Project Number: 693349

D4.7 Third SIGN-HUB Conference

Version 1.0 – 26/06/2018

Project title: The SIGN-HUB: preserving, researching and fostering the linguistic, historical and cultural heritage of European Deaf signing communities with an integral resource
Lead contractor: Universitat Pompeu Fabra
Contact person: Josep Quer Departament de Traducció i Ciències del Llenguatge Roc Boronat, 138 08018 Barcelona Spain Tel. +34-93-542-11-36 Fax. +34-93-542-16-17 E-mail: josep.quer@upf.edu
Work package: WP
Affected tasks: Task

Nature of deliverable[1]	R	DEM	DEC	O
Dissemination level[2]	PU	PP	RE	CO

[1] *R: Report, DEM: Demonstrator, pilot, prototype, DEC: Websites, patent fillings, videos, etc., O: Other*

[2] ***PU**: public, **PP:** Restricted to other programme participants (including the commission services), **RE** Restricted to a group specified by the consortium (including the Commission services), **CO** Confidential, only for members of the consortium (Including the Commission services)*

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 693349.

CONTENTS

1. Scope of the document

This document presents general data about the third SIGN-HUB Conference and the dissemination material.

2. Introduction

The third SIGN-HUB conference took place at the University of Venice on June 18-20, 2018. It was the seventh edition of the "Formal and Experimental Advances in Sign language Theory" (FEAST) colloquium.

The dissemination of the conference was done through linguist lists (e.g. The Linguist List and SLLing-List) and the conference website (see Figure 1). About 90 people attended the event.

50 abstracts were submitted out of which 16 abstracts have been accepted for oral presentation and 12 abstracts have been accepted for poster presentation.

Figure 1. SIGN-HUB Conference website.

https://sites.google.com/site/feastconference/feast-2018-venice

FEAST 2018 Venice

WELCOME TO FEAST 2018 CONFERENCE WEBSITE!

Video di YouTube

The seventh meeting of the "Formal and Experimental Advances in Sign language Theory" (FEAST) colloquium will take place at the University of Venice on June 18-19-20, 2018.

FEAST is the official conference of the research project "The Sign Hub: Preserving, Researching and Fostering the Linguistic, Historical and Cultural Heritage of European Deaf Signing Communities with an Integral Resource" (2016-2020)

funded by the European Commission within the Horizon 2020 programme (http://www.sign-hub.eu/).

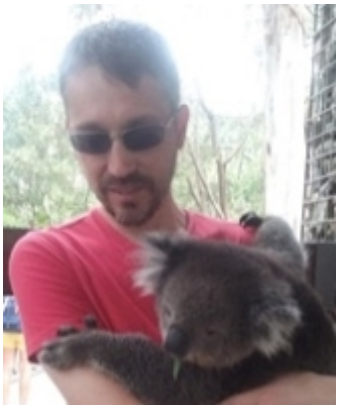
FEAST is a regular forum to discuss formal approaches to sign language grammar (in particular in the generative tradition), experimental approaches to sign languages, and their interaction.

Invited speakers will be:

Luca Des Dorides (Istituto Statale Sordi di Roma)

PhD in Historical Sciences, deaf, researcher, archivist and librarian at the State Institute for the Deaf in Rome (Ministry of Education, University and Research). His research interests mainly focus on persons with disabilities, with particular regard to the deaf people and the confinement to mental hospitals. He is currently engaged in Oral History in Italian Sign Language projects. He has been in charge of the project for the recovery of oral sources in Italian Sign Language *Ti segno la storia* with the General Direction of Archives (Ministry of Cultural Heritage) and for the *Oral History School in Sign Language* with the Italian Association of Oral History (AISO). For the *Sign Hub* project is engaged in the *Task 2.4 – Life stories of elderly deaf signers*.

Contact: l.desdorides@issr.it



Carlo Geraci (Institute Jean-Nicod)

Carlo Geraci is researcher at the CNRS, Institut Jean-Nicod, Paris. He is director of the sign language group and member of the Department of Cognitive Studies of the École Normale Supérieure of Paris. His main specialization is on the syntax/phonology interface, but his interests in sign language are broader, from formal linguistics to sociolinguistics, language and cognition, and artificial intelligence. He works within both theoretical and experimental frameworks.

https://sites.google.com/site/carlogeraci76/home

Krister Schönström (Stockholm University)

Dr. Krister Schönström is an associate professor at the Department of Linguistics, Stockholm University. His primary research interests include several aspects within the topic of deaf bilingualism, including questions related to sign bilingualism, acquisition of written languages and sign languages in the deaf. He has also been conducting several projects in sign language test developments aimed at measuring SSL skills in the deaf.

Meltem Kelepir (Boğaziçi University)

Meltem Kelepir is a member of the Department of Linguistics at Boğaziçi University, Istanbul. She has worked on the morphology-syntax and syntax-semantics interface issues in Turkish and in Turkish Sign Language (TİD).

The official languages of the conference will be English and ASL. Interpreting between ASL and English will be provided.

No registration fee is required to attend the conference, but attendees are kindly requested to register here!

The SIGN-HUB project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 693349.

Subpages (8): ACCOMMODATION BOOK OF ABSTRACTS CALL FOR PAPERS COMMITTEES FEAST PROCEEDINGS PROGRAM REGISTRATION FORM FEAST 2018 VENUE AND TRAVEL

Commenti

Non disponi dell'autorizzazione necessaria per aggiungere commenti.

3. Leaflet

POSTER SESSIONS:

JUNE 18

Word order and intonation in embedded polar interrogatives in TİD
Emre Hakguder (University of Chicago)

Verb types and semantic maps
Marloes Oomen (University of Amsterdam)

Starting to make sense: Further developing a nonsense sign repetition task
Ulrika Klomp (University of Amsterdam)

Grammatical and iconic constraints on serial verb constructions in TİD
Ayşe Özçiçek, Kadir Gökgöz (Boğaziçi University)

Age of sign language acquisition affects processing of word order: EEG evidence
Julia Krebs (University of Salzburg),
Evie Malaia (University of Freiburg),
Dietmar Rohem (University of Salzburg)

Modal signs and scope relations in TİD
Serpil Karabüklü (Purdue University),
Fabian Bross (University of Stuttgart),
Ronnie Wilbur (Purdue University),
Daniel Hole (University of Stuttgart)

JUNE 19

Coordination in Catalan Sign Language: CoPhrase
Giorgia Zorzi (Pompeu Fabra University)

A negation-tense interaction in Georgian Sign Language
Roland Pfau (University of Amsterdam),
Tamar Makharoblidze (Ilia State University)

Can formal features be predicted from form? Using Machine Learning to predict transitivity class from the form of pantomime and ASL classifier constructions
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Hope Morgan (University of Haifa)

Manual and nonmanual cues for speech act perception in DGS
Elisabeth Volk (University of Göttingen)

European Commission | Horizon 2020 European Union funding for Research & Innovation

Supported by:
H2020 project SIGN-HUB (693349)
Dipartimento di Studi Linguistici e Culturali Comparati
(Università Ca' Foscari Venezia)

The official languages of the conference
will be English and ASL.
ASL/English interpreting will be provided.

Università Ca'Foscari Venezia
Dipartimento di Studi Linguistici e Culturali Comparati

SIGN HUB

Venice FEAST Colloquium

Formal and Experimental Advances in Sign language Theory

June 18-19-20, 2018

Auditorium Santa Margherita
Campo Santa Margherita – Venezia

JUNE 18

8:15 ***Registration***

8:45 ***Welcome and opening***

9:00 ***TBA***
Meltem Kelepir
(Boğaziçi University) (invited speaker)

9:50 ***Are plain verbs really plain? Location as the exponent of agreement in Brazilian Sign Language***
Guilherme Lourenço
(Federal University of Minas Gerais),
Ronnie Wilbur
(Purdue University)

10:30 ***Causativity and transitivity in classifier predicates in Tianjin Sign Language: a case study***
Jia He, **Gladys Tang**
(The Chinese University of Hong Kong)

11:10 Coffee break

11:40 ***Word order asymmetries in NGT coordination: The impact of Information Structure***
Iris Legeland
(UvA),
Katharina Hartman
(JW Goethe University Frankfurt),
Roland Pfau
(University of Amsterdam)

12:20 ***Phonological priming in the visual world: An eye tracking study on German Sign Language***
Anne Wienholz
(University of Göttingen),
Derya Nuhbalaoglu
(University of Göttingen),
Markus Steinbach
(University of Göttingen),
Annika Hermann
(University of Hamburg),
Nivedita Mani
(University of Göttingen)

13:00 Lunch break

14:20 ***Iconicity matters: Signers and speakers view spatial relations differently prior to linguistic production***
Francie Manhardt, **Susanne Brouwer**,
Beyza Sumer, **Asli Özyürek**
(Radboud University)

15:00 ***It's not all ME, ME, ME: Revisiting the Acquisition of ASL Pronouns***
Diane Lillo-Martin
(University of Connecticut),
Deborah Chen Pichler
(Gallaudet University)

15:40 ***Poster presentation***

16:10 Coffee break

16:40 ***Poster session***

17:20 ***SIGN-HUB session: sign language assessment***

17:50 ***Insights from the development of Swedish Sign Language assessments - some issues and challenges***
Krister Schönström
(Stockholm University) (invited speaker)

18:40-19:00 ***Business meeting***

20:00 ***Social dinner***

JUNE 19

9:50 ***Quotation in RSL: insights from a corpus study and elicitation***
Vadim Kimmelman
(University of Amsterdam),
Evgeniia Khristoforova
(Russian State University for the Humanities)

10:30 ***Does INDEX matter? Selecting referents in German Sign Language and Turkish Sign Language***
Derya Nuhbalaoglu
(University of Göttingen)

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11:40 ***A preliminary description of evaluative morphology in LIS***
Elena Fornasiero
(Ca' Foscari University of Venice)

12:20 ***Watch my lips: expressing attitude and irony in LIS through non-manuals***
Lara Mantovan
(Ca' Foscari University of Venice, University of Milan-Bicocca),
Beatrice Giustolisi
(University of Milan-Bicocca),
Francesca Panzeri
(University of Milan-Bicocca)

13:00 Lunch break

14:20 ***Path and (a)telicity in space: Motion predicates in LSCu (Sign Language of Cuba)***
Alicia Calderon Verde
(CENDSOR, Cuba),
Donny Wilson Limonta
(CENDSOR, Cuba),
Gilma Cervantes Soliño
(CENDSOR, Cuba),
Ariel Hernández Hernández
(CENDSOR, Cuba),
Elena Benedicto
(Purdue University)

15:00 ***Directness of causation constraints on resultative constructions in ASL and English***
Cornelia Loos
(University of Göttingen)

15:40 ***Poster presentation***

16:10 Coffee break

16:40 ***Poster session***

17:20 ***SIGN-HUB session: sign language Atlas and grammars***

17:50 ***Interviewing Deaf elderly signers: methodological issues and practical problems in Italian SIGN-HUB interviews***
Luca Des Dorides
(Istituto Statale Sordi di Roma) (invited speaker)

18:40 ***Getting ready for the Cinedeaf***

19:00-20:00 ***Cinedeaf***
(Istituto Statale Sordi di Roma)

JUNE 20

9:00 ***TBA***
Carlo Geraci
(Institute Jean-Nicod) (invited speaker)

9:50 ***What looks like a question followed by an answer in LSF***
Charlotte Hauser
(Université Paris Diderot Institut Jean Nicod),
Caterina Donati
(LLF, CNRS)

10:30 Coffee Break

11:00 ***Feeling phonology: The emergence of tactile phonological patterns in protactile communities in the United States***
Terra Edwards
(Saint Louis University)

11:40 ***"Rhythm ratio" in sign languages: A measure of phrasal rhythm***
Diane Brentari
(University of Chicago),
Joseph Hill
(Rochester Institute of Technology-National Technical Institute for the Deaf)

12:20 ***Closing session***

4. Poster

Università Ca'Foscari Venezia

Dipartimento di Studi Linguistici e Culturali Comparati

SIGN HUB

Venice FEAST Colloquium

Formal and Experimental Advances in Sign language Theory

June 18-19-20, 2018

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Supported by:
H2020 project SIGN-HUB
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Dipartimento di Studi Linguistici e Culturali Comparati
(Università Ca' Foscari Venezia)

Organizing Committee:
Chiara Branchini
Anna Cardinaletti
Carlo Cecchetto
Josep Quer

The official languages of the conference will be English and ASL. ASL/English interpreting will be provided.

European Commission
Horizon 2020
European Union funding for Research & Innovation

5. Abstracts book

Dipartimento di Studi Linguistici e Culturali Comparati
Università Ca' Foscari Venezia

VENICE FEAST COLLOQUIUM

FORMAL AND EXPERIMENTAL ADVANCES IN SIGN LANGUAGE THEORY

June 18-20, 2018
Auditorium Santa Margherita, Campo Santa Margherita, Venezia

This event is part of the H2020 project SIGN-HUB (693349),
financed by the European Commission.

European Commission | Horizon 2020 European Union funding for Research & Innovation

SIGN HUB

ABSTRACT BOOK

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CONFERENCE PROGRAM

JUNE 18, 2018

08:15 – 08:45 Registration

08:45 Welcome and opening

09:00 *"Embracing the other": Clusivity Distinctions in indefinite arguments in TID.*
Meltem Kelepir - invited speaker (Boğaziçi University)

09:50 *Are plain verbs really plain? Location as the exponent of agreement in Brazilian Sign Language.*
Guilherme Lourenço (Federal University of Minas Gerais), Ronnie Wilbur (Purdue University)

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Ulrika Klomp (University of Amsterdam).

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Second Poster Session (June 19, 2018)

Coordination in Catalan Sign Language: &Phrase.
Giorgia Zorzi (Pompeu Fabra University) (Second alternate)

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Roland Pfau (UvA), Tamar Makharoblidze (Ilia State University)

Can formal features be predicted from form? Using Machine Learning to predict transitivity class from the form of pantomime and ASL classifier constructions.
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Distribution of Lexical Contrast in Kenyan Sign Language.
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Manual and nonmanual cues for speech act perception in DGS.
Elisabeth Volk (University of Göttingen)

JUNE 20, 2018

09:00	*TBA* Carlo Geraci - invited speaker (Institute Jean-Nicod)
9:50	*What looks like a question followed by an answer in LSF*. Charlotte Hauser (Université Paris Diderot Institut Jean Nicod), Caterina Donati (LLF, CNRS)
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11:40	*"Rhythm ratio" in sign languages: A measure of phrasal rhythm*. Diane Brentari (University of Chicago), Joseph Hill (Rochester Institute of Technology-National Technical Institute for the Deaf)
12:20	Closing session

ABSTRACTS

ORAL PRESENTATIONS

"EMBRACING THE OTHER": CLUSIVITY DISTINCTIONS IN INDEFINITE ARGUMENTS IN TİD

Meltem Kelepir (Boğaziçi University, Istanbul)

Sign languages are known to exhibit clusivity distinctions in first person plural personal pronouns such as WE and TWO.OF.US where inclusive pronouns include the addressee and exclusive pronouns exclude the addressee (Cormier, 2012: 233). Inclusive pronouns are signed in the central signing space and exclusive pronouns are signed in the lateral signing space.

In this talk I argue, based on observations on Turkish Sign Language (TİD), that clusivity distinction is not limited to personal pronouns, but should also be extended to indefinite pronouns with the meaning 'someone'. The contrast in interpretation can be expressed roughly as being between "someone who is other than you and possibly other people in the location of the utterance" vs. "someone who is from among the group of people in the location of the utterance".

I show that TİD expresses exclusiveness of indefinite pronouns with two means: lexically, with a determiner glossed as OTHER, and spatially, by signing an indefinite pronoun without such determiner, ONE, in the lateral signing space. This contrasts with the same indefinite pronoun signed in central space, which is interpreted as inclusive. Similar facts are observed with agreement.

One important implication of these findings is that regardless of the context, certain components of signing space function as the implicit restrictions of quantificational elements, in this case indefinites. These observations are discussed in relation to the findings on languages such as ASL, LSC and LSF in works such as Barberà (2012), Davidson & Gagne (2014) and Schlenker et al. (2013).

References

Barberà, G. 2012. The meaning of space in Catalan Sign Language (LSC): Reference, specificity and structure in signed discourse. PhD dissertation, Universitat Pompeu Fabra, Barcelona.

Cormier, K. 2012. Pronouns. In Pfau, R., M. Steinbach & B. Woll (eds.), Sign languages. An international handbook, 227-244. Berlin: De Gruyter Mouton.

Davidson, K. and D. Gagne. 2014. Vertical representation of quantifier domains. In U. Etxeberria, A. Falaus, A. Irurtzun, and B. Leferman, Proceedings of Sinn und 31 Bedeutung 18, 110-127.

Schlenker, P., Lamberton, J. & Santoro, M. 2013. Iconic Variables. Linguistics & Philosophy 36(2): 91-149.

ARE PLAIN VERBS REALLY PLAIN?: LOCATION AS THE EXPONENT OF AGREEMENT IN BRAZILIAN SIGN LANGUAGE

Guilherme Lourenço*, Ronnie Wilbur[+]
(*Federal University of Minas Gerais, [+]Purdue University)

In contrast to previous discussions on agreement, this paper argues that *location* is the single morphological exponent of verb agreement in signed languages, using data from Brazilian Sign Language (Libras). Therefore, we reject the analysis of path/directionality as agreement markers (Meir 2002; Lillo-Martin and Meier 2011; inter alia). Additionally, we will show that agreement is actually more pervasive and productive than has been argued (e.g. Mathur and Rathmann 2012), thus challenging one argument against calling it agreement. We argue that "plain" verbs are actually capable of showing agreement, as long as there is no phonological restriction and, therefore, agreement is not restricted to a subset of verbs.

Agreement in sign languages has usually been described as a change in orientation and direction of movement of the verb (Mathur and Rathmann 2012:137). We propose, however, that the sole manifestation of agreement in Libras – and possibly other sign languages – is not directionality, nor facing. It is, instead, the sharing of location features (*loci*) between controller and target/verb. The path movement in agreeing verbs is actually related to event properties of the predicate, as consistently argued by Wilbur (2010) and others. Considering location as the exponent of agreement allows us to treat plain verbs as agreeing constructions; because if plain verbs can take location features from a controller, they are actually showing agreement. Some examples of plain verbs clearly incorporating location features are given in Figure 1.

Figure 1. Plain verb signs in Libras (SUPPORT, STUDY, EXPLAIN, WORK and PLAY) displaying agreement with the *locus* of the controller (Corpus/Libras/UFSC, Quadros et al.).

The data supporting our claim comes from analysis of syntactic behavior of 584 Libras verbs from a Libras-Portuguese dictionary (Capovilla et al. 2017) and evaluated by Deaf informants. Information on transitivity (argument structure), agreement pattern (single, double,
regular, backward, spatial or plain), phonological shape (specifically body anchoring and [PATH] features in Brentari's Prosodic Model (1998)) and event structure (state, process or transition) was collected for each of those verbs.

Our first claim on the pervasiveness of agreement is directly drawn from the fact that 42% of the verbs are "traditional" agreeing (whether spatial, regular, backward, single or double) and 58% are "plain" verbs (Figure 2). These numbers alone contradict the argument that "**the agreement process in sign languages is restricted to a smaller set of verbs**, whereas agreement in spoken languages, if it is marked at all, is usually marked on the whole set of verbs" (Mathur and Rathmann 2002, p. 152). This assumption does not hold, considering that almost half of our verbs are agreeing. Moreover, we want to take a step further and ask how plain the plain verbs really are.

We tested if so-called plain verbs could be co-located with a *locus* from a previously introduced referent. The result is that 49% can indeed show location agreement, while 51% cannot. Further, looking at the phonological form of these non-agreeing plain verbs, we see that they are body anchored (98%), meaning that they already are fully specified under the Place of Articulation branch, i.e.,

marked for *head*, *body*$_0$ or *arm* features (in Brentari's system). Thus, the only restriction for agreement in Libras is actually a phonological one.
Because "plain" verbs do not have a path, they only have one slot for agreement. We note that (i) the same primacy of object over subject marking (Lillo-Martin and Meier 2011) is attested in the choice of which argument the verb agrees with: with object in a transitive sentence and with subject in intransitive ones; and (ii) whether a "plain" verb shows overt agreement depends not on the verb itself, but on the underlying mechanism of R-loci assignment.

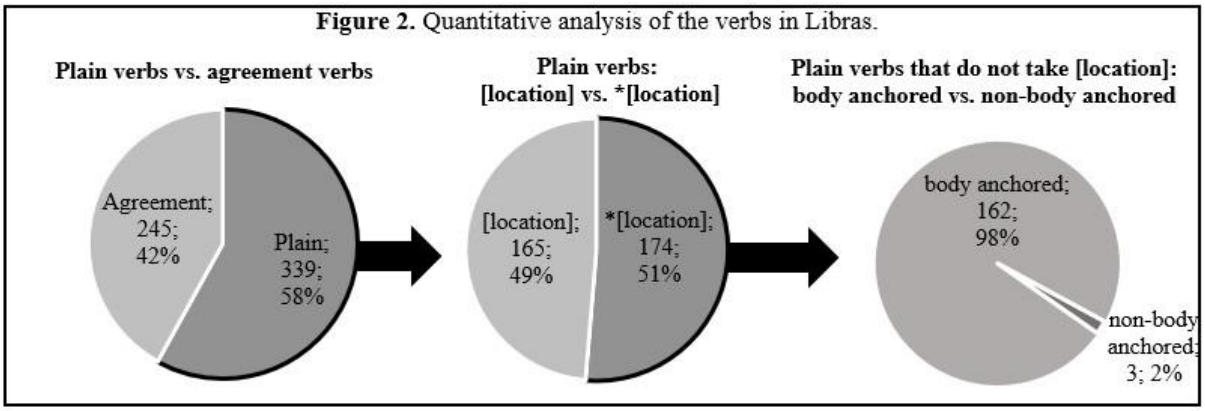

Figure 2. Quantitative analysis of the verbs in Libras.

Changing the analysis of how agreement is morphophonologically spelled-out has implications for ongoing debates on how different agreement patterns can be derived and generated (whether thematically/semantically or syntactically); and what agreement-classes found in sign languages are (e.g. whether spatial verbs and person agreement verbs constitute different agreement-classes). It also resolves the discussion on candidacy for agreement (the features that predict the realization of agreement) and eliminates the relevance of the distinction between directionality and facing for agreement analysis.
Finally, we claim that different morphological operations will target specific nodes of the phonological structure of the sign, as can be seen in Figure 3.

