

Developmental language disorder
in deaf children:
Implications for teaching
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Acknowledgements



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The context

External factors:

Quantity } of language input
Quality }



Internal factors:

Individual differences in
language acquisition ability

Developmental language disorder (specific language impairment)

Diagnosed when children have difficulty acquiring their own language for no obvious reason.

Children have difficulty understanding what people say to them, and struggle to articulate their ideas and feelings.

On average, 2 children in every class of 30 will experience DLD severe enough to hinder academic progress.

Co-occurs with other difficulties, e.g. difficulties with literacy and mathematics.

Sign language development in deaf children

External factors:

Quantity } of sign language
Quality } input



Internal factors:

Can deaf children be affected by DLD?

Speech and language therapists and teachers of the deaf report that they encounter signing children with unexplained language impairments.

Research project at DCAL 2006-2011



Research questions:

- Is it possible to identify DLD in deaf children who sign?
- If so, how do their language difficulties compare to those of hearing children learning spoken languages?
- How prevalent is DLD in signers?

An obvious challenge



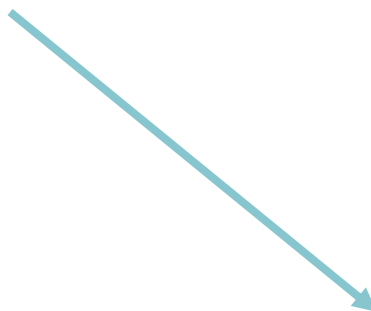
■ Deaf children who are learning to sign receive very variable quantity and quality of sign language input.

■ If a deaf child is having difficulty acquiring sign language, how can we be sure that this is due to an internal factor (i.e. DLD) rather than external factors (i.e. poor quantity/quality of input)?

Option 1: Focus on native signers

The paper reports the case of a deaf child exposed to BSL from birth, who has significant developmental deficits in the comprehension and production of BSL grammar based on formal assessment and linguistic analyses of his sign communication in comparison with age-matched unimpaired signers.

BUT NATIVE SIGNERS ARE RARE!



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Short Report

Language impairments in sign language:
breakthroughs and puzzles

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Abstract

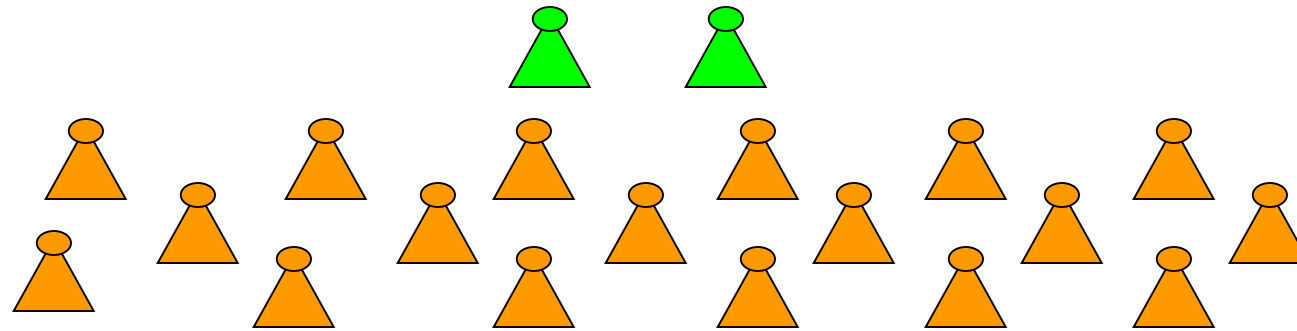
Background: Specific language impairment has previously solely been documented for children acquiring spoken languages, despite informal reports of deaf children with possible sign language disorder. The paper reports the case of a deaf child exposed to British Sign Language (BSL) from birth, who has significant developmental deficits in the comprehension and production of BSL grammar based on formal assessment and linguistic analyses of his sign communication in comparison with age-matched unimpaired signers.

Results: It is shown that linguistic difficulties with BSL verb morphology underlie the child's poor performance compared with same-age native signers.

Conclusions: The appearance of linguistic impairments in sign and spoken languages in comparable domains supports cross-linguistic and modality free theories of specific language impairment.

Keywords: British Sign Language, Development, Disorder.

Option 2: Comparison with peers who also have non-native input



For non-native signers – we are seeking to identify a disorder on top of a delay.

