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Sociolinguistic variation of two-handed signs in French Belgian Sign Language: Weak drop as a stable reduction phenomenon

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Sociolinguistic variation of two-handed signs in French Belgian Sign Language (LSFB)

WEAK DROP as a stable reduction phenomenon

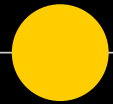
Aurore Paligot & Laurence Meurant

Sign CAFÉ 1, University of Birmingham
July 30-31 2018



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Two-handed signs



No WEAK DROP



WEAK DROP

POSSIBLE

There is a “growing observation across unrelated sign languages that a phonological shift is occurring over time from two- to one-handed signs”.
(Stamp et al. 2015: 168)



“

Is there a change towards one-handed forms in LSF?

- Looking at all two-handed signs of a given sign language
- Semi-automatic method of extraction of one-handed and two-handed forms
- In a yet understudied sign language





Signing styles and phonetic reduction

Towards a description of French Belgian Sign Language registers. Phonological aspects and phonetic variations (Paligot 2018)

- Sign lowering
 - Weak Hand Lowering
 - Lowering of forehead located signs
- Weak Drop



**Vers une description des registres de la langue des signes
de Belgique francophone (LSFB)
Aspects phonologiques et variations phonétiques**

Thèse déposée par Aurore PALIGOT
en vue de l'obtention du grade de
Docteur en Langues et Lettres
19 mars 2018

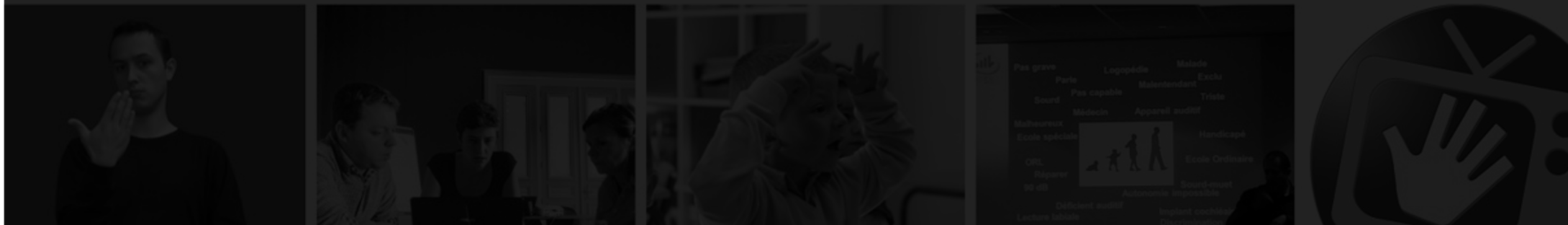
Jury : Laurence MEURANT (promotrice), Jean GIOT,
Onno CRASBORN, Mieke VAN HERREWEGHE, Adam SCHEMBRI



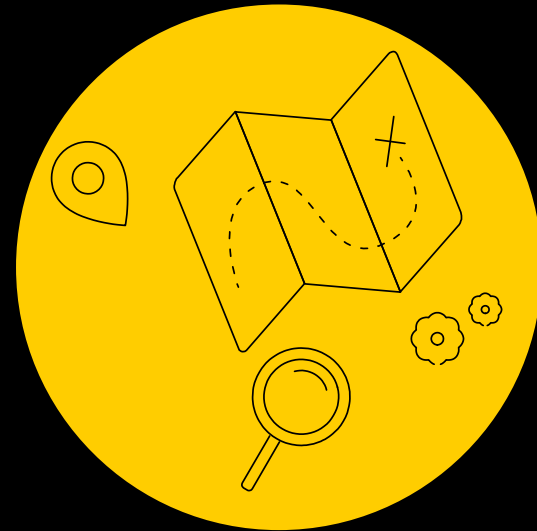
French Belgian Sign Language (LSFB)

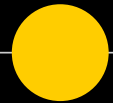
Starting point LSFB seems to be going through an accelerated development that includes the development of a **formal/informal register difference**

Vocal Languages Informal styles contain more reductions than formal styles (e.g. van Son & Pols 1999; Hanique et al. 2013, Ernestus et al. 2015)