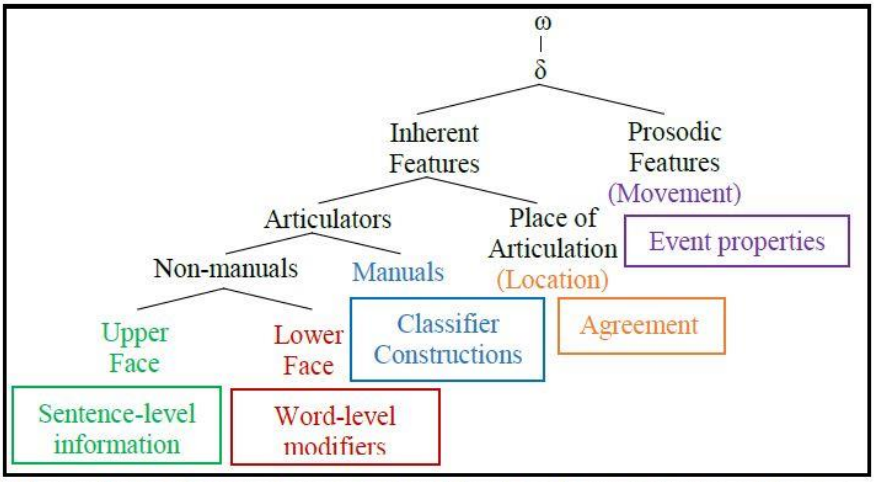

Figure 3. Morphological operations and the phonological structure of the sign.

Descriptions of the specific functions of the non-manual markers (Wilbur 2003) and of the further specification of manual features in classifier constructions (Brentari 1998) have been provided before. What we add here is the disentanglement of the functions of location and movement. Location modifications in a sign are related to agreement; whereas movement modifications are associated to

the event structure of the predicate. This contributes to a fine-grained description of the *layering* of visual information in sign language structure.

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CAUSATIVITY AND TRANSITIVITY IN CLASSIFIER PREDICATES IN TIANJIN SIGN LANGUAGE: A CASE STUDY

Jia He and Gladys Tang
(The Chinese University of Hong Kong)

This paper reports on a case study on the valency of argument structure in classifier predicates in Tianjin Sign Language. Benedicto and Breantari (2004) were among the first researchers who claimed that transitivity alternation exists in American Sign Language (ASL), just like other spoken languages such as English in the literature (Hale and Keyser 1993), through various diagnostic tests to detect both external and internal arguments in corresponding alternating predicates. The structure they focused on is classifier predicates, which are known to be morphologically complex. Specifically, they argued that there is a correspondence between types of classifier handshapes and argument structure: (a) Predicates with handling classifiers are transitive, which involve both an external and an internal argument; (b) Predicates with whole entity classifiers are intransitive unaccusative, which involve only one internal argument; and (c) Predicates with body part classifiers are intransitive unergative, which involve only one external argument. They proposed that classifier verbs such as "break" alternate between transitive causative predicates and intransitive unaccusative predicates, where a handling classifier handshape is adopted for the former and a whole entity classifier handshape for the latter. This empirical argumentation is based on a variety of syntactic tests targeting the internal as well as external arguments. Although problems remain open, this transitivity alternation has been successfully applied to Catalan Sign Language (LSC) and Argentina Sign Language (LSA) (Benedicto et. al 2007). Zwitserlood (2003) also reported the same finding in verbs of motion and location in Sign Language of the Netherlands (NGT).

To check whether B & B's claim holds crosslinguistically, a preliminary study has been conducted which targets the argument structure of classifier predicates in Tianjin Sign Language (TJSL). Since TJSL is not related to any of the sign languages mentioned above, empirical evidence of such existence would further strengthen the search for universality of B & B's proposal. The research question in this study is: Can the correlation as reported in B&B (2004) in ASL be applied to TJSL? Firstly, unlike ASL, the handling classifier verb "BREAK" in TJSL appears in transitive predicates, it does not necessarily indicate a result denoting something is broken. A diagnostic test targeting the result (Beavers 2012) as shown in example (1) was implemented and the result is negative.

Non-manual marking for telicity

(1) STICK I-i CL_{HANDLE}: I break the stick// $CL_{w/e}$: the stick breaks NOT
"I break the stick, but it is not broken."

Non-manual marking for telicity Non-manual marking for telicity

*(2) STICK INDEX-i CL_{HANDLE}: I (try to) break the stick // $CL_{w/e}$: the stick breaks NOT
"I break the stick (non-manual marking for result), it is not broken"

As shown through the contrast between (1) and (2), when the handling classifier "break" lacks the telic non-manual marker, it does not denote the result state of "being broken". Thus it is compatible with the clause describing the negation of a final state of being broken. Whereas in (2), when the handing classifier verb "break" is marked by the telic non-manual, it will no longer be compatible with the second clause denoting the stick is not broken. Therefore, the so called transitive causative classifier verb "break" shown in (1) is just a transitive action verb indicating the manner of breaking is denoted by the handling classifier handshape only, without entailing a result state of being broken. The data shows that such causative classifier verbs like BREAK, SHATTER or SMASH etc. crashes in TJSL. In order for the classifier verb "break" to denote a causative construction, a non-

manual, which marks for telicity in causative predicates is necessary, as shown in (1) and (2). The telic marking is articulated by puff of air on the mouth, which we interpret to be denoting change of state, characterizing a telic event. Careful observation on the data in TJSL shows that such non-manual is an indispensable component in distinguishing resultative from non-resultative predicates in classifier predicates. In fact, causative constructions are always expressed through serial verb constructions in TJSL, as in (3), in which the causing event is immediately followed by a result and both may be expressed by classifier predicate. The data shows that only a limited number of causative constructions can be expressed through one single classifier verb.

(3) CAR be-located$_a$+CL$_{w/e}$: a_3D_flat_object// tree//
fall$_a$+ CL$_{w/e}$: a_cylindrical_object//
CL$_{w/e}$:a_flat_3D_object//
flatten$_a$+ CL$_{w/e}$:a_flat_3D_object//
Lit. A tree falls onto a car; the car becomes flattened.

Secondly, the claim that whole entity classifiers only occur in unaccusative predicates is also not born out in TJSL. Predicates that involve whole entity classifiers can be productively found in transitive predicates as the following examples show:

(3) TABLE CL$_{w/e}$: TABLE-BE-LOCATED-AT-i // BOY INDEX$_j$ RULER CL$_{w/e}$:PUT-THE-RULER-ON-THE-TABLE (ON PURPOSE)
"The boy put the ruler on the table (on purpose)."
(4) MAN INDEX$_i$ GLASSES CL$_{w/e}$: TAKE-OFF-HIS-GLASSES (ON PURPOSE)
"The man took off his glasses (on purpose)."

Diagnostic tests targeting the agent also prove that the above whole entity classifier predicates do involve an agent argument. We also found that the signer's body can serve the grammatical function of marking for the agent argument in such predicates In other words, there are other morphological marking for the valency of classifier predicates, such as ROLE SHIFT is an important piece of empirical evidence indicating the presence of the agent argument. Therefore, B&B's proposal of one-to-one corresponding relationship between the type of classifier handshape and the valency of the predicate does not hold in TJSL, and research in other signed languages is necessary to further verify the validity of their claim.

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WORD ORDER ASYMMETRIES IN NGT COORDINATION: THE IMPACT OF INFORMATION STRUCTURE

Iris Legeland*, Katharina Hartman[+], Roland Pfau*
(*UvA, [+]JW Goethe University Frankfurt)

Background: To date, coordination in sign language (SL) is still an understudied phenomenon (see Tang & Lau 2012). Exceptions are Cecchetto et al. (2015) and Zorzi (in press), who study predicate ellipsis in Italian and Catalan SLs, respectively. The conjuncts of the coordinated constructions reported in these studies exhibit a parallel structure ("parallel structure constraint", PSC), a pattern that is in accordance with results from the literature on typologically diverse spoken languages. The PSC is especially relevant in cases of ellipsis, where it has been argued to be a precondition for linking arguments to their respective thematic roles (Lang 1987; Hartmann 2000). This is shown for ASL in (1) (Liddell 1980:31) and for English in the translation. (2) represents a violation of the PSC in the second conjunct.

(1) HAVE WONDERFUL PICNIC. IX_1 BRING SALAD, JOHN BEER, […] TED HAMBURGER
'We had a wonderful picnic. I brought the salad, John the beer, […], and Ted the hamburger.'
(2) *I brought the salad, and the beer, John, and Ted the hamburger.

In the present study, we examine coordination in Sign Language of the Netherlands (NGT), based on corpus data, and propose that the PSC can be violated in NGT coordination. We argue that such violations are motivated by Information Structure (IS), specifically, by moving one second-conjunct constituent to an IS-related projection in the left periphery. We further argue that clause-final subject pronouns in the second conjunct also result from foregrounding information in that conjunct.

Methodology: Data were extracted from the Corpus NGT, a partly annotated and translated database of natural signed dialogues (Crasborn et al. 2008). Existing annotations and translations were used after verification. Coordinated structures were identified by searching in the annotated data of 12 signers for overt coordinators glossed as OF ('or') and PLUS, the latter corresponding to 'and' in spoken languages. Asyndetic coordinated structures were found by searching for the corresponding Dutch coordinators *of* and *en* on the translation tier.

Results I. Topicalization: The data in (3) and (4) show that within the coordinated constituent, the PSC can be violated in that the order of predicate and argument may vary. NGT is usually analyzed as an SOV language, but SVO orders are also attested (Coerts 1994). We do not take up a stance on this issue but merely observe a word order variation across conjuncts, illustrated in (3) and (4):

(3) CAN CHOOSE WHEN DILEMMA [CI TAKE.OFF] OR [STAY CI]
'(You) can choose when you feel ambivalent, take the CI off or let the CI stay.'
(4) CI [$GO{+}{+}_{3a}$ S-H SCHOOL] [HEARING SCHOOL GO_{3b}]
'Because of CI, (children) go to a hard-of-hearing school (or) go to a hearing school.'

We argue that the word order variation in the second conjunct follows from fronting of a contrastively focused constituent. The contrast relation is established across the conjuncts. Hence, in (3) the verb STAY in the second conjunct is contrastively focused to TAKE.OFF in the first. In (4) it is the locative argument HEARING SCHOOL which is contrasted to S-H SCHOOL in the second conjunct.

Results II. Clause-final subject pronouns: We analyze clause-final subject pronouns in coordination as a further means to foreground information in the second conjunct (cf. Bos

1995). Given that NGT is a pro drop language, the subject pronoun in (5) is optional in both conjuncts. Its presence in the second conjunct in final position syntactically puts the VP in a highlighted position, hence in contrast to the predicate of the first conjunct. Note that in our data, such clause-final pronouns never combine with a clause-initial pronoun.

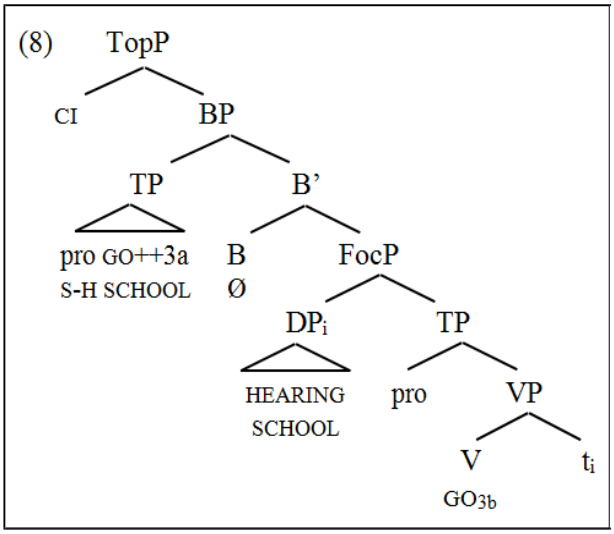
(5) T-E-S-T [IX_3 HUNDRED PERCENT DEAF] OR [BIT HEAR IX_3]
'(They) test whether he is 100% deaf or whether he hears a little bit.'

Analysis: Coordination is assumed to be binary; see Munn (1993), according to whom the second conjunct is embedded within a Boolean Phrase (BP). The corpus data clearly show that the head of the BP in NGT can be overt (syndetic coordination) or covert (asyndetic coordination). Note that asyndetic coordination is frequent in conjunctions (7) and disjunctions (8), including instances that require overt coordinators in spoken languages.

(6) $INDEX_{1(B\text{-}hand)}$ [FLY CHICAGO] [LOOK TRANSFER]
'We flew to Chicago (and) looked for (our) transfer.'

hs
(7) CHILD KNOW IX_1 CHILD [DEAF] [HEAR]
'The child, I do not know whether the child is deaf (or) hearing.'

Examples (3)–(5) support the availability of IS-related projections within the left periphery of NGT (Brunelli 2011). Thus, the core-clause may be extended by a focus and topic projection, both being accessed by contrastively focused or topicalized constituents. We assume that IS- related phrases only project in the presence of contrasting constituents. New information focus is realized in situ. (8) gives the structure we assume for (4).



The second conjunct of the coordinated structure in (8) projects a FocP whose specifier hosts the contrastively focused object. We claim that IS-related syntactic movement is preferred over prosodic marking in situ, as it is a more salient foregrounding strategy in such complex (bi-clausal) constructions. Of course, prosodic IS-marking strategies exist in NGT (Crasborn & van der Kooij 2013), but they do not appear to make IS-related syntactic movement superfluous (see Kimmelman & Pfau 2016 for discussion). Such a trade-off between different means of expressions of IS-categories has also been reported from Asian and African tone languages (see e.g. Leben et al. 1989 for Hausa).

What is special in the coordination data discussed in this paper is the fact that the PSC may be violated. This suggests that the word order of NGT is highly determined by discourse- configurational principles, rather than by ordering principles that are especially required for the assignment of prosodic accents.

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PHONOLOGICAL PRIMING IN THE VISUAL WORLD: AN EYE TRACKING STUDY ON GERMAN SIGN LANGUAGE

Anne Wienholz*, Derya Nuhbalaoglu*, Markus Steinbach*, Annika Hermann+, Nivedita Mani*
(*University of Göttingen, +University of Hamburg)

Just as words in spoken languages, signs in sign languages can be decomposed into smaller phonological units, so-called parameters, i.e. handshape, location and movement (Stokoe, 1960). Various studies provide evidence for a phonological priming effect in the recognition of single signs and that phonological parameters influence this effect differently (Carreiras, Gutiérrez-Sigut, Baquero, & Corina, 2008; Corina & Hildebrandt, 2002; Dye & Shih, 2006; Hosemann, 2015). Previous studies demonstrate that eye tracking can be used with the Visual World Paradigm in sign language research as well and that this method can detect differences in phonologically distinct conditions (Lieberman, Borovsky, Hatrak, & Mayberry, 2015; Lieberman, Borovsky, & Mayberry, 2017; Thompson, Vinson, Fox, & Vigliocco, 2013). The current eye tracking study on German Sign Language examines the presence of a phonological priming effect at the sentence level and whether this effect differs depending on the phonological relation of prime-target sign pairs.

Using a modified version of the Visual World Paradigm, we recorded eye movements of 26 deaf native signers of German Sign Language (DGS) (13 female, 13 male; mean age: 34 years) while presenting a video and pictures of the target and the distractor. Videos contained prime- target sign pairs embedded in natural sentences. In the priming condition, prime and target built a minimal pair by sharing two phonological parameters and differing in the third. This leads to three priming parameter conditions named according to the differing parameter (handshape, location, movement), i.e., in the location condition in (1a) the minimal pair MINUTE and DOCTOR only differs in the location parameter. For the unrelated condition, a sentence containing a phonologically and semantically unrelated prime-target sign pair was constructed but using the same target for both conditions, i.e., in (1b) again DOCTOR is the target and is not related to SECRETARY at all. We expect effects to be reflected in proportionally more looks to the target using a time window analysis. Differences between parameter conditions would suggest different roles of each parameter during sign processing.

	Priming condition	**Unrelated condition**
1	**Location condition**	
	a) TWENTY **MINUTES** INDEX **DOCTOR** COME. 'In twenty **minutes**, the **doctor** will come.'	b) EVERY-DAY **SECRETARY** INDEX **DOCTOR** SUPPORT. 'Every day the **secretary** supports the **doctor**.'
2	**Handshape condition**	
	a) JUST INDEX1 **CENTRE** INDEX **CITY** VISIT. 'I just visited the **center** of the **city**.'	b) YESTERDAY INDEX1 **HOSPITAL** INDEX **CITY** GO-TO. 'Yesterday, I went to the **hospital** of the **city**.'
3	**Movement condition**	
	a) YESTERDAY EVENING MY FRIEND **BUS** INDEX **COCKTAIL** DRINK. 'Yesterday evening, my friend drank a **cocktail** in the **bus**.'	b) HOLIDAYS INDEX POSS1 FATHER **BEACH** INDEX **COCKTAIL** ENJOY. 'In the holidays, my father enjoys a **cocktail** at the **beach**.'

For the analysis, mean proportion of target looking was examined in a time window analysis. A 2x3 ANOVA with the factors condition (priming, unrelated) and parameter (handshape, location, movement) revealed a main effect of parameter ($F(2,44) = 5.81$; $p = .006$) and an interaction of both factors ($F(2,44) = 4.99$; $p = .011$). Comparing parameter conditions within the priming condition revealed a significant difference between location and movement parameter ($t(22) = 3.12$; $p = .005$) and between location and handshape parameter ($t(22) = 3.39$; $p = .003$) with, in both cases, more looks in the location parameter, as well as a near-significant difference between movement and handshape

parameter ($t(22) = 2.00$; $p = .057$) with more looks in the movement parameter. This analysis revealed no difference between parameter conditions in the unrelated condition ($p > .1$).

The data show supporting evidence for a phonological priming effect that varies with regard to the phonological relation of prime-target sign pairs. The analysis suggests a hierarchy for the three parameter conditions with proportionally most looks in the location and fewest looks in the handshape condition. The minimal pairs in the current study were constructed based on the definition of minimal pairs in spoken languages, i.e., pairs differing in a single phoneme. However, this notion has been used differently for sign languages defined as sharing one phoneme. Applying this definition to our parameter conditions leads to a new hierarchy allowing to determine the role single parameters in their contribution to sign recognition. Based on that, the handshape and location parameter affect recognition differently such that facilitation is observed for sign pairs sharing handshape, but inhibition for those sharing the location parameter. These effects can be explained by different properties of the sub-lexical features, e.g. time of identification of the different parameters (Caselli & Cohen-Goldberg, 2014). Thus, this study on DGS shows that sub-lexical features influence sign language processing and that eye tracking can be used to investigate this effect at the sentence level. Moreover, it provides additional evidence for sign languages to be processed on a phonological level similar to spoken languages and contributes to the understanding of factors influencing sign recognition and processing.

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ICONICITY MATTERS: SIGNERS AND SPEAKERS VIEW SPATIAL RELATIONS DIFFERENTLY PRIOR TO LINGUISTIC PRODUCTION

Francie Manhardt, Susanne Brouwer, Beyza Sumer, Asli Özyürek
(Radboud University, Netherlands)

In sign languages, spatial encodings are iconic and analogue to the real event (Emmorey, 2002). That is, signers mostly use visually motivated form-to-meaning mappings to refer to spatial events by choosing certain handshapes to classify a set of objects and placing them in the signing space corresponding to their viewing of the relative relations of the objects (Figure 1). In contrast, in spoken languages spatial encodings are arbitrary and categorical. Previous research has shown that cross-linguistic variability in encoding spatial events across spoken languages might guide visual attention to event components differently prior of using language (e.g., Papafragou, Hulbert, & Trueswell, 2008). However, it is less explored whether the iconic and analogue spatial encodings in sign languages guide signers' attention to events prior to language production differently than that of speakers, that is, whether *thinking for signing* differs from *thinking for speaking* (Slobin, 2003).

To investigate this, the present study used a visual world production eye-tracking experiment to compare for the first time, signers' and speakers' visual attention to *left/right* spatial relations during planning of linguistic production. The general aim was to see whether signers would pay more sustained visual attention than speakers to contrasting spatial relations. This might be due to the fact that signers' visually iconic encodings resemble the symmetrical configuration of left/right displays of objects in the presented pictures, however, speakers arbitrary and categorical encodings do not.

We tested 20 speakers of Dutch and 19 signers of Sign Language of the Netherlands and presented them with visual displays consisting of four pictures. Each picture contained the same two objects, but in different spatial relations to each other (Figure 2). In a within- subjects design, participants were asked to describe one of the pictures (i.e., target picture) highlighted by an arrow (i.e. linguistic task) or to only observe the four picture displays (i.e. non-linguistic task). In addition, experimental conditions contained either *left* (e.g., pen left of cup) AND *right (e.g.,* pen right of cup*)* configurations in one display (i.e. Contrast condition) or *left* OR *right* configurations in one display (i.e. No-Contrast condition). The displays in both conditions always contained a target (*left* or *right*), and two distractors (*in/on/front/behind*). Importantly, a contrast competitor (*left* or *right*, depending on the target) was present in the displays of the Contrast condition but absent in the No-Contrast condition. The presence or absence of the contrast competitor gives insight into whether competition in eye gaze occurs between left and right configurations. We predicted that in the Contrast condition prior to spatial descriptions (i.e., in the linguistic task), signers would be more likely to look at the contrast competitor compared to the target than speakers due to the visual symmetrical resemblance of the presented pictures. As for speakers, the symmetrical visual resemblance of objects might be less relevant for their categorical and arbitrary encoding of *left/right*. We did not expect differences between signers and speakers in the No-Contrast condition or in the non-linguistic task.

Our results confirmed our predictions. The fixation data were analyzed using linear mixed- effects regression models (Baayen, Davidson, & Bates, 2008) for two distinctive time windows: 1) the pre-decision window, initiating before the presentation of the arrow and 2) the decision window, initiating from arrow onset until arrow offset. To analyze eye-gaze competition between *left/right* contrasting spatial relations we created our main measure: mean of looks to targets minus contrast competitors (i.e., contrast competition). For both time windows signers showed increased contrast competition over time (i.e., more looks to contrast competitor compared to the target), while speakers' contrast competition decreased over time (i.e., less looks to contrast competitor compared to the target). In the non-linguistic task, (i.e., during visual picture observation only) the difference in

contrast competition between signers and speakers found in the linguistic task are absent. In the No-Contrast condition in both tasks, eye-gaze patterns did not differ between signers and speakers. These results provide first evidence that the modality of spatial encodings (iconic sign vs. arbitrary, categorical speech) influences visual attention to contrasting spatial relations prior to language production. It further suggests that the influence of language on visual attention goes beyond cross-linguistic differences across spoken languages and that thinking for signing might indeed differ from thinking for speaking (Slobin, 2003).