3 stages of our research project

Questionnaire: To identify children with weaker-than-expected language skills

Standardised tests: Can children with a DLD-type profile be identified?

New, specially developed tests: To characterise the profile of DLD in greater detail

Stage 1: Questionnaire

■ Sent to over 60 deaf schools and specialist units

■ Children aged 8-14 years

■ 50 children were referred to us

Stage 1: Questionnaire

Does the child have **difficulty following instructions** in BSL?

Does the child have **difficulty understanding** things signed to them?

Does the child frequently **ask for signs to be repeated**?

Does the child **produce more gesture than BSL**?

Does the child **respond better when visual aids are used**?

Does the child have **poor memory for BSL information**?

Does the child **show hesitation** when signing?

Does the child **show frustration** when signing?

IN
COMPARISON
TO
PEERS

Stage 2: Standardised assessments

26 children followed up

Based on methodology for identifying DLD in spoken languages:

- British Ability Scales non-verbal tests
- BSL Receptive skills test (Herman et al, 1999)
- BSL Narrative skills test (Herman et al, 2004)



Stage 2: Results

(Mason et al., 2010, *BJDP*)

Child	BAS z-score	BSL Receptive Test z-score	BSL production test percentile scores			Age
			Narrative Content	Narrative Structure	BSL Grammar	
1	-0.6	0.3*	25*	50*	10*	13;11
2	-0.6	<-2.1	<10	<10	<10	7;04
3	-0.1	1.1*	10*	10*	25*	14;02
4	-0.9	-1.5*	10*	10*	10*	14;08
5	0.6	-2.1	<10	<10	<10	7;04
6	-0.7	0.1	25	10	50	11;00
7	-1.2	<-2.1	<10	10	25	5;10
8	-1.2	0.6	<10	<10	25	8;01
9	-0.6	-2.3	10	25	10	9;01
10	0.3	-1.5	<10	<10	<10	10;06
11	-0.5	<-2.1	<10	<10	<10	10;09
12	0.7	1.1	<25	10	<25	9;08
13	-1.0	-0.7	10	50	10	11;03

13 children were considered to have DLD = 6.4% of the population sampled!



Stage 3: Specially-developed tests

- Sentence repetition

- Semantic fluency

Stage 3: Sentence repetition - rationale

- A clinical marker for DLD in spoken language

 - E.g. *The horse that the farmer pushed kicked him in the back.* →
The horse that pushed the farmer kicked him in the back.

- A measure of:

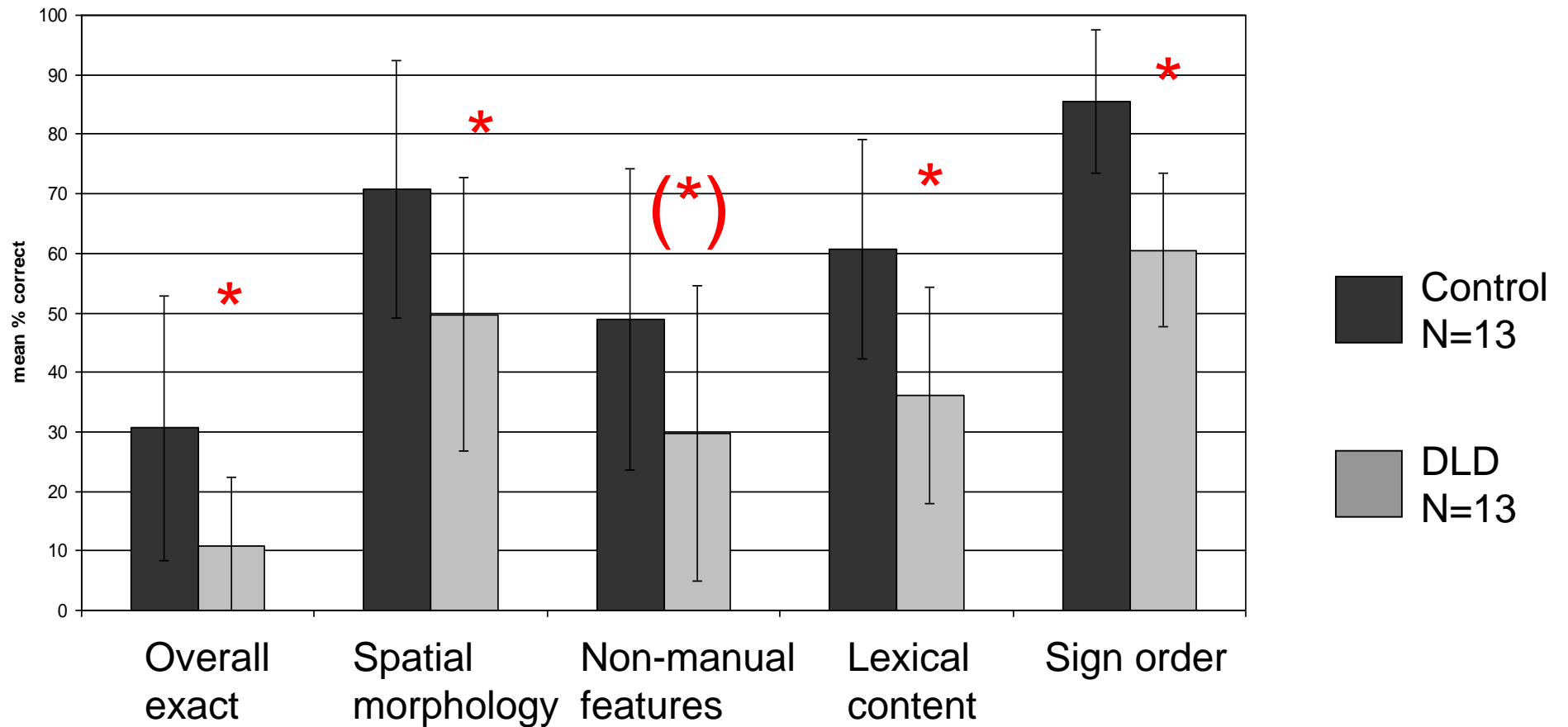
 - Linguistic knowledge – lexical, morphological, syntactic
 - Verbal short term memory

