

Weak Hand Lowering across signing styles of French Belgian Sign Language (LSFB)

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WEAK HAND LOWERING

Weak Hand Lowering (WHL) is a case of **phonetic reduction** specific to symmetrical signs.



Careful form



Reduced form

In their **careful forms**, symmetrical signs are articulated with both hands at the same height.

In their **reduced forms**, symmetrical signs are articulated with the weak hand lower than the strong hand (WHL).

PHONETIC REDUCTION

Reductions are phonetic variants that occur in normal language production and that differ from their respective careful forms in that they are generally produced with smaller movements of the articulators (Warner 2011).

Internal factors (e.g. speech rate, phonetic environment) and **external factors** (e.g. gender, age, region) influence the production of reduced forms both within the spoken and the signed modality (Lucas et al. 2002, Schembri et al. 2006, Tyrone and Mauk 2010).

In the spoken modality, it has been shown that **informal styles** contain more reductions than **formal styles** (e.g. van Son & Pols 1999).

LSFB

Since its official recognition in 2003, "LSFB seems to be going through an accelerated development, involving [...] the development of a formal/informal register-difference" (Meurant et al. 2013). **Do these emergent registers differ in their use of some phonetic variants?**

RESEARCH QUESTIONS

- How does the use of Weak Hand Lowering vary across different signing styles of LSFB?
- Which elements of the phonetic environment favor Weak Hand Lowering?

DATA

- The recordings of 4 deaf signers in 4 different settings varying according to their formality level: an online video, a public lecture, a narration and a dialogue.
- In ELAN, annotation of at least 35 fully symmetrical signs per signer in each context (N=533 tokens, 176 sign types)

CODING

- For every annotated token, coding for
- the distance between the strong and the weak hand, determined manually by reporting the difference between the heights of each hand in pixels
 - the number of active hands in the preceding and following segments

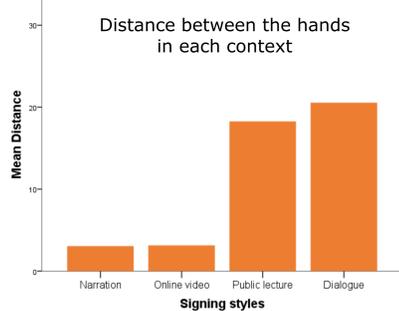
TEST

Linear mixed effects analyses using lme4 package in R

- Dependent variable : Weak Hand Lowering
- Fixed effects : (1) signing styles and (2) phonetic environment
- Random effects : signers and sign types

1. RESULTS : SIGNING STYLES

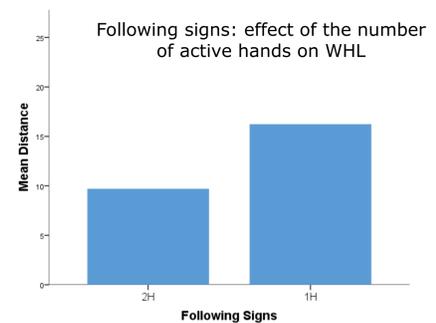
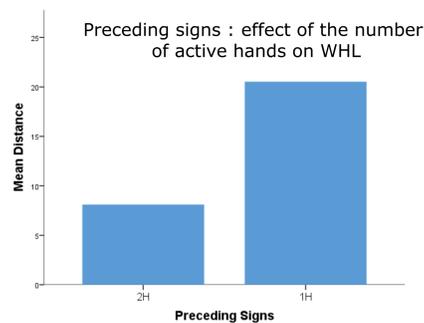
Weak Hand Lowering is differently distributed across signing styles of LSFB ($p=0.004$)



The narration and the online video disfavor the use of Weak Hand Lowering while the public lecture and the spontaneous dialogue favor it.

2. RESULTS : PHONETIC ENVIRONMENT

Weak Hand Lowering is affected by the number of active hands in the preceding ($p=1e-06$) and the following ($p=0.02$) segments.



When a symmetrical sign is preceded or followed by a one-handed segment, Weak Hand Lowering is more important in comparison to when it is preceded or followed by a two-handed segment.

CONCLUSIONS

- In LSFB, like in spoken languages, there is a relationship between signing styles and the amount of phonetic reduction. Very formal settings (i.e. the online video) disfavor Weak Hand Lowering and more informal ones (i.e. the dialogue) favor it. Besides formality, other elements such as the degree of preparation, the interactivity or the discourse type also influence the realization of Weak Hand Lowering.

- There is a coarticulatory effect of the preceding and the following segments on the realization of Weak Hand Lowering, as has been shown for other instances of signed reduction such as Sign Lowering. The phonetic pressure to reduce articulatory efforts favors Weak Hand Lowering in the context of one-handed segments.
- Other sources of variation not included in this study are internal factors like stress and lexical frequency and external factors like gender, age and region.

References

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Acknowledgements

I would like to thank the informants of the LSFB Corpus project for their participation and my supervisor Laurence Meurant for her help in the realization of this project. This research was funded by a F.R.S-FNRS Research Fellow Grant (1.A.352.13F).

