

DEVELOPMENT OF HKSL BY DEAF CHILDREN IN THE SLCO PROGRAMME

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賽馬會手語雙語共融教育計劃
JOCKEY CLUB SIGN BILINGUALISM AND
CO-ENROLMENT IN DEAF EDUCATION PROGRAMME

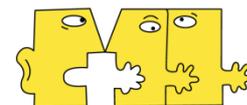
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Acknowledgement



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Outline

- Introduction
- Current Study
- Results
- Discussion
- Conclusion

INTRODUCTION

Critical Period Effects

- Critical Period:
 - ‘Language acquisition may be linked to brain maturation and predicted that the ability to acquire a language would be limited to a period during childhood, before the loss of neural plasticity’ (Lenneberg, 1967)
 - Once the critical period of learning language has passed, it would be more difficult to learn a language, such as L2 acquisition.
- Two ways of research:
 - Language acquisition by social isolates
 - Study of deaf adults who were exposed to signed languages at various ages

Heterogeneity in the deaf community

- Deaf children of deaf parents (DD)

- Exposed to natural sign language from birth;
- Acquisition: similar developmental milestones to those of hearing children's spoken language

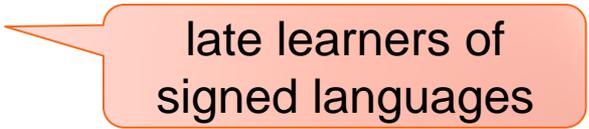


~5%-10%

(Anderson & Reilly, 2002; Lillo-Martin, 1999; Mayberry & Squires, 2006; Petitto, 2000; a.o.)

- Deaf children of hearing parents (DH)

- 90-95% of deaf children are born to hearing families without knowledge of sign language;
- Little or no accessible sign language input during their early life;
- Exposure to sign languages is delayed
 - Hearing parents do not know sign language
 - Hearing parents are told not to use sign language to their deaf child



late learners of
signed languages

Effects of Age of Acquisition: Late Learners of Sign Languages

- **Word order:**
 - Native, early and late learners performed well with basic word order in American Sign Language (Newport, 1990)
 - Child late learners use canonical word order most of the time, but less frequent use of non-canonical order (Lillo-Martin and Berk, 2003)
- **Complex morphology:** verb agreement, classifier constructions, etc.
 - The performance is tied to the age of acquisition (Newport, 1990)
 - More errors (2% to 11.1%) on verb agreement produced by child late learners (Berk, 2004)
- **Language processing:**
 - Phonological processing is a vulnerable domain for delayed acquisition (Mayberry 1995, Mayberry & Eichen 1991, Mayberry & Fischer 1989, Emmorey, Corina and Bellugi 1995).

Implications

- The ability of acquiring and processing language effortlessly is not easy to obtain after the critical period.
- Critical period effects may be selective :
 - Only some domains of grammar are affected

CURRENT STUDY

Current Study

- Aim: To examine critical period effects, or non-effects, of late exposure to HKSL on the sign language development of deaf children studying in a sign bilingual environment.
 - Are the acquisition processes of DH late learners different from those of the early learners?
 - Are there domains of grammar of HKSL that are more vulnerable to critical period effects than others?

Subjects

- Late learners of HKSL:
 - Four deaf children of hearing parents (DH)
 - Profound hearing loss, one with auditory neuropathy
 - Mean age of HKSL assessment= 13;0
 - Studying in a sign bilingual setting where they were consistently exposed to both HKSL and Cantonese
 - Onset age of HKSL acquisition: after 6;0
 - Years of exposure to HKSL: 6-7 years
- Early learners of HKSL:
 - Two deaf children of deaf parents (DD)
 - Severe to profound hearing loss
 - Mean age of HKSL assessment =12;0
 - Studying in a sign bilingual setting where they were consistently exposed to both HKSL and Cantonese
 - **Age of early exposure to HKSL: 1;9 & 1;3**
 - Years of exposure to HKSL: 10-11 years

Subjects' Backgrounds

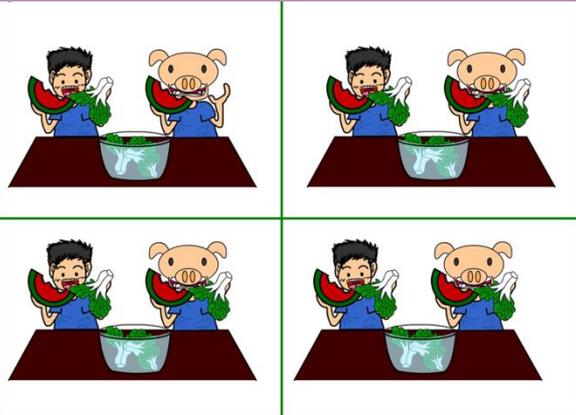
	Research Code	Chronological Age	Gender	Hearing Level	Onset Age of HKSL input	Duration of Exposure to HKSL (month)	Hearing Device	HKCLOAS (CG)	CANSWORT
DH	C1-5-TKH	14;5	M	Profound	7;2	87	CI	40.96%	78.88%
	C1-2-HST	13;11	F	Profound	6;8	87	CI	50.66%	4.17%
	C1-3-LKY	13;7	M	Profound	6;4	87	CI	37.35%	0%
	C2-3-TWK	12;10	M	Profound	6;7	75	HA	77.11%	55.83%
DD	C1-4-SMC	12;9	M	Profound	1;9	132	HA	83.13%	91.67%
	C2-2-SMY	11;3	F	Severe	1;3	120	HA	79.52%	100%