Background



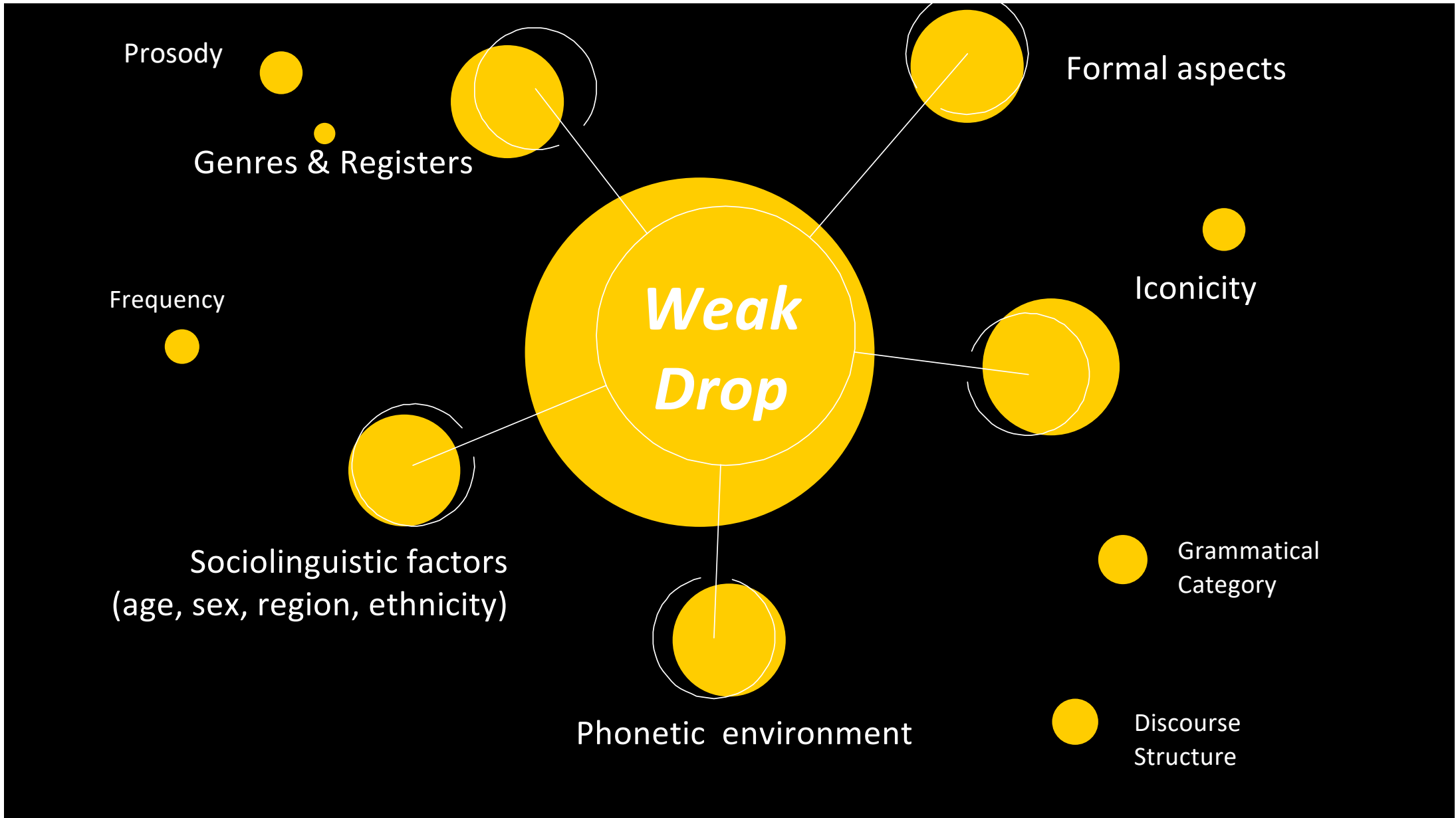


Phonetic reductions

“**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.**” (Tyrone & Mauk 2010)

1. Alterations
2. Deletions
3. Reductions of contrasts

14 - 20 % of reduced forms in conversational data (Warner 2011)



a Formal aspects

Weak Drop is linked to the amount of phonological information that is lost in the realisation of one-handed variants (Battison 1974; Brentari 1995; van der Kooij 2001; Paligot, van der Kooij & Crasborn to come)

