SIGN Language Linguistics

CAFÉ 3

Cognitive and Functional Explorations

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Foreword

The Section for Sign Linguistics at the Faculty of Polish Studies of the University of Warsaw is proud to be holding Sign CAFÉ 3 – the third edition of the Workshop on Cognitive and Functional Explorations in Sign Language Linguistics, which has been set up at the University of Birmingham as a regular forum to discuss approaches toward sign language linguistics in the cognitive and functional linguistics tradition. These approaches frame language as a type of social action in relation to other cognitive systems. A wide range of theoretical approaches are included in this definition: they all have in common the importance they ascribe to the role of communication and cognition in linguistic theory and in descriptions of language structure.

The dates of Sign CAFÉ 3 are September 18–19, 2025. These dates are far from accidental for two reasons. On September 22, 2025, the International Week of Deaf People begins, during which the United Nations–proclaimed International Day of Sign Languages is celebrated on September 23 (this year under the theme *No Human Rights Without Sign Language Rights*). The Warsaw conference will thus serve as an excellent prelude to this year's celebrations. Moreover, it will mark the fifteenth anniversary of the Section for Sign Linguistics at the University of Warsaw, which wishes to commemorate this milestone with the publication of two new dictionaries: the *Dictionary of Polish Sign Language Legal Terms* – https://www.prawopjm.uw.edu.pl/ and the *Dictionary of Polish Sign Language Medical Terms* – https://www.medycynapjm.uw.edu.pl/.

The team of the Section for Sign Linguistics welcomes the opportunity to celebrate its anniversary alongside numerous esteemed specialists from across the globe, who have chosen to come to Warsaw to share their research at Sign CAFÉ 3.

On-stage presentations

New Dictionaries of Polish Sign Language Legal and Medical Terminology

Jadwiga Linde-Usiekniewicz, Marcin Łuczywek, Marek Śmietana, Renata Świderska-Noworyta, Małgorzata Talipska, Sylwia Łozińska, Joanna Wójcicka, Piotr Mostowski & Paweł Rutkowski
University of Warsaw

Keywords: lexicography, Polish Sign Language, legal terminology, medical terminology

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THIS presentation introduces two pioneering specialized dictionaries — the first in Poland to document legal and medical terminology in Polish Sign Language (PJM). These resources were compiled by the Section for Sign Linguistics at the Faculty of Polish Studies, University of Warsaw — the only academic unit in Poland, and one of very few in Central and Eastern Europe, dedicated to linguistic research on the communication of Deaf signers. The project represents an example of effective collaboration between University of Warsaw researchers and extra-academic partners, addressing socially significant issues. The project's partners represented two key stakeholder groups: the Institute for the Deaf, a non-profit organization that supports signers in diverse domains and advocates for their rights, and the National Bar Council of Attorneys-at-Law, which — based on its members' experiences and the communication difficulties encountered with Deaf clients — approached the Section for Sign Linguistics with a request to create a dictionary unifying and standardizing specialist terminology used in legal contexts.

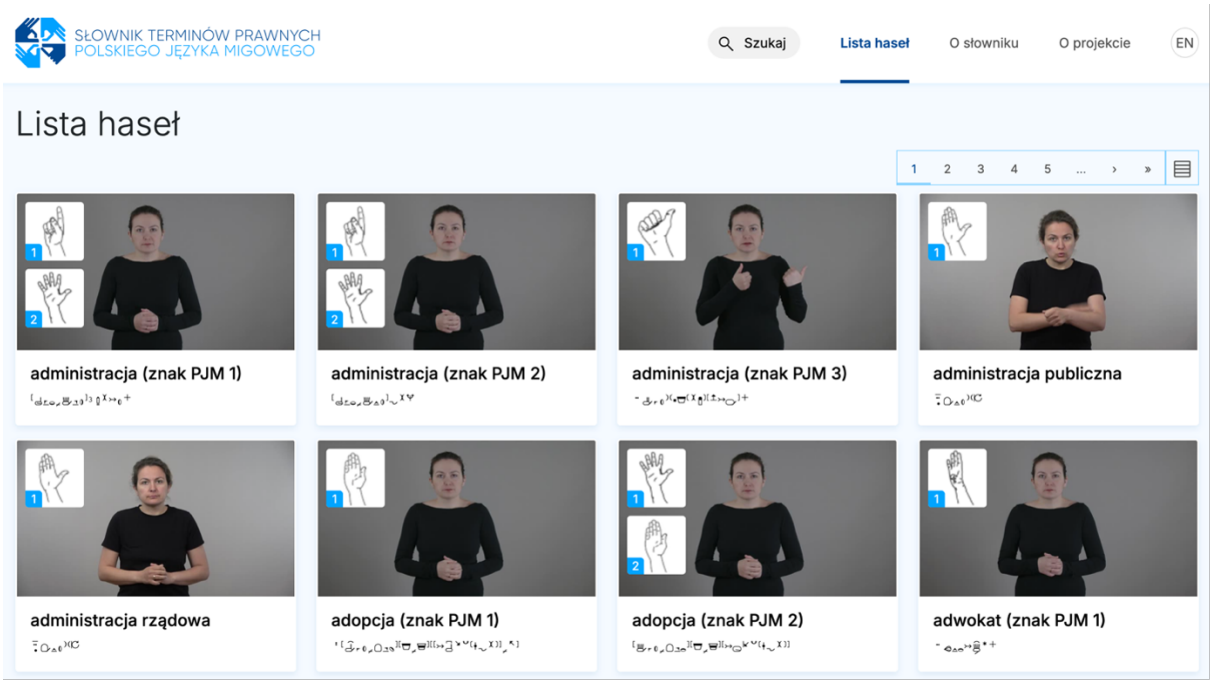
The project results have been compiled into two online multimedia dictionaries, available at the following addresses: *Dictionary of Polish Sign Language Legal Terms* – https://www.prawopjm.uw.edu.pl/; *Dictionary of Polish Sign Language Medical Terms* – https://www.medycynapjm.uw.edu.pl/. The endeavor began with a systematic review of the largest existing source of PJM data, namely the PJM Corpus, which was created from the ground up by the Section for Sign Linguistics (https://www.korpuspjm.uw.edu.pl/). The PJM Corpus represents a major advance for both quantitative and qualitative analyses of the lexicon of Deaf Poles. At present, it contains more than 600,000 annotated tokens, making it one of the two largest sign language databases worldwide (alongside the German Sign Language Corpus developed at the University of Hamburg). Drawing on this unprecedented resource, the project team identified those lexical items related to medical and legal domains that were already corpus-attested and thus merited inclusion in the new specialist terminological dictionaries. A subsequent stage involved reviewing additional sources beyond the PJM Corpus, in particular online materials recorded by Deaf individuals across Poland (e.g., videoblogs).

Parallel to these activities, work was also undertaken from the perspective of spoken

Polish: namely, the selection of concepts and phrasemes indispensable for enabling fluent communication on legal and medical topics. At this stage, the project team benefited from the expertise of the Polish National Bar Council of Attorneys-at-Law as well as medical institutions collaborating with the project.

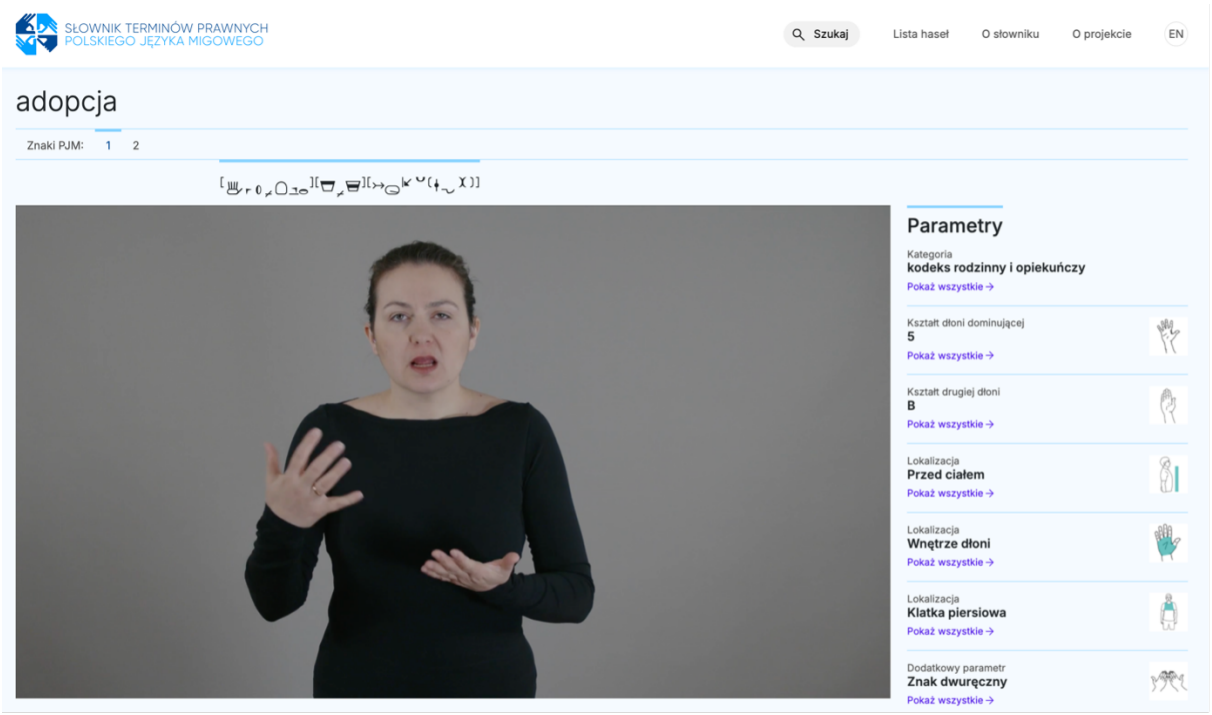
The documentation phase did not allow for the identification of signed equivalents for all terms deemed necessary for inclusion. To ensure the dictionary fulfilled its communicative function, lexical gaps had to be addressed. This required the undertaking of a nomination process, in which Deaf signers of PJM participated. Their task was to evaluate the comprehensibility of individual terms, each accompanied by a definition rendered in PJM. These evaluations were carried out via an online questionnaire.