Methodology: Production tasks

- Picture description: negation, classifier constructions
- Question elicitation: *wh*-questions
- Story retelling: verb agreement, modal

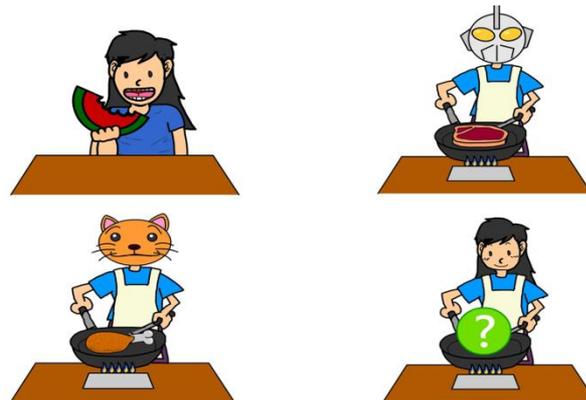
Negation: NOT-HAVE

Find the different picture then describe it.



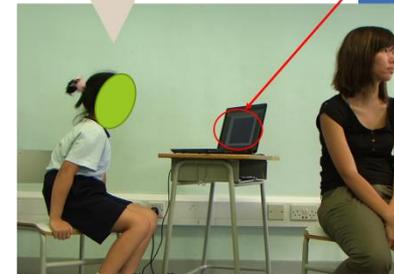
Classifier constructions:

Look at the picture and describe it.



Example of *wh*-questions elicitation task: **WHAT**

Watch a story signed by a native Deaf adult

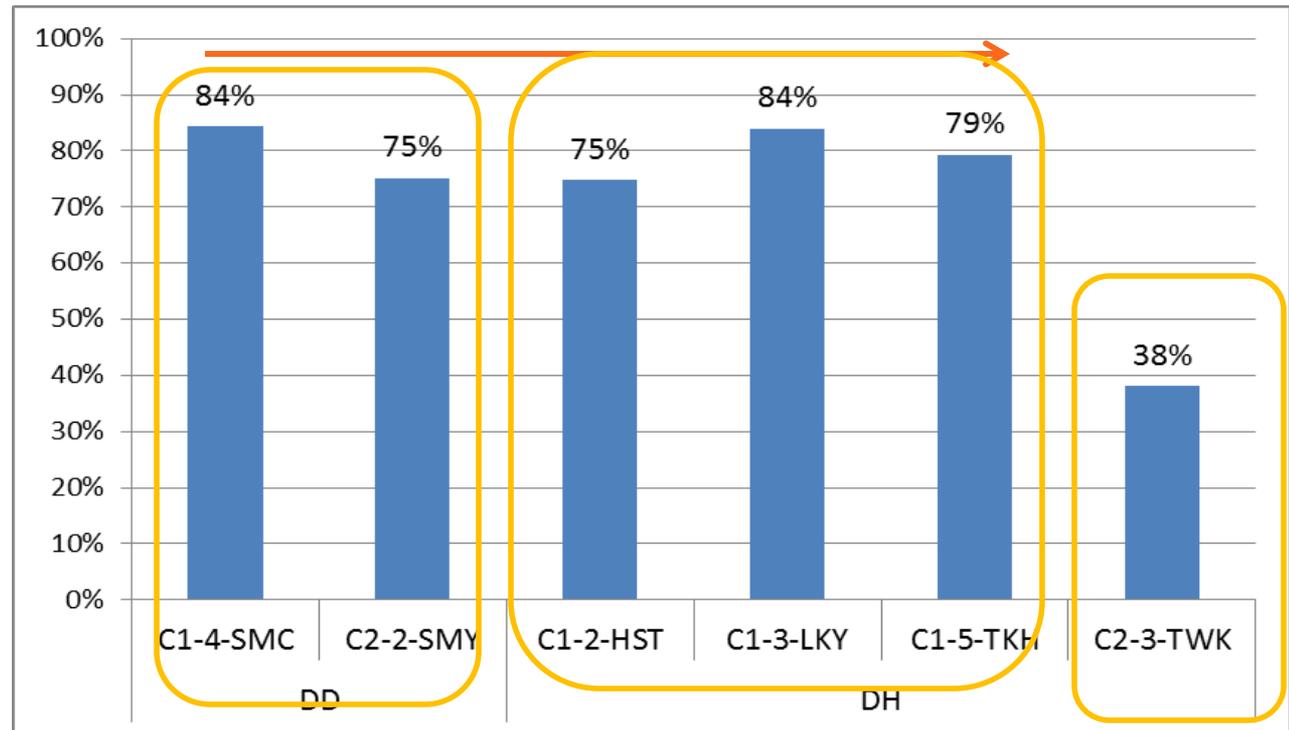
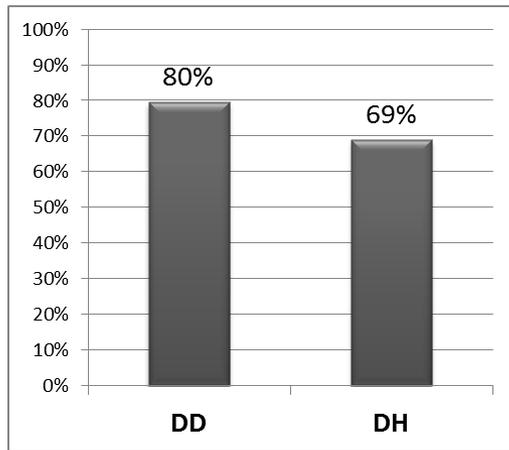