Same amounts of Weak Drop in symmetrical and asymmetrical signs:

Symmetrical signs: Contact and alternating movement disfavors WD

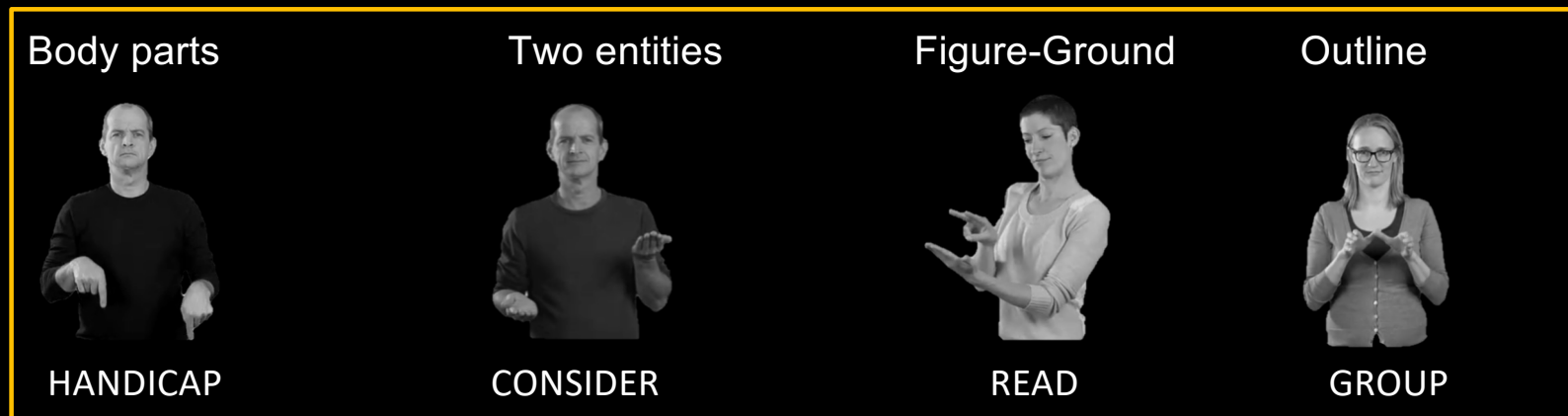
Asymmetrical signs: Weak B handshape favours WD; contact disfavors WD

b Iconicity

When the signs refer to **concepts that involve two objects** or referents, Weak Drop is less likely to occur (Van der Kooij 2001, Paligot, Van der Kooij & Crasborn to come).

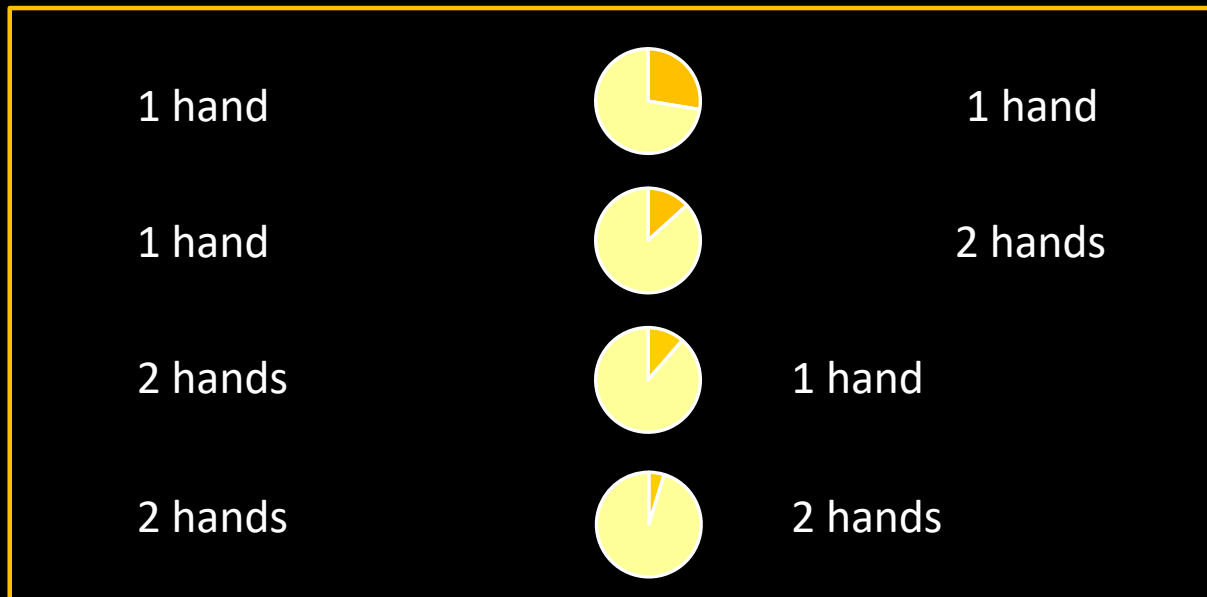
Disfavour WD: Body parts, two entities, outline