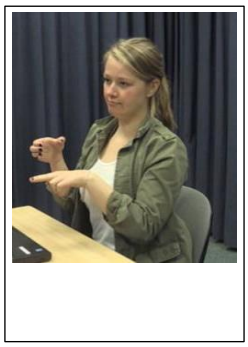

Figure 1. An example of how to describe "pen is to the left of the cup" in Language of the Netherlands.

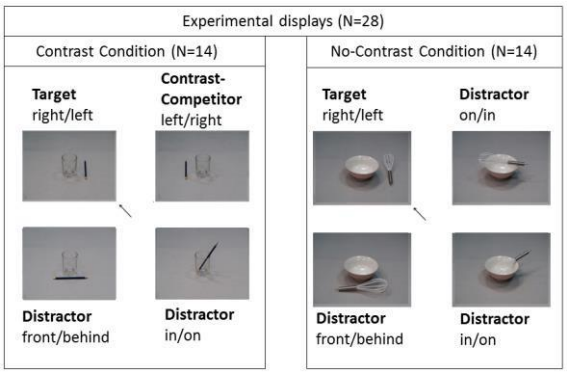

Figure 2. Examples of experimental displays (specified for Contrast and No-Contrast condition). Sign

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IT'S NOT ALL ME, ME, ME: REVISITING THE ACQUISITION OF ASL PRONOUNS

Diane Lillo-Martin*, Deborah Chen Pichler+
(*University of Connecticut, +Gallaudet University)

The development of pronouns has attracted a great deal of interest in both signed and spoken languages. In a highly influential study, Petitto (1987) argued that the iconic nature of pronouns in American Sign Language (ASL) fails to render them easier to acquire than their less transparent counterparts in spoken languages. At the heart of Petitto's argument was the claim that all infants engage in pointing from an early age, but that such pointing is gestural, and sign- exposed children must at some stage transition from gestural pointing to formal, grammatically constrained pronouns. According to Petitto (1987), Deaf children initially engage in gestural pointing towards both objects and people. Between 12-18 months, her two Deaf participants began the transition to a linguistic system of pointing as pronouns, signaled by a period of interruption in their pointing behavior. Only after this period of "reanalysis" did pointing to people re-emerge in the children's data, this time correctly and as bone fide ASL pronouns.

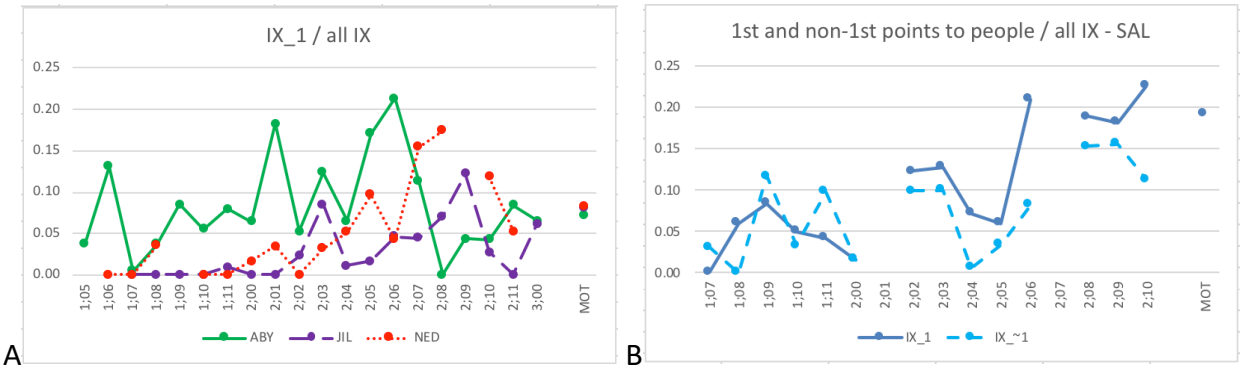
Petitto's claims have been challenged by sign language researchers such as Morgenstern et al. (2016) (who studied one Deaf child acquiring French SL) and Hatzopoulou (2008) (who studied one Deaf child acquiring Greek SL). These authors argue that sign-exposed children's early pointing gestures transition smoothly into the pronoun system during the second year, with no evidence of discontinuity or delay. However, there is little evidence to support the claim that children in general produce points to people at an early age; the rich literature on hearing children's pointing focuses almost exclusively on pointing to objects and locations, revealing a surprising absence of points to self (Bates 1990). Our own small-scale study of two non-signing hearing children found no uses of points to self and very few to other people during the period 2;00 (years;months) – 2;06. Given recent renewed interest in the effects of iconicity on language acquisition, the current paper revisits the question of pronoun acquisition by sign- exposed children, taking advantage of a substantial corpus of spontaneous longitudinal data we have collected from four Deaf children between the ages of 1;05 and 3;00, acquiring ASL from their signing parents.

We first asked whether 1st person pronouns emerge early or later among sign-exposed children, and whether they use lexical and name signs as an alternative. Table 1 shows that the mean proportion of points to self out of total pointing (including points to people, objects and locations) ranged from 3.4% to 13%, quite a bit lower than what Morgenstern et al. (2016) reported for their Deaf participant; Figure 1 summarizes the longitudinal data by month. All four children acquire the ASL 1st person pronoun, as determined by the first of repeated use (FRU) in two consecutive months, between 1;05 and 2;02. While this is relatively early in language development, it is not a quick, seamless transition from gestural to linguistic pointing; rather it is comparable to the acquisition of the 1st person pronoun in spoken English (Clark 1978; Fenson et al. 1994). At no point do any of our participants make productive use of name signs or lexical signs to refer to self in place of 1st person points. Next, we examined pointing to non-1st entities in more detail for Sal, the child with the overall highest proportion of 1st person pointing, to examine whether her development of that pronoun form differed from her development of non-1st person pronouns. Figure 1B shows that despite variation across sessions, Sal's use of 1st and non-1st person pronouns are very similar across the period of observation.

The patterns reported here suggest that the development of the 1st person form in ASL is part of the system of developing personal pronouns, and indeed, not trivialized by its iconicity. Thus, we provide a new kind of evidence, distinct from Petitto's discontinuity argument, that personal pronouns are acquired as part of a grammatical system.

Participant	Age Range	# of Sessions	Total # IX	# IX_1	Proportion IX_1	FRU of IX_1	First use of NS(self)
ABY	1;05-3;00	30	2295	203	0.088	1;05	2;01
ABY's MOT	1;05-3;00	22	1992	144	0.072		
JIL	1;07-3;00	33	2239	77	0.034	2;02	2;02
JIL's MOT	1;08-3;00	19	1335	108	0.081		
NED	1;06-3;00	25	1620	202	0.125	2;00	2;02
NED's MOT	1;06-3;00	25	4022	335	0.083		
SAL	1;07-2;10	18	2769	357	0.129	1;08	1;08
SAL's MOT	1;07-2;08	14	1905	363	0.191		

Table 1: Deaf children's use of 1st person pronoun (IX_1) and name sign (NS) for self; each child's Mother's use of IX_1 (both child- and adult-directed contexts).



A B

Figure 1: A. Points to self (IX_1) as a proportion of all points (IX) for three native signing children. Each child's Mother's mean usage of IX_1 is indicated on the far right. NB: Ned's last session at 3;00 is excluded from the graph because his rate jumps off the scale to 74%.
B. Points to self (IX_1) and points to other people (IX_~1) as proportions of all points (IX) for one native signing child. Her Mother's mean usage of IX_1 is indicated on the far right.

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INSIGHTS FROM THE DEVELOPMENT OF SWEDISH SIGN LANGUAGE ASSESSMENTS - SOME ISSUES AND CHALLENGES

Krister Schönström (Stockholm University)

There are few sign language assessments in existence around the world. For many practitioners and professionals who work with deaf people, this is a real obstacle to their work, as they need effective instruments to be able to measure sign language skills for different purposes. The lack of available tests and assessments in sign languages can partly be linked to the current body of research of sign languages. In comparison, there are numerous language tests in different spoken languages around the world. Their test design draws from findings in spoken language linguistics, which offer test developers a vast number of descriptions and criteria. The field of sign linguistics research, on the other hand, is relatively young, and those who want to develop sign language tests have fewer tools and less knowledge available to them. This is especially a challenge when it comes to the issue of validation, namely the identification of the construct (i.e., linguistic unit) that is intended to represent a particular linguistic skill at a particular stage. As a test developer, one then needs to make sure that the test is actually a credible tool for measuring language skills (and nothing else).

A look at the existing sign language tests available around the world shows that most of the tests are adapted from a test that was originally developed for either a spoken language or another sign language. For the validation process itself, it may be less complicated to adapt an existing sign language test to another sign language, while it may be harder to adapt from a spoken language test. This is probably due to the discrepancy between spoken languages and signed languages with regard to the linguistic descriptions and criteria. For example, the issue of spatiality in sign languages and and how it is associated with sign language skills at different levels needs to be taken into account during sign language test development.

In my talk, I will specifically address the issue of validation of sign language tests. I will then refer to my previous experience of developing Swedish Sign Language (SSL) tests aimed at different target groups: L1 signers, *TSSL* (Schönström et al., 2003) and *SSL-SRT* (Schönström, 2014a; 2014b), and L2 signers, *SignRep* (Schönström & Holmström, 2017) and one SSL version of Sign Language Proficiency Interview (SLPI) that is currently being developed. By the end of my talk, I will reflect on the role of sign linguistics research in the area of test development and how this research can contribute to effective sign language tests and assessments.

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QUOTATION IN RSL: INSIGHTS FROM A CORPUS STUDY AND ELICITATION

Vadim Kimmelman*, Evgeniia Khristoforova+
(*University of Amsterdam, +Russian State University for the Humanities)

Quotation has been an important topic in both linguistics and philosophy [1]. Considerable research has also been done on quotation in sign languages (SLs) [2,3]. A common pattern is that quotation in SLs is expressed via role shift (a specific set of non-manual markers); note that role shift is also used for constructed action, not further discussed here. Several interesting features of quotation expressed by role shift in SLs have been identified. First, some authors argued that quotation is not direct speech, based on the evidence that the quote is syntactically subordinate, among other arguments [3, cf. 4]. Furthermore, mixed behavior of indexicals has been reported for some SLs [2,5], but not others [6]. The exact nature of quotation and role shift in SLs is thus still under debate. In this paper, we describe the basic properties of quotation in Russian Sign Language (RSL) for the first time, using corpus research and elicitation. We discuss what our findings imply for the general theory of quotation and role shift.

Methods. We identified and analyzed all instances of quoted speech and thought (total number: 341) in a subcorpus of the online corpus of RSL [7]. We used narrative data (personal stories) produced by 11 signers from the Moscow region to exclude regional variation as a factor. Given the usual limitations of corpus data (small dataset; absence of negative data), we also collected grammaticality and felicity judgments from 12 native RSL signers in Moscow.

Results. Based on corpus research, we identified the following basic properties of quotation:

1) Similar to other SLs, quotation in RSL is often marked non-manually, specifically by head and/or body turns and change in eye gaze direction, which can be analyzed as role shift (1).

2) Importantly, none of the non-manual markers occur obligatorily. For instance, only a half of instances are marked by head or body turns, and a quarter of instance are not marked with head or body turns or eye gaze [cf. 5]. Moreover, the scope of non-manual marking is not always the quote itself: sometimes a part of the quote is marked, and sometimes the matrix verb or even the source is marked by the same non-manuals (2).

3) In an absolute majority of examples with indexicals, these indexicals received a shifted interpretation (3). Indexicals shift even in the absence of any non-manual marking. Judging by the behavior of indexicals, RSL shows a strong preference for using direct speech in narratives.

In the corpus, none of the examples showed clear evidence of mixed behavior of indexicals or of syntactic subordination of the quote, so we investigated these issues using elicitation of judgments for constructed RSL examples. We found out that some mixed behavior of indexicals is possible: the adverb HERE can be interpreted with respect to the place of the main utterance while the first-person pronoun in the quote is interpreted with respect to the quote itself (4). Even more surprisingly, personal pronouns do not have to shift even in the presence of non-manual marking (5). Furthermore, we failed to find any evidence of syntactic subordination. Thus, wh-movement outside of the quote is impossible (6), and center embedding of the quote is impossible as well (7).

Discussion. The corpus and elicitation results taken together indicate that, in RSL, quotation can be marked by role shift, but this marking is optional, and not always aligned with the quote. Furthermore, the presence of role shift in RSL is not necessary or sufficient for the shifted interpretation of indexicals. Similar findings have been reported for some other SLs [8] but their consequences for the general theory of role shift are not usually discussed within formal models. These findings seem problematic for theories where role shift is an overt manifestation of a context-shifting predicate or operator [5]. Mixed behavior of indexicals is also problematic for the idea that role shift is a context-shifting operator, although see [9] for a solution. Finally, in the absence of evidence of syntactic subordination, we are inclined to conclude that quotation with shifted indexicals in RSL is in fact direct speech. As for the nature of the role shift non-manual marking, we argue that the demonstration approach to quotation developed in [10] is compatible with the RSL data: the non-manuals are a

demonstration by the signer of some aspects of the quoted utterance as produced by the author of the quote. This approach does not run into problems of the context-shifting operator approaches discussed above.

Examples. Examples from the corpus are accompanied with the link to the on-line version. Free registration is required to access the corpus. IX – pointing signs, POSS – possessive pronoun, rs – role shift non-manual marking.

(1) IX-1: GOOD, FINISH (rs)
'I say: good, that's it.' (vid)

(2) GIRL CALL-1 IX-A STAND EXIST (rs)
'The girl calls me: "There is a stand there!".' (vid)

(3) CALL DAUGHTER POSS-2 PRESENT WHAT? (rs)
'(She) asks: what should I gift your daughter?' (vid)
POSS-2 'your' refers to the addressee of the quote, not to the addressee of the utterance.

(4) MY FRIEND PAST ST.PETERSBURG SAY IX-1 STUDY HERE (rs)
'My friend was in St. Petersburg and said "I study here."' The example is uttered in Moscow. HERE can refer to either St. Petersburg or Moscow even though IX-1 is shifted.

(5) MOTHER IX-A SAY IX-A TIRED (rs)
'The mother$_i$ said that she$_i$ was tired.'

(6) *WHERE MAN SAY-1 IX-2 LIVE (rs)
Intended interpretation: 'Where did the man say I live?'

(7) *GIRL SAY IX-1 CRY YESTERDAY TODAY (rs)
Intended interpretation: 'Today, the girl said: "I cried yesterday".'

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DOES INDEX MATTER? SELECTING REFERENTS IN GERMAN SIGN LANGUAGE AND TURKISH SIGN LANGUAGE

Derya Nuhbalaoglu (University of Göttingen)

Reference to non-present entities in sign languages can be realized through overt/covert referent-location associations (i.e., localization) in the horizontal plane of the signing space (Lillo-Martin & Klima 1990; Perniss 2012; Barberà 2012). Such associations take place in an arbitrary manner and remain constant until they are restructured in the context. Recent analyses have shown that the initial placement of referential locations (R-loci) in space follows a particular pattern (i.e., spatial default), which may vary according to handedness of a signer (Geraci 2014). In German Sign Language (DGS), signers overtly and covertly associate the first mentioned referent with the ipsilateral (right of the narrator/signer) and the second mentioned with the contralateral side (left of the narrator/signer) of the signing space in case of two discourse referents (Steinbach & Onea 2015; Wienholz et al. 2018). However, in DGS this pattern has been detected only for right-handed signers and using experimental methodology (i.e., ERP method). It remains to be seen whether the same pattern can be observed using offline techniques (i.e., behavioral tasks), with signers of different handedness within and across sign languages. Therefore, the aim of the present study is to investigate whether the same default pattern (i.e., right-left pattern) of referent localization is used for identifying referents of pronominal INDEX in ambiguous local contexts comparing response data of DGS and Turkish Sign Language (TİD).

In a forced choice referent selection task, participants were asked to identify the antecedent of a pronominal INDEX choosing between two person referents presented in the preceding context. The stimulus material (structure similar to Wienholz et al. 2018) contains mini- narratives composed of two sentences (see an illustrative example from TİD in 1a-b). The introduction sentence contains a subject referent (first mentioned referent), an object referent (second mentioned referent), a sentence-initial or -medial adverb and a verb. A sign name was assigned to each referent, which were not spatially localized. The verbs represent a heterogeneous set containing plain (including reciprocal verbs) and agreeing verbs (articulated in the neutral area in front of the signer). Continuation sentence starts with an INDEX pointing either towards right ($INDEX_R$) or left ($INDEX_L$) area of the signing space combined with a neutral predicate equally likely to refer to either referent. All sentences follow SOV word order. For right-handed signers, it was expected to identify $INDEX_R$ as first mentioned referent (i.e., OYA) and $INDEX_L$ as second mentioned referent (i.e., KEMAL). On the other hand, left-handed signers are assumed to show the reverse pattern interpreting $INDEX_R$ as second mentioned and $INDEX_L$ as first mentioned referent.

1) a. OYA KEMAL NOT NOW LATER MEET. **$INDEX_R$** TALK WANT. b.
OYA KEMAL NOT NOW LATER MEET. **$INDEX_L$** TALK WANT.
'Later Oya meets Kemal. S/he wants to talk.'

The stimulus material included 40 items per language, divided in two conditions based on the direction of the pronominal sign: ipsilateral (1a) and contralateral (1b). The stimuli were pseudo-randomly distributed in two lists such that each list contained only one of the items from each stimulus pair as in (1a-b) and were presented on computer screen to participants. One experienced right-handed male deaf informant for each language signed the material in natural speed. Only localizing non-manuals (e.g., eye-gaze directed to locus of a referent) were controlled for. 10 deaf signers (5 right-handed, 5 left-handed) of DGS (4 male, 6 female, mean age: 34,4 years) and 10 deaf signers (5 right-handed, 5 left-handed) of TİD (4 male, 6 female, mean age: 29,7 years) participated in this study. Participants' referent selections were manually entered in a checklist after each trial and coded accordingly for further analyses. To analyze the data, participants' referent selections were grouped according to language, spatial direction of INDEX, handedness and co-variate (verb type)

and the frequency for each group was calculated using descriptive statistics. Comparing the response data revealed the following: (i) signers of two languages differed significantly in their referent choices, (ii) only in context of reciprocal verbs (e.g., MEET) signers of both languages seem to follow default localization pattern to resolve pronominal reference, however realization of this pattern differed across languages, (iii) in DGS this pattern was observed only for left-handed signers as left- right while in TİD signers it appears to be right-left irrespective of the handedness, (iv) choice of the second mentioned referent in both languages seems to be influenced by the type of the verb immediately preceding pronominal INDEX, the plain verbs causing majority of the second referent interpretations. The results suggest that default pattern of localization operates only in restricted contexts (i.e., with reciprocal verbs) and its realization seems to be language specific. Such a difference might occur due to different perspective taking strategies applied in DGS and TİD (Perniss & Özyürek 2008). DGS, has been suggested to prefer mirrored space (addressee perspective) for grammatical locations (Fehrmann 2014), which can explain the left-right pattern applied by left-handed signers. Even though there are no studies focusing on the usage of abstract space, research on topographic space suggests that TİD signers tend to apply signer perspective in their descriptions of static scenes (Arık 2013). Therefore, it might be the case that TİD signers also follow similar strategy in interpreting pronominal reference, hence they follow right-left pattern which is from the signer's view.

In addition, this study provides evidence for the importance of the (spatial) verb type for interpretation of pronominal reference. In spoken languages semantic properties of a verb trigger preferences for identification of pronominal referents (Hartshorne, O'Donnell & Tenenbaum 2015). For sign languages, there are no studies showing influence of verb semantics and its correlation with the spatial type of the verb for pronoun resolution. Given that sign languages are natural languages, the expectation is then to see parallel patterns in interaction of verb semantics with referential preferences and the exact nature of that should be further investigated. Present task is the first step to look at the comparative data focusing on grammatical use of space with respect to resolving pronominal reference and it opens the following research question: "How do modality specific and modality independent factors interact in resolution of pronominal reference?"

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A PRELIMINARY DESCRIPTION OF EVALUATIVE MORPHOLOGY IN LIS

Elena Fornasiero (Ca' Foscari University of Venice)

Introduction. Evaluative Morphology (henceforth: EM) refers to those processes whereby the morphology of nouns is modified in order to convey not only diminutive and augmentative features, but also emotional overtones of approval and endearment or disapproval and pejoration (Bauer 1997). Extensive investigations of EM in spoken languages account for (i) its morphosyntactic nature as inflectional or derivational process (a. o. Scalise 1994; Grandi 2002, 2005, 2015); (ii) its relation to morpho-pragmatics (Dressler, Merlini-Barbaresi 1994); (iii) the semantics of evaluative morphemes (a. o. Jurafsky 1996); (iv) its typological properties cross-linguistically (a. o. Bauer 1997; Körtvélyessy 2012b; Grandi 2015) and (v) the syntactic distribution of evaluative affixes (Cinque 2015). In general, EM is considered as a set of linguistic constructions that satisfy two conditions: a semantic condition, a construction can be considered evaluative if it assigns to a concept a new value which is different from the 'standard' one; and a formal condition: an evaluative construction must include the explicit expression of the standard (through a lexically autonomous word-stem) and an evaluative marker expressing one of the semantic primitives 'big', 'small', 'good' or 'bad'. World languages vary with respect to the morphological processes they display to convey evaluative features: affixation, compounding, reduplication, root internal modification or tonal variation. Despite being pervasive among sign languages (henceforth: SLs), EM is still quite unexplored. A preliminary description of EM in SLs is provided by Petitta, Di Renzo and Chiari (2015), who are the first to include SLs within the cross-linguistic typological studies on EM. They account for three main evaluative strategies: *(i) Manual sequential/simultaneous evaluation*: manual sequential evaluation consists in the articulation of the sign for the noun followed by a specific classifier (CL) defining size and shape, both marked by specific non-manual markers (NMMs); manual simultaneous evaluation, instead, refers to the modification of the phonological features of the manual sign, whose articulation can be enlarged or reduced to convey the meaning 'big' or 'small', together with the occurrence of dedicated NMMs; *(ii) Non-manual simultaneous evaluation*: evaluative features are conveyed through specific NMMs simultaneously articulated with the manual sign in its canonical form; *(iii) reduplicative evaluation* (sequential and simultaneous), which consists in the partial or full reduplication of the manual sign, or a portion of it, with possible variation in manual patterns. However, their description in quite general and do not offer a detailed description of EM in LIS. **Goals.** The present paper aims at (i) offering a detailed description of the display of EM in Italian Sign Language (LIS), further developing the analysis by Petitta et al. (2015); (ii) providing a typological and morpho-syntactic analysis of EM in LIS considering whether LIS respects the properties defined for EM in cross-linguistic studies.