The most important outcome of the project — namely, the two multimedia dictionaries — comprises more than 1,200 entries, amounting to several thousand signed video recordings. Each lemma is accompanied by signed definitions and usage examples. The principal tool enabling access to the lexical items compiled in the course of the project is the dictionary entry list. Each entry is represented through a multimodal set of descriptors: a video recording of the sign, a schematic graphic of the relevant handshape (or handshapes in the case of two-handed signs), a HamNoSys transcription, and a Polish gloss. As shown in the figure below, a single Polish semantic equivalent (e.g., ADMINISTRACJA "administration") may correspond to multiple distinct sign forms (in this case, three), reflecting the complexities of the PJM lexicon:



Each entry is further annotated by means of a detailed specification of the sign's articulatory parameters, i.e., the distinctive (diacritic) features that differentiate a given lexeme from other items in the PJM lexicon. For the entry ADOPCJA "adoption" illustrated below, the annotation specifies: the handshape of the dominant hand, the handshape

of the non-dominant hand, the place of articulation, and the fact this is a two-handed sign.



Lexical retrieval is supported by an advanced search interface, which allows for the identification of signs not only via their Polish lexical equivalents, but also through the selection of semantic domains, handshapes, places of articulation, and other supplementary parameters.

Pragmatic influences on the form of head nods: Insights from a study of spoken and signed interactions

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University of Cologne, University of Cologne, University of Hamburg & University of Cologne

Keywords: head nods, feedback nods, head nod, differ from feedback, phonetic properties, affirmation nods

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HEAD nods are a common bodily signal in face-to-face communication, both spoken and signed, serving functions like affirmation, emphasis, and feedback (Cerrato, 2005). However, their phonetic properties, particularly those of addressees' nods, remain understudied due to reliance on manual annotations rather than naturalistic data.

This study examines the phonetic properties of addressees' head nods in natural dyadic signed and spoken interactions. Expanding our previous research, we analyze German Sign Language (DGS), spoken German, Russian Sign Language (RSL), and spoken Russian. We explore whether head nods with distinct pragmatic functions exhibit systematic phonetic variations, offering the first cross-linguistic and cross-modal analysis of head nod form in interaction.

We hypothesize that affirmation nods differ from feedback nods in duration, velocity, and amplitude across modalities. Affirmation refers to a positive response to a preceding question, while feedback nods signal interlocutors' perception or understanding of the ongoing conversation (Gardner, 2001). Using ELAN for manual annotation and OpenPose for body pose analysis (Cao et al., 2021), we extract head nod measurements from 2–4 hours of spontaneous dyadic interactions per language, identifying over 600 nods in each dataset.

Results indicate that affirmative nods differ from feedback nods in velocity and maximal amplitude, with this distinction holding across both spoken and signed languages. Feedback nods tend to be slower and smaller in amplitude than affirmation nods. We attribute these differences to their roles in turn-taking: feedback nods typically indicate passive recipiency, whereas affirmation nods produce a more prominent visual signal, facilitating detection and potential conversational interruptions.

Our findings suggest that pragmatic function strongly influences the physical form of non-manual gestures, aligning with previous research on manual gestures (Gerwing and Bavelas, 2005). Additionally, the lack of significant cross-modal differences in phonetic properties suggests a shared cognitive mechanism underpinning head nod use. The functional differentiation of head nods enhances communicative efficiency, supporting smooth information exchange in interaction.

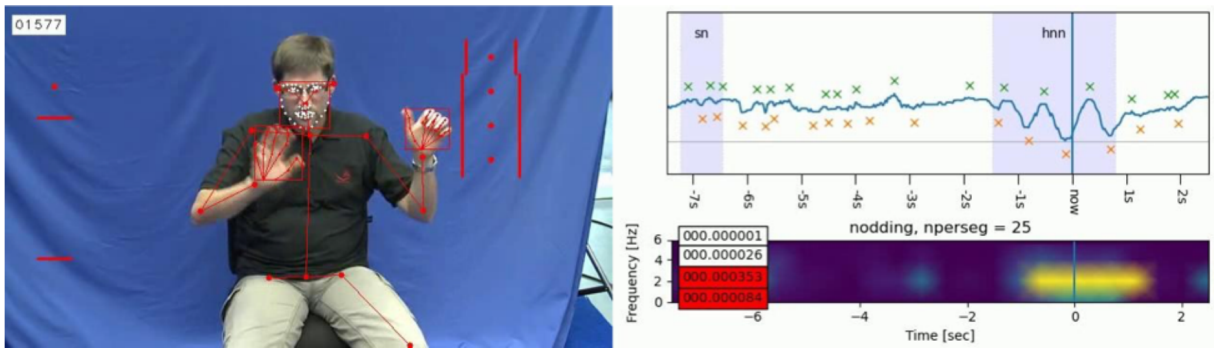

Figure 1. Head nod visualization with OpenPose body points (left). The line graph (upper right) shows vertical nose motion (blue) and OpenPose confidence (red). Light blue boxes mark labeled nods. The spectrogram (lower right) highlights vertical nose movement frequencies, with brighter areas indicating repeated nodding motions.

References

Cao, Z., Hidalgo, G., Simon, T., Wei, S.-E., & Sheikh, Y. (2021). OpenPose: Realtime Multi-Person 2D Pose Estimation Using Part Affinity Fields. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, *43*(1), 172–186. https://doi.org/10.1109/TPAMI.2019.2929257

Cerrato, L. (2005). Linguistic functions of head nods. In J. Allwood, B. Dorriots, & S. Nicholson (Eds.), *Proceedings from The Second Nordic Conference on Multimodal Communication* (pp. 137–152). Göteborg University.

Gardner, R. (2001). *When Listeners Talk: Response tokens and listener stance* (Vol. 92). John Benjamins Publishing Company. https://doi.org/10.1075/pbns.92

Gerwing, J., & Bavelas, J. (2005). Linguistic influences on gesture's form. *Gesture*, *4*(2), 157–195. https://doi.org/10.1075/gest.4.2.04ger

Signing with your hands full

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Keywords: weak drop, Maltese Sign Language, adapted one-handed signs

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WEAK drop, or the optional deletion of the weak hand in two-handed signs, is a natural phenomenon occurring in several signed languages (Paligot et al., 2016). Several studies (Battison, 1974; **frishberg_arbitrariness_1975**; Siedlecki Jr. and Bonvillian, 1993; Brentari, 1999; van der Kooij, 2001; Nishio, 2009; Udoff et al., 2010; Kozak and Tomita, 2012; Paligot et al., 2016; Tamminga et al., 2020) suggest that signers often spontaneously omit the weak hand when producing two-handed signs even when they have both hands at their disposal. However, situations such as holding a drink, allow the use of only one hand. In these cases, weak drop is not an option but a necessity.

The present study focuses on forced weak drop, that is, the production of two-handed signs without the option of using the weak hand, to observe what adaptations occur when signing a narrative. Seven Maltese Sign Language (LSM) native Deaf signers were filmed narrating a story from a children's picture book first making use of both hands and then using just one hand whilst the other held a cup of water. The resulting fourteen renditions were analysed and compared to other studies in the literature. Results show that many of the adaptations observed in LSM are similar to those found in other studies and that these adaptations are related to both the role of the weak hand in two-handed signs as well as its role in narratives.

Additionally, in cases when spontaneous weak drop is otherwise inhibited, participants reverted to one-handed adaptations (as seen in figures 1 and 2 below) which exhibit changes in several parameters but not all. It appears that in these cases iconicity influences the adaptation of two-handed LSM signs into one-handed variants, with the unchanged parameters holding the most iconicity in each of these signs. Results may also indicate that over time certain two-handed signs may develop a one-handed adaptation which can either be used interchangeably or in specific situations. In general, this is already being observed throughout the Maltese Deaf community, as an increased occurrence of one-handed variants is being used especially during video calls and video messaging, when the weak hand is holding the device while the dominant hand is used for signing. This leads to the hypothesis that over time, a one-handed register specific to particular situations, such as video calls, may develop.