Favour WD: Figure-ground



C Phonetic environment

Weak Drop is more likely to occur when a two-handed sign is surrounded by one-handed forms (Nishio 2009, Paligot et al. 2016).



d Sociolinguistic factors

Phonological change

Frishberg (1975)

OLSF, ASL, head signs

Lucas et al. (2007)

(A)ASL, Type 1 signs

McCaskill et. al (2011)

AASL, Type 1 signs

McKee et al. (2011)

NZSL, Numeral signs

Stamp et al. (2015)

BSL, Numeral signs

e

Genre and registers

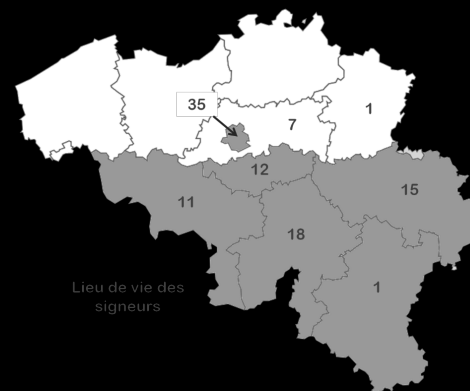
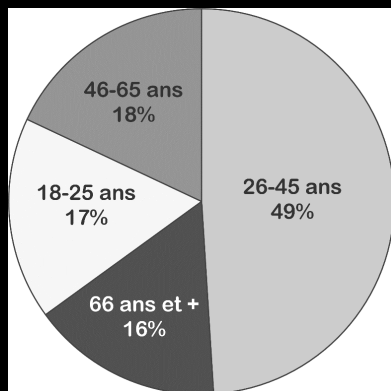
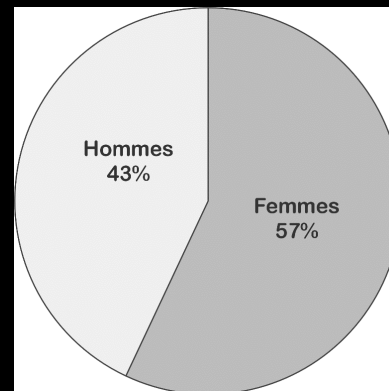
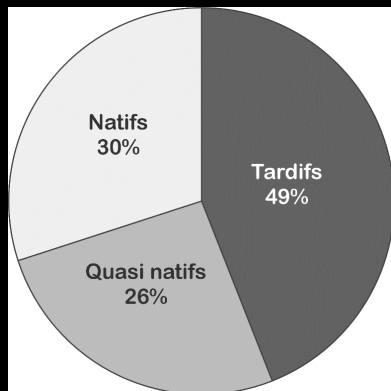
Weak Drop is thought to be more common in informal and spontaneous registers (ex. Battison 1974, van der Kooij 2001, McCaskill et al. 2011), but there is no strong evidence to support that claim to date.

In vocal languages, informal styles often contain more reductions than formal styles (e.g. van So vn & Pols 1999; Hanique et al. 2013, Ernestus et al. 2015).

Those associations are context-dependent and sociologically determined (Laks 2000).