- Has been investigated in many different languages and included in many standardised language tests.

Stage 3: Sentence repetition - stimuli

Video removed

Stage 3: Sentence repetition – results (Marshall et al., 2015, *LLD*)



Stage 3: Semantic fluency - rationale

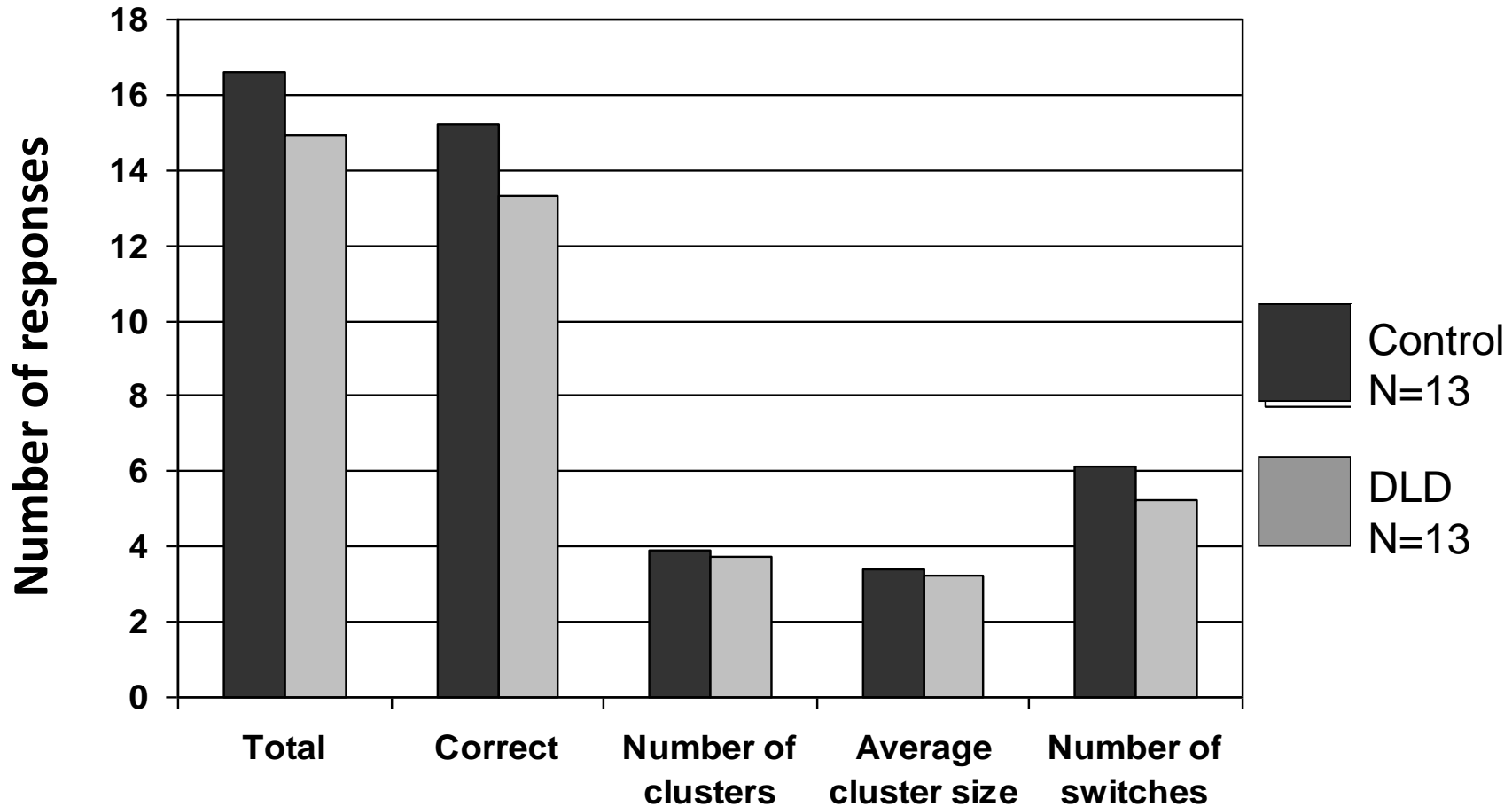
- Not a clinical marker for DLD in spoken languages.
- However, some children with DLD do have word-finding difficulties
- Semantic fluency is a quick test to administer and provides a lot of data