Retell the story to a Deaf investigator

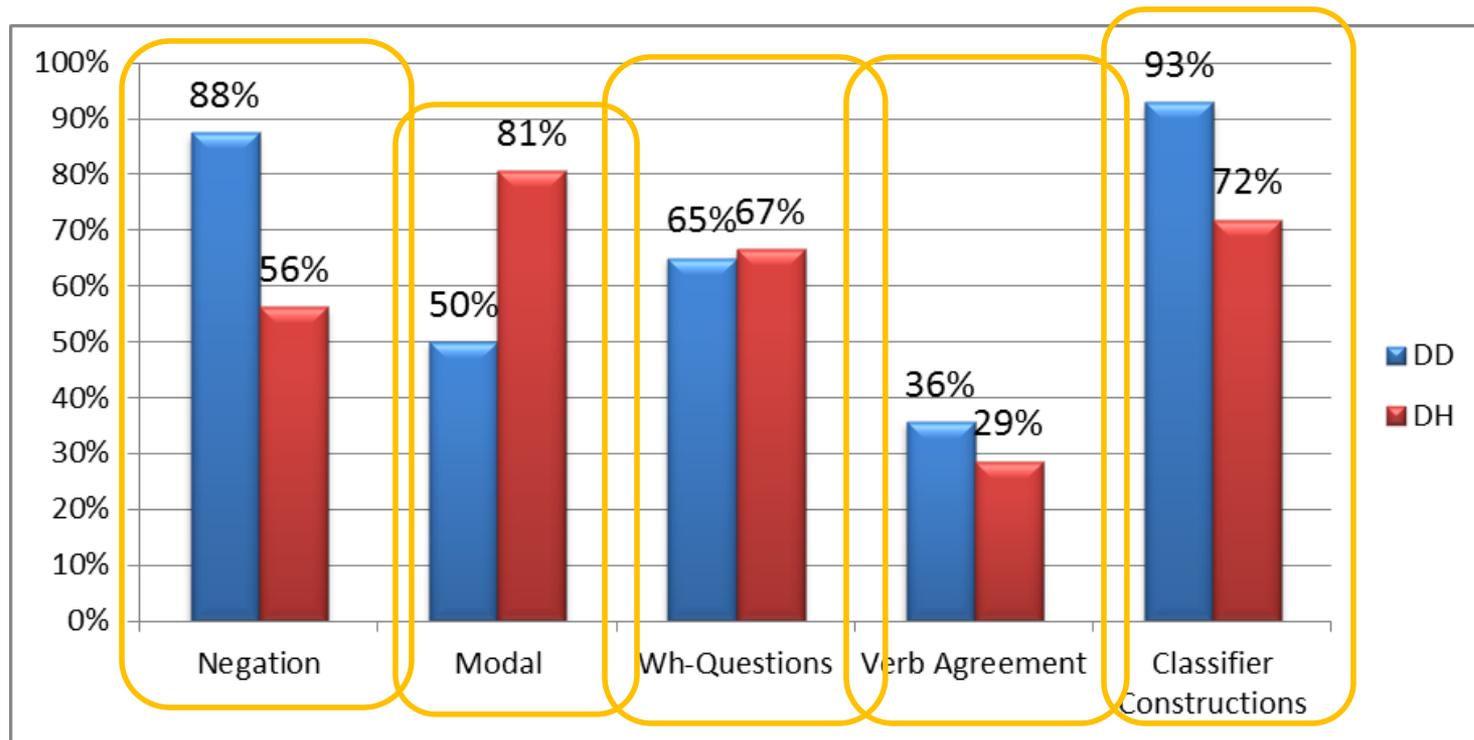


RESULTS

Overall Performance

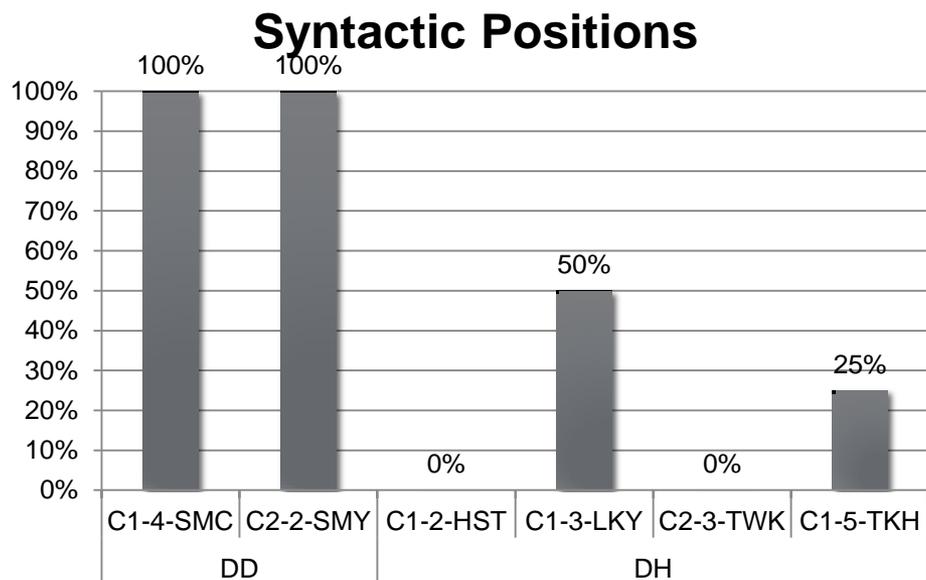


DH Late Learners: Overall Performance



- Acquired: with an accuracy rate of 75%
 - Modal, classifier constructions

DH Late Learners: Negation



Error analysis		Preverbal negator
Early learners	C1-4-SMC	0% (4/4)
	C2-2-SMY	0% (4/4)
Late learners	C1-2-HST	100% (4/4)
	C1-3-LKY	50% (1/2)
	C2-3-TWK	n.a.
	C1-5-TKH	100% (3/3)

co-occurrence of clause-final and preverbal negator in SMC's early stage

- The main error type in the syntactic position of negation:
 - Preverbal negator:
 - E.g. *PIG NOT-HAVE EAT VEGETABLE (C1-2-HST)
'The pig doesn't eat the vegetable.'

HKSL:
PIG EAT VEGETABLE NOT-HAVE

Cantonese:
zyu *mou* sik coi
pig not-have eat vegetable

What domains of grammatical knowledge in HKSL have been acquired by DH late learners?

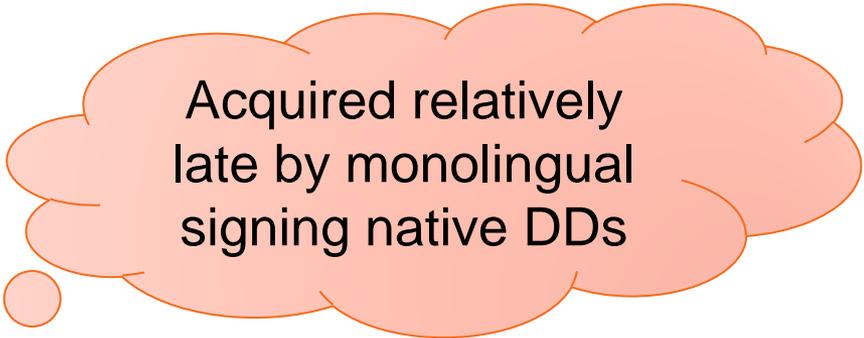
- Acquired:

- Word order:

