SIGN LOWERING
and signing styles of
French Belgian Sign Language

Aurore Paligot
aurore.paligot@unamur.be
1. Sign languages
2. Phonetic variants related to stylistic variation
3. Sign lowering
French Belgian Sign Language
« LSFB »

- Wallonia-Brussels Federation
- ± 6000 signers
- Recognized as an official language in 2003
Sign Languages

- Are organized similarly to spoken languages: they have **semantic, syntactic, morphological and phonological systems**

- The terms **phonology** and **phonetics** are used in sign language research to describe the **sign modality’s analogs** of the phonological and phonetic aspects of spoken languages
Phonological parameters

Handshape

‘TO SIGN’

Movement

Location
Minimal pair vs. phonetic variants

‘LABORATORY’

‘ANALYSIS’

‘TRAM’

‘TRAM’
2. Phonetic variants
Phonetic variants related to stylistic variation?

1. Precision of handshapes

‘EXAMPLE’

‘EXAMPLE’
Phonetic variants related to stylistic variation?

2. Duration and markedness of pauses
Phonetic variants related to stylistic variation?

3. Contact loss

‘INTERPRETER’

‘INTERPRETER’
Phonetic variants related to stylistic variation?

4. Weak hand drop

‘POSSIBLE’
Phonetic variants related to stylistic variation?

5. Assimilation of handshapes

‘EXAMPLE’

‘SCHOOL’

‘EXAMPLE’
Phonetic variants related to stylistic variation?

6. Sign Lowering

Forehead located signs

Symmetrical signs

‘OTHER’

‘TOPIC’
Phonetic reduction

• “Phonetic reduction occurs in the course of normal language production, when instead of producing a carefully articulated form of a word, the language user produces a less clearly articulated form. When signs are produced in context by native signers, they often differ from the citation forms of signs. In some cases, phonetic reduction is manifested as a sign being produced at a lower location than in the citation form.” (Tyrone & Mauk 2010)

• In vocal languages, casual styles contain more reduced forms than formal styles (e.g. van Son & Pols 1999, Warner & Tucker 2011)
Research questions:

1. How does the use of sign lowering vary across multiple settings?
   + Formal and – Formal

2. Which features of the phonetic environment contribute to sign lowering?
   • Forehead located signs
   • Symmetrical signs
3. Sign Lowering : method
<table>
<thead>
<tr>
<th>Online video</th>
<th>Conference</th>
<th>Conversation</th>
<th>Hidden camera</th>
</tr>
</thead>
<tbody>
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<td><img src="image1" alt="Online video image" /></td>
<td><img src="image2" alt="Conference image" /></td>
<td><img src="image3" alt="Conversation image" /></td>
<td><img src="image4" alt="Hidden camera image" /></td>
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</tbody>
</table>
## Corpus

<table>
<thead>
<tr>
<th>Recording conditions</th>
<th>Online video</th>
<th>Conference</th>
<th>Conversation</th>
<th>Hidden camera</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Natural’</td>
<td>‘Natural’</td>
<td>Studio</td>
<td>Studio</td>
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<td>Conversation</td>
<td>Conversation</td>
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<table>
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<tr>
<th>Preparedness</th>
<th>Planned</th>
<th>Planned</th>
<th>Spontaneous</th>
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<tr>
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<td>Planned</td>
<td>Spontaneous</td>
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<table>
<thead>
<tr>
<th>Interactivity</th>
<th>Monologue</th>
<th>Monologue</th>
<th>Dialogue</th>
<th>Dialogue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monologue</td>
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<td>Dialogue</td>
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</table>

<table>
<thead>
<tr>
<th>Audience</th>
<th>Virtual</th>
<th>30 -100 people</th>
<th>Conversation partner + Deaf moderator + Camera</th>
<th>Conversation partner</th>
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</tbody>
</table>
Coding

Forehead located signs

Symmetrical signs
4. Sign Lowering : results
1. Situational contexts

Sign lowering is significantly affected by context

- **Lowering of FOREHEAD LOCATED SIGNS by context**
  - Mean distance: Lowering by context
  - Online video: p=2e-16
  - Conference: p=2e-16
  - Conversation: p=2e-16
  - Hidden camera: p=2e-16

- **Weak hand lowering by context**
  - Mean distance: Weak hand lowering by context
  - Online video: p=7e-10
  - Conference: p=7e-10
  - Conversations: p=7e-10
  - Hidden camera: p=7e-10
Dialogue
Dialogue
no lowering
Dialogue

strong lowering
Dialogue

moderate

lowering
Online video
Online video lowering
« Do you know the joke about a restaurant? »

« Four old men enter a restaurant... »
Other sources of variation

Sign Language of the Netherlands : The Bear Fable
Other sources of variation

- Stress
  - Unstressed form
  - Stressed form

- Phonetic context
- Lexical frequency
3. Conclusions
1. Sign Lowering is **differently distributed across contexts**

2. Phonetic environment:
   - Lowering of forehead located sign is affected by the **motion of the hand** in the preceding segment.
   - Weak Hand Lowering is affected by the number of **active hands** in the neighboring signs.


THANK YOU!

Questions and comments?

aurore.paligot@unamur.be

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Coding: forehead located signs

Preceding and following segments

Sign

Pause

DEAF
Coding: symmetrical signs

Preceding and following segments

1 Hand
One-handed sign

2 Hands
Two-handed sign
Pause

DEAF

MEAT
2. Phonetic environment: sign - pause

Lowering of forehead located signs is affected by the **hand motion** in the preceding context.

![Bar chart showing effect of hand motion on sign lowering](chart)

**Preceding signs**: effect of the hand motion on sign lowering

- Sign: Mean distance
- Pause: Mean distance

**Effect**:
- *Sign*: Mean distance $p=0.01$
- *Pause*: Mean distance $p=0.02$

**Following signs**: effect of the hand motion on sign lowering

- Sign: Mean distance
- Pause: Mean distance

**Effect**:
- *Sign*: Mean distance $p=0.01$
- *Pause*: Mean distance $p=0.3$
2. Phonetic environment: 1 H vs. 2 H

Weak Hand Lowering is affected by the number of active hands in its surrounding context

Preceding signs: effect of the number of active hands on WHL

Following signs: effect of the number of active hands on WHL

\[ p = 1 \times 10^{-6} \]

\[ p = 0.02 \]