The study. In order to collect a considerable amount of data, I have analysed both a corpus of 22 LIS fairy-tales produced by a LIS native signer, and elicited data produced by three native LIS signers involved in a picture-description task, narration and grammaticality judgements. The items described by signers were characterised by peculiar features of size, shape and quality in order to elicit both objective (diminutive, augmentative) and subjective (endearment, pejorative) descriptions.

Description of the data. The analysis of corpus and elicited data reveals that the preferred strategies employed to convey diminutive and augmentative features are: (i) manual simultaneous evaluation (examples (1) and (2)), in which the manual signs for nouns are modified in their articulation (restricted for the diminutive as in (1), enlarged for the augmentative as in (2)) and through the articulation of specific NMMs for each evaluative feature; and (ii) manual sequential evaluation (examples (3) and (4)), in which the evaluative feature is conveyed through the articulation of a specific classifier defining the size and shape of the entity following the sign for the noun.

Dim
(1) CHAIR
'a little chair'

Aug
(2) CHAIR
'a big chair'

Dim
(3) CUP CLSHAPE
'a little cup'

Aug
(4) CUP CLSIZE
'a big cup'

As for endearment and pejorative features, informants preferred to employ adjectives like 'nice, 'bad'. However, I have also detected some instances of non-manual simultaneous evaluation, which are reported in (5) and (6).

pej
(5) green
'bad-looking green'

end
(6) bear
'a sweet bear'

Evaluative features are encoded differently in the data: (i) diminutive is conveyed through a restricted articulation of the sign for the noun or the classifier defining size and shape, associated with NMMs consisting of squinted eyes and tensed mouth or furrowed eyebrows and lips/tongue protrusion. (ii) Augmentative features are conveyed through an enlarged articulation of the sign for the noun or the size/shape classifier, associated with open eyes and mouth shaping O/A or furrowed eyebrows and inflated cheeks or teeth biting the inferior lip. (iii) Endearment features are conveyed through specific NMMs consisting of relaxed eyebrows and lips protrusion. (iv) Pejorative features are conveyed through furrowed eyebrows and tensed cheeks or tongue/lips protrusion.

Discussion. The analysis of the data reveals the crucial role that dedicated NMMs play in conveying evaluative features. Differently from Petitta et al. (2015) I did not detect any occurrence of reduplication. It seems that size and shape classifiers are employed when the sign for the noun does not allow for a modification of its articulation meant to convey a different size (compare (1) and (2) against (3) and (4)). Further analyses are needed to investigate this phonological restriction. From a typological perspective, LIS respects the classifications developed for EM in spoken languages (Körtvélyessy 2015b) in that (i) it displays both diminutive and augmentative features; (ii) suffixation is the preferred strategy (NMMs and/or classifiers can be considered bound morphemes attached to the manual sign); (iii) it mainly selects nouns as base-lexical categories (but further investigation is needed to account for other lexical categories possibly involved) and (iv) it respects the formal and semantic conditions: the manual sign defines the standard, whereas the NMMs and classifiers encode the evaluative meanings. As for the morpho-syntactic analysis (Grandi 2002), at this preliminary stage it seems that EM in LIS is a derivational process since (i) it is not obligatory; (ii) it does not convey syntactic features; (iii) it creates a new lexeme, thus conveying a new semantic concept. **Conclusions.** The present paper improves the description of EM in LIS thus enlarging the typological studies only addressing spoken languages. LIS shows to respect the universal properties described for this phenomenon regardless of the different modality employed.

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WATCH MY LIPS: EXPRESSING ATTITUDE AND IRONY IN LIS THROUGH NON-MANUALS

Lara Mantovan, Beatrice Giustolisi, Francesca Panzeri
(University of Milan-Bicocca)

Background. Verbal irony is a widely used linguistic device that generates a contradiction between what is literally uttered and the speaker's intended meaning. To avoid misunderstanding and communication failure (Kreuz et al. 1999), the ironist usually makes use of ironic markers, i.e. meta-communicative cues that alert the addressee that the utterance requires an ironic interpretation (Attardo 2000). In spoken languages, ironic markers may be realized *via* a particular intonational contour, the so-called ironic tone of voice (but see Bryant and Fox Tree 2005 for a critique of this notion), slower speech rate, syllable lengthening, exaggerated pitch, etc. (see Attardo 2000 and references therein).

Research goals. As for sign languages, the expression of verbal irony is a severely under-investigated research topic. Many studies indicate non-manual markers (NMMs) as ideal candidates for an intonational analogue in sign languages (Sandler 1999; Wilbur 2000; Sandler & Lillo-Martin 2006). Our study focuses on Italian Sign Language (LIS) and aims at: i) describing how literal remarks differ from ironic ones, ii) identifying the presence of ironic (non-manual) markers, and iii) proposing an analysis accounting for the contribution of NMMs to the expression of irony.

Methods. We administered to four Deaf native LIS signers (two women and two men) a Discourse Completion Task (Félix-Brasdefer 2010) in order to obtain a semi-spontaneous elicitation of ten minimal pairs of remarks: the same remark was elicited in one session after a context that triggered its literal interpretation and, in a different session, after a context that supported its ironic interpretation. The remarks contained five positive evaluative signs (e.g. BEAUTIFUL) and five negative evaluative signs (e.g. WORTHLESS). We thus obtained, from every signer, 5 Literal Compliments (LiCo), 5 Literal Criticisms (LiCr), 5 Ironic Compliments (IrCo), and 5 Ironic Criticisms (IrCr). To illustrate, we provide below the glosses of two minimal pairs.

(1)	IX-3 BEAUTIFUL VERY	('That's very beautiful!')	Readings: LiCo & IrCr
(2)	HOUSE_i IX_i WORTHLESS	('What an awful house!')	Readings: LiCr & IrCo

Results. Comparing literal and ironic remarks in LIS, we found significant results with Head (multiple nods) and Mouth (corners up and corners down). We conducted a generalized linear model analysis entering as predictors Remark type (literal vs. ironic) and Attitude (compliment vs. criticism). We found a significant effect of remark type (ironic>literal, $p<.001$) on multiple head-nods; a significant effect of attitude on mouth-corners down (criticism>compliment, $p=.01$); and a significant effect of attitude on mouth-corners up (compliment>criticism, $p<.001$). A more fine-grained descriptive analysis conducted on the evaluative signs revealed clear regularities: i) ironic remarks were almost always (92,5% of the times) accompanied by multiple nods and/or lateral tilts of the head; ii) mouth-corners up were almost always present in remarks expressing compliment (LiCo and IrCo), while mouth-corners down were almost always present in remarks expressing criticism (LiCr and IrCr). Finally, other instances of NMMs were observed within ironic remarks: open mouth, head shake, wide-open eyes, and raised eyebrows. Since these four NMMs were not systematically found across signers and contexts, we report them as descriptive observations.

Discussion. The quantitative and qualitative analyses we conducted on the minimal pairs of ironic/literal remarks allowed us to identify an irony toolkit for LIS. We argue that the pragmatic contribution of the identified non-manual cues is of different types: i) warning cues (head tilts, open mouth, wide open eyes, and raised brows), used to alert the addressee to the non-literal interpretation of the utterance and induce suspicion of irony; ii) overemphasizing cue (multiple nods), used to amplify the contradiction between sentence meaning and signers' attitude, and hence make the ironic

intent more easily detectable; and iii) corrective cue (head shakes), used to explicitly suggest reversal of evaluation (cf. Partington 2007). However, as the results indicate, some of these cues were not systematically produced in our corpus of data. The two NMMs regularly occurring within ironic remarks, multiple nods and head tilts, are not irony-specific, since they can well be used in other linguistic domains in LIS with other functions: for example, multiple nods can be used with emphatic function to reinforce assertion (Geraci 2006) and lateral head tilts often accompany role-shift (Mazzoni 2008).

Interestingly, the analysis revealed a systematic use of another NMM, namely the mouth. This is associated with the signer's attitude: mouth-corners up convey compliment, whereas mouth- corners down criticism. We claim that, besides the irony markers discussed before, irony in LIS is inferred also from the combination of sentence meaning and signer's attitude: sentence meaning consists in the positive or negative evaluation expressed by the lexical evaluative sign (e.g. BEAUTIFUL and HORRIBLE); signer's attitude is signaled by the position of the mouth. The interaction between these two elements indicates whether the sentence has to be interpreted literally (if they match) or ironically (if there is a mismatch). To illustrate, we show this pattern with one informant and two evaluative signs (FUN and WORTHLESS), but we highlight the fact that it systematically applies across evaluative signs and contexts in all four informants.

Match condition				**Mismatch condition**			
LiCo 		**LiCr** 		**IrCr** 		**IrCo** 	
+	corners-up	-	corners-down	-	corners-down	+	corners-up
+	FUN	-	WORTHLESS	+	FUN	-	WORTHLESS

We describe mouth patterns as 'Attitude NMMs' and we claim that they have a linguistic, rather than an affective status (for a discussion see Reilly et al. 1990). Arguments in support of this are: i) no optionality, no inter-signer variation; ii) activation of specific facial muscles (mouth- corners); iii) closed class (two possible variables: mouth-corners up and down); iv) domain- marking NMMs: they mark the domain of evaluation (they must align with the evaluative sign and optionally spread over the entire evaluative utterance).

Conclusions. This study showed that the expression of irony in LIS is signaled by a layering distribution of warning, overemphasizing, and corrective non-manual cues. Mouth-corners up and down are linguistic tools encoding a precise semantic information, the signer's attitude. This interacts with the evaluation expressed by the utterance and contributes to the coding of irony in LIS. In follow-up research, we are currently testing the recognition of attitude and irony in signers and speakers with the aim of comparing the contribution of facial expressions in LIS and Italian.

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PATH AND (A)TELICITY IN SPACE: MOTION PREDICATES IN LSCU (SIGN LANGUAGE OF CUBA)

Alicia Calderon Verde*, Donny Wilson Limonta*, Gilma Cervantes Soliño*,
Ariel Hernández Hernández*, Elena Benedicto[+]
(*CENDSOR, Cuba, [+]Purdue University)

This paper explores the syntactic structures used to express Motion Predicates in LSCu, with special emphasis on the parameters of Path and (a)Telicity.
Data were obtained from 3 adult native signers, fluent users of LSCu. The instrument used was Benedicto (2017), a self-paced application with 175 video animations divided in 7 blocks. The application encodes variables for several parameters related to Motion Predicates; in this paper we focus on Path (encoding the event`s *process*) and Telicity and examine the morphological correlates associated with the non-manual markers of eyegaze and mouth gestures. Each signer produced 2 different renderings for each video animation with a total of 1050 productions; qualitative follow-up with the signers was obtained as needed. Two cameras with frontal and side angles were used and recordings were clipped and processed in ELAN, with coding tiers for dominant and non-dominant hands (H1 and H2), eyegaze and mouth NMM; spatial coding for Figure, Endpoint and Movement vectorization was used according to the categorical specifications of Benedicto-Branchini-Mantovan (2015). Initial results indicate the following correlations:

(1)

a. a [u] NMM mouth gesture with optional release of air co-timed with the Path of the motion event; semantically, this corresponds to the *process* sub-event.
b. a bilabial stop [p] NMM mouth gesture co-timed with the Endpoint of the motion vector; semantically, this corresponds to the *telic* sub-event.
c. an [eyegaze] NMM on the Figure at the beginning of the Path articulation
d. d. an [eyegaze] NMM on the Endpoint location of the motion vector

The following examples illustrate these points:

(2) [0111LSCglm-a]

[eg]					[x]		[x]	
[m]					[uuu]			[p]
H1.	PÁJARO.b	ÁRBOL.l	ÁRBOL.r	RIO.c	PÁJARO.b	F+IR-VOLAR----------		F+ARRIVE.l
H2.		ÁRBOL.l	ÁRBOL.r		5.r+ESTAR		5.l+ESTAR ----------	

'There is a bird, a tree on the left, a river in the middle; the bird flies across the river all the way up to the tree on the left'

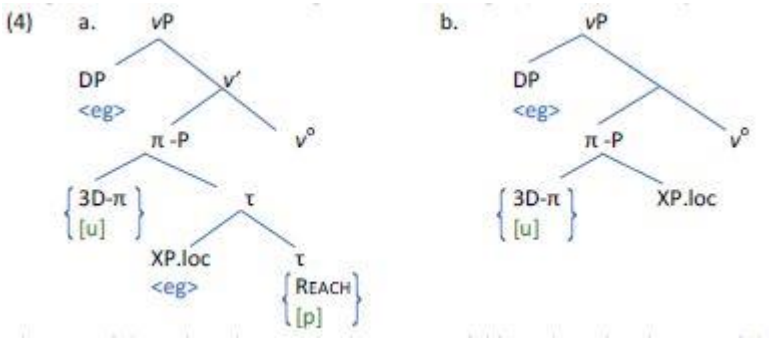
(3) [0125LSCglm-b]

[eg]			[x]			[x]	
[m]						[uuu]----------	
H1.	NIÑA.a	PÁJARO.b	SOLTAR	F+IR-VOLAR		F+IR-VOLAR ----------	
H2.			SOLTAR		RIO.c	4.d+ESTAR ----------	

'The girl releases the bird; (it) flies across the river in the direction of the fence'

In (2), corresponding to a telic prompt, we can observe two mouth NMMs: a [u]-shaped gesture co-articulated with the path of the motion, and a [p] gesture co-articulated with the end of the path and the reaching of the endpoint of the displacement. We can also observe two points where the eyegaze fixates on a spatial point different than the addressee: the Figure at the beginning of the path, and the spatial identification of the Endpoint location. It is interesting to point out that at the time of articulation of arrival at the Endpoint, the eyegaze has returned to the addressee. In (3), on the other hand, corresponding to a non-telic prompt (there is a potential endpoint, a fence, 4.d+ESTAR, but it is not reached), we again observe a [u]-shaped mouth gesture coarticulated with the path, as well as

an absence of the [p] mouth gesture. The eyegaze is directed to the Figure at the beginning of the path and is crucially absent on the potential Endpoint, the fence, which never materializes as the endpoint. For the analysis, we adopt Neidle et al.'s (2000) analysis of NMM–eyegaze as an Agreement morpheme, and Benedicto-Branchini-Mantovan's (2015) analysis of motion predicates as larsonian serial constructions with recursive sub-eventive structures under *v*, corresponding to the *process* (the articulation of the 3DPath, π) and to Telicity, τ, (the articulation of the arrival or REACHing of the Endpoint), as in (4a). Along these lines, we analyze the [u]-shaped NMM gesture as the morpheme for the *process/path* π substructure and the [p] NMM as the morphemic realization of the Telic head τ. We further analyze the [eyegaze] as the morphological realization of Agreement on the internal argument DP (the Figure) and on the Endpoint XP locative argument.



Absence of the Telic sub-eventive structure in (4b) predicts the absence of the <eg> Agreement marker on the XP locative argument that cannot be interpreted as the Endpoint (the Rheme in Ramchand 2008). Presence of <eg> Agreement on the Figure DP is predicted, as it is the internal argument in Spec-vP, both in telic and atelic cases. The presence of a *process* NMM [u] in both telic and atelic cases confirms the status of atelicity as the absence of a telic sub-eventive structure as defended in Borer (2005). Finally, it is interesting to point out that cases like those in (3) reveal lack of iconicity. Though abstract relative location in space is maintained between the Agent (the girl), the river and the fence, the orientation of those constituents in the space with respect to each other is not iconic: the river in the prompt is in the horizontal plane but is rendered in the utterance in the sagittal plane; the fence in the prompt is oriented along the deictic plane, but rendered in the vertical plane. Implications for the limitations of iconic representations in the signing space will be discussed.

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DIRECTNESS OF CAUSATION CONSTRAINTS ON RESULTATIVE CONSTRUCTIONS IN ASL AND ENGLISH

Cornelia Loos (Georg-August-Universität Göttingen)

Background. Linguistic research suggests that there are restrictions on single-clause expressions of causality. Lexical causatives (1a) and resultative constructions (1b) cannot felicitously describe indirect causation scenarios such as (1). Instead, only a periphrastic causative (1c) is acceptable.

(1) Causative situation: Mary hammers on a roof tile. The tile comes loose and falls to the ground, directly onto a piece of metal. The metal becomes flat.

a. ?#Mary flattened the metal.
b. #Mary hammered the metal flat.
c. Mary caused the metal to become flat.

Instead, single-clause causatives typically describe 'direct' causative situations where an agent intentionally brings about an immediate change of state in an inanimate object. This directness constraint may arise in resultatives as a consequence of causative type-shifting [1] or a [cause] affix on the resultative adjective [7], which denotes direct causation as the default semantic link between cause (*hammer*) and change-of-state (*flat*) subevents. While the theoretical mechanisms that introduce directness of causation are fairly well-understood, a more fundamental question remains contentious: How should we define 'directness'? Which components of a direct causation scenario are necessary for a resultative to be felicitous? Potential candidates include (a) the causee's degree of control [2]; (b) the causer's intentionality [4, 11]; (c) physical contact between causer and causee [10]; (d) a shared spatio-temporal profile [5]; and (f) adjacency of causing and change-of-state events in the causal chain [1, 3, 9]. For resultatives in particular, [5] argues that directness is characterized by temporal overlap between causing event and change of state, while [9, 1, 7] claim the decisive factor to be the absence of intervening events in the causal chain. Lastly, work on lexical causatives predicts that the causer's intention to bring about a particular change of state attenuates the effect of an intervening cause(r) [11].

Proposal. This study presents the first empirical analysis of directness constraints on resultatives in American Sign Language and English[1]. Given that languages differ in the degree of directness required by a causative construction [11], comparing ASL and English allows investigating universal trends and unique properties of their resultative constructions. Based on felicity judgment data, I propose a revised construct of directness that distinguishes at least two levels of indirectness: (1) temporal distance and (2) an intervening cause(r) between cause and change-of-state subevents. In addition to this universal trend, I show cross-linguistic differences in the attenuating effect of causer intentionality.

Experiments. We tested the felicity of 12 resultative constructions per language in 4 causative scenarios that varied by degree of directness (see Table 1). The 4 scenarios allowed testing the effect of temporal distance (a:d), intervening cause(r)s (a:b), and intentional vs. unintentional intervening cause(r)s (b:c) on the degree of directness of a causative situation.

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[1] ASL has a productive resultative construction, shown in (i) [6, 8]. The construction is monoclausal, as evidenced by the availability of subject pronoun copies (IX-addr in (i)) and rightward *wh*-movement (HAMMER SPOON FLAT WHO).

polar q
(i) IX-addr HAMMER SPOON FLAT IX-addr
'Did you hammer the spoon flat?'

Causative scenario	Intentional causer	Intervening cause(r)	Temporal delay
a) Direct	+	-	-
b) Intentional intervener	+	+	-
c) Intervener	-	+	-
d) Temporal distance	+	-	+

Table 1 Causative situations by intentionality, intervening cause(r)s, and temporal distance

Two online surveys with 48 items (12 resultatives x 4 conditions) were created; 28 English speakers and 25 native signers of ASL were each assigned randomly to one of two sub- surveys to judge 24 items in randomized order on a 5-point Likert scale from "Very appropriate" to "Not appropriate at all". A sample resultative for ASL and English is provided in (2); stimuli, scenarios and instructions for the ASL survey were presented in the target language.

(2) How appropriate is the following sentence for describing what happened in (a)-(d)?
ASL: #JOHN CL:kick OPEN-door
English: John kicked the door open.

a. John wants to get into his home, but the door is stuck, so he kicks at it once and it opens.
b. John wants Mary to water his flowers while he is gone, so he programs his door to open automatically at 6pm, when Mary is supposed to stop by. John likes technological gimmicks, so he bought a door that you can only program to open at a particular time if you kick it. John kicks it to set the opening mechanism for 6pm, and when Mary gets to John's place a little after 6pm, the door is open.
c. John wants to open his front door for his wife but he has his hands full and his foot cannot reach the door. There's a ball lying nearby, so John kicks the ball at the door and it opens.
d. John is mad about something and needs to vent his anger. He kicks against a ball lying near him, and the ball accidentally hits a nearby door. The door opens.

Results & Discussion. A linear mixed model (fixed effect: causative scenario) revealed that English and ASL resultatives were significantly more felicitous in the Direct scenario than in any other ($p <$ 0.0001). Resultatives were further significantly more felicitous in scenarios with a temporal delay than in those with an intervening cause(r) ($p < 0.0001$). English and ASL differed in the effect of intentionality: A causer who intends to bring about a particular result significantly increases the felicity of a resultative with an intervening entity in English ($p = 0.008$), but not in ASL. The novelty of the findings consists in a) showing empirically that resultatives are sensitive to the level of directness of a causative situation; b) contra [9] and pro [5], temporal distance and intervening cause(r)s impact directness independently; and c) two distinct levels of directness can be distinguished since temporal distance degrades the felicity of a resultative less than an intervening cause(r). In addition to such universal trends in the linguistic encoding of directness of causation, we have also shown significant differences in the degree of directness encoded by a resultative in English vs. ASL. English resultatives resemble lexical causatives in being more compatible with intentionally used intervening cause(r)s, while ASL resultatives allow no intervening cause(r)s at all. The cultural overlap between the (American) English and ASL speech communities suggests that these differences are not based on cultural differences in the conceptualization of direct causation. Rather, the inadmissibility of any intervening causer(s) in ASL may be due to constraints imposed by spatio-temporal iconicity: Cause and result are spatially and temporally contiguous in the signed utterance, implying their adjacency in the causal chain.

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INTERVIEWING DEAF ELDERLY SIGNERS: METHODOLOGICAL ISSUES AND PRACTICAL PROBLEMS IN ITALIAN SIGN-HUB INTERVIEWS

Luca Des Dorides (Istituto Statale Sordi di Roma)

An extensive literature has shared the view that the increasingly sophisticated methods of video file recording and managing suggest new scenarios for the preservation of the memory, culture and language of deaf signers. (Supalla, 1991; Schuchman, 1993; Legg, 2016). These new resources urge researchers to handle a composite but not always coherent combination of technical, scientific and ethical requirements. In such a scenario, while investigating the best practices for an oral history project in the digital age, Michael Frisch gave himself a simple and exhaustive answer: "It depends" (Frisch et al. 2012). This paper aims to describe the compromises and the solutions adopted for the realization of the Italian interviews for *Task 2.4 – Interview with deaf elderly signers* of the Sign-Hub project.