- Modals: 97%
- *Wh*-signs: 75%
- Classifier constructions: 72%

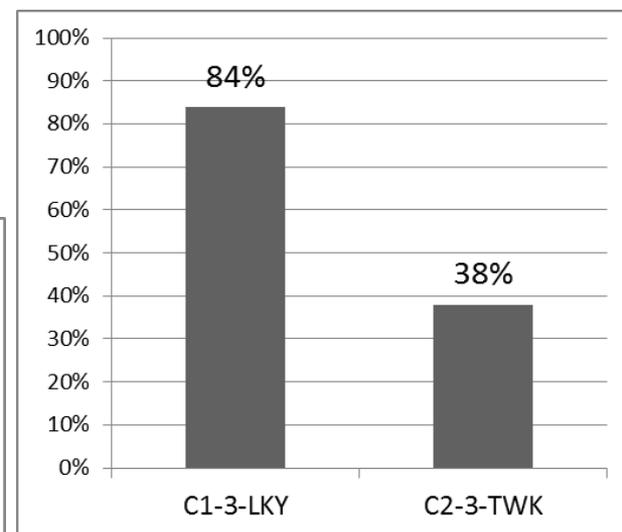
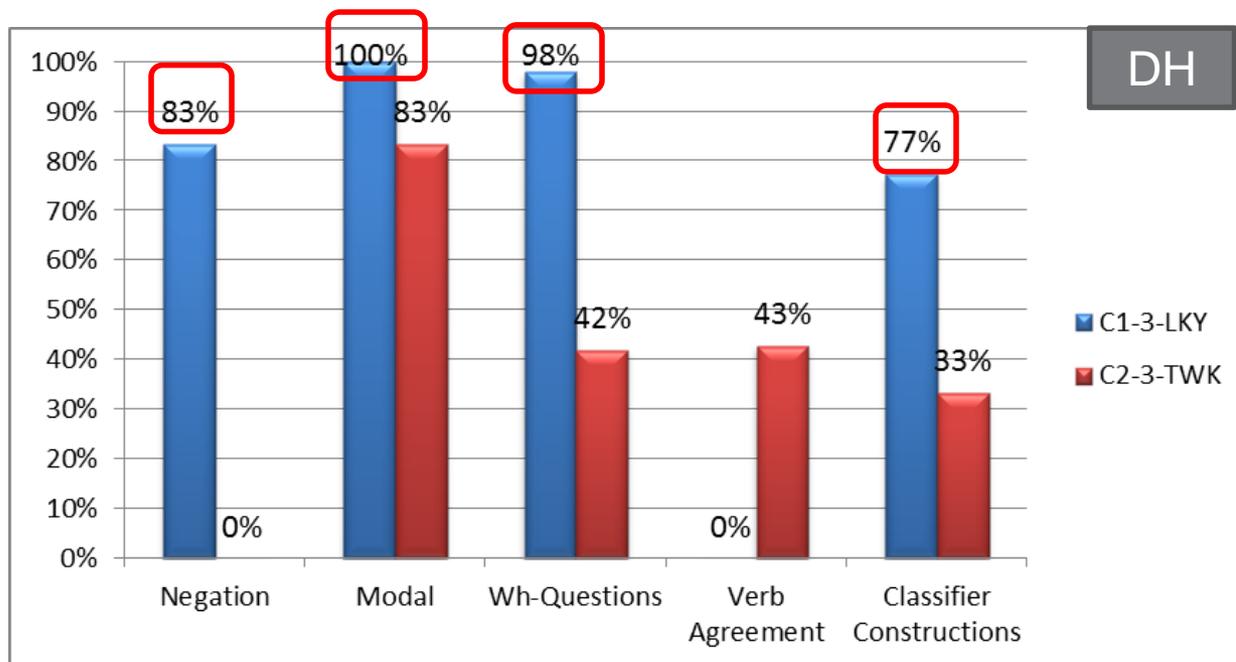
- Not acquired:

- Nonmanuals: e.g. facial expressions
 - associated with the syntactic scope of *wh*-questions: 35%
- Verb agreement: 33%