Study





Corpus LSFb (Meurant 2015)
www.corpus-lsfb.be

12 hours

of annotated videos

2 816 signs

stored in Lex-LSFB

76 764 tokens

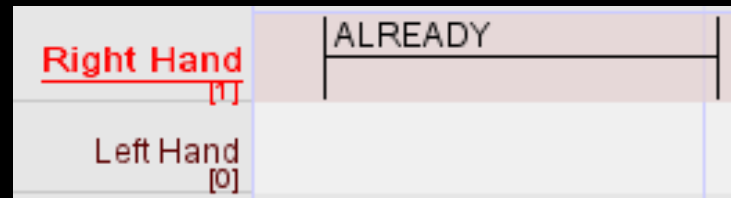
of standard signs

Corpus LSFb (Meurant 2015)

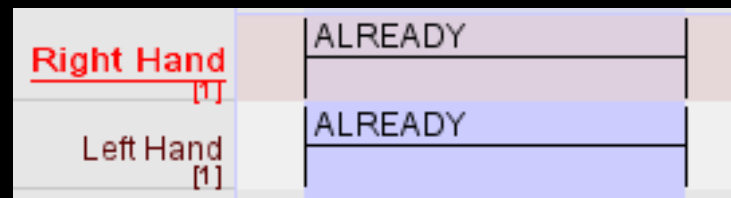
www.corpus-lsfb.be



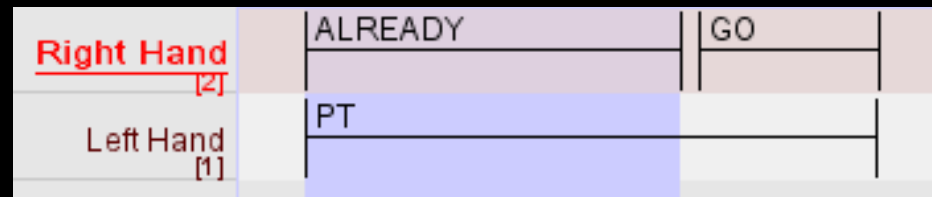
Method



Weak Drop



No Weak Drop



A method to establish sign frequency based on the patterns of articulation

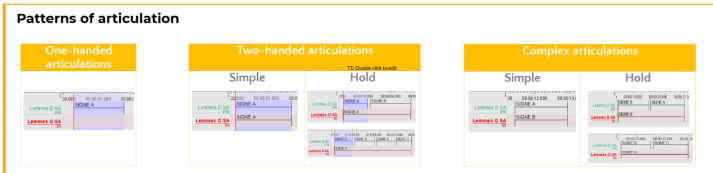
Aurore Paligot, Maxime Gobert, Laurence Meurant

We suggest a (semi-)automatized method to establish sign frequency that specifically addresses these difficulties

- 01** "Determining the number of signs" in a corpus is a "non-trivial task" given that "signers may deviate from citation forms by articulating one-handed signs as two-handed and vice versa, use their non-dominant hands as a buoy, or articulate two one-handed signs simultaneously" Bank (2014 :73)
- 02** "Gloss pattern matching (i.e., a query such as "is the same, different or empty/absent annotation found on a 'sister' of a given tier, e.g., the LH tier compared to the RH tier") is not implemented in the search functions of Elan yet (Johnston 2016), which makes point 1 even more difficult to achieve.

03 We perform a gloss pattern matching as described in point 2 with either Excel or SQL to identify which pattern of articulation corresponds to every annotation. This information, crossed with data about the handedness status of the citation forms (one-handed or two-handed signs) allows us to determine the frequency of occurrence of each sign as well as its articulatory pattern.

Pattern of articulation	Description	Compared tier
One-handed	A manual activity performed with one hand	No annotation on the compared tier
Two-handed articulations	Same manual activity for the two hands	Identical annotation on the compared tier
Complex articulations	Different manual activity for each hand	Different annotation on the compared tier



Requirements

This method is replicable for any annotation dataset that draws on the principles of ID-glossing (Johnston 2016), has two independent annotation tiers for the hands and does not segment the buoys as separate annotations (Crasborn et al. 2015).

Excel

SQL

SQL
- fully automated
- two requests
- one filter



New feature for the Corpus LSF website

Tip
Import the data from Elan with the function "Annotation overlaps information".

