation de la production lexicale des enfants français entre 16 et 30 mois. *Glossa*, 85, 8-62. / Klatte, I. S., Heugten, V. V., Zwitserlood, R., & Gerrits, E. (2022). Language Sample Analysis in Clinical Practice: Speech-Language Pathologists' Barriers, Facilitators, and Needs. *Language, Speech, and Hearing Services in Schools*, 53(1), 1-16. / Leonard, L. B., Miller, C., & Gerber, E. (1999). Grammatical morphology and the lexicon in children with specific language impairment. *Journal of Speech, Language, and Hearing Research*, 42(3), 678-689. / MacWhinney, B. (2000). *The CHILDES project: Tools for analyzing talk: Transcription format and programs*, Vol. 1, 3rd ed. (p. xi, 366). Lawrence Erlbaum Associates Publishers. / McGregor, K. K., Newman, R. M., Reilly, R., & Capone, N. C. (2002). Semantic representation and naming in children with specific language impairment. *Journal of Speech, Language, and Hearing Research*, 45(5), 998-1014. / McGregor, K. K. (2009). Semantic deficits associated with developmental language disorders. In: Schwartz R.G. (ed.), *The Handbook of Child Language Disorders*. Psychology Press, p. 365-387. / Parisse, C., & Le Normand, M.-T. (2002). Production of lexical categories in French children with SLI and in normally developing children matched for MLU. *Brain and Cognition*, 48(2-3), 490-494. / Rice, M. L., & Bode, J. V. (1993). GAPS in the verb lexicons of children with specific language impairment. *First Language*, 13, 113-131. / Thordardottir, E. T., & Weismer, S. E. (2001). High-frequency verbs and verb diversity in the spontaneous speech of school-age children with specific language impairment. *International Journal of Language & Communication Disorders*, 36(2), 221-244. / Watkins, R.V., Rice, M.L., & Moltz, C.C. (1993). Verb use by language-impaired and normally developing children. *First Language*, 13, 133-143.