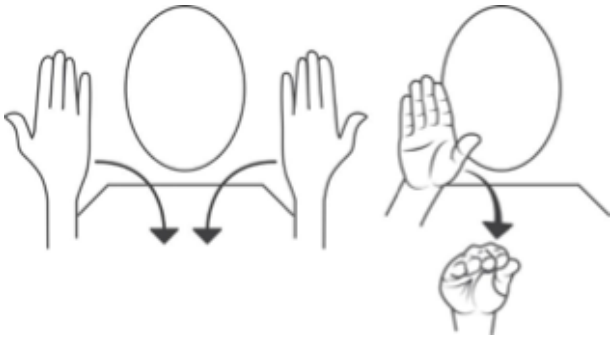

Figure 1. LSM two-handed version and one-handed adaptation of the sign FILGĦAXIJA (EVENING)

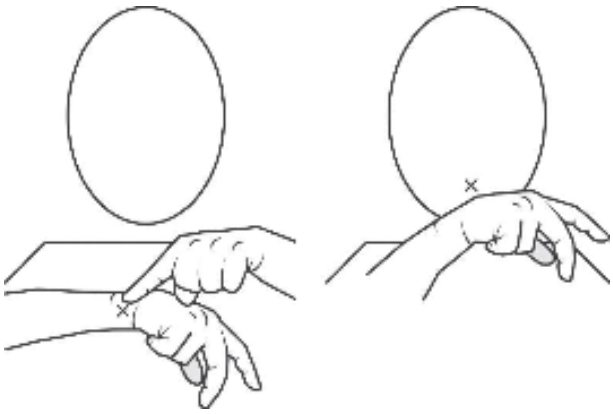

Figure 2. LSM two-handed version and one-handed adaptation of the sign ĦIN (TIME)

References

Battison, R. (1974). Phonological deletion in American Sign Language. *Sign Language Studies*, *5*(1), 1–19. https://doi.org/10.1353/sls.1974.0005

Brentari, D. (1999). *A Prosodic Model of Sign Language Phonology*. The MIT Press. https://doi.org/10.7551/mitpress/5644.001.0001

Kozak, L. V., & Tomita, N. (2012). On Selected Phonological Patterns in Saudi Arabian Sign Language. *Sign Language Studies*, *13*(1), 56–78.

Nishio, R. (2009). Corpus-based analysis of Weak Drop and Weak Prop in German Sign Language (DGS). *Paper presented at the workshop Sign language corpora: Linguistic issues*.

Paligot, A., van der Kooij, E., Crasborn, O., & Bank, R. (2016). Weak Drop in Context. *12th International Conference on Theoretical Issues in Sign Language Research, Melbourne, Australia*.

Siedlecki Jr., T., & Bonvillian, J. D. (1993). Location, handshape & movement: Young children's acquisition of the formational aspects of American Sign Language. *Sign Language Studies*, *78*(1), 31–52.

Tamminga, M., Fisher, J., & Hochgesang, J. (2020). Weak hand variation in Philadelphia ASL: a pilot study. *University of Pennsylvania Working Papers in Linguistics*, *25*(2), 125–134.

Udoff, J., Nip, I., & Emmorey, K. (2010). The phonological representation of the non-dominant hand: Evidence from articulatory compensation in ASL. *Theoretical Issues in Sign Language Research Conference 10, West Lafayette, Indiana, USA*.

van der Kooij, E. (2001). Weak Drop in Sign Language of the Netherlands. In V. Dively, M. Metzger, S. Taub, & A. M. Baer (Eds.), *Signed Languages: Discoveries from International Research* (pp. 27–42). Gallaudet University Press. https://doi.org/10.2307/j.ctv2rh296t

Changing deaf spaces, changing sign languages? Generational differences in deaf signers in England and Portugal

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Keywords: language attitude, language ideologies, generational differences, BSL and LGP, International Sign

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DEAF communities have a strong tendency to establish connections with other deaf individuals. This phenomenon stems from the need to facilitate socialisation in sign languages and the construction of a distinct cultural identity (Lane et al., 1996; Woll and Ladd, 2012; Morgado, 2024). With advancements in digital technologies, the dynamics of interaction among deaf people have undergone significant change. While physical gatherings were once fundamental for socialisation, there is now an increasing participation in virtual spaces as new environments for deaf community interactions. The impact of the internet has been crucial in this process, revolutionizing the way communication occurs globally (Fialho et al., 2023). This phenomenon has direct consequences for sign languages, which are now in more frequent contact with other languages (both signed and spoken) leading to potential changes in their structure and usage. This study aims to compare British Sign Language (BSL) and Portuguese Sign Language (LGP) communities, focusing on language ideologies and the similarities and differences in the impact of technological and social changes on these languages and their respective communities. We conducted qualitative research on language attitudes and change using questionnaires. We have thus far interviewed 8 people from the BSL and 20 from the LGP communities. This presentation will focus on two separate themes: the notion of a deaf space and sign language variation and change.

In our data, older people tended to place importance on the existence of a deaf club or the notion of deaf space, often linking it to their deaf identity and part of deaf culture and community. There is a clear shift in attitude amongst younger deaf signers in both communities in that they place less importance on deaf clubs. They have more independence and prefer socialising in smaller groups, while being reliant on technology to organise meeting up.

Both language groups observed changes regarding how their language is being used between generations. Young Portuguese signers described older signers' LGP as 'version 1.0', that it is 'like wine': 'heavy', 'rough' and 'pure'. They characterise their own signing as LGP 'version 2.0', that it is like a 'cocktail': 'light', 'smooth', and 'mixed'. Older Portuguese signers described their own signing as 100% LGP, that it is 'full' and 'strong', where they noted that younger group use more recently invented signs, are more influenced by spoken languages, and mix their signing with International Sign lexical items. Similar attitudes were documented amongst the BSL signers.

In summary, we can see evidence here of a generational shift in language attitudes in both BSL and LGP communities, although we have yet to investigate this in more detail in the language used in our other BSL and LGP datasets. More research is needed to investigate whether these findings are similar across other signing communities, and what is driving this generally negative trend towards younger signers amongst older people. We are aware that there are external factors that may be driving these changes such as changes in education and sign language transmission, decline in deaf clubs, and technological advances.

Acknowledgements

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References

Fialho, J., Martins, I. C., Caraça, L., & Oliveira, A. (2023). Scroll. Logo existe! : comportamentos aditivos no uso dos ecrãs. https://doi.org/10.34628/EZGP-4P63

Lane, H., Hoffmeister, R. J., & Bahan, B. J. (1996). *A journey into the deaf-world*. Dawn Sign Press.

Morgado, M. (2024). *Personal experience narratives in three West African Sign Languages: The influence of time-depth, community size and social interaction*. LOT.

Woll, B., & Ladd, P. (2012). Deaf Communities. In M. Marschark & P. E. Spencer (Eds.), *The Oxford Handbook of Deaf Studies, Language, and Education, Volume 1, Second Edition* (2nd ed., pp. 159–172). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199750986.013.0012

Testing the validity of the telling-showing continuum from kinematic and neurocognitive perspectives

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Keywords: constructed action, telling-showing continuum, corpus, EEG, motion capture

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In this talk, we discuss the continuum (Figure 1) that has been assumed between lexico-grammatical telling (cf. lexical signs, well-formed clauses) and gestural enactment (i.e. overt constructed action) in several corpus studies over the last decade (e.g., Cormier et al., 2015; Puupponen et al., 2022). Specifically, we ask how valid the continuum is when examined with kinematic and neurocognitive measurements

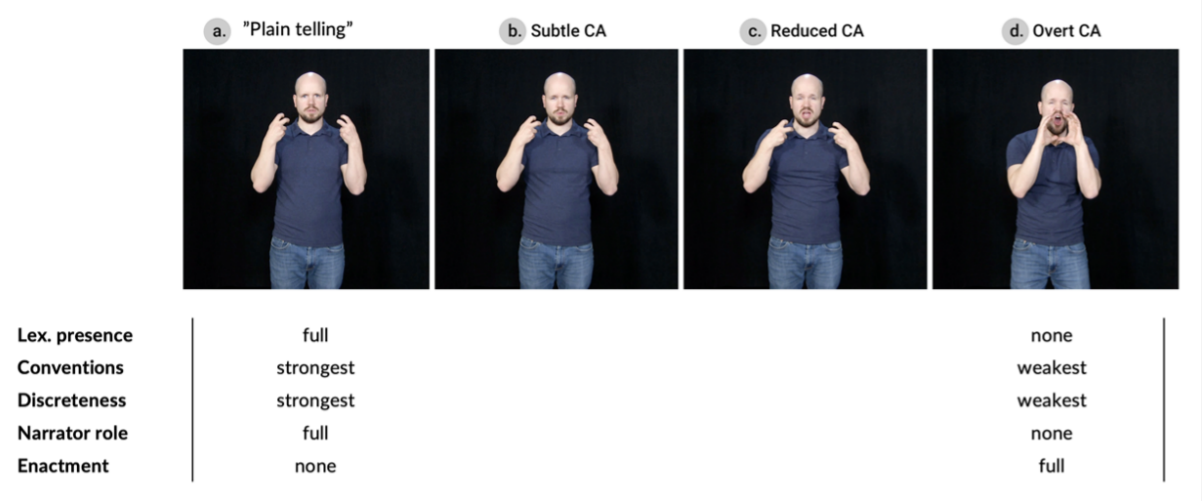

Figure 1. The continuum of lexico-grammatical telling and gestural enactment based on corpus studies

In our kinematic studies based on motion capture data, we have shown that the more overt constructed action signers use, the broader and faster their head and body movements tend to be, and the more changes in speed they include (Jantunen et al., 2020). On the other hand, our research has also shown that as signers move from plain telling to reduced constructed action, their hand movements tend to occupy a smaller area, become slower, and include fewer changes in velocity (Vandenitte et al., n.d.). The results for the kinematics of the head and body on the one hand, and the hands on the other, are opposite, but both support the idea of the continuum.