In order to carry out the project, 28 semi-structured interviews have been collected among elderly deaf signers, both male and female, living in five different towns. In accordance with the previous work of the Italian research group (Cecchetto et al., 2011; Geraci et al 2011) and the importance given to educational experience (Nikolarizi and Hadjikakou, 2006; Quinn, 2010; McIlroy and Storbeck, 2011), the chosen cities have been considered relevant for the contemporary presence of a wide deaf community and at least one institute for the Deaf operating between 1920 and 1970. Even though the data collection has not merely a quantitative purpose, the necessity for the preservation of a linguistic heritage has imposed a strict control over linguistic accommodation and contact details. The interviews have been conducted by signing deaf interviewers and the methodological framework of reference for the *rules of engagement* has been largely borrowed by the one developed for the linguistic corpora and the study of sign languages variations. (Lucas et al., 2001; Schembri et al. 2013; Stamp et al. 2016). However, while on one hand the choice of having semi-structured interviews has made the comparative analysis easier, on the other hand, allowing wide margins of freedom to the interview, it has made it necessary to take into consideration the methodological framework typical of qualitative research. In order to manage these different dynamics without the aid of some typical instruments of research, such as unstructured interviews or Grounded Theory, reference has been made to the methods of oral history and its ability to go beyond the hegemonic reproductive approach whether in a context of signed languages or not. (Passerini 1978; Thompson, 1988; List, 1993; Hirsch, 1995; Freebody e Power 2001; Ryan and Schuchman, 2002; McCleary 2003).

According to Charles Morrissey, it is impossible to reduce interviewing to a set of techniques or rules (Morrissey, 1998), this paper aims to show that working with oral sources means to combine methods and skills that have to be modeled on the purposes and the characteristics of each project. However, within this set of practices it has been possible to identify the need of not only providing counseling spaces for the "unheard voices", but also of making the "untold narratives" come to light through engaging initiatives open to the community.

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WHAT LOOKS LIKE A QUESTION FOLLOWED BY AN ANSWER IN LSF

Charlotte Hauser*, Caterina Donati+
(*Université Paris Diderot Institut Jean Nicod, +LLF, CNRS)

Goal: In this presentation we will give a step by step description of a focus construction used in French Sign Language (LSF) that looks superficially as a question followed by its answer, and that we shall call 'wh-foc' from now on. Since a very similar construction has been already studied in ASL, we will review the three analyses that have been proposed to account for it, and their related arguments, and verify how they apply to LSF. In so doing, we will highlight the fact that LSF behaves differently from ASL. We will conclude that LSF wh-foc construction is clearly 1) not a rhetorical question followed by an answer as proposed by Hoza et al. (1997) for ASL; 2) nor a case of wh-pseudocleft as proposed by Wilbur (1996) and Petronio (1991). Finally, we will also show that it cannot be straightforwardly analyzed along the lines proposed by Caponigro and Davidson (2011), namely as a copular construction with a question as its subject and an elided clause as the predicate.

A rhetorical question followed by an answer? (Hoza et al. (1997)) LSF wh-foc does not share the properties of neither rhetorical questions nor information-seeking questions. Morpho-phonologically, LSF signers frown their eyebrows when asking wh-questions (as in (1)-(2)), while they raise their eyebrows in the wh-foc construction (3). As for its internal syntax, the wh-clause of the wh-foc construction does not behave like a question: while LSF displays a wh- in situ strategy for both questions types (see again (1)), in wh-foc the wh-element is obligatorily displaced to the right periphery of the clause.

(1) $\overset{bf}{\text{WHO}}$ OFFER FLOWER GIRL *Wh.Qu.*
'Who offered flowers to the girl ?'

(2) $\overset{bf}{\text{WHO EAT CANDY?}}$ $\overset{br}{\text{ME?}}$ $\overset{bf}{\text{NO!}}$ *Rh.Qh*
'Who ates the candies (then)? Me? No! '

(3) OFFER FLOWER GIRL $\overset{br}{\text{WHO}}$ BOY *foc-wh*
'The person whom offered flowers to the girl is the boy.'

As for its external syntax, the wh-clause in wh-foc does not behave like a question either: it can be embedded, but crucially not under a verbum interrogandi: see (4); the entire construction can be questioned, as in (5), and coordinated with another foc-wh (elided) construction (6a) and with a simple declarative (6b).

(4) JEAN HOPE/*ASK [MARIE EAT WHAT STRAWBERRY] 'Jean hope that what Marie eats is a strawberry.'

(5) $\overset{bf}{\text{JEAN EAT WHAT}_{br}}$ $\overset{br}{\text{CHOCOLATE?}}$ ' Was chocolate what Jean ate ? '

(6) a. MARIE GO SCHOOL WHERE MARSEILLE JUSTINE WHERE PARIS
'Where Marie goes to school is Marseille and Justine, Paris '

b. MARIE GO SCHOOL WHERE PARIS BUT JUSTINE GO SCHOOL MARSEILLE
'Where Marie goes to school is Marseille and Justine went to Paris.'

As for the focused constituent (the answer), (7) shows that it can be negated in LSF.
(7) MARIE EAT WHAT NO ALMOND 'What Marie ate are not almonds.'

All these observations converge against an analysis as a question followed by an answer for LSF. Typologically, we know that cleft constructions typically emerge from copular sentences with a relativized or anyway nominalized clause as the presupposed constituent (Creissels (2018)): this would advocate for a pseudo-cleft analysis.

A pseudo-cleft? (Wilbur (1996), Petronio,(1991)) A pseudocleft analysis of the construction implies that the 'wh-clause' is to be analyzed as a free relative. Notice that LSF relativization strategies never make use of wh-elements (Hauser & Geraci, 2017) and wh free-relatives, as (8), are not possible in LSF.

(8) *IX-1 BUY WHAT JEAN BUY 'I bought what Jean bought.'

Moreover, unlike most pseudo-clefts, wh-foc cannot be inverted, as illustrated in (9).

(9) a. JEAN BUY WHAT BOOK 'What Jean bought is a book.'

b. * BOOK, JEAN BUY WHAT 'A book is what John bought.'

Finally and most crucially, the wh-clause cannot be followed by a predicate instead of a focused element (see the contrast between (10a) and (10b)).

(10) a. MARIE EAT WHAT PIZZA 'What Marie ate is a pizza.'

b. * MARIE EAT WHAT GOOD 'What Marie ate is good.'

This can be interpreted as a final piece of evidence that the wh-clause of the wh-foc construction is not a nominalized constituent, and the construction does not qualifiy as a pseudo cleft. This conclusion is further reinforced by the interpretation of the construction: while (free) relative clauses are known to display exhaustivity, the wh-foc construction in LSF does not.

A copular construction with the embedded question as its subject? (Caponigro and Davidson (2011)). A third analysis that has been proposed for ASL argues that the wh-clause is a question sitting in a copular sentence together with an elided declarative. We will tentatively adopt this analysis for LSF as a starting point, relying on Schlenker (2003) more general hypothesis (following an old intuition stemming from Ross,1972) that specificational copular sentences systematically contain concealed questions. We will argue however that LSF shows the beginning of a grammaticalization process leading to a devoted focus construction, involving the loss of the question status for the wh-clause: recall that the wh-clause does not share (anymore?) the syntax and the morphophonology of a wh-question. As for the obligatory wh-movement that it displays, it can be seen as a further step towards the development of a specific syntax, that might eventually lead to a proper pseudoclefting. The differences that we will outline between ASL and LSF can be interpreted in this framework as akin to different steps in this process: while the wh-clause in ASL still displays some defining properties of a question (exhaustivity, non questionability, and so forth), the wh-clause in LSF has lost most of them. If we are on the right track, free relatives might emerge from wh-questions through sustained usage of this kind of focalizing construction. More generally, this could provide a new explanation of why free relatives are systematically ambiguous with questions in so many languages of the world.

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FEELING PHONOLOGY: THE EMERGENCE OF TACTILE PHONOLOGICAL PATTERNS IN PROTACTILE COMMUNITIES IN THE UNITED STATES

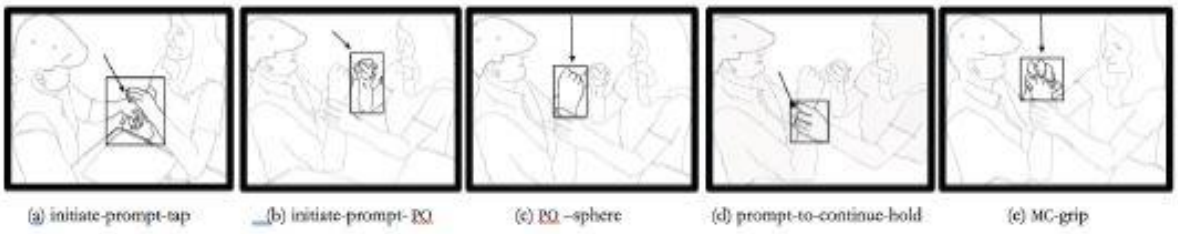
Terra Edwards (Saint Louis University)

The broad aim of this presentation is to argue that, like the visual/gestural modality, the tactile/proprioceptive modality can sustain phonological structure. We are asking this question in a historically unprecedented moment when, for the first time, a network of DeafBlind language-users is communicating directly with one another via reciprocal, tactile channels, a practice known as "protactile" (PT). Over the past 10 years, PT practices have led to new norms and values, which have affected the way DeafBlind people interact and communicate (Edwards 2015), and more recently these changes have begun to target the sub-lexical level of sign structure. Based on the findings of a recent pilot study, we argue that as ASL has been adapted to PT environments, the very primitives used to create new signs have been replaced. These changes are no longer mere adaptations to American Sign Language (ASL); rather, they reflect systematic principles that govern what is and is not a well-formed PTASL sign. Unlike visual signed languages, which are produced with the two hands (and arms) of the signer, PTASL signers incorporate the hands and arms of Signer 1 and Signer 2; each of the four anatomical structures can take on an active articulatory role (Figure 1).

Figure 1: The four anatomical structures used to produce proprioceptive constructions

PTASL optimizes the tactile modality by assigning articulatory and perceptual roles to these anatomical structures. Brentari et al. (2012) argue that minimal pairs and phonological rules are insufficient criteria for deeming a phenomenon "phonological"; rather, emergent phonological patterns can be grasped by way of more basic principles, such as **redundancy, componentiality, conventionalization,** and **well-formedness**, which organize the system slowly, eventually leading to duality of patterning, minimal pairs, and phonological rules. In this presentation, we argue that the assignation of conventional linguistic tasks to specific anatomical structures among PTASL signers engages these principles, and therefore constitutes the emergence of phonological patterns. This work targets the spatial component of the lexicon, where classifier constructions are located.

Methods: The data was collected from 11 signers in three participant groups: (1) DeafBlind individuals with at least one year of PT experience, or "PT DeafBlind signers" (3 males, 3 females, ages 32-47); (2) DeafBlind signers with no PT experience, or "non-PT DeafBlind signers" (1 male, 1 female, ages 50-72); and (3): Deaf, with no PT experience, or "non-PT Sighted signers" (1 male, 2 females, ages 22-24. We used two tactile stimuli including a lollipop and a jack to elicit Size and Shape Specifiers (SASSs). For each participant, sessions were videotaped and annotated in ELAN. Analysis: We have identified phonological functions associated with each of the four hands of a PTASL dyad when describing events involving size and shape (Figure 1): INITIATE, PO, PROMPT-TO-CONTINUE, AND MC.



These four sub-structures occur in a strict order within the proprioceptive construction. The 4-handed apparatus is "initiated" in two steps, first by Signer 1's non-dominant hand (H3) and then by Signer 1's dominant hand (H1). INITIATE tells Signer 2 that their active participation is required. In Figure 2a and 2b, Signer 1 combines INITIATE-PROMPT-TAP (H3) & INITIATE-PROMPT-PO (H3). Next, Signer 2 produces the "proprioceptive object", or "PO" with her dominant hand (H2). Together, INITIATE and PO delimit the active tactile signing space. Next, Signer 1 prompts Signer 2 to hold the PO in place with her non-dominant hand (H3). We call this "PROMPT-TO-CONTINUE". Finally, Signer 1 produces "movement contact types", or "MCs" on the PO to draw attention to different internal aspects of its structure using her dominant hand (H1). Together, this sequence of tasks produces what we are calling a "proprioceptive construction" or "PC". Signer 2's nondominant hand is called on sporadically to produce POs and otherwise being available for backchanneling (H4). H1, the dominant hand of Signer 1, is the most active hand having two roles—prompt and MC. H2, the dominant hand of Signer 2, is the next active hand. H3 and H4 are less active; H3, the nondominant hand of Signer 1, can be used for further prompting, and H4, the nondominant hand of Signer 2, is used for backchanneling. In addition, among the PT DeafBlind signers, the content of the PC is assigned to H1 and H2 in the roles of MC and PO. The role of PO was assigned to H2 75% of the time (H4 25%)(Figure 3).

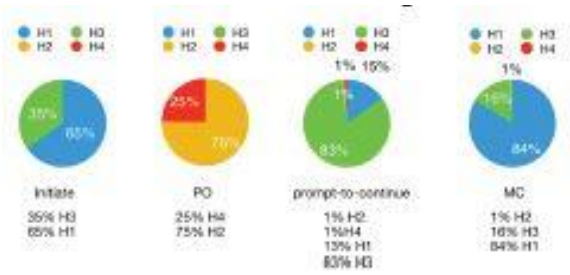


Figure 3: Percentage of tokens (for all superordinate categories) produced by each available anatomical structure.

H1 is the most active articulator, which produces 81% of the MCs (16% are assigned to H3). The functional roles of the PC— INITIATE and PROMPT are assigned to H1 and H3. We found that PROMPT-TO-CONTINUE was assigned to H3 83% of the time and 15% of tokens were produced by H1. There were two types of INITIATE: 80% of INITIATE-TOUCH tokens were produced with H1, while only 20% were produced with H3; conversely, 75% of INITIATE-GRASP tokens were produced with H3, while 25% were produced with H1. These data suggest that among DeafBlind PT signers, novel linguistic tasks are being consistently assigned to specific anatomical structures. In comparing these patterns to those found in our non-PT subject groups (Deaf and DeafBlind), we have confirmed that the patterns we are describing are not adjustments made at the level of interaction, but are, rather, emergent, linguistic patterns, which can be expected to develop further in historical time given the necessary socio-cultural and interactional conditions.

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"RHYTHM RATIO" IN SIGN LANGUAGES: A MEASURE OF PHRASAL RHYTHM

Diane Brentari*, Joseph Hill+
(*University of Chicago, +Rochester Institute of Technology-
National Technical Institute for the Deaf)

In this paper a novel approach to phrasal rhythm for sign languages is introduced, called "RHYTHM RATIO", which considers sign duration and transition duration together, and is similar in spirit to the "Pairwise Variability Index" (PVI) in spoken languages [1, 2, 3]. Rhythm class is a fundamental way of categorizing spoken languages as syllable- or stress-timed languages, but phonetic grounding for this distinction had been illusive until the PVI was developed, which measures the standard deviation of syllable nuclei against the standard deviation of the intervals between syllable nuclei [3].
Rhythmic differences are noticeable among signers and sign varieties as well, but until now there has been (to our knowledge) no way to capture these differences. We propose that sign movements (lexical movements) and the movements between signs (transitional movements) are important for rhythm. Transitional movements are important because a) they can be incorporated into compounds, b) sign language poets often manipulate them or try to reduce them, c) they must be naturally modulated in order to make life-like sign language avatars, and d) as we argue below, the adjacent signs on either side significantly affect transition durations; they are neither uniform nor randomly distributed. The RHYTHM RATIO measure proposed in this paper is calculated in two ways. The primary was RR was measured is as the duration of each lexical movement divided by the sum of the sign duration plus its adjacent transition durations (1) and Figure 1.

(1) rhythm ratio (RR)= $\frac{\text{sign duration}}{\text{previous transition + sign duration + following transition}}$

We also calculated RR it has been commonly calculated in spoken languages as PVI, measuring the standard deviation of lexical sign duration against the and the standard deviation of the pauses (holds+transitions), for each individual, confirming the RR measure (Figure 2). The signers in this study were 23 native or early learners of ASL (12 males; 11 females), from 2 ASL varieties (Black ASL and Mainstream ASL), and 2 age groups (older than 55; younger than 35). They watched and then narrated a Walt Disney cartoon to another Deaf member of their own sociolinguistic group. SIGN RATE, SIGN DURATION, TRANSITION DURATION, PHRASAL POSITION (I-Phrase-medial; I-Phrase- final) and RHYTHM RATIO were measured (6631 data points). Statistical analyses included dependent variables of the sociolinguistic factors of Age, Gender, Sign Variety, plus Phrasal Position, and (for Transition only) Sign Before and the Sign After, which capture a sign's adjacent transitions.
Results (significant main predictors only, $p<.05$; interactions will be discussed in the paper, but not here): i) RHYTHM RATIO is affected by Age and Gender (younger signers, and male signers, had lower RRs; see Figure 1). Gender is associated with higher Standard Deviation of sign duration (y axis); Age is associated with higher Standard Deviation of transition duration (x axis). This is seen in Figure 2; ii) SIGN DURATION is affected by Age (younger signers have shorter signs); iii) TRANSITION DURATION is affected by Sign Before and the Sign After; iv) SIGN DURATION and TRANSITION DURATION are affected by Phrasal position (final signs and transitions are longer).
Discussion/Conclusions: The advantages of RHYTHM RATIO over analyses of individual properties are as follows. RHYTHM RATIO reveals an overall rhythm category in a single measure that is typically masked by PHRASAL POSITION in individual analyses of SIGN DURATION and TRANSITION DURATION because the effect of PHRASAL POSITION is so strong. In addition, RHYTHM RATIO captures sociolinguistic effects of Age and Gender, while individual

analyses capture a main effect of Age alone, and only for SIGN DURATION; therefore RHYTHM RATIO has the potential to be more sensitive to sociolinguistic differences. In the future cross-linguistic differences will be investigated as well. Should this ratio differ cross-linguistically, it will provide evidence for differing rhythm classes in signed languages and a means of analyzing them quantitatively that is functionally equivalent to the PVI measure used for spoken languages.

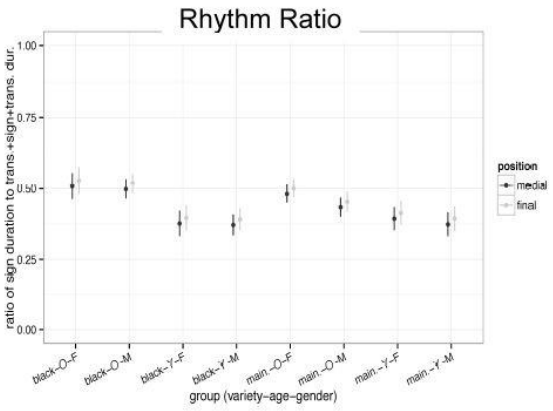

Figure 1. Scaled output of the RHYTHM RATIO by group. The dots are means, and the lines are the 95% confidence interval.

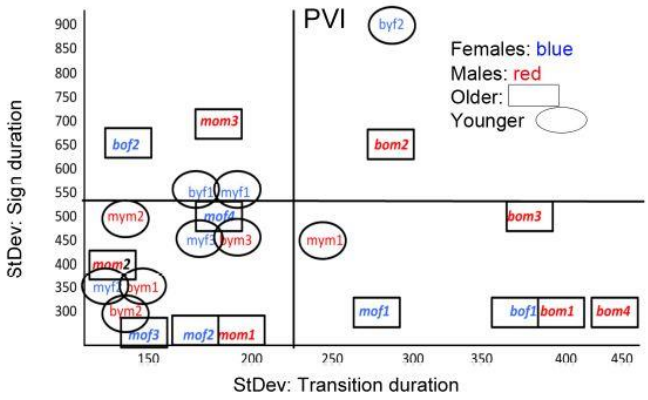

Figure 2. PAIRWISE VARIABILITY INDEX (PVI) for ASL. Standard deviation of sign duration (y-axis) plotted against the standard deviation of transition duration (x-axis).

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ABSTRACTS

POSTERS

WORD ORDER AND INTONATION IN EMBEDDED POLAR INTERROGATIVES IN TİD

Emre Hakguder (The University of Chicago)

Previous research has shown that TiD (Turkish Sign Language – Türk İşaret Dili[2]) can embed wh-interrogatives and that the grammar distinguishes between its types. In this study, I investigate embedded polar interrogatives with the aim to show where they pattern with and differ from embedded wh-interrogatives and embedded declaratives. I specifically look at the matrix and embedded word orders and the nonmanual markers[3] (NMMs) associated with polar interrogatives. Polar interrogatives share the property of being a question with wh-interrogatives, i.e. information-seeking, but differ from them in that they lack a wh-word. Interestingly, polar interrogatives in TiD (2) share the same word order with declaratives (1). The two structures minimally differ in nonmanual marking[4]. This distinction is important to tell apart the interpretations of the same string of signs when embedded. As for embedded wh-interrogatives, TiD distinguishes between the ones embedded under intensional predicates (e.g. WONDER, ASK, CURIOUS) and those under extensionals (e.g. KNOW, FIND.OUT).

(1) IX-2 UNIVERSITY GO (hn) *declarative*
You went to college.

(2) IX-2 UNIVERSITY GO (hf, hs) *polar question*
Did you go to college?

Extensionals (3) prefer a matrix SVO word order and prohibit the head backward whereas intensionals (4) prefer a matrix SOV order and must retain the head backward.

(3) IX-1 KNOW [GÜNAY$_a$ IX-$_a$ AYŞE$_{b\ a}$-CHEAT.ON-$_b$ WHO] (*head backward)
I know who Günay is cheating on Ayşe with.

(4) [WHAT THERE.IS] WONDER (head backward)
I wonder what there is [in the picture].

This is in line with previous research on the semantics of questions (Munsat 1986; Lahiri 1991, 2002; Spector & Egré (2015); George (2011); Groenendijk & Stokhof 1982, 1984 & 1989, among others) and provides the morphological manifestation for Berman's (1990, 1991) question-morpheme. In this study, I look at matrix word order and NMMs in embedded polar interrogatives in TiD. My observations are in line with embedded wh- interrogatives in that intensionals require the question intonation (i.e. head forward) and prefer an SOV order (5). Interestingly, the lack of a complementizer and head forward in extensionals (6) cause the construction to be ambiguous between an embedded polar interrogative and an embedded declarative, embedded declarative being the most salient and accessible interpretation to most signers[5]. This behavior of polar interrogatives embedded under

[1] I look at 4 datasets collected between 2014 and 2017 from 4 native signers, and 2 naturalistic datasets that consists of sentences found in a TiD corpus. Grammaticality judgment tests are still carried out, current results are preliminary.
[3] Göksel & Kelepir (2013) observe *head backward* with matrix wh-interrogatives and *head forward* with matrix polar interrogatives.
[4] hn: *head nod*, hs: *head shake*, hf: *head forward*, hb: *head backward.*
[5] TiD uses two other strategies that can bypass the extensional problem: (i) the particle *Mİ* and (ii) negative alternative questions. Due to space restrictions I won't report my findings on those here.

extensional predicates has been previously attested in other languages (see Davidson&Caponigro, 2015 for ASL; Adger&Quer, 2001, Eckardt, 2001 for English):

(5) IX-2 [AYŞE ENGLAND MOVE]$_{\text{head forward}}$ WONDER
I wonder whether Ayşe moved to England.