- Syntactic position of functional signs:
 - Negation: 19%



Acquired relatively late by monolingual signing native DDs

Individual Variation



Individual Variation

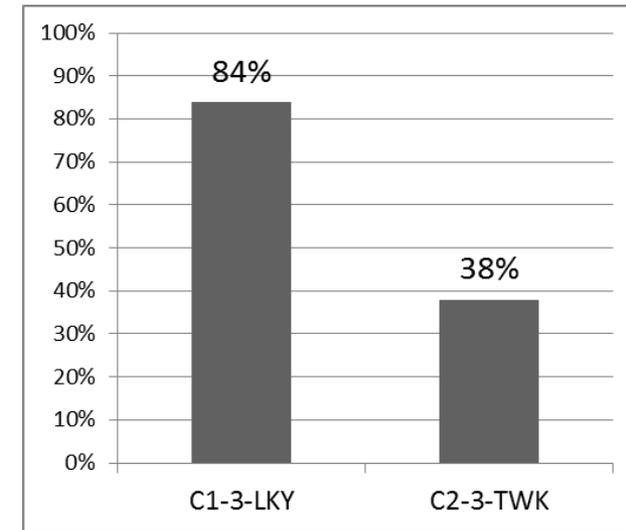
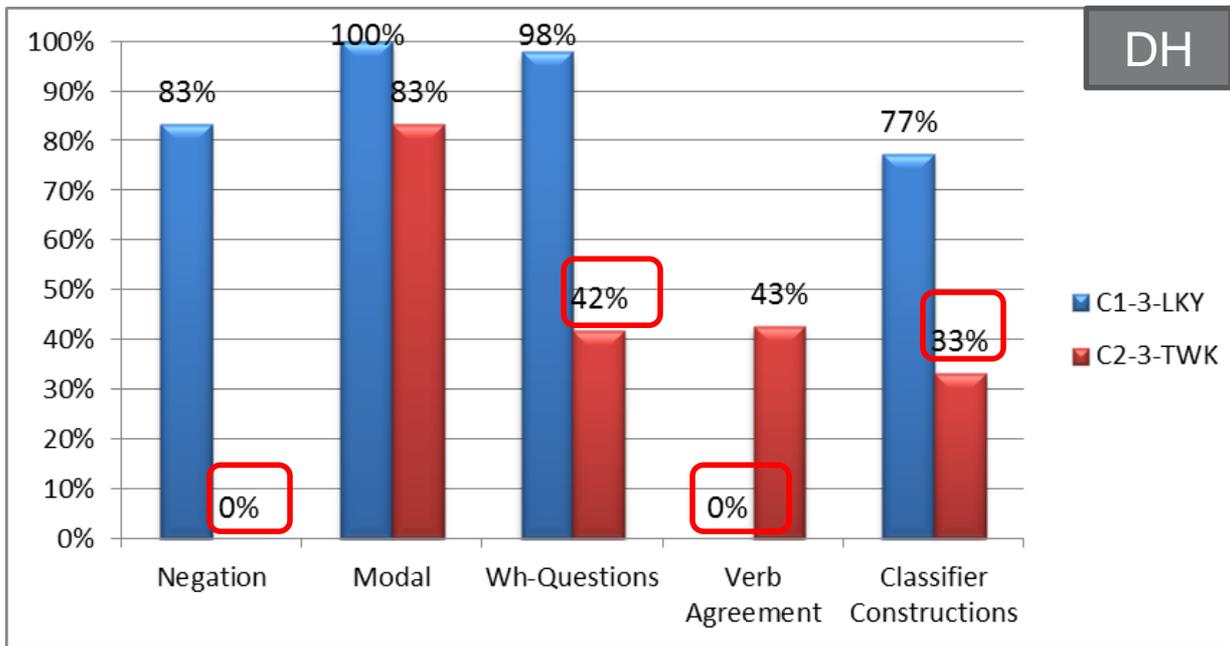
Cantonese Grammar

Speech Perception

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- Accessible languages:
 - TWK: Cantonese & HKSL
 - LKY: HKSL

Individual Variation

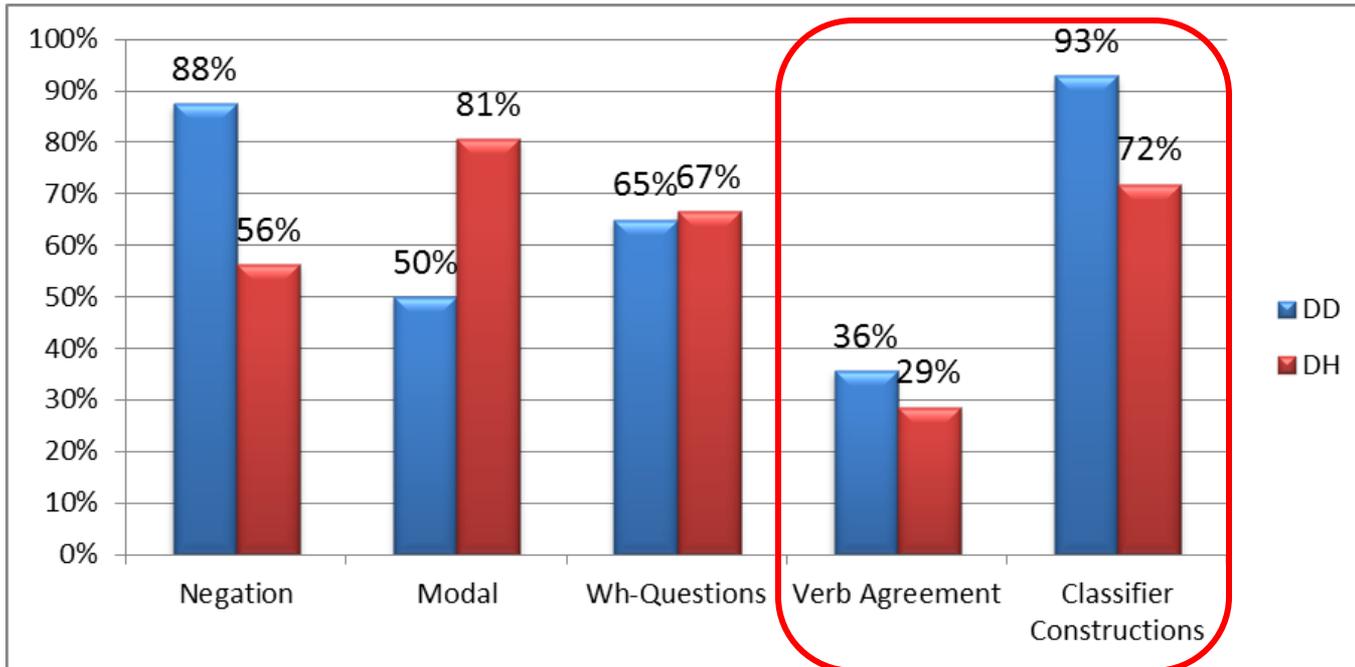


- Stronger effects of cross-linguistic influence from Cantonese observed in TWK than LKY

Error analysis

- Cantonese -> HKSL:
 - Using Cantonese word order when performed in HKSL
 - Classifier constructions: TWK -> 100%; LKY -> 86%
 - E.g. *TOY-CAR ABOVE HAVE DOG
'A dog is on the toy car.'
 - Mouthing Cantonese-equivalent words instead of using syntactic nonmanuals
 - *Wh*-questions: TWK -> 91% of the time; LKY -> only 1 token
 - E.g. *mouthing: *bian dou*
MALE WASH HAT WHERE
'Where is the man washing the hat?'
- Cantonese-based signing is internally derived by deaf bilingual children.