We have also found support for the continuum in our neurocognitive studies based on EEG data. In the N400 ERP context (Hernández et al., 2024), we found that the amplitude of the EEG-measured brain response – indicating the number of neural resources

needed – decreases during the lexical processing phase in deaf L1 signers the more overt the constructed action in a stimulus sentence. In the P300 ERP context (Hernández et al., 2025), the trend is reversed and holds for both deaf and hearing L1 signers: in the inhibition and attentional allocation phase, signers used more neural resources the more overt the constructed action was in the stimulus signs.

In general, our kinematic and neurocognitive results support the validity of the continuum. At the same time, they provide an opportunity to complement and refine its original definition. In our presentation, we propose an extended definition of the continuum and also discuss the theoretical relevance of the measurement results more broadly.

References

Cormier, K., Smith, S., & Sevcikova-Sehyr, Z. (2015). Rethinking constructed action. *Sign Language & Linguistics*, *18*(2), 167–204. https://doi.org/10.1075/sll.18.2.01cor

Hernández, D., Puupponen, A., Keränen, J., Ortega, G., & Jantunen, T. (2024). Between bodily action and conventionalized structure: The neural mechanisms of constructed action in sign language comprehension. *Brain and Language*, *252*. https://doi.org/10.1016/j.bandl.2024.105413

Hernández, D., Puupponen, A., Keränen, J., Vandenitte, S., Anible, B., Ortega, G., & Jantunen, T. (2025). Neuroelectrical and behavioral correlates of constructed action recognition in Finnish Sign language. *Neuroscience*, *575*, 140–149. https://doi.org/10.1016/j.neuroscience.2025.03.046

Jantunen, T., De Weerdt, D., Burger, B., & Puupponen, A. (2020). The more you move, the more action you construct: A motion capture study on head and upper-torso movements in constructed action in Finnish Sign Language narratives. *Gesture*, *19*(1), 72–96. https://doi.org/10.1075/gest.19042.jan

Puupponen, A., Kanto, L., Wainio, T., & Jantunen, T. (2022). Variation in the use of constructed action according to discourse type and age in Finnish Sign Language. *Language & Communication*, *83*, 16–35. https://doi.org/10.1016/j.langcom.2021.11.006

Vandenitte, S., Puupponen, A., Hernández, D., Anible, B., & Jantunen, T. (n.d.). The kinematics of composite stories: A motion-capture study of manual telling sequences with varying degrees of constructed action in Finnish Sign Language narratives. *Manuscript submitted for publication*.

The diverse phenomenon of constructed action in children's language development

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Keywords: children and adults, children's language development, aspects of language skills, constructed action

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THIS on-stage presentation summarizes two studies on children's use of constructed action (CA), a meaning-making strategy where discourse referents are enacted with different parts of the body (e.g. Cormier et al., 2015). Previous research shows great variation in children's CA use suggesting it as a skill acquired gradually (Cormier et al., 2013; Morgan, 2005; Smith and Cormier, 2014). However, crucial knowledge on how the use of CA develops and how its use is related to children's language development is still lacking.

To contribute to this topic, we analyzed children's use of CA in two narrative tasks and investigated the connections between this use with adults' CA use in similar tasks (Study1), and different aspects of children's Finnish Sign Language (FinSL) skills (Study2). Data from children and adults were annotated for CA according to the Cormier et al. (2015) framework, including annotations for enacting articulators, signer's viewpoint, its prominence, and CA types. Study1 included 12 children and adults. Study2 included 21 children. The data contained both hearing and deaf children age 4 to 10 years. The association between children's use of CA and FinSL skills was analyzed in terms of FinSL vocabulary, grammatical structures and narrative skills assessed with different assessment tools. Results of Study1 showed that children as young as 4 years old used CA in varying amounts, significantly less than adults, and both groups used CA less when retelling still-images compared to video materials. Additionally, both children and adults used overt CA (enactment only) more than non-overt CA (enactment combined with lexical/partly lexical signs) in both the still-image and video-based narration. This indicates that CA is a skill to be acquired, used differently depending on the communicative situation, language affordances and degree of enactment. Factors such as language skills, cognitive development, and language environment may be connected to the differences between children's and adults' use of CA but were not taken into consideration in the analysis. Thus, these factors were studied further in Study2.

Results of Study2 showed that children's age is associated with their use of CA, and that there are particular "benchmarks" in this progress. By age 4, the children seemed to have acquired the use of overt CA, while non-overt CA increased later (reduced after the age of 6, subtle after the age of 7). Furthermore, the use of CA was connected to the children's FinSL vocabulary, grammatical, and narrative skills in several ways.

The more a child combined enactment with fully or partially lexicalized elements, the more proficiency was required in all aspects of language skills.

In summary, complexity in enactment and signs seems to emerge at different stages of language development and is associated with various aspects of language skills. In child language, CA seems to be a resource that is used in different ways during language development when certain aspects of language are still under development. Additionally, these studies reveal several methodological remarks. This diverse set of phenomena will be discussed further during the presentation.

Acknowledgements

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References

Cormier, K., Smith, S., & Sevcikova, Z. (2013). Predicate Structures, Gesture, and Simultaneity in the Representation of Action in British Sign Language: Evidence From Deaf Children and Adults. *Journal of Deaf Studies and Deaf Education*, *18*(3), 370–390. https://doi.org/10.1093/deafed/ent020

Cormier, K., Smith, S., & Sevcikova-Sehyr, Z. (2015). Rethinking constructed action. *Sign Language & Linguistics*, *18*(2), 167–204. https://doi.org/10.1075/sll.18.2.01cor

Morgan, G. (2005). The Development of Narrative Skills in British Sign Language. In B. Schick, M. Marschark, & P. E. Spencer (Eds.), *Advances in the Sign-Language Development of Deaf Children* (pp. 314–343). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195180947.003.0013

Smith, S., & Cormier, K. (2014). In or Out? Spatial Scale and Enactment in Narratives of Native and Nonnative Signing Deaf Children Acquiring British Sign Language. *Sign Language Studies*, *14*(3), 275–301.

IS

At the Crossroads: A Sociolinguistic Perspective on Aspect Markers in Triestine Sign Language

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University of Lancaster

Keywords: historical sociolinguistics, language contact, Israeli Sign Language (ISL), Triestine Sign Language (TSL), aspect markers

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THIS paper explores a compelling case of cross-linguistic similarity between two unrelated sign languages: Israeli Sign Language (ISL) and Triestine Sign Language (TSL). Despite their geographic and sociohistorical distance, both languages make use of two aspectual markers, referred to here as example 1 (FINISH) and example 2 (NOT-YET), that are identical in both form and meaning. These markers are used in conversational contexts to indicate whether an event has already occurred or has yet to happen (Meir, 1999).

Figure 1. Example 1 (left) and 2 (right)

The central research question guiding this study is: how did such striking similarities come to exist between ISL and TSL?

Methodologically, the research draws on two different approaches due to the distinct levels of documentation available for each language. For ISL, the study utilizes a national corpus developed as part of a previous research project, analysed using ELAN software within the ongoing CrossMoGram project, a three-year initiative examining aspect markers across 50 spoken creole languages and 10 sign languages worldwide. The ISL data was further validated through consultation with a native Deaf signer with expertise in the language.

For TSL, which lacks a national corpus, the methodology involved reviewing existing literature and historical documents (Alloisio, 2008; Corazza and Lerose, 2008b), as well as engaging in in-depth discussions with an expert native signer. Although data for TSL is more limited, the triangulation of sources provides a sufficient basis for the identification and analysis of the aspectual markers in question.

The historical backdrop of Trieste offers valuable insight into the origins of these lin-

guistic features. Situated in northeastern Italy near the Slovenian border, Trieste was part of the Austro-Hungarian Empire. During this period, many Deaf individuals from Trieste received their education in Vienna, where Austrian Sign Language (ÖGS) was used. Upon returning home, these individuals brought with them elements of ÖGS, which likely shaped the development of TSL (Dotter and Bidoli, 2017). It is also well documented that TSL and Italian Sign Language (LIS) are distinct languages, underscoring the importance of localised historical and sociolinguistic factors (Pizzuto and Corazza, 1996; Stibiel, 2004; Alloisio, 2005; Corazza and Lerose, 2008a).

The findings suggest that the presence of identical aspectual markers in ISL and TSL is not coincidental but rather the result of historical pathways of Deaf mobility and educational exchange, first through Central Europe and later toward Israel (Meir and Sandler, 2008; Meir, 2016). This supports the hypothesis that linguistic features can travel across communities through social networks, even when languages are not genealogically related.

This study contributes to ongoing discussions in the fields of sign language linguistics, language contact, and typology. It highlights the significance of Deaf migration, language transmission, and historical context in shaping the structure of sign languages. The presentation will offer detailed examples, visual data, and a discussion of broader implications for understanding how grammatical features can emerge and be preserved across different linguistic and geographic contexts.