Stage 3: Semantic fluency - stimuli

Video removed

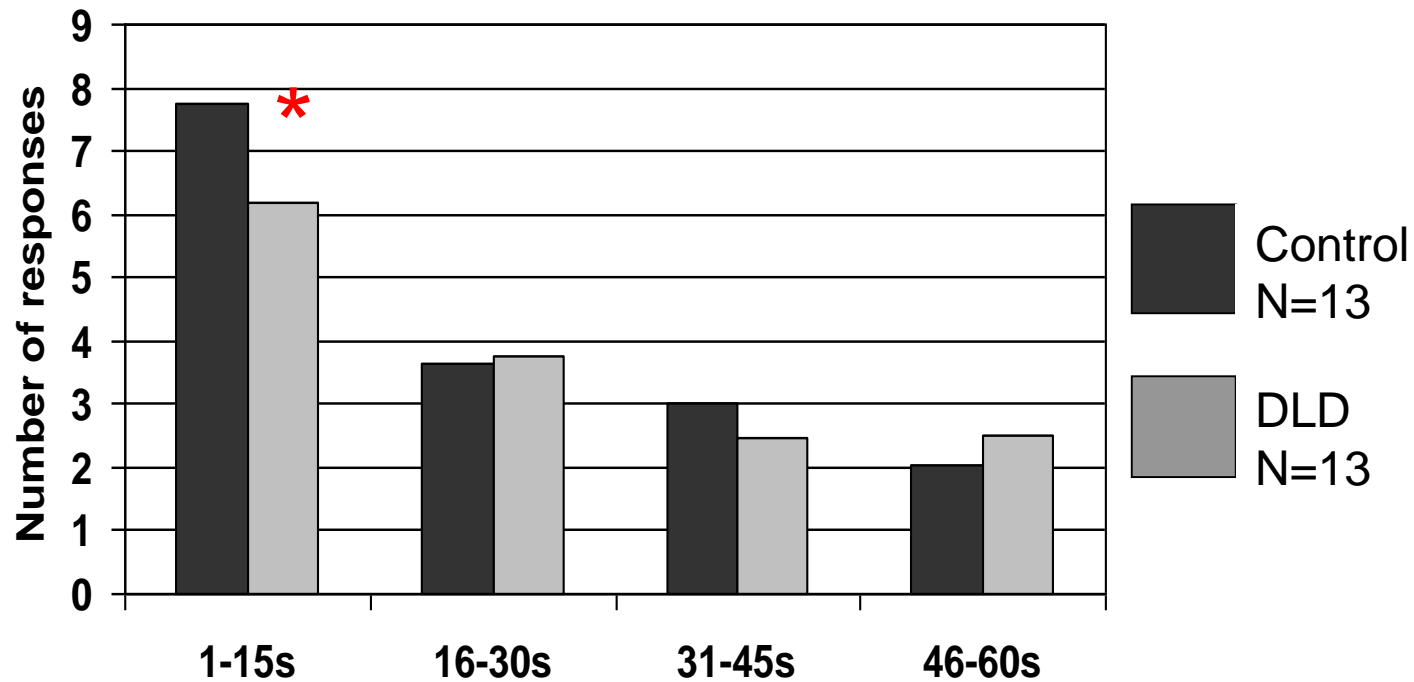
Stage 3: Semantic fluency – results

(Marshall et al., 2013, *JCL*)



Stage 3: Semantic fluency – results

(Marshall et al., 2013, *JCL*)



Some evidence of sign-finding difficulties
 (e.g. MOUSE IN WHEEL... YOU KNOW! 7 s later: HAMSTER!)

→ Evidence that signers with DLD access signs more slowly

Conclusions from this research project

- DLD can be identified in signers,
but it is challenging to distinguish it from sign language delay.
- DLD in sign has some of the same features as DLD in spoken languages,
despite the differences in modality:
 - Poor sentence repetition
 - Some word finding difficulties

What do we still need to know?

- We need to better understand sign language development in signers without DLD.
- What is the profile of signers with DLD
 - across development?
 - across languages?
- What does bilingual-bimodal DLD look like in hearing signers?
- How do we tease apart the effects of delay and disorder?
- How does sign language proficiency relate to literacy, numeracy and other aspects of learning?

Recent research from other groups: Quinto-Pozos et al., ASL

- Case of a deaf native signer of American Sign Language (ASL) with DLD. School records documented normal cognitive, but atypical language, development.
- Average intelligence, intact visual perceptual skills, visuospatial skills, and motor skills, yet challenges with some memory and sequential processing tasks.
- Scores from ASL testing signalled language impairment and a marked difficulty with fingerspelling.
- Additionally, significant deficits in English vocabulary, spelling, reading comprehension, reading fluency, and writing.

Recent research from other groups: Bogliotti et al., LSF



[GLISSER] MD



[GARCON] MND



[SALE] MD



[MAMAN] MND

Mixed dominance



[DEGUISE]



[TAPER A L'ORDINATEUR]



Lack of facial expression

Recent research from other groups: Bogliotti et al., LSF



[FILLE]



[BROSSER LES CHEVEUX]



[TROMPER]



[GARCON]



[BROSSER LES CHEVEUX]



[GARCON]



[BROSSER LES CHEVEUX A QUELQU'UN]

Errors of reference and the syntactic use of space

A result of all this work: The recognition of DLD in sign

Old definition:

SLI is characterized by the inability to master spoken and written language expression and comprehension, **despite normal** nonverbal intelligence, **hearing acuity**, and speech motor skills, and no overt physical disability, recognized syndrome, or other mitigating medical factors known to cause language disorders in children.

New definition (ICD-11):

DLD is characterized by persistent difficulties in the acquisition, understanding, production or use of language (spoken or **signed**), that arise during the developmental period, typically during early childhood, and cause significant limitations in the individual's ability to communicate.

It remains problematic to diagnose DLD in ORAL deaf children.

Implications for teaching

- Awareness that a child with poorer-than-expected sign language skills might be affected by DLD, and not just by impoverished sign language input.
- Such a child might also have concomitant difficulties in literacy.
- This child might benefit from particular types of support.

@DOTdeaf

Prof. Ros Herman and Dr Joanne Hoskins

Exciting new ERASMUS+-funded study

Aim: To develop online training for deaf practitioners working with signing deaf children with broad language difficulties.

Email: r.c.herman@city.ac.uk

Find out more

■ Marshall, C. & Morgan, G. (2016). Specific language impairment in deaf and hard-of-hearing children who use a signed language, website *Raising and Educating Deaf Children: Foundations for Policy, Practice, and Outcomes*

■ Marshall, C. & Morgan, G. (2016). Investigating sign language development, delay, and disorder in deaf children. In M. Marschark & P. E. Spencer (Eds.), *The Oxford handbook of deaf studies in language* (pp. 311-324). New York, NY: Oxford University Press.

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