Acquisition of Complex Structures



(Tang & Gu,
2007: 1224-1225)



TREE



CL-A-TREE-BE-LOCATED-AT-i



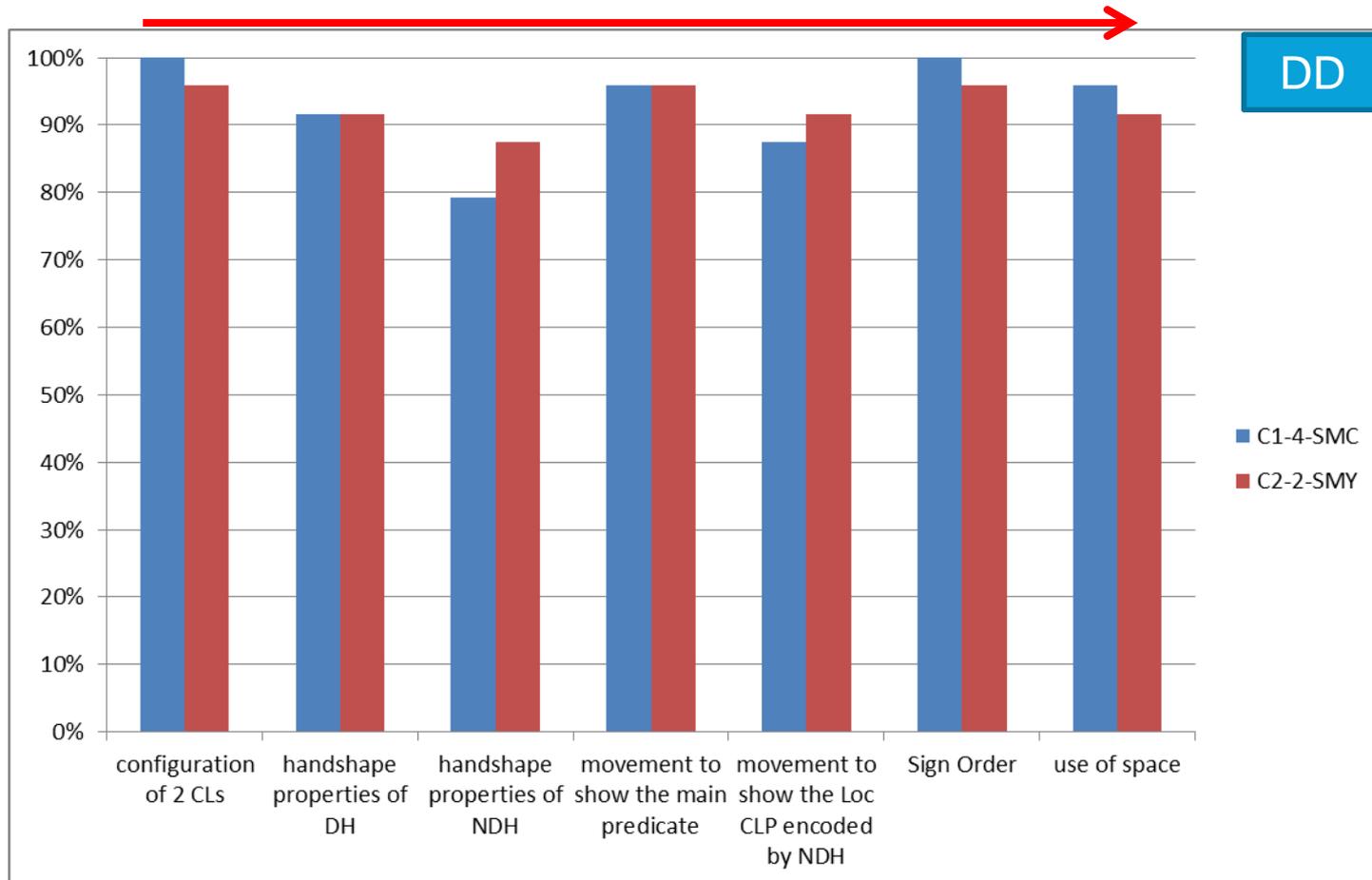
CAR



CL: A-VEHICLE-MOVE-TOWARD-A-TREE

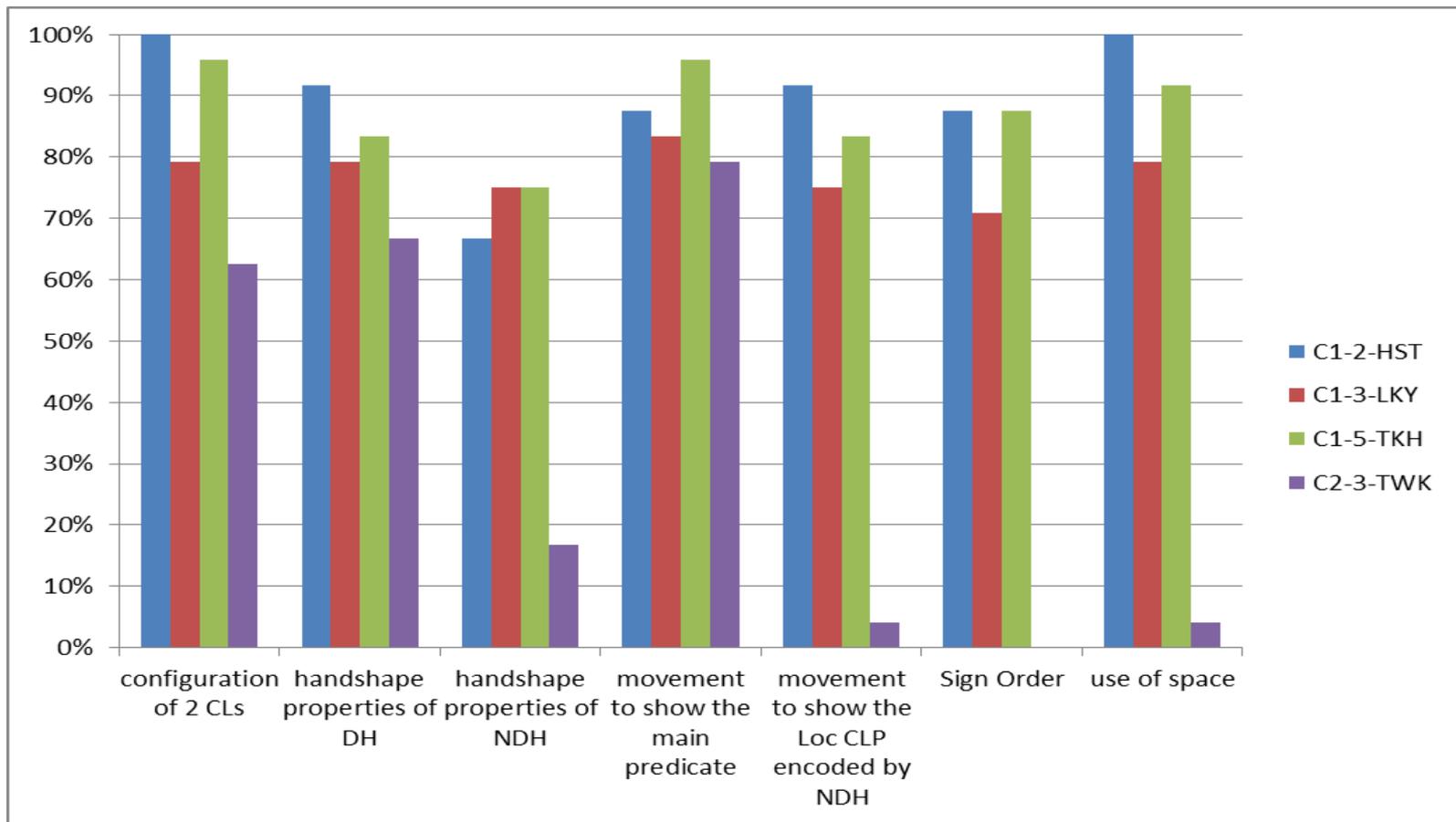
Acquisition of Complex Structures

- Classifier constructions:



Acquisition of Complex Structures

- Classifier constructions:



Discussion

- Deaf children, whose age of exposure to HKSL was delayed to age 6, showed similar developmental process as the early learners
- Evidence (1)
 - They erred similarly in:
 - Verb agreement: DH->33%; DD->35%
 - Non-manuals: DH->35%; DD->28%

Discussion

- Evidence (2)
 - Similar to spoken language bilinguals, cross-linguistic influence from Cantonese was observed when deaf children had developed knowledge of Cantonese
 - Direction of crosslinguistic influence:
 - From more dominant language to less dominant language.
 - TWK: Cantonese -> HKSL
 - Affected domains
 - The syntactic position of negators, modals, *wh*-signs in HKSL (contra Cantonese)
 - Agreement morphology especially when it requires the use of space (Cantonese does not require verb agreement morphology).
 - Unaffected domains:
 - HKSL- specific constructions e.g. classifier constructions

Discussion

- Critical period effects?
 - Despite late exposure to HKSL, most DH learners have developed knowledge of most grammatical domains included this study, except for verb agreement.
 - It seems that critical period effects with sign bilinguals involve a complex interaction of linguistic input in both a sign language and a spoken language, as findings from the individual variation show.
 - With TWK, late exposure to HKSL plus an adequate development of Cantonese due to good speech perception abilities might lead to critical period effects in the acquisition of HKSL in the long run.

Conclusion

- Sign bilingual environment
 - An enriched linguistic environment with sustained input in HKSL is crucial for promoting language acquisition, to offset the effects of late exposure of linguistic input
- Further research on the DH late learners' ultimate attainment in HKSL

Thank you!

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