References

Alloisio, S. (2005). *La Lingua dei Segni Triestina e la Lingua dei Segni Austriaca: considerazioni storici e comparativi* [Unpublished graduation dissertation]. University of Trieste.

Alloisio, S. (2008). Methodological issues by comparing historically related sign languages. *Gebärdensprachlinguistik und Gebärdensprachkommunikation. Referate der VERBAL-Sektion" Gebärdensprachlinguistik und-kommunikation" innerhalb der 34. Österreichischen Linguistiktagung, Veröffentlichungen des Zentrums für Gebärdensprache und Hörbehindertenkommunikation der Universität Klagenfurt Band 13*, 3–6.

Corazza, S., & Lerose, L. (2008a). L'origine della lingua dei segni, variante triestina. In C. Bagnara (Ed.), *I segni parlano: prospettive di ricerca sulla lingua dei segni italiana*. F. Angeli.

Corazza, S., & Lerose, L. (2008b). Vergleich von Klassifikatoren in der Österreichischen und der Triestiner Gebärdensprache. *Gebärdensprachlinguistik und Gebärdensprachkommunikation. Referate der VERBAL-Sektion" Gebärdensprachlinguistik und-kommunikation" innerhalb der 34. Österreichischen Linguistiktagung, Veröffentlichungen des Zentrums für Gebärdensprache und Hörbehindertenkommunikation der Universität Klagenfurt Band 13*, 31–36.

Dotter, F., & Bidoli, C. J. K. (2017). The Historical Relationship between Triestine Sign Language and Austrian Sign Language. *Sign Language Studies*, *17*(2), 193–221.

Meir, I. (1999). A Perfect Marker in Israeli Sign Language. *Sign Language & Linguistics*, *2*(1), 43–62. https://doi.org/10.1075/sll.2.1.04mei

Meir, I. (2016). Grammaticalization is not the full story: a non-grammaticalization account of the emergence of sign language agreement morphemes [Artwork Size: 112-124 Pages Publisher: Mediterranean Morphology Meetings]. *Mediterranean Morphology Meetings*, 112–124. https://doi.org/10.26220/MMM.2729

Meir, I., & Sandler, W. (2008). *A language in space: the story of Israeli Sign Language*. Lawrence Erlbaum Associates.

Pizzuto, E., & Corazza, S. (1996). Noun morphology in Italian Sign Language (LIS). *Lingua*, *98*(1), 169–196. https://doi.org/10.1016/0024-3841(95)00037-2

Stibiel, M. (2004). *La storia dell'educazione dei sordi triestini e breve confronto tra la LIS ed I segni triestini* [Unpublished graduation dissertation]. University of Trieste.

Beyond the Binary: Stance-Taking and Language Change in Trans-Affirming ASL

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Keywords: trans linguistics, online ethnography, trans-affirming language, nonbinary language, language change, LGBTQ+ sign language linguistics, constructional schemas, focal sites

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RECENT research has explored trans-inclusive language change (TILC) (Bedin and Kodova, in prep) across spoken and written languages (Zimman, 2017; Dumais, 2021; Papadopoulos, 2022). This study expands that scope by examining TILC in American Sign Language (ASL) online internet data. The US Deaf trans community is situated across time and space, making the internet a critical place for knowledge-sharing, identity negotiation and affirmation, and language innovation. As means of pursuing online ethnography of these communities (Hou et al., 2020), I analyzed social media vlogs posted by queer, trans and nonbinary Deaf signers and their respective comment sections. By analyzing these digital discourses as sites of community-driven language activism, I investigate how these online signing communities innovate trans-affirming language and challenge cissexist linguistic norms. Specifically, I observed and analyzed the morphological shifts in the gender marking of ASL kinship signs coupled with community reactions which revealed ideologies that incite epistemic, evaluative and affective stance-taking.

Social media functions as a crucial platform for metalinguistic critique, resistance, and advocacy within deaf communities (Holcomb and Smith, 2018). The affordances of these digital spaces enable signers to engage in conversations about language justice, visibility, and social change. This study draws from four high-engagement videos (garnering over 25,000 views total and 234 comments) created by Deaf queer and trans content creators who explicitly taught trans-affirming kinship signs. Videos were identified via keyword search on public-facing Instagram, Facebook, and YouTube posts, and basic demographic information was noted based on self-identification in creator bios or public profiles.

Methodologically, I use discourse analysis and qualitative coding to examine viewer responses, attending to epistemic, affective, and evaluative stances following DuBois's (2007) stance triangle. Comments were primarily in written English, often blended with ASL gloss, emoji use, and other translingual strategies. Commenter handles were anonymized and replaced with unique participant IDs. To analyze sign form and innovation, I used the Sign Language Phonetic Annotation System by Johnson and Liddell (2011a; 2011b; 2011c; 2012; 2021) to annotate and compare phonetic features, particularly focal sites and placed articulators, as articulated in the gendered kinship terms

across videos.

Results show that creators frequently articulate neutral kinship signs such as SIBLING, COUSIN-neut or SPOUSE at novel focal sites, most commonly the center of the face, which emerges as schematic, productive locations for expressing nonbinary or trans identification. These sites function as constructional anchors for an emerging more gender-inclusive lexicon, though it remains evident that variation exists across ASL users on the conventionality of the novel forms analyzed. In the comments, epistemic stances often reflect an expectation that inclusive English terms must first emerge and stabilize before corresponding ASL signs are constructed, revealing deep entrenchment of English dominance even within ASL innovation in trans signing communities. Affective stances were overwhelmingly affirming, with commenters expressing pride, joy, and solidarity. Evaluative stances largely conferred linguistic authority on Deaf trans signers as legitimate models of language change, reinforcing the political and semiotic legitimacy of their innovations.

Taken together, the comments reveal a broader discursive alignment with trans justice and language justice, while also showcasing the ongoing struggle against cissexist ideologies and English-centric norms in ASL languaging. This research highlights TILC as both a sociopolitical response and a collaborative linguistic endeavor, underscoring the role of social media in shaping an expansive and inclusive ASL lexicon.

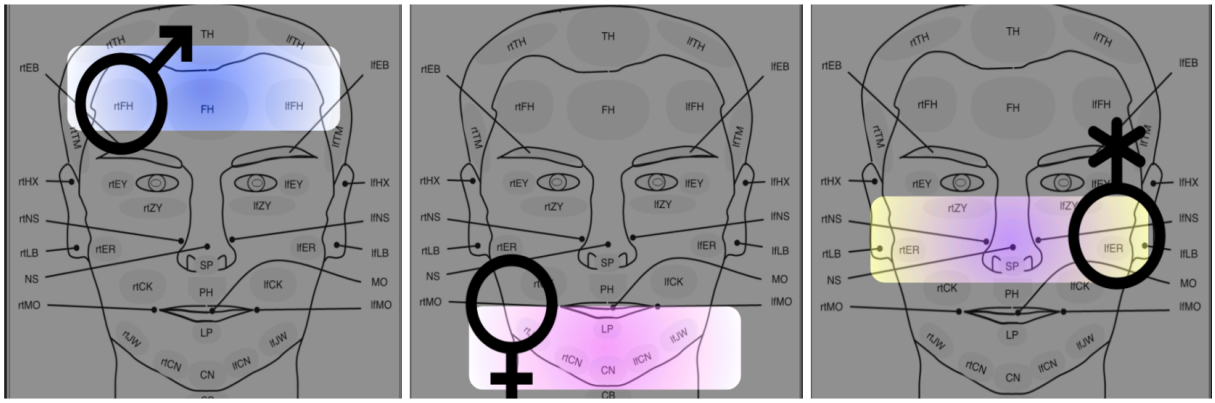

Figure 1. The location-bearings of "masculine", "feminine" and the novel "nonbinary" focal sites (Johnson and Liddell, 2021; annotations are mine)

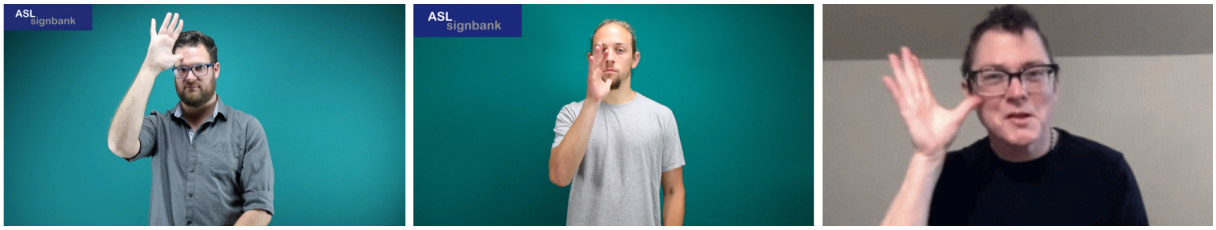

Figure 2. Examples of each respective use of gendered focal sites as seen in FATHER, MOTHER and (novel) PARENT (ASLSignbank, 2025; Hibbard, 2020 from YouTube)

References

Du Bois, J. W. (2007). The stance triangle. In R. Englebretson (Ed.), *Pragmatics & Beyond New Series* (pp. 139–182). John Benjamins Publishing Company. https://doi.org/10.1075/pbns.164.07du

Dumais, G. (2021). "What do they say in Quebec?": Non-binary gender expression in informal spoken Quebec French. *Toronto Working Papers in Linguistics*, *43*(1). https://doi.org/10.33137/twpl.v43i1.35934

Hibbard, E. (2020, February 11). *ASL Gender Inclusive Signs Family*. Retrieved August 19, 2025, from https://www.youtube.com/watch?v=sE397G-ZCjY

Hochgesang, J., Crasborn, O., & Lillo-Martin, D. (2025). ASL Signbank. https://doi.org/10.6084/M9.FIGSHARE.9741788

Holcomb, T. K., & Smith, D. H. (Eds.). (2018, June 26). *Deaf Eyes on Interpreting*. Gallaudet University Press. https://doi.org/10.2307/j.ctv2rh28rm

Hou, L., Lepic, R., & Wilkinson, E. (2020). Working with ASL Internet Data. *Sign Language Studies*, *21*(1), 32–67.