(6) IX-2 KNOW [AYŞE ENGLAND MOVE]$_{\text{*head forward}}$
I know that Ayşe moved to England.
 # I know whether Ayşe moved to England.

Moreover, some extensional predicates can be made intensional with matrix negation or by turning the matrix sentence into a question:

(7) IX-2 [AYŞE ENGLAND MOVE]$_{\text{head forward}}$ KNOW^NOT$_{\text{hs}}$
I don't know whether Ayşe moved to England.
 # I don't know that Ayşe moved to England.

(8) IX-2 KNOW [AYŞE ENGLAND MOVE]$_{\text{head forward}}$
Do you know if Ayşe moved to England?
#? Do you know that Ayşe moved to England?

I will discuss my findings on other NMMs commonly found in polar interrogatives (i.e. head nods, head shakes and brow raises) and how they may or may not come together with the ***head forward*** to mark complex structures. This study stresses the importance of intonation and paves the way to more research in how prosody interacts with syntax and semantics in both spoken and signed languages.

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VERB TYPES AND SEMANTIC MAPS

Marloes Oomen (University of Amsterdam)

Background and aim. Verb classifications for sign languages (SLs) are typically based on agreement properties: roughly, agreement verbs and spatial verbs agree with person/location, while plain verbs do not agree (see e.g. Padden 1983; Janis 1992; de Quadros 1999; Meir 2002). It has also been suggested that this classification is semantically grounded, with agreement verbs denoting transfer, spatial verbs motion, and plain verbs neither of the two (Meir 2002). Given this proposition, it is perhaps surprising that details of the semantics of verb types have not been explored in more depth beyond what Meir has offered. The aim of this work, therefore, is to gain a deeper understanding of the semantic underpinnings of verb types.

A semantic map. Tsunoda (1981), inspired by Hopper & Thompson (1980), argues that different lexical verb classes select for different case-frames depending on properties of (participants of) the event denoted by class members: verbs with many properties associated with a high degree of transitivity are more likely to receive a transitive encoding (e.g. NOM- ACC case-frame). Malchukov (2005), building on Tsunoda's work, proposes a semantic map (depicted in Fig. 1, with DGS data) in which semantic categories are ordered from left to right according to decreasing likelihood of category members to allow for a transitive case-frame.[1]

The map also accounts for different dimensions of deviation from the transitive prototype. The upper strand, for instance, orders categories according to decreasing patienthood of the object (i.e. objects of effective action verbs are more patient-like than those of motion verbs).

We hypothesize that the semantic properties that govern case-frame selection in spoken languages similarly mediate verb type in SLs. The rationale behind this idea is that many of the relevant properties have the potential to be expressed iconically in SL verb forms, such that particular combinations of features increase the likelihood of a verb to be of a certain type. To give an example, the verb meaning 'fear' denotes an event that (i) is more stative than active; (ii) involves an experiencer (low degree of agentivity); (iii) involves an object with a low level of affectedness (or patienthood). A plain verb articulated on the body is a suitable candidate for iconically conveying these properties: the lack of a path movement suggests stativity, the signer's body represents the experiencer through body-anchoring (Meir et al. 2007; Oomen 2017), and the relative unaffectedness of the object is reflected in the absence of formational characteristics that make iconic reference to this argument.

Data. In a subset of 58 dialogues from the DGS Korpus (www.sign-lang.uni-hamburg.de/dgs-korpus), verb forms were annotated that denote any of the verb meanings from the 'ValPaL' list (www.valpal.info), which is meant to be representative of the verbal lexicon. In total, 83 plain verb forms were attested: 51 articulated on the body (*body-anchored*), and 32 signed in neutral space (*neutral*). In addition, 15 agreeing forms (*agreement*), and 9 spatial forms (*spatial*) were identified. Malchukov (2005), Tsunoda (1981), and Levin (1993) – in that order – were consulted to determine the position of all verb forms on the semantic map.

Results. As Fig. 1 shows, body-anchored verbs (mostly lower strand) and neutral verbs (middle strand) each cover contiguous areas on the map, while agreement verbs and spatial verbs are somewhat scattered across the map. However, if verbs of the latter two types are grouped together – as e.g. Janis (1992) and de Quadros (1999) suggest we should – a clearer semantic profile emerges, in which agreeing verbs occur most frequently in categories on the upper strand and the left side of the map. Thus, the map provides an additional argument for collapsing

[1] A semantic map, which is constructed based on data from typologically diverse languages, allows one to make cross-linguistic predictions about systematic relations between the functions of multifunctional items (Haspelmath 2003). Semantic categories are placed in a network in such a way that the connections between them represent hypotheses about polyfunctionality: if a marker expresses functions A and C, it should also express intervening function B. The connections also serve as predictions about pathways of diachronic change.

agreement verbs and spatial verbs into a single category, while it offers support for distinguishing between body-anchored verbs and neutral verbs. Categories on the map that include verbs of several types are particularly interesting to consider, since one may expect to find verb forms with hybrid properties here, potentially signaling diachronic change. Such forms were indeed attested. SAY1 (*Interaction*), for instance, is body-anchored – yet in the data, there was one very clear instance of agreement with an object argument through directionality. HUG1 (*Interaction – Middle*) is categorized as an agreeing form, but it only agrees with an object argument. As such, it is possible that this form represents an intermediate stage between a body- anchored verb – like HUG2 – and a verb that agrees with two arguments. Finally, note that all three lexical forms denoting 'fear' (*Emotion*) are, indeed, body-anchored.

Conclusions. Overall, the results lend credibility to the hypothesis that case marking systems in spoken languages and the verb type system in SLs are sensitive to the same underlying semantic factors, which points toward the centrality of these notions in language. The knowledge that the map 'works' opens up many opportunities for future research. Data from other sign languages can be added to further test the validity of the map, as well as predictions about diachronic change. For instance, Meir et al. (2007) describe a gradual change of verbs of transfer from body-anchored verbs to agreement verbs in Israeli SL. The semantic map can serve as a useful tool in describing the pathways of such change.

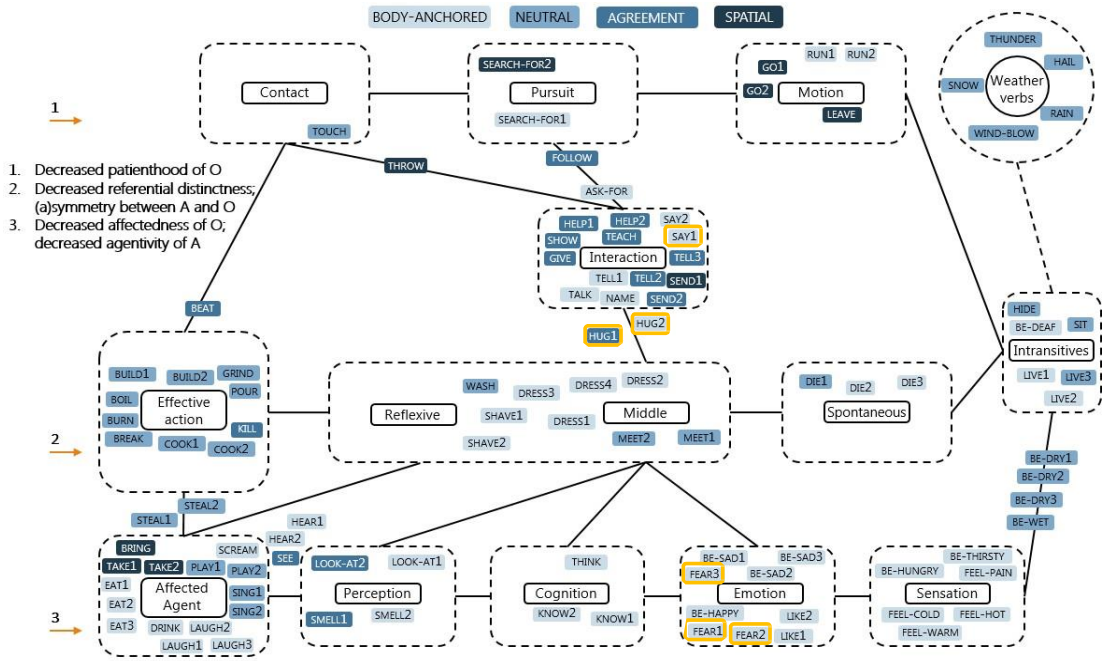

Figure 1. Malchukov's (2005) semantic map for transitivity splits with verb forms from DGS, by type.

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STARTING TO MAKE SENSE: FURTHER DEVELOPING A NONSENSE SIGN REPETITION TASK

Ulrika Klomp (University of Amsterdam)

Background. At present, few tests are available to measure sign language development in general, and to discover a sign language delay or impairment in particular (Mason et al. 2010). This is unfortunate, since such tests are crucial for gaining insight into L1 and L2 development and for appropriate language interventions. To fill this gap, Marshall et al. (2006) developed a nonsense sign repetition task (NSRT) for British Sign Language (BSL). It was modeled after widely used nonsense word repetition tasks (e.g. Dollaghan & Campbell 1998) and is meant to measure phonological skills. Importantly, nonsense signs are signs that are non-existent in the sign language at stake, but do follow its phonotactic rules. Furthermore, it is important that an NSRT includes signs of varying complexity. The BSL NSRT therefore involved signs of four (2 x 2: simple/complex handshape and single/combined movement) complexity levels.
Using the BSL NSRT, Mann et al. (2010) showed that the number of errors made per sign was indeed effected by the complexity. Specifically, they demonstrated that more errors were made in signs with a marked handshape compared to an unmarked handshape, in signs with a hand-internal movement compared to a path movement, and in signs with a combined movement compared to a single movement.

The NGT NSRT. The author (2015) developed an NSRT for adult users of Sign Language of the Netherlands (Nederlandse Gebarentaal, NGT). The NGT NSRT adopts the complexity levels of the BSL NSRT, but adds a distinction between signs with a path movement and signs with a hand-internal movement, in line with Mann et al.'s findings that these movement types are of different complexity. Consequently, the NGT NSRT has six levels instead of four (see Table 1).
The procedure is as follows: 36 nonsense signs (and four practice items) are listed in a VLC play list, and after every two signs, a blue screen appears for 6 seconds. Participants are instructed to watch the signs, remember them, and then repeat them when the blue screen appears. The paired signs are always of the same complexity level. See Figure 1 for an example of a sequence.
So far, the NGT NSRT has been carried out with two groups of (hearing) CODAs (the author 2015, Zijlstra 2017). Although both these studies focused on issues that are less relevant for the current study, the obtained results are an important step towards more insight into the phonological complexity of the items and for establishing norm scores for the test. For example, it was confirmed that, also for NGT, signs with a complex handshape are more difficult to repeat than signs with a simple handshape, and signs with a combined movement are more difficult than signs with a single movement. However, no evidence for a difference between path movement and hand-internal movement was found.
The next crucial step before the NSRT can be used in practice is conducting the test with deaf L1 signers of NGT. In the current study, special attention is paid to the complexity of movement. In addition, for practical use it is of interest to investigate whether scoring per phoneme (is every phoneme repeated correctly?) yields similar results as scoring per whole item (is the item as a whole repeated correctly?). The author (2015) and Zijlstra (2017) scored per phoneme; however, scoring per item would be considerably less time-consuming.

Aims & preliminary results. In the current study, 11 deaf L1 users of NGT will perform the NSRT, and their results will be compared to those reported in the studies of the author (2015) and Zijlstra (2017). Our research questions are: **1.** Do deaf L1 signers perform differently from CODAs on the NGT NSRT? **2.** Do signers perform equally on signs with a path movement and signs with a hand-internal movement? **3.** Is there a correlation between phoneme-based scores and binary whole-item-based scores?

So far, seven subjects have been tested. We can therefore provide some preliminary answers to our research questions: **1.** Deaf signers perform significantly better (mean score = 139) than the CODAs of the previous study (mean score = 126) (U = 63.5, z = 2,79, p = 0.03). **2.** So far, there is no evidence for a difference in complexity between the different levels of movement for these subjects (H(2) = 2.5, p = 0.29). 3. Phoneme-based scoring and binary whole-item-based scoring are highly significantly correlated (rs = .93, 95% BCa CI [.770, .989], p < 0.01, effect size rs^2 = .87).
If further testing confirms our first results, this will have important implications for the use of the NGT NSRT, and NSRTs in general, as it would allow for testing that is at the same time more fine-grained (complexity levels) and economical (scoring).

	Handshape	
	Unmarked	Marked
Movement		
Path	Level 1a	Level 2a
Internal	Level 1b	Level 2b
Path & internal	Level 1c	Level 2c

complexity ↓

complexity →

Table 1. Levels of phonological complexity of the items in the NGT NSRT.

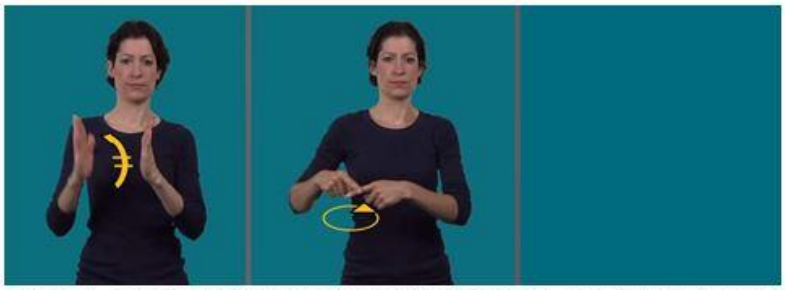

Figure 1. A sequence from the NGT NSRT: non-sign 1, non-sign 2, blue screen.

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[to be added: author 2015]

GRAMMATICAL AND ICONIC CONSTRAINTS ON SERIAL VERB CONSTRUCTIONS IN TİD

Ayşe Özçiçek, Kadir Gökgöz
(Boğaziçi University)

Supalla (1990) notes that "events of motion in real world often involve several aspects that occur simultaneously. For example, the object that moves, its path of motion, its manner of motion along this path, its orientation, the background objects, and the other aspects of the event are all in some sense present simultaneously." If more than one aspect of these motions are encoded in a verbal complex, these are called serial verb constructions. In this study, we investigate complex motion events and their linguistic encoding as serial verb constructions in Turkish Sign Language (TİD). We observe that TİD has grammatical and iconic restrictions on expressing different aspects of a complex motion event.

Adopting Supalla (1990), the following event components are used for this research. Manners are limping, running, walking, walking on toes, walking briskly, walking like a tramp, soaring like Superman and swimming. Paths are circular, snakelike and straight. Furthermore, we added the direction factor with forward, backward and crosswise directions. The basic event (i.e. manner) was presented to the signer with a video, for instance a video of someone limping, running (Fig 1a), walking etc. and the direction and path were presented to the signer with a drawing for instance a snakelike path and a crosswise direction (Fig 1b). The signer was asked to sign these aspects of motion event to tell the complex event indicating all three components.

Fig. (1): Sample item for stimuli

a. Video showing manner b. Drawing showing path and direction

We note three important findings here. First, although there is no physical restriction for simultaneous expression of a three morphemes combination, i.e. [Manner+Direction+Path], the signer does not sign them simultaneously. Second, the linguistic encoding of the aspects of the complex motion event change with respect to the direction of the event. When the signer uses her front side in the signing space (forward and crosswise), Direction and Path are combined with each other but Manner is separated from them as in Fig. (2).

Fig. (2): A human is running crosswise on a snakelike path

Manner……..Path+Direction……

In Fig. (2), the signer signs the Manner, walking briskly, with the human arms classifier, then she expresses the Path and the Direction simultaneously. On the other hand, when signing a backward Direction morpheme, the signer combines Path and Direction again, but this time Manner is also combined with Direction so a [Manner+Direction] and [Path+Direction] serial verb construction is observed as in Fig. (3). Based on the stimuli: "A human is running backward on a circular path", the signer uses human arms as a Manner morpheme and combines Direction with the human arms classifier by moving her arms backwards. So, as a linguistic constraint, [Path+Direction] is obligatorily expressed simultaneously in each serial verb construction in TİD (Fig. 2 and 3). However, a [Manner+Direction] combination is also necessary when the direction of the motion is backwards (Fig 3). But crucially, the signer does not sign all of the morphemes, Manner, Direction and Path simultaneously. These findings indicate that the linguistic system is involved.

Fig. (3): A human is running backward on a circular path

Direction…….Manner+Direction……..Path+Direction..……...

Lastly, we observe that path movement is directly affected by the real world properties/plausibility of the motion event. In this sense, Path morphemes interact with iconicity. The circular Path morpheme of all of the movements in events which are on earth are signed in the horizontal axis because the physical movement takes place on the ground. On the other hand, if the movement occurs in water or on air, this time the circular path is signed in the vertical axis. Obviously, in real world, swimming in a circular way horizontally is not as possible/plausible but following this path vertically may be possible. This shows that the Path morpheme in TİD potentially interacts with iconic information.

In summary, despite the physical possibility that all three morphemes, Manner, Path and Direction could be expressed simultaneously in TİD, this does not happen due to grammatical restrictions, i.e. *[Manner+Direction+Path]. Furthermore, we observe that direction has an effect on encoding pieces of an event with backward directed events encoding [[Manner+Direction] + [Direction+Path]] while forward and crosswise directed events encoding [[Manner] + [Direction+Path]]. To the best of our knowledge, this finding about Direction is a new contribution since previous studies has concentrated on Manner and Path (Supalla 1990; Benedicto et al. 2008). Lastly, we observe that the grammatical expression of motion events in the form of serial verb constructions potentially interacts with iconicity in that the Path morpheme is expressed in the horizontal or vertical axis depending on whether the event takes place on the ground vs. in water/on air.

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AGE OF SIGN LANGUAGE ACQUISITION AFFECTS PROCESSING OF WORD ORDER: EEG EVIDENCE

Julia Krebs*, Evie Malaia[+], Dietmar Rohem*
(*University of Salzburg, [+]University of Freiburg)

Early acquisition of a natural language, signed or spoken, has been shown to fundamentally impact both one's ability to use the first language, and the ability to learn subsequent languages later in life (Mayberry, 2007). Neuroimaging evidence shows that people who acquire a natural language in the normal timeframe possess specialized linguistic abilities and brain functions that are missing or deficient in people whose exposure to natural language is delayed or absent (Malaia & Wilbur, 2010). In spoken language, later learners of second language have been shown to have attenuated sensitivity to grammatical and semantic violations as indexed by ERP components such as N400 and P600, with higher sensitivity to violations presented in the auditory domain (Meulman et al., 2014). However, the timeline of acquisition of sign language processing abilities in specific linguistic domains (syntax vs. semantics, non-manuals vs. spatial linguistic processing) is not well known. The current investigation looked at the relationship between the age of sign language acquisition, and the neural activity during processing three features of sign languages that are relevant for linguistic processing: word order, non-manual discourse markers, and spatial-iconic predicates (classifiers), in order to identify the relative malleability of linguistic processing in these domains to the age of sign language acquisition.

The investigation consisted of three EEG experiments, which presented Austrian Sign Language (ÖGS) sentences to 20 Deaf signers (9 females, mean age of 39.37 years, *sd* = 10.19; *range* = 28 - 58 years), who acquired sign language at 5 distinct age time ranges (0-3 years of age, 4-7, 13-17, 18-22, and above 22). Experiment 1 (Subject Preference) investigated comparative neural processing of word orders (SOV, OSV), using material comparable to constructions used for testing subject/object ambiguities in spoken languages. The basic sign order in ÖGS transitive clauses is SOV, but OSV orders are also possible. Independent of word order, the first argument was always referenced at the signer's left side in the stimuli. After both arguments were referenced in space by an index sign, the disambiguating agreeing verb either moves from the argument established first (from left to right in SOV) or from the argument referenced second (from right to left in OSV). Based on ERP investigations of L2 learning, we hypothesized that SO order condition will be marked by an N400 component, which will be attenuated in correlation with the age of acquisition. Experiment 2 (Non-Manual Discourse Marking) used stimuli similar to those of Experiment 1 (i.e. SOV and OSV orders), in which half of the sentences had the first sign marked with the non-manual marker of discourse topic. We hypothesized that if the non-manual is processed as a semantic, rather than syntactic marker by late learners, the N400 component in OSV orders will be attenuated in correlation with the age of acquisition.

Experiment 3 (Classifier Processing) used classifiers, highly spatially iconic structures, to disambiguate between the two word orders in stimuli constructed similarly to Experiments 1 and 2. We hypothesized that the age of acquisition will negatively correlate with the linguistic reanalysis response (N400) to OSV. However, since classifiers are highly iconic, the effect size of the correlation was expected to be lower than that in Experiments 1 and 2. Due to the relatively low number of participants with ranked ranges of age of sign language acquisition, the non-parametric statistics Kendall's τ was used to assess correlation between age of acquisition and mean amplitudes of EEG responses for each experiment. Whole-group EEG was used to determine time ranges for assessing the difference between conditions (SO, OS) in line with best practice recommendations (Luck & Gaspelin, 2017).

Results: Age of sign language acquisition was significantly negatively correlated with the mean amplitude of EEG during sign processing in Experiment 1 (τ = .259, p<.036) and Experiment 2 (τ = .265, p<.032), but not Experiment 3 (τ = .118, p>.1). By-condition analysis revealed that canonical

word order (SO) did not show any significant correlation between age of sign language acquisition and EEG morphology (all *p*s>.2). In non-canonical word order condition (OS), EEG response was significantly correlated with the age of acquisition in Experiment 1 ($\tau = .442$, $p<.014$) and Experiment 2 ($\tau = .379$, $p<.034$), but not in Experiment 3 ($\tau = .013$, $p>.9$). Age of acquisition negatively correlated with the mean amplitude of the N400 ERP in OSV order in Subject Preference and Non-manual Discourse Marking experiments, but not in Classifier Processing experiment (Figure 1), suggesting that while processing of word order and non-manual marking is dependent on the age of sign language acquisition, the processing of iconic structures (classifiers) is not.

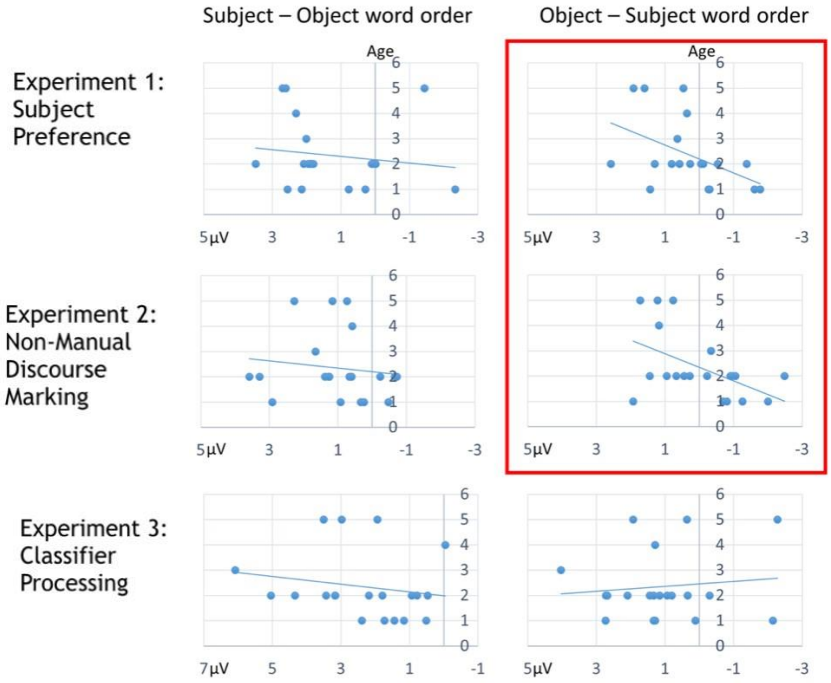

Figure 1. Correlation of age of acquisition and mean amplitude of the N400 ERP in SO and OS word order. Mean amplitude of the N400 ERP is represented in μV on the x-axis. Age of sign language acquisition is represented on the y-axis, whereby age ranges are ranked ranges; 1 stands for 0-3 years of acquisition age, 2 stands for 4-7, 3 stands for 13-17, 4 stands for 18-22, and 5 stands for < 22).

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MODAL SIGNS AND SCOPE RELATIONS IN TİD

Serpil Karabüklü*, Fabian Bross[+], Ronnie Wilbur[*], Daniel Hole[+]
(*Purdue University, [+]University of Stuttgart)

This project tests a claim made by Bross and Hole (2017) that Cinque's (1999) hierarchy is universally mapped to manual and nonmanual signs in sign languages. Based on DGS, which is an SOV language, they made three proposals: (i) High scoping categories including epistemic modality, are mapped to a high body part, descending from upper face to shoulders to manual signs. (ii) Intermediate operators have a left-to-right sequencing, in which the operator that appears to the left scopes over the right. (iii) Lower operators have a right-to-left sequencing, in which the operator on the right has higher scope. This study tests these claims in a typologically related language TİD, which is also SOV (Sevinç, 2006). We will report that TİD has different lexical signs for different modal readings epistemic, deontic, ability, permission). Furthermore, since all these signs are overwhelmingly preferred in sentence final position, left- to-right is not a possible scopal strategy in TİD. However, right-to-left sequencing is possible with two modal signs.

Stimuli provided by Bross and Hole were adapted into Turkish. Three participants were interviewed with the assistance of an interpreter to ensure the comprehension of intended meanings. Analysis covered three points: (i) how modal meanings are expressed by manual and nonmanual signs, (ii) the position of the operator in Cinque's hierarchy, and (iii) the possibilities of word order changes for intermediate and lower operators. Findings indicate that the mapping found in DGS does not hold for TİD. TİD has different modal signs for distinct modal readings: POSSIBLE (1) (synonyms LIKE-5 and LIKE-2), NECESSARY (2), CAN (3) (a.k.a DO), and FREE (4).

(1) LIGHT-ON MOM HOUSE-a EXISTENTIAL-a BE POSSIBLE — epistemic
'Light is on, my mom may be at home.'

(2) OFF FINISH TODAY WORK COME NECESSARY — deontic
'His off-work ends. He must come to work today.'

(3) IX-3 MAGIC CAN — ability
'He can perform magic.'

(4) INTERPRETER PICK FREE — permission
'She can ask for an interpreter.'

Participants were asked about changing word orders to check left-to-right or right to-left sequencing, but it yields ungrammatical results for epistemic (5), deontic (6), ability (7), and permission (8) modals.

(5) * IX-3 ROOM POSSIBLE BE — epistemic
'She may be at her office.'

(6) *IX-3 ROOM NECESSARY TIDY — deontic
'He must tidy his room.'

(7) *IX-3 CAN MAGIC — ability
'He can perform magic.'

(8) *INTERPRETER FREE PICK — permission
'She can ask for an interpreter.'

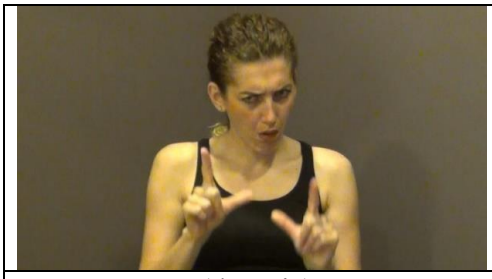
Even though change in the orders of modals is ungrammatical, TİD can have two modal signs in a sentence (Özkul, 2016). The modal sign that occurs to the right scopes over the one that appears to its left (9, 10), which supports Bross and Hole's right-to-left sequencing.

(9) IX-3 HOUSE GO NECESSARY BE^POSSIBLE (Özkul, 2016, p.19)
'It is possible that she needs to go home.'

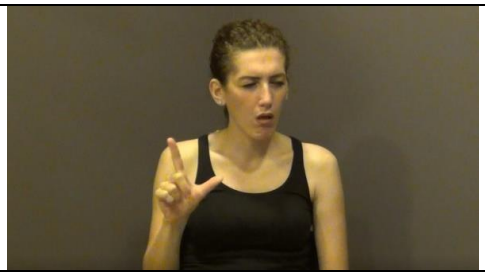
(10) IX-3 CAR^DRIVE CAN NECESSARY (Özkul, 2016, p.19)
'It is epistemically necessary that he can drive.'

An interesting finding is that the sign NECESSARY can appear in both deontic and *some* epistemic contexts (Özkul, 2016). The participants found it ungrammatical in sentences like (1). However, when the signer is certain about the situation and there is no other choice, then it is acceptable in the context. For instance, the signer knows that it is office hour for the subject (11). The signer also knows that the subject is not in her room now. After eliminating other possibilities, the signer guesses that one other possibility is being in the secretary's room for which she uses NECESSARY. When used epistemically like this, NECESSARY is signed with eye squint (es) (Picture 2). In contrast, deontic use of NECESSARY is signed without eye squint (Picture 1).

(11) S ROOM WORK ROOM NONEXISTENTIAL, IX$_?$ TIME ROOM BE
es
NECESSARY PALM-UP, SECRETARY WORK ROOM GO NECESSARY
'She is not in her office. She should (deontic) be in her office now. She might (epistemic) be in the secretary's office.'



NECESSARY (deontic)



NECESSARY (epistemic)

In summary, we showed that TİD has distinct modal signs for various modal readings. Modal signs appear in sentence final position, which eliminates the left-to-right scope interaction which was observed in DGS. Modal doubling shows that right-to-left sequencing is strictly preferred in TİD. Interestingly, so far one sign NECESSARY has been attested for two different readings, epistemic and deontic. However, it still occurs clause finally. Thus, two typologically similar SOV languages can behave differently with respect to Cinque's hierarchy. However, in line with Bross and Hole's finding, the epistemic meaning is obligatorily marked with a physically high operator, namely the eyes.

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COORDINATION IN CATALAN SIGN LANGUAGE: &PHRASE

Giorgia Zorzi (Pompeu Fabra University)

Introduction. Haspelmath (2000) defines *coordination* as a syntactic construction in which two or more units of the same type are combined into a larger unit and still have the same semantic relations with other surrounding elements. In Sign Languages (SLs) this structure is productive as well, mainly asyndetically, that is, not using manual markers but rather nonmanual ones (NMM) such as body and head turns to mark the conjuncts. Manual markers are also used. This paper provides a syntactic analysis of coordination in Catalan Sign Language (LSC) focusing on VP/TP conjunction, building on the analyses proposed till now for spoken languages in order to give a cross-modal comparison never undertaken before.

Expressing coordination in LSC. Coordination in LSC is mainly expressed through the use of NMM. Body or head shift or lean in opposite directions with respect to the midsagittal axis in signing space, spread on each conjunct, are used to mark them. Also, placement in the two opposite sides of the space of at least one element for each conjunct supports or compensates the NMM, as in (1), where in the first and second conjunct both NMM and use of the opposite location in space face the same direction.

		bs+space contral.		bs+space ipsilateral		
	re		hth	re	shn	
(1)	MARINA	CAKE	MAKE	JORDI	SELL.	(LSC)
	'Marina made a cake and Jordi sold it.'					

Coordination in LSC can also use coordinators between the conjuncts, such as list-buoys, PLUS and ALSO. Due to the frequent simultaneous nature of list-buoys, I will not include data about this type of connector and I address the analysis of this type to Kimmelman (2017), while we will focus on PLUS and ALSO: even if they are signed differently, their meaning and distribution as coordinators is very similar. They have an additive function and they can only precede the second conjunct. ALSO can be used as focus marker as well, but in coordination it presents the same characteristics of languages in which this type of adverbial connectors develop into conjunctive markers (Mithun 1988).

Tests to identify coordination. Due to the lack of overt declarative complementizers in SLs and therefore to the need of identifying coordination in contrast to subordination, some tests have been proposed: i) extraction, ii) scope of yes/no questions, iii) distributional dependency and iv) position of prosodic boundaries (Tang & Lau 2012; Van Gijn 2004; Göksel & Kelepir 2016). The first one looks at the possibility of topicalizing or wh-extracting via Across-theboard (ATB) movement the same element in the two conjuncts. This relates to the *Coordinate Structure Constraint* (CSC) by Ross (1967) that states that in coordination it is not possible to move a conjunct or extract an element from it, while it is in subordination. In coordination, the CSC can be violated, though, if the movement happens in an ATB fashion, making this a specific property of coordination. In (2a) we can see an example from LSC with topicalization of the same element out of both conjuncts. Another way to confirm the presence of coordination in SLs is to look at the scope of yes/no questions. The sign at the end of this type of structures, in LSC RIGHT (2b), refers back to the two conjuncts just introduced in order to confirm whether they are both true or false. Scoping over both conjuncts, it is possible to confirm the presence of coordination, as in (2b). The third test, the distributional dependency one, can only be applied to TP coordination since it looks at the possibility of two conjuncts being independent clauses in order to exclude the presence of subordination where one would be dependent. Finally, NMM such as eye-blinking, lean backward and head thrust (hth) have been identified as prosodically marking clause boundaries that could not be possible to find between a clause and its complement. In (1) we can see that the presence of head thrust at the end of the first conjunct and a single head nod (shn) at the end of the second one show again the presence of coordination.

t bs contr. bs ipsil.

(2) a. CAR, MARINA BUY JORDI SELL. (LSC)
'The car, Marina bought and Jordi sold.'
b. MARINA WIN JORDI LOSE, RIGHT?
'Marina won and Jordi lost, right?'

Asymmetry. Once established the existence of coordination, the presence of asymmetry can be crucial in determining the need of a symmetric coordination structure or not. Symmetry, using Nonato's (2014) criteria, can be detected in sentences where the order of the conjuncts can be inverted without affecting the meaning of the sentence. If a syntactic element like a possessive pronoun is added to the second conjunct of a structure with semantic symmetry, though, this will not be symmetric anymore, as in (3a), since the possessive pronoun needs an antecedent. Moreover, another way to determine the need of having an asymmetric structure for coordination is to look at the position of the coordinator with respect to the conjuncts. Appling the prosodic grouping test (Haspelmath 2004) to LSC, in (3b) we can see that ALSO can be signed in a continuum with the second conjunct following a short prosodic break (//) after the previous conjunct. The coordinator, then, belongs to the second conjunct and it is not neutrally placed between the two. This position of the coordinator determines the presence of prepositive coordination (Haspelmath 2004), where the coordinator belongs to the second conjunct ([α&β]), in opposition to postpositive one, where the coordinator belongs to the first one ([α] & [β]).

(3) a. MARINA$_j$ PIZZA BUY SON // IX-3$_j$-POSS SANDWICH PREPARE.
'Marina bought pizza and her son prepared a sandwich.'
b. MARC CAKE BAKE // ALSO MARINA PIZZA EAT // ALSO IX-2 SANDWICH PREPARE.
'Marc baked a cake and Marina ate a pizza and you prepared a sandwich.'

Directionality of coordination. Relying on the intonational grouping, Zhang (2010) argues that the two types of coordination need two different coordination structures: right-branching for prepositive coordination, (4a), and left-branching for the postpositive one (4b). LSC, then, will need an asymmetric coordination structure and a right-branching one, as the one in (4a), despite being a head-final language.

(4) a. [[α] [& β]] b. [[α &] [β]]

&Phrase. Assuming that the coordinator is a head, it therefore needs a corresponding phrase. I adopt Munn (1987) where conjuncts are specifiers and complements in &P, using for LSC a right branching structure like the one in (4a). Authors such as Camacho (1997) and Zhang (2010) claim that coordination cannot belong to a specific category and that the category of the phrase where the coordinator is inserted takes the one of the first conjunct. In LSC, though, there is no evidence based on this argument since the limitation in the possibility of switching conjuncts of different categories depends on pragmatics. Moreover, in LSC, differently than spoken languages, the presence of a coordinated structure can be detected with the production of the first conjunct thanks to NMM. Therefore, it is even more coherent to assign a specific category since the &P is early marked in the sentence.

Conclusions. This paper proposes a syntactic structure for coordination in LSC. Tests used to identify coordination in SLs confirm the presence of this structure in LSC. Moreover, LSC shows similar properties to spoken languages and the intonational grouping determines the need of a right-branching structure despite LSC being a SOV language. Finally, modality specific properties are an important argument to have &P as the category for coordination structure.

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A NEGATION-TENSE INTERACTION IN GEORGIAN SIGN LANGUAGE

Roland Pfau*, Tamar Makharoblidze+
(*UvA, +Ilia State University)

Background: In sign languages (SLs), clausal negation can be realized by manual signs (particles, adverbials, n-words) and/or a headshake (or some other non-manual). The way in which such manual and non-manual markers of negation interact, however, is subject to language-specific constraints (Zeshan 2004). Interestingly, across SLs, certain signs – mostly existentials, completives, and modals – commonly involve an irregular negative form, resulting from suppletion, affixation, or cliticization (Pfau & Quer 2007; Quer 2012). In addition, some SLs allow for Negative Concord involving manual negators, while others do not (Pfau 2016).

As for the feature tense, the available evidence suggests that it does not usually play a (morpho)syntactic role in SLs, as verbs do not inflect for tense (but see Zucchi (2009) for LIS). Still, some authors suggest that Tense does project in the phrase structure of some SLs (e.g. Neidle et al. (2000) for ASL; Pfau & Quer (2007) for DGS and LSC; Gökgöz (2011) for TİD).

Present study: We investigate the behavior of modals under negation in different tense contexts in Georgian SL (GESL), based on naturalistic data from three (second or third generation) native signers, combined with elicited data and grammaticality judgments. GESL is an understudied language which is used on a regular basis by approx. 2,500 people in Georgia.

We first demonstrate that these verbs display a (partially) suppletive form under negation, i.e. a morphological *one-to-many* relation. Second, and more strikingly, the data reveal that in the past tense, these suppletive forms obligatorily combine with the manual particle NOT, i.e. we observe Negative Concord (NC), a syntactic *many-to-one* relation.

I. Partial suppletion: The available data suggest that GESL is a manual dominant SL. In general, clauses are negated by the particle NOT (1). The modals CAN, WANT, and MUST, however, behave differently: similar to what has been described for other SLs, they take sign-specific irregular negative forms, characterized by a change of movement, as illustrated for WANT in (2a); see the second image in (3a) for illustration of the sign (its positive counterpart contacts the chest, but does not involve the sideward movement). (2b) shows that the combination of the modal with the negative particle is ungrammatical, irrespective of order. We argue that these forms are neither fully suppletive nor morphologically complex; rather, they display 'partial suppletion', i.e. sign-specific stem-internal phonological changes (non-manuals neglected in examples).

(1) INDEX$_1$ NOT PAINT
'I do/did not paint.'

(2) a. INDEX$_1$ WANT-NOT PAINT
'I don't want to paint.'

b. * INDEX$_1$ WANT NOT PAINT / * INDEX$_1$ NOT WANT PAINT

II. Tense-specific Negative Concord (NC): While the deviant behavior of modals under negation is well-documented in the SL literature, we encountered an unexpected pattern in the spontaneous data when negative modals were used in a past tense context. In such contexts, the irregular negative forms have to combine with the particle NOT, as is illustrated for WANT-NOT in (3a).

(3) a. 

'Yesterday I didn't want to paint.'

b. * YESTERDAY **WANT-NOT** PAINT

c. * TODAY **WANT-NOT NOT** PAINT / * TODAY **WANT-NOT** PAINT **NOT**

Discussions with the informants confirmed that using only the partially suppletive form leads to ungrammaticality (3b), and so does combining WANT-NOT with the particle NOT in the present/future tense, irrespective of the position of the particle (3c). That is, this type of NC in GESL is tense-specific.

Note that tense-specific negation strategies are also common in spoken languages, as is illustrated by the example from Arapesh in (4). In the future tense, negation requires the clause-initial particle *kobwi* (4ab), while non-future tenses display NC, i.e. a combination of the two markers *wo* and *e* (4cd) (Conrad & Wogiga 1991; in Miestamo 2005:257). However, to the best of our knowledge, such tense-specific strategies never apply to only a subset of verbs. In the GESL past tense, we thus observe at the same time the combination of two meanings in a single form (WANT-NOT) and the expression of one meaning by two forms (NC), as illustrated in Figure 1.

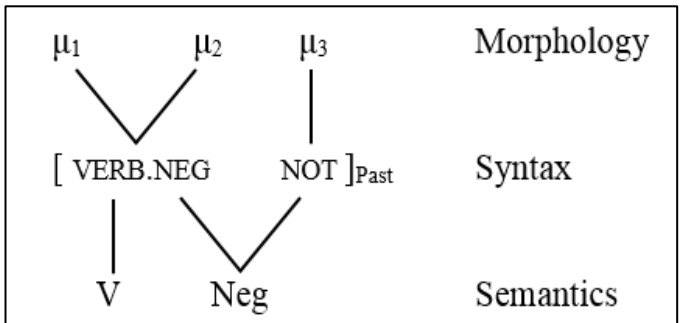

Figure 1. One-to-many and many-to-one relation in Georgian SL

(4) a. wotak m-u-lpok
more 1PL-IRR-fight
'We will fight some more.'

b. **kobwi** wotak m-u-lpok
NEG more 1PL-IRR-fight
'We will not fight anymore.'

c. n-a-nak
3SG-R-go
'He went.'

d. **wo** n-ú-nak **e**
NEG 3SG-IRR-go NEG
'He didn't go.'

Analysis: What causes the idiosyncratic behavior of GESL modals? We hypothesize that NegP has to be lexicalized by a manual sign. In general, this is achieved by using a negative particle (NOT in (1a)), which is merged in the head of NegP – and this explains why GESL is manual dominant. When a modal is used in a negative context, it obligatorily moves to Neg, and the resulting Mod+Neg complex will be spelled out by the irregular form (2a) (cf. Pfau & Quer (2007) for DGS/LSC). We further assume that in past contexts, the modal moves further up to Tns, due to [+past] being a strong feature; that is, the negative modal occupies different positions in (2a) versus (3a). Following Neg-to-Tns movement, Neg is vacant, and thus, merging NOT in NegP is obligatory in [+past] contexts.

While details of this analysis may have to be reconsidered once more data become available, we take the tense-specific NC pattern described here to strongly suggest that Tense is grammatically active in GESL in a way that has not been previously described for any other SL.

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CAN FORMAL FEATURES BE PREDICTED FROM FORM? USING MACHINE LEARNING TO PREDICT TRANSITIVITY CLASS FROM THE FORM OF PANTOMIME AND ASL CLASSIFIER CONSTRUCTIONS

Chuck Bradley (Purdue University)

This project investigates the iconicity[1] of transitivity distinctions in ASL classifier constructions (CCs) and pantomimes produced by non-signers, and addresses whether there are universally available mapping biases between form and argument structure. The present work uses machine learning to discover what features of classifier construction and pan- tomime production are relevant to transitivity classification, and informs work elsewhere exploring how non-signers classify these manual actions. Patterned responses lend weight to a gesture-first origin of Language, bootstrapped by 'visual' transitivity. While most research on iconicity concerns form-meaning mappings (e.g., Strickland et al., 2015) this project addresses motivated links between form and structure. This project piggybacks off Abner & King (2018) who did not find transitivity marking distinctions in pantomime based off event boundedness i.a., and Brentari et al. (2012), who noted a distinc- tion in production of intransitive and transitive pantomimes w.r.t. handshape complexity. The latter note that transitivity distinctions are coded differently in pantomimes than in CCs. We incorporate these findings into the present work and hypothesize that (a) non- signers code transitivity distinctions in their pantomimes, (b) both non-signers and signer recruit the same strategies for coding these distinctions (e.g., handshape, telicity, i.a.) but (c) the specific features used to code this distinction will differ between groups. Five hearing non-signers pantomimed 70 videotaped actions[2]. One native Deaf signer signed these actions. 35 of the actions were intransitive and 35 transitive[3]. Video presentation was randomized for each subject; subjects were filmed individually. All videos were hand-coded by one undergraduate researcher and the authors for features representing the following strategies: handshape (Eccarius & Brentari, 2008), articulators involved (elbow, fingers, etc.), eye-gaze (towards hands, camera or other), end-marking (Wilbur, 2008), the behavior of the second hand (static, active, copy, etc.), *i.a.*

To determine if there is a consistent transitivity coding strategy within and across non- signing subjects, we used a binary Multinomial Naive Bayes classifier.[4] For the within- subject analysis, we divided each subject's feature set into 7 subsets, for a 7-fold leave- one-out cross-validation paradigm. Cross-subject classifiers were instead trained on feature sets from 5 non-signers and tested on the 6th's. All classifiers identified their targets with significantly above chance accuracy (≥51/ 70 trials correct; p=0.000), where chance is 50% (transitive or intransitive), except for Subject 2 classifiers (41/70; p=0.06). Results are shown in Fig. 1. The 10 most informative features for classification were extracted for each fold per subject. Of these, the following were the 5 most frequent features common to all non-signers: [wiggle], [crossed], eye-gaze: other, 2nd-hand: ground, [stacked]. For the signer, the following features were most frequently informative: [stacked], [loop], [wiggle], [crossed],

[1]Here, I intend *iconicity* to refer to a motivated correspondence between visual features of a pantomime or CC and its meaning, here whether it's transitive or not.

[2]Participants were asked to represent only the actions, not the objects/ agents involved.

[3]All transitive videos were of a male agent manipulating an object by hand. All intransitive videos depicted the movement of an agent or object.

[4]*Classifier* here means an algorithm that sorts raw input into different categories, or *class*. It should not be confused with 'classifier construction.

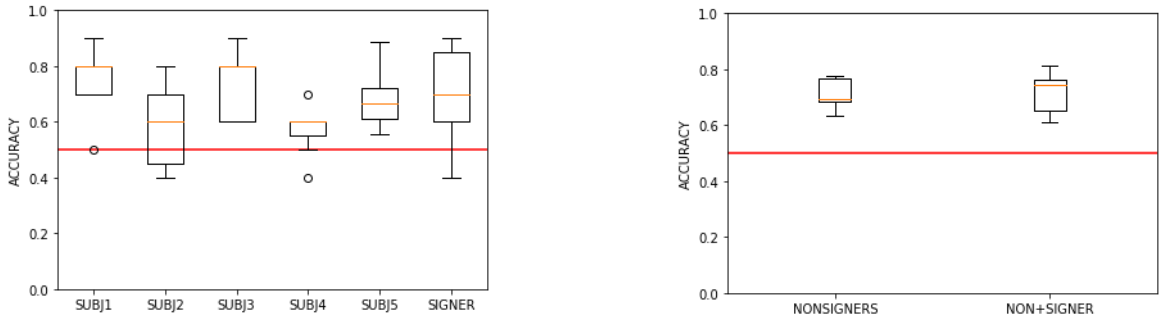

Figure 1: **Left**: Boxplots showing accuracy of within-subject classifiers. **Right**: Boxplot of cross-subject classifiers. "NONSIGNERS" shows accuracy of classifiers excluding signer's data; "NON+SIGNER" with. Red line = chance performance (50%).

[contact]. Despite Abner & King's results, elements of boundedness were informative for transitivity distinctions. Consistent with Brentari et al. (2012) handshape features were also significant predictors (including joint complexity, but to a lesser degree). Further, many of the same features were shared between the non-signers and signer, implying that the same visual resources are employed by both populations for this function.

To determine if there is a consistent transitivity coding strategy between populations, the data from the 5 non-signers formed the training set and the data from the native signer the test set. This classifier achieved 74% accuracy (52/ 70 trials; p=0.00), with the most informative features being [wiggle], [crossed], aperture change, [wide], and joint complexity. The features [wiggle] and [crossed] appear in every analysis.[5]

We conclude that transitivity distinctions are coded using the same general strategies in both non-signers and our signer (e.g., using handshape), suggesting a deep-rooted connection between praxis, vision, and communication. This is consistent with gesture-first theories of Language evolution which take iconicity as a means to achieve parity (Arbib, 2012). The present work sheds light on how parity can be achieved in a syntactic rather than lexical/ semantic domain. We also found that specific features vary in significance between populations, suggesting that conventionalization/ grammaticalization builds atop general communicative strategies.

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[5]The features reported here are not common to all productions, but are the most consistent predictors of transitivity. We elsewhere manipulate these features in a pantomime/ transitivity perception task.

THE DIALOGIC NATURE OF EPISTEMIC MARKERS IN TWO UNRELATED SIGN LANGUAGES

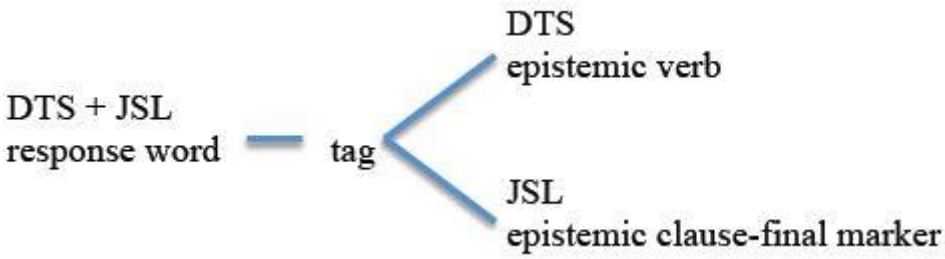
Elisabeth Engberg-Pedersen (University of Copenhagen)

Most studies on modality in sign languages focus on modal verbs and adjectives of possibility and necessity and analyse their distribution (e.g., Padden 1988; Wilcox & Wilcox 1995; Shaffer 2004; Pfau & Quer 2007), or their origins in lexical signs/gesture and their further semantic development and synchronic form and meaning variation (e.g., Wilcox & Wilcox 1995; Shaffer 2004; Cabeza-Pereiro 2013). Herrmann (2013) compared expressions of modality in three sign languages, DGS, NGT, and Irish SL in a corpus of sentences elicited by means of written contexts. She found that all three languages used non-manual marking of epistemic uncertainty either by itself or, especially in Irish SL, in combination with some manual sign or the gesture *palm-up*.
A few researchers have searched spontaneous discourse for expressions of speaker uncertainty. Wilcox and Wilcox (1995) identified tag questions (the signs RIGHT and HUH) combined with a special non-manual marking as signals of epistemic uncertainty in ASL; by itself, the non-manual marking can be enough 'to convey degree of confidence in an asserted proposition' (1996: 146). In a corpus of NZSL McKee and Wallingford (2011) found that *palm-up* (possibly formally similar to Wilcox and Wilcox's (1995) tag HUH) was used with different types of nonmanual marking to signal epistemic meanings (see also Mesch 2016). And Conlin, Hagstrom and Neidle (2003) describe an ASL sign whose articulation is somewhat similar to ASL WHAT (and possibly HUH and the gesture *palm-up* found in NZSL, DGS, NGT, and Irish SL) as an indefinite focus particle with a domain-widening effect. It associates with layers of different heights in the sentence structure; when the particle is used sentence-finally, 'it often indicates uncertainty about the proposition as a whole' (Conlin, Hagstrom & Neidle 2003: 10), i.e., the defining feature of epistemic meaning.

This explorative study is in line with earlier studies of spontaneous signing. It compares expressions of epistemic modality in dialogues from two unrelated sign languages, Danish Sign Language (DTS) and *Nihon Shuwa* (JSL). The study uses a closed corpus elicited by asking signers to solve two problems whose solution draws on their knowledge of, in one case, how to survive at sea in a shipwreck and, in the other, the impact of people's skills and attitudes on a group's chances of survival in war time. Especially the first task elicited numerous examples of speaker uncertainty. The signers were all Deaf native signers whose most frequently used and preferred means of communication was either DTS or JSL (see the table). The data were transcribed with the assistance of native signers.

DTS	JSL
8 signers	4 signers
Deaf parents	Deaf parents
age 26-69	age 37-44
40 minutes	42 minutes

Among many other types of expressions (including modal verbs in DTS equivalent of Danish modal verbs), it was found that tags were used in both sign languages, and furthermore that the tags were also used as response words and were integrated as markers of epistemic uncertainty into sentences in both sign languages, but they were integrated in different ways. This can be schematized as follows:



The response word in DTS is *palm-up* – PRESENTATION (Engberg-Pedersen 2002) – used with various meanings in a number of Western sign languages (see above) and as a gesture in Western cultures (Kendon 2004; Müller 2004). In (1) PRESENTATION is used as an epistemic verb.

(1) TWO THOUSAND (2h)POINT+alternate CONNECT RADIO CAN / 1.p PRESENTATION /
'I **doubt** that the radio can connect, with two thousand kilometres in all directions.'

The JSL two-handed signs SAME and DIFFERENT have given rise to the one-handed response words SAME1 ('yes') and DIFFERENT1 ('no'). The one-handed versions are also used as tags and as clause-final markers of epistemic uncertainty prosodically integrated into the clause (DIFFERENT is listed as MODAL-7 in Matsuoka, Yano, Akahori & Oka 2016). In (2) DIFFERENT1 is integrated into the clauses, and SAME1 can be seen as a tag.

(2) POINT+card 1.p NOT-NEED DIFFERENT1 POINT+card / SAME1 /
'That one, I think we **may** not need it, that one, **right**?'

The two sign languages show a similar pattern of recruiting dialogic words to signal epistemic uncertainty, but they integrate the words as epistemic markers differently: DTS as an epistemic verb, JSL as clause-final epistemic markers. Although signers of JSL also use epistemic verbs and signers of DTS also use clause-internal epistemic markers, JSL appear to have many more different epistemic clause-internal epistemic markers (cf. Matsuoka, Yano, Akahori & Oka 2016) as a structural, but not lexical, parallel to spoken Japanese. The development of epistemic markers from tags and response words is also seen in some spoken languages (e.g., Wangaaybuwan-Ngiyambaa, Donaldson 1980: 242 and spoken Danish).

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DISTRIBUTION OF LEXICAL CONTRAST IN KENYAN SIGN LANGUAGE

Hope Morgan (University of Haifa)

Minimal pairs in sign languages have often been described by sign phonologists as "difficult to find" (Sandler 1996: 202; Brentari 1998: 4), and it has further been implied that they are scarcer in the sign modality overall (van der Kooij 2002: 19; Eccarius & Brentari 2010: 163). This study reports on findings from a phonological analysis of Kenyan Sign Language (KSL) showing that, in aggregate, there are not necessarily fewer minimal pairs in sign languages compared to spoken languages, but that most individual phonemic units in a sign language inventory (e.g., locations, handshapes, movement features, etc.) are not associated with many pairs. This study also finds that the number of minimal pairs may be affected by two factors: frequency in the lexicon and degree of perceptibility.

While any phonological analysis crucially relies on minimal pairs to determine the inventory of phonological units in a language, many analyses of sign languages have not been fully transparent about what counts as a minimal pair and whether a minimal pair can be found for each phonemic unit (though see Schmaling [2000] for a counterexample). The present study seeks to clarify exactly how many and which minimal pairs can be found in one language, how they are distributed in the lexicon, and what accounts for that distribution.

The minimal pairs come from a lexical database of 1,880 KSL monomorphemic signs (i.e., those without sequential morphology, like compounds, affixes, etc.), which were coded for around 50 phonetic features in a FileMaker Pro database. Potential pairs were collected at all stages of coding and analysis, including a final stage in which systematic searches for minimal pairs throughout the database were conducted to uncover as many pairs as possible and to verify their status as truly minimal and not near-minimal.

The final dataset consists of 461 truly minimal pairs. As shown in **Figure 1**, 41% of these pairs are locations, 33% are handshape contrasts, 18% are movement, 4% are orientation, and 4% are contrasts based on other features. Within handshape and location primes (e.g. the 'O' handshape or 'mouth' location), it was found that the most frequent primes are associated with more minimal pairs, but that the majority of primes appear in only a few pairs (**Figure 2**). This provides an explanation for why sign phonologists report such difficulty finding minimal pairs; i.e., there are few contrasts per phoneme (a prime or a feature). At the same time, a comparison with spoken languages by < redacted >, **Figure 3**, shows that the total number of minimal pairs in KSL falls within the low but normal range of observed variation for minimal pair counts evaluated for hundreds of spoken languages.

Finally, an intriguing pattern is found in the distribution of contrasts *within* parameters. Contrasts in handshape (**Figure 4**), location, and movement minimal pairs appear to correspond to results from perception studies in ASL, suggesting that perceptual salience may also influence the distribution of lexical contrast in sign languages.

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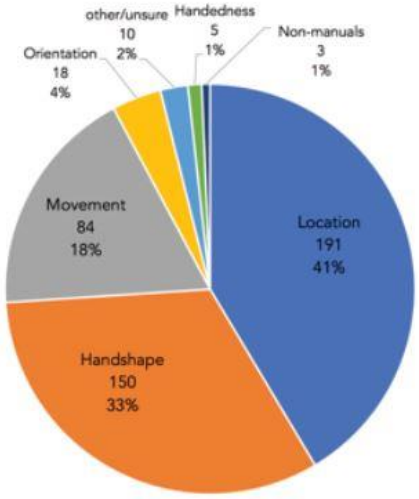

Figure 1. Proportion and counts of 461 minimal pairs, by phonological parameter

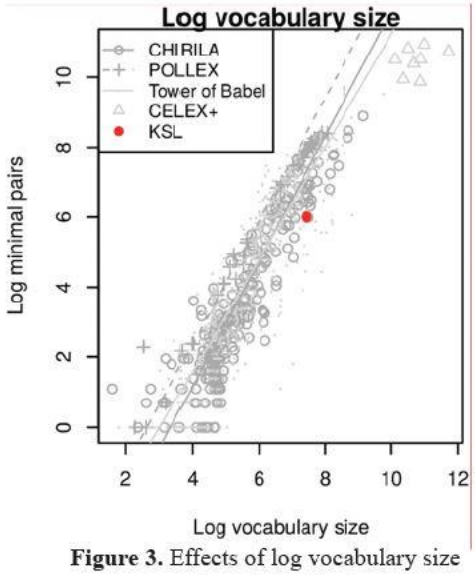

Figure 3. Effects of log vocabulary size on log minimal pairs

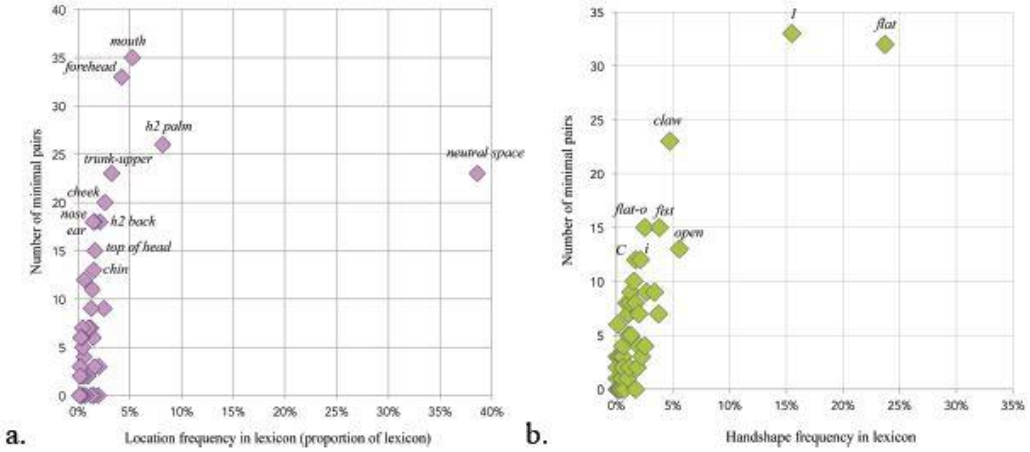

Figure 2. Relationship between frequency in the lexicon (X-axis) and number of minimal pairs in the lexicon (Y-axis): (a) location primes, (b) handshape primes

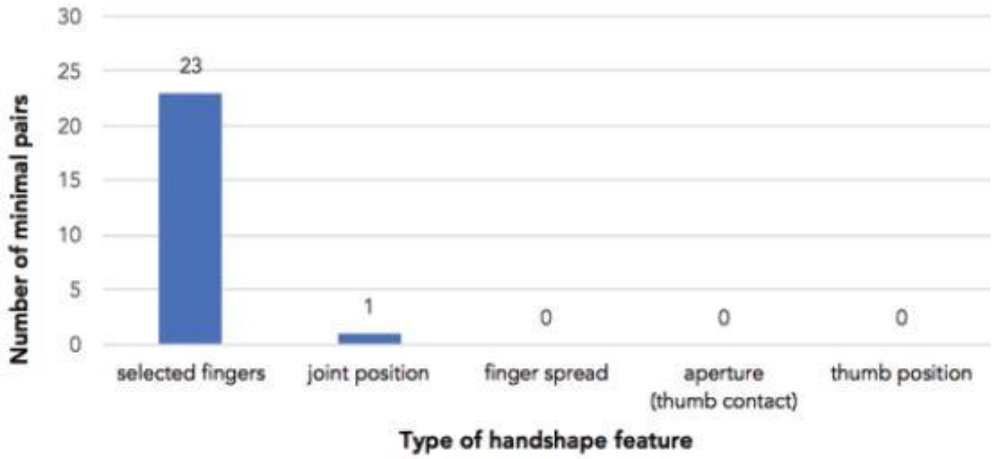

Figure 4. Number of minimal pairs based on five types of handshape features

MANUAL AND NONMANUAL CUES FOR SPEECH ACT PERCEPTION IN DGS

Elisabeth Volk (University of Göttingen)

Background. It was a milestone in linguistic theory to observe that language is not only based on *what* is being communicated but also on *why* it is being communicated. The concept of the speaker's intention and the idea of utterances as actions – or *speech acts* – with specific interpersonal goals has enriched our understanding of human communication tremendously. Although pragmatic notions such as politeness have been investigated in sign languages (cf. e.g. Hoza 2007), direct applications of speech act theory to sign language discourse are scarce (cf. e.g. Celo 1996; Campbell 2001). This is surprising as, according to pragmatic theory, the signer's intention is at the core of sign language communication and therefore deserves careful analysis. In this paper, I will present results of a pilot study investigating speech act perception in German Sign Language (DGS). For this study, I hypothesized that 1) both nonmanual markers and manual gestures may be perceived as cues for decoding the signer's intention realized by speech acts and 2) that there is an interaction of nonmanual markers and manual gestures in speech act perception deriving compositional meaning types.

Data. A set of 120 DGS sentences was created by a Deaf native DGS signer (male, age 25) pertaining to five nonmanual conditions (NM): 1) neutral (ne), 2) head nod (hn), 3) brow raise (br), 4) brows puckered (bc), and 5) brow furrow (bf). Moreover, each of the five conditions was realized by three manual conditions (M): i) no manual gesture, ii) pointing gesture, and iii) palm-up gesture, resulting in a combined number of 15 conditions (15 conditions x 8 sentences = 120 items). Whereas the neutral condition did not include any nonmanual markers, the latter four NM-conditions involved head and brow movements with scope over the whole sentence. The manual gestures were produced sentence-finally with a lateral movement of the dominant hand. The word order of all items was object-verb (OV) and each item consisted of two signs (± additional gesture): an inanimate noun (e.g. VEGETABLE) and a plain verb (e.g. EAT). In this way, each item had the potential to be interpreted as a declarative, interrogative, or imperative sentence making various speech acts feasible. All items were annotated with ELAN for temporal cues (sign duration, hold duration, and transition duration) and nonmanual markers.

The 120 items were used as stimuli in a meaning attribution task to assess the perception of speech acts in DGS. Seven Deaf DGS signers participated in this study; all of them had Deaf parents, acquired DGS from birth and were 20-42 years old (three females; mean age 28.7).
The participants were divided into two groups and were presented one out of two lists of stimuli including 60 items as part of an online questionnaire. The questionnaire included a meta data page, instructions given in DGS by another Deaf native signer (male, age 36), a practice section, and an experimental section showing each stimulus video one after another in randomized order. The participants were able to see each video as often as they liked and were then asked to write down a German word that represented the signer's intention the best. The overall 420 responses were categorized according to Searle's (1976) classification of speech acts.

Results. The choice of nonmanuals as well as the presence of manual gestures influenced the duration of signs and gestures, holds, and transitions. As for the OV-items (without gesture), the verb was longer than the noun in terms of sign and hold duration across NM-conditions, except for the hn-items. Those items were produced with shorter sign and hold durations of the verb compared to the other NM-conditions, so that verbs and nouns were of equal length. OVitems with neutral nonmanuals exhibited longer sign and hold durations of the noun as well as noun-verb-transitions compared to the other NM-conditions. As for the OVg-items (with gesture), the duration of the gesture was longer than the duration of the noun and the duration of the noun was longer than the duration of the verb across NM-conditions, once again except for the hn-items, which were produced with nouns and verbs of equal length. OVg-items with neutral nonmanuals were produced with longer sign and hold

durations of nouns and verbs as well as noun-verb- and verb-gesture-transitions compared to the other NM-conditions.

The participants of the perception study related each stimulus item to a compatible signer's intention in a non-random manner. In case no additional gesture was produced, items were categorized as follows (only stating the most frequent responses): ne-items as *statements* (100%), hn-items as *confirmations* (79%), br-items as *questions* (75%), bc-items as *questions* (43%) and *requests* (36%), and bf-items as *orders* (54%) and *questions* (33%). The use of a manual gesture decreased the chance to interpret an item as a *question* and increased the chance to interpret it as an imperative-type speech act across all NM-conditions by varying degree. This effect was even stronger with palm-up gestures than with pointing gestures. For instance, bc-items were judged less frequently as *questions* with pointing gestures (21%) and least frequently with palm-up gestures (7%). By contrast, there was a higher frequency of imperativetype speech acts in bc-items with pointing gestures (68%) and palm-up gestures (79%).

Among the imperative-type speech acts were *permission*, *request*, *demand*, and *order*. While *permissions* involve addressee goals, the latter three speech acts involve goals of the signer. Of these imperative-type speech acts, the use of pointing gestures only triggered signer-goal
speech acts, whereas palm-up gestures triggered both signer-goal and addressee-goal speech acts, i.e. *permissions*, depending on the NM-condition. For instance, ne-items with pointing gestures were judged as *statements* in 68% of responses and as signer-goal speech acts in 32% of responses. In turn, ne-items with palm-up gestures were judged as *statements* in 46% of responses, whereas both signer-goal speech acts (29%) and *permissions* (21%) occurred.
Interestingly, palm-up gestures triggered categorizations as *permissions* across all NMconditions by varying frequency, except for bf-items, which were judged most frequently as signer-goal speech acts (75%), but never as *permissions*, if combined with palm-up gestures.

Conclusion. In this paper, I presented results of a pilot study designed to gain first insights into the realization of speech acts in DGS. The evaluation of the data reveals that both nonmanual markers and manual gestures may serve as cues for speech act perception. Based on the use of specific nonmanual markers, speech acts are well-distinguished from each other, whereas ambiguity appears between questions and imperative-type speech acts such as requests and orders. Lateral, one-handed manual gestures trigger signer-goal (pointing and palm-up gestures) and addressee-goal type meanings (only palm-up gestures), which interact with the use of nonmanual markers in speech act perception and assume a disambiguating function. There is an effect of using nonmanual markers and manual gestures on temporal cues of signing, which may also influence speech act perception. Variation in temporal cues therefore needs to be further investigated as well as other aspects such as variation in intensity and the layering of nonmanuals to reach a more comprehensive understanding of speech acts in sign languages.

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