Results - Ten most frequent signs of the Corpus LSF

Rank	ID-glosses	Handedness	Frequency
1	PT.PRO3	one-handed	4,458
2	PALM-UP	two-handed	2,718
3	PT.DET	one-handed	2,064
4	TOO	two-handed	1,813
5	SL	one-handed	1,660
6	YES	one-handed	1,236
7	PT.PRO3	one-handed	1,099
8	PT.PRO2	one-handed	1,046
9	TO.HAVE	one-handed	852
10	DEAF	one-handed	829

Advantages

The method provides accurate information about the sign frequency and allows
 - (1) To tackle the difficulties of point 1 and 2
 - (2) To process large amounts of data
 - (3) To revise prior information about handedness based on usage data (Johnston 2016)
 - (4) To avoid manual annotation of one-handed and two-handed variants (Johnston 2016)
 - (5) To automatically spot Weak Drops, buoys and complex articulations
 It can be further refined by implementing constraints based on overlap times and by applying a by-ID-gloss filter (i.e. in the case of one-handed signs).

Outputs

- Correction of the accuracy of the frequency counts of the Corpus LSF (Paligot 2018)
 - Quantitative studies of Weak Drop in NGT (Paligot, van der Koijl & Crasborn, to come) and LSF (Paligot 2018)

Last words

Frequency being a rising topic in SL literature (e.g. Fenlon et al. 2014, Bórstall et al. 2016), we call for an evaluation of the current counting methods in order to formulate some propositions of standardization in this respect.

References

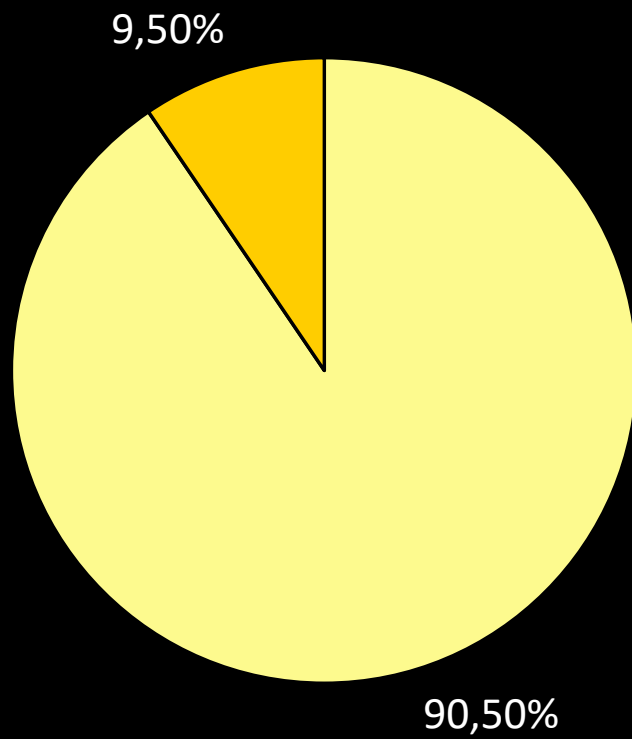
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A method to establish sign frequency based on the patterns of articulations (Paligot, Gobert, Meurant 2018)

- Fully automatized in SQL
- Sign frequency
- Patterns of articulations

➔ No need to manually annotate one-handed and two-handed variants anymore! (Johnston 2016)



- Two-handed & complex forms
- One-handed forms

**Weak Drop in the
Corpus LSFb**



Weak drop in the Corpus LSFb

Genres

1. Narration (-)
2. Description
3. Argumentation
4. Explanation
5. Conversation (+)

Preparedness

Prepared (-) vs. unprepared (+)

Interactivity

Interactive vs. non interactive

Signers' profiles

1. Sex (men (+), women(-))
2. Age (18-25, 26-45, 46-65, 66+)
3. Acquisition (native, near-native, late)

Frequency

Very frequent signs (+) vs.
Less frequent signs (-)

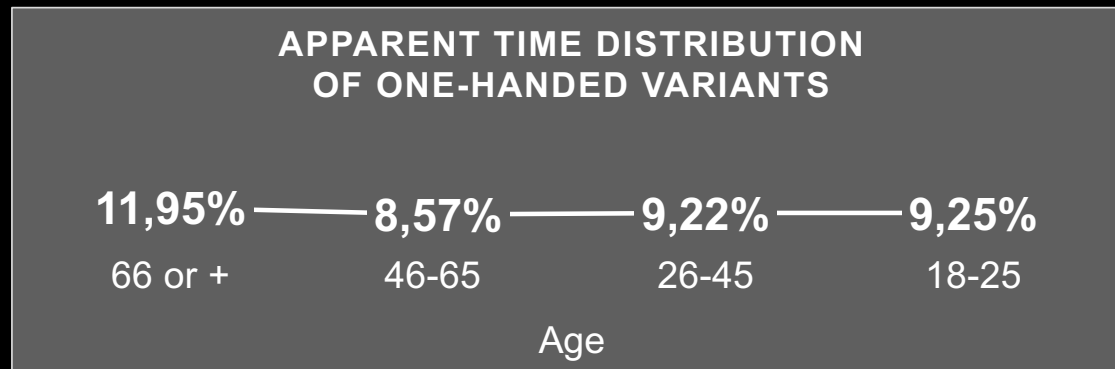
Mixed effect model
(lme4; Winter 2013)



Apparent time construct

« The basic assumption underlying apparent time [...] is that differences among generations of adults mirror actual diachronic developments in a language when other factors [...] are held constant. » (Bailey et al. 1991)

- Apparent time vs. real time
- Change in progress vs. stable variation



Conclusions



1. Weak Drop is more frequent in informal, spontaneous registers

First study to actually measure it!

The one-handed form is less careful than the two-handed form

Women tend to favor the two-handed forms because of their sensitivity to linguistic prestige (cfr Labov 1960)

We observe cross-linguistic differences (ASL and AASL, McCaskill et al 2011)

2. Variation of one-handed and two-handed forms is a stable phenomenon in LSFB

According to the apparent time hypothesis (Bailey 2002), a variation within different age groups may be read as an ongoing language change.

No difference between the generations of signers was observed.

=> No change towards one-handed forms in LSFB

The argument is strengthened by the men's preference for the reduced forms. This was shown to be an indicator of stable variation pattern in several vocal languages (Labov 1990).

We observe cross-linguistic differences (ASL, AASL, BSL, NZSL, Auslan)



Notes!

Cross linguistic differences: change

In LSFB, stable phenomenon vs. evolutive phenomenon in ASL (Lucas et al. 2001); AASL (McCaskill et al. 2011); NZSL (McKee et al 2011); BSL (Stamp et al. 2015) in sub-groups of signs.

Cross linguistic differences : value

In LSFB, WD=informal vs. in AASL, two-handed form= street language (McCaskill et al. 2011).

Further comparison between global and local variation phenomena

All two-handed signs vs. sub-groups of two-handed signs (ex. head signs in ASL and LSFB)



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Corpus

www.corpus-lsfb.be

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Registres de langue – Variable d’application : articulations à une main

<i>Groupe de facteurs</i>	<i>Facteur</i>	<i>Facteur de pondération Rbrul</i>	<i>Pourcentage d’articulations à une main</i>	<i>Nombre d’occurrences</i>
Spontanéité	Semi-spontané	0.537	9,84%	25 403
	Planifié	0.463	8,14%	8 083
Genre discursif	Explication	0.536	10,21%	7 015
	Conversation	0.519	8,95%	9 303
	Argumentation	0.496	8,78%	8 640
	Description	0.49	12,15%	1 646
	Narration	0.46	9,44%	6 882
Interactivité	Interactif	/	9,16%	20 551
	Semi-interactif	/	9,86%	12.35

Données sociolinguistiques – Variable d’application : articulations à une main

<i>Groupe de facteurs</i>	<i>Facteur</i>	<i>Poids Rbrul</i>	<i>Pourcentage</i>	<i>Nombre de d’articulation à une main tokens pour le groupe de facteurs</i>
Sexe	Masculin	0.557	10,47%	18 221
	Féminin	0.443	8,19%	15 265
Age	18-25 ans	/	9,25%	5 966
	26-45 ans	/	9,22%	22 032
	46-65 ans	/	8,57%	2 391
	66 ans ou +	/	11,95%	3 097
Profil d’acquisition	Natif	/	10,00%	13 466
	Quasi-natif	/	9,13%	10 814
	Tardif	/	8,95%	9. 206