Johnson, R. E., & Liddell, S. K. (2011a). A Segmental Framework for Representing Signs Phonetically. *Sign Language Studies*, *11*(3), 408–463.

Johnson, R. E., & Liddell, S. K. (2011b). Toward a Phonetic Representation of Hand Configuration: The Fingers. *Sign Language Studies*, *12*(1), 5–45.

Johnson, R. E., & Liddell, S. K. (2011c). Toward a Phonetic Representation of Signs: Sequentiality and Contrast. *Sign Language Studies*, *11*(2), 241–274.

Johnson, R. E., & Liddell, S. K. (2012). Toward a Phonetic Representation of Hand Configuration: The Thumb. *Sign Language Studies*, *12*(2), 316–333.

Johnson, R. E., & Liddell, S. K. (2021). Toward a Phonetic Description of Hand Placement on Bearings. *Sign Language Studies*, *22*(1), 131–180.

Papadopoulos, B. (2022). A brief history of gender-inclusive Spanish/Una breve historia del español no binario. *Deportate, esuli, profughe*, *48*(1), 31–48.

Zimman, L. (2017). Transgender language reform. *Journal of Language and Discrimination*, *1*(1), 84–105. https://doi.org/10.1558/jld.33139

The impact of International Sign on the daily life of the Portuguese deaf community

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Keywords: International Sign, social media, language contact, ethnography linguistics

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THIS study examines International Sign (IS) as a language in contact with Portuguese Sign Language (LGP) and the growing role of social media in interactions among deaf individuals, leading to potential linguistic change. Technological advancements have shifted social interactions—once predominantly in person, such as in deaf clubs and schools (O'Brien et al., 2019)—to virtual environments. According to Fialho (2024), the time spent on virtual interactions now surpasses face-to-face interactions, leading to behavioral changes. deaf individuals increasingly form smaller groups and use social media, where IS is integrated into daily communication. Recent observations indicate that the deaf community in Portugal is progressively adopting IS in LGP practices. This study highlights the consequences driven by the contact of portuguese deaf signers with IS.

To gain a deeper understanding of the influence of IS on LGP, 60 interviews were conducted with deaf Portuguese participants, aged between 16 and 88. The results reveal that IS has become increasingly integrated into LGP, particularly since the COVID-19 pandemic, and continues to be used across generations, with a higher prevalence among younger individuals. Participants reported following 'deaf influencers' and participating in online gaming, which reinforces the use of IS as it allows people from different nationalities to communicate in a widely understood signed language. Additionally, these participants perceive IS as clearer, easier, and more efficient than national sign languages. The interviews also revealed aspects of linguistic ideologies and language attitudes, reflecting a positive perception of IS as an accessible and international communication tool.

To complement the interview data, ethnographic studies were conducted, including observations of everyday interactions among deaf people to capture natural LGP use with IS. Among these observations, videos were recorded of spontaneous social interactions, such as a dinner among friends, and videos shared by participants on social media.

Participants use social media daily to interact with deaf people worldwide or watch 'deaf influencers', communicating through International Sign (IS). They recognise IS helps them expand their communication reach and ensure understanding among diverse nationalities, fostering broader connections within the deaf community. Similarly, deaf influencers use IS to reach a global audience.

In short, IS influence appears to be embedded in the sign language of Portuguese deaf people of all ages.

References

Cid, M., Coppi, M., Fialho, I., Monteiro, A., & Leite, C. (2024). Usos de plataformas e tecnologias digitais por estudantes portugueses. *Magis, Revista Internacional de Investigación en Educación*, *17*, 1–25. https://doi.org/10.11144/Javeriana.m17.uptd

O'Brien, D., Stead, L., & Nourse, N. (2019). Bristol Deaf Memories: archives, nostalgia and the loss of community space in the deaf community in Bristol. *Social & Cultural Geography*, *20*(7), 899–917. https://doi.org/10.1080/14649365.2017.1392591

Referential expressions and their antecedents in two text types – A corpus study on German Sign Language

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Keywords: referential expressions, information structure, text type effects, German Sign Language, corpus linguistics

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THE creation and identification of reference chains is a constant, complex, cognitive component of language production and perception. The choice of a specific referential expression (RefEx) at a given point in time is affected by many different factors. This study explores the antecedent's influence in terms of part-of-speech, distance, and discourse status on the choice of RefEx in retellings and conversations

For sign languages, reference research has thus far focused on retellings and narratives (e.g., Ferrara et al., 2023; Frederiksen and Mayberry, 2016; Perniss and Özyürek, 2015) with very few exceptions (Grosso, 2017; Hansen, 2008). They have found previously established cognition-based reference models, like Accessibility Theory (Ariel, 2001), to be applicable to sign languages. This study investigates the use of RefEx in German Sign Language (DGS) using DGS corpus (Konrad et al., 2020) transcripts of free conversations and retellings with additional annotations, containing a total of about 3000 RefEx. Free conversations are comprised of spontaneous utterances and characterized by numerous interactions between participants, while retellings are less spontaneous and more monologue-like.

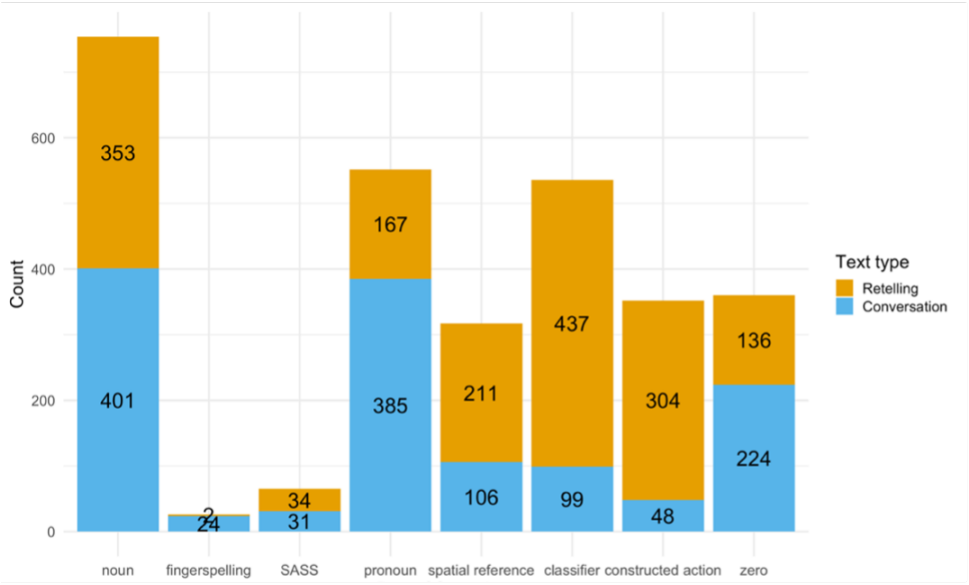

Figure 1. Absolute frequencies of RefEx types in DGS retellings and conversations

The absolute frequencies (Figure 1) reveal stark differences in the use of RefEx in

the two text types: RefEx that use iconicity and spatiality (spatial references, classifiers, CA) to refer are used more often in retellings and RefEx that use the linguistic context (pronouns, zeros) to refer are used more often in conversations. A Bayesian analysis provides statistical evidence for these results. Despite these differences, many antecedent-driven effects remain the same:

(a) larger distances between antecedent and RefEx of over five seconds lead to the use of nominal RefEx;

(b) while all RefEx can introduce referents, nouns do so much more frequently than other RefEx;

(c) RefEx tend to be preceded by antecedents of the same kind, meaning that pronouns tend to follow pronouns, classifiers tend to follow classifiers etc.

One interesting difference is revealed in the use of constructed action (CA): in conversations, CA tends to follow co-referential pronouns (59%); in retellings, CA tends to follow CA (42%) or co-referential nouns (23%). The Bayesian analysis of these effects is ongoing. The tendencies observed in this study emphasize the importance of diverse data: text type affects the production of utterances in complex ways and thus affects linguistic phenomena such as reference.

References

Ariel, M. (2001). Accessibility theory: An overview. In T. J. Sanders, J. Schilperoord, & W. Spooren (Eds.), *Human Cognitive Processing* (pp. 29–88, Vol. 8). John Benjamins Publishing Company. https://doi.org/10.1075/hcp.8.04ari

Ferrara, L., Anible, B., Hodge, G., Jantunen, T., Leeson, L., Mesch, J., & Nilsson, A.-L. (2023). A cross-linguistic comparison of reference across five signed languages. *Linguistic Typology*, *27*(3), 591–627. https://doi.org/10.1515/lingty-2021-0057

Frederiksen, A. T., & Mayberry, R. I. (2016). Who's on First? Investigating the referential hierarchy in simple native ASL narratives. *Lingua*, *180*, 49–68. https://doi.org/10.1016/j.lingua.2016.03.007

Grosso, T. M. (2017). *Referring forms and cognitive status in non-narrative American Sign Language texts* [Master's thesis, University of North Dakota].

Hansen, M. (2008). Raum und Körpernutzung in Texten der Deutschen Gebärdensprache (DGS). Teil I: Textkohäsion und Referenzstrukturen. *Das Zeichen*, (79), 274–283.

Konrad, R., Hanke, T., Langer, G., Blanck, D., Bleicken, J., Hofmann, I., Jeziorski, O., König, L., König, S., Nishio, R., Regen, A., Salden, U., Wagner, S., Worseck, S., Böse, O., Jahn, E., & Schulder, M. (2020). MY DGS – annotated. Public Corpus of German Sign Language, 3rd release/MEINE DGS – annotiert. Öffentliches Korpus der Deutschen Gebärdensprache, 3. Release. https://doi.org/10.25592/DGS.CORPUS-3.0

Perniss, P., & Özyürek, A. (2015). Visible Cohesion: A Comparison of Reference Tracking in Sign, Speech, and Co-Speech Gesture. *Topics in Cognitive Science*, *7*(1), 36–60. https://doi.org/10.1111/tops.12122

Moving beyond the 'gesture'/'sign' binary

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Keywords: gesture, sign language, multimodality

In this paper, I want to address criticism of the so-called 'Gesture School' in sign language linguistics (Dotter, 2018; Wilcox et al., 2024), a framework to which I very much contributed (e.g., Schembri et al., 2018). I discuss the rise of the 'Gesture School' framework within cognitive-functional linguistics and place it in historical context. I want to publicly acknowledge on some of the problems this approach created and the misunderstandings between scholars working within this framework and those working in both cognitive-functional and generative approaches. I partly do this here by revisiting the much-discussed relationship between sign languages, gesture, and spoken language and by reflecting on how proposed boundaries between 'linguistic' and 'non-linguistic' phenomena have been investigated in our respective fields.

I agree that any notion of a binary 'linguistic' versus 'non-linguistic' distinction is problematic (cf., Coppola and Senghas, 2017), reflects academic ideologies about what 'language' is (Kusters and Sahasrabudhe, 2018), and that the relationship between gesture, speech, and sign is better examined instead along several dimensions (Okrent, 2002; Coppola and Senghas, 2017; Schembri and Cooperrider, 2020; Cohn and Schilperoord, 2024). Sometimes scholars wish to portray language as categorical, conventionalised, and compositional in nature, whereas gesture is considered as a phenomenon that is gradient, less conventionalised, and/or less integrated into grammar (Coppola and Senghas, 2017; Kita and Emmorey, 2023; Cohn and Schilperoord, 2024). Some work has shown, however, that these divisions do not map readily onto gesture and sign (e.g., Kendon, 2004; Occhino and Wilcox, 2017). Another set of useful dimensions are the degree to which aspects of human communication are multimodal (involving more than one perceptual modality, such as audition and vision), multichannel (involving more than one means of production, such as the mouth, the hands, the head etc.), and multisemiotic (involving different ways of making meaning through symbols, icons, and indexes, either separately or in combination, e.g., Enfield, 2009; Ferrara and Hodge, 2018). I will explore previous work on pointing actions in sign languages and gesture, as well as on verb directionality, along these six dimensions to show how these help us tease apart both similarities and differences, and to ask new questions (Cormier et al., 2013; Schembri et al., 2018; Fenlon et al., 2019). I argue that these distinctions help us break down 'sign language' and 'gesture' (and 'linguistic' and 'non-linguistic') into smaller, and, most importantly, less baggage-laden concepts. Investigating sign, gesture, and language along these many dimensions will reveal more about the nature of human communication than the traditional 'linguistic' versus 'non-linguistic' binary.

Like Hou (2022) who has called for new approaches to understand the interplay between the structure and function in directional verbs and a movement away from the focus on theoretical debates about agreement, I would like to see us move away from reductionist discussions about 'sign language' versus 'gesture' and move towards a more data-driven exploration of these two different aspects of multimodal language systems.

References

Cohn, N., & Schilperoord, J. (2024). *A multimodal language faculty: a cognitive framework for human communication*. Bloomsbury Academic.

Coppola, M., & Senghas, A. (2017). Is it language (yet)? The allure of the gesture-language binary. *Behavioral and Brain Sciences*, *40*, e50. https://doi.org/10.1017/S0140525X1500285X

Cormier, K., Schembri, A., & Woll, B. (2013). Pronouns and pointing in sign languages. *Lingua*, *137*, 230–247. https://doi.org/10.1016/j.lingua.2013.09.010

Dotter, F. (2018). Most Characteristic Elements of Sign Language Texts Are Intricate Mixtures of Linguistic and Non-linguistic Parts, Aren't They? *Colloquium: New Philologies*, *3*(1), 1–62. https://doi.org/10.23963/cnp.2018.3.1.1

Enfield, N. J. (2009). *The Anatomy of Meaning: Speech, Gesture, and Composite Utterances* (1st ed.). Cambridge University Press. https://doi.org/10.1017/CBO9780511576737

Fenlon, J., Cooperrider, K., Keane, J., Brentari, D., & Goldin-Meadow, S. (2019). Comparing sign language and gesture: Insights from pointing. *Glossa: a journal of general linguistics*, *4*(1). https://doi.org/10.5334/gjgl.499

Ferrara, L., & Hodge, G. (2018). Language as Description, Indication, and Depiction. *Frontiers in Psychology*, *9*, 716. https://doi.org/10.3389/fpsyg.2018.00716

Hou, L. (2022). A Usage-Based Proposal for Argument Structure of Directional Verbs in American Sign Language. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.808493

Kendon, A. (2004). *Gesture: visible action as utterance*. Cambridge University Press.

Kita, S., & Emmorey, K. (2023). Gesture links language and cognition for spoken and signed languages. *Nature Reviews Psychology*, *2*(7), 407–420. https://doi.org/10.1038/s44159-023-00186-9

Kusters, A., & Sahasrabudhe, S. (2018). Language ideologies on the difference between gesture and sign. *Language & Communication*, *60*, 44–63. https://doi.org/10.1016/j.langcom.2018.01.008

Occhino, C., & Wilcox, S. (2017). Gesture or sign? A categorization problem. *Behavioral and Brain Sciences*, *40*, e66. https://doi.org/10.1017/S0140525X15003015

Okrent, A. (2002). A modality-free notion of gesture and how it can help us with the morpheme vs. gesture question in sign language linguistics (Or at least give us some criteria to work with). In R. P. Meier, K. Cormier, & D. Quinto-Pozos

(Eds.), *Modality and Structure in Signed and Spoken Languages* (pp. 175–198). Cambridge University Press. https://doi.org/10.1017/CBO9780511486777.009

Schembri, A., & Cooperrider, K. (2020). Gesture versus sign: Moving beyond the binary. *Paper presented at the 14th Biennial Conference of the High Desert Linguistics Society*.

Schembri, A., Cormier, K., & Fenlon, J. (2018). Indicating verbs as typologically unique constructions: Reconsidering verb 'agreement' in sign languages. *Glossa: a journal of general linguistics*, *3*(1). https://doi.org/10.5334/gjgl.468

Wilcox, S., Martínez, R., & Siyavoshi, S. (2024). *Signed Language and Cognitive Grammar*. Cambridge University Press. https://doi.org/10.1017/9781108951326

Understanding directionality in British Sign Language verbs: Pointing away from the agreement debate

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Keywords: agreement, verbs, British Sign Language

INDICATING verbs in British Sign Language (BSL) and other signed languages can be directed towards locations in space associated with their arguments. This directionality has been widely analysed as a form of person agreement marking (Lillo-Martin and Meier, 2011; Padden, 1988), although some typologists have rejected this account (e.g., Corbett, 2006). Indicating verbs have been variously analysed as exhibiting canonical agreement (Costello, 2016), non-canonical agreement (Lillo-Martin and Meier, 2011), semantic agreement (Engberg-Pedersen, 1993), or no agreement marking at all (Liddell, 2003; Schembri et al., 2018; Wilcox and Occhino, 2016). Judgements elicited from life-long signers appeared to suggest that such directionality was obligatory for the marking of object arguments in BSL (e.g., Morgan et al., 2006). Corpus-based evidence, however, does not support this claim. Fenlon et al. (2018) investigated a range of linguistic and social factors associated with 1,436 indicating verb tokens in the BSL Corpus, showing that directionality in BSL is not obligatory, and is conditioned by several linguistic factors, such as constructed action, animacy, and co-reference.

In this study, we investigate additional factors that may influence when a sign uses directionality. Using the BSL Corpus indicating verb dataset (Cormier et al., 2015; Fenlon et al., 2018), this investigation explores the influence of definiteness (cf. Barberà Altimira, 2015) and variable argument noun phrase presence (cf. Lillo-Martin and Meier, 2011). Preliminary analysis using Rbrul suggests that definiteness is indeed a significant factor, with definite arguments more likely to trigger directionality in indicating verbs than indefinite arguments. We hope to present more recent results drawing on further coding of the data to confirm. Variable argument presence was also important with spatial modification more likely in clauses with null argument expression. We will discuss the relevance of this study for an understanding of variable directionality in indicating verbs and the notion of agreement in signed languages. Recently, it has become clearer that some of the assumptions about agreement marking in spoken languages (which have been often transferred uncritically to signed languages) need to be re-examined (Croft, 2022; Kibrik, 2019), and that the difference between the different sides of the agreement verb debate may not be as great as previously assumed (e.g., Schembri et al., 2018).

Like Hou (2022) who has called for new approaches to understand the interplay between the structure and function in directional verbs, we would like to see us move away from the decades-long focus on a purely theoretical agreement debate and to-

wards a more data-driven exploration of the variable use of this key aspect of signed language grammar.

References

Barberà Altimira, G. (2015). *The Meaning of Space in Sign Language: Reference, Specificity and Structure in Catalan Sign Language Discourse*. DE GRUYTER. https://doi.org/10.1515/9781614518815

Corbett, G. G. (2006). *Agreement*. Cambridge Univ. Press.

Cormier, K., Smith, S., & Sevcikova-Sehyr, Z. (2015). Rethinking constructed action. *Sign Language & Linguistics*, *18*(2), 167–204. https://doi.org/10.1075/sll.18.2.01cor

Costello, B. (2016). *Language and modality: effects of the use of space in the agreement system of lengua de signos española (Spanish Sign Language)*. LOT.

Croft, W. (2022). *Morphosyntax: Constructions of the World's Languages* (1st ed.). Cambridge University Press. https://doi.org/10.1017/9781316145289

Engberg-Pedersen, E. (1993). *Space in Danish Sign Language. The Semantics and Morphosyntax of the Use of Space in a Visual Language*. Signum.

Fenlon, J., Schembri, A., & Cormier, K. (2018). Modification of indicating verbs in British Sign Language: A corpus-based study. *Language*, *94*(1), 84–118. https://doi.org/10.1353/lan.2018.0002

Hou, L. (2022). A Usage-Based Proposal for Argument Structure of Directional Verbs in American Sign Language. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.808493

Kibrik, A. A. (2019). Rethinking agreement: Cognition-to-form mapping. *Cognitive Linguistics*, *30*(1), 37–83. https://doi.org/10.1515/cog-2017-0035

Liddell, S. K. (2003). *Grammar, gesture, and meaning in American Sign Language*. Cambridge University Press.

Lillo-Martin, D., & Meier, R. P. (2011). On the linguistic status of 'agreement' in sign languages. *Theoretical Linguistics*, *37*(3). https://doi.org/10.1515/thli.2011.009

Morgan, G., Barrière, I., & Woll, B. (2006). The influence of typology and modality on the acquisition of verb agreement morphology in British Sign Language. *First Language*, *26*(1), 19–43. https://doi.org/10.1177/0142723706060739

Padden, C. (1988). *Interaction of morphology and syntax in American sign language*. Routledge, Taylor & Francis Group.

Schembri, A., Cormier, K., & Fenlon, J. (2018). Indicating verbs as typologically unique constructions: Reconsidering verb 'agreement' in sign languages. *Glossa: a journal of general linguistics*, *3*(1). https://doi.org/10.5334/gjgl.468

Wilcox, S., & Occhino, C. (2016). Constructing signs: *Place* as a symbolic structure in signed languages. *Cognitive Linguistics*, *27*(3), 371–404. https://doi.org/10.1515/cog-2016-0003

Fingerspelling Practices Through the Lens of Crip Linguistics and Non-alphabetic writing

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Keywords: Polish Sign Language, fingerspelling, crip linguistics, language ideology, multimodality, writing

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THIS presentation examines fingerspelling practices in Polish Sign Language (PJM). Language ideologies about PJM often frame fingerspelling as evidence of signers' limited linguistic competence caused by language deprivation or PJM's limited vocabulary. My analysis offers a contrasting perspective by taking a crip linguistics approach, which allows us to see differences as a source of potential rather than deficit (Henner and Robinson, 2023).

The data comes from the PJM Corpus, which includes 550 hours of filmed material among 120 native PJM users. There have been found distinct patterns in fingerspelling across different communication contexts and intergenerational variations in fingerspelling practices. A common practice is combining signs and fingerspelling to represent a single concept. Signers tend to fingerspell only the beginning or ending of a Polish word, eg. HERBS+A (herbal medical syrup called *Amol*), A+BOWL (*aquarium*), A+CL(a person doing acrobatics) (*acrobatics*), O+BEE (*osa*; *a wasp*). There are instances of even longer manual constructions that can be fully covered throughout by mouthing the word, eg. GLASS+BOWL+I-U-M (*aquarium*).

These practices resemble a phenomenon known in graphic communication as the "rebus" (O'Hagan, 2023). It is when semantic content, or both semantic and phonetic content, is combined to represent a word. This strategy has been used in visual communication for centuries, as a standard practice in Egyptian hieroglyphs (Pries, 2023), Mesoamerican writing (Whittaker, 2018) or kanji word play (Robertson, 2020). In this case, fingerspelling and mouthing serve as the "phonetic" component showing a form of a spoken/written word, when PJM signs provide semantic content by giving clues about the referent. Signs can also serve as a phonetic component, eg. by signing BUŁGARIA (Bulgaria) as BUŁKA (bread roll) or signing BUTKIEWICZ (Polish surname) as BUT (shoe).

Looking at fingerspelling through the lens of crip linguistics, allows us to recognize the ingenuity behind this practice. Signers navigate bilingual environments by drawing on broad semiotic repertoires available to them and their conversation partners (Kusters, 2021). My research demonstrates that use of fingerspelling in PJM reflects advanced linguistic competencies.

References

Henner, J., & Robinson, O. (2023). Unsettling Languages, Unruly Bodyminds: A Crip Linguistics Manifesto [Artwork Size: 7-37 Pages Publisher: Journal of Critical Study of Communication & Disability]. *Journal of Critical Study of Communication & Disability*, *1*(1), 7–37. https://doi.org/10.48516/JCSCD_2023VOL1ISS1.4

Kusters, A. (2021). Introduction: the semiotic repertoire: assemblages and evaluation of resources. *International Journal of Multilingualism*, *18*(2), 183–189. https://doi.org/10.1080/14790718.2021.1898616

O'Hagan, L. A. (2023). *An Eye for an I: The Rebus as an Historical Form of Emoji, DiscourseNet Collaborative Working Paper Series, no. 9*. https://discourseanalysis.net/dncwps

Pries, A. (2023). Egyptian Writing: Extended Practices. *UCLA Encyclopedia of Egyptology*, *1*(1), 1–19.

Robertson, W. (2020). Unspeakable puns: kanji-dependent wordplay as a localization strategy in Japanese. *Perspectives*, *28*(4), 606–624. https://doi.org/10.1080/0907676X.2018.1548628

Whittaker, G. (2018). Aztec hieroglyphics: a name-based writing system. *Language & History*, 1–17. https://doi.org/10.1080/17597536.2018.1441950

(Re)drawing parallels between depicting signs and ideophone-gesture composites: Insights gained from similarities across depictive practices

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Keywords: depiction, iconicity, ideophone, depicting sign, comparative semiotics

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In this presentation, I aim to foreground commonalities between phenomena often studied in different linguistic traditions: ideophony, depicting signs, and depictive gestures. A growing attention for depictive language use has led to a substantial body of research on the use of ideophones in spoken language linguistics, depicting signs in signed language linguistics, and iconic gestures in gesture studies. More and more research has also shown that the depictive nature of these forms means that they co-occur (in the case of ideophones and iconic gestures) and/or that they show important parallels (both for depicting signs and ideophones as well as for depicting signs and iconic gestures) (Cormier et al., 2012; Lu and Goldin-Meadow, 2018; Ferrara and Halvorsen, 2017; Dingemanse, 2019). However, there is ground for more research on the extent of these commonalities, their theoretical significance, and their potential for cross-fertilisation. Based on previous literature and using illustrations from LSFB lexical databases as well as from the directly comparable corpus of LSFB and of Belgian French (Meurant, 2015; Lepeut et al., 2024), I highlight similarities between the forms and functions of these phenomena. Next, I suggest how theoretical and methodological developments in each (sub)field could inform parallel research traditions. For instance, the expertise in multimodal language use developed in signed language and gesture research can help spoken language linguists refine their analyses of the forms of ideophone – gesture composites (McKee et al., 2021). In the same vein, the semantic typological tradition that emerged from research on ideophones could prove useful to the study of depicting signs (e.g., Van Hoey, 2023).

References

Cormier, K., Quinto-Pozos, D., Sevcikova, Z., & Schembri, A. (2012). Lexicalisation and de-lexicalisation processes in sign languages: Comparing depicting constructions and viewpoint gestures. *Language & Communication*, *32*(4), 329–348. https://doi.org/10.1016/j.langcom.2012.09.004

Dingemanse, M. (2019). 'Ideophone' as a comparative concept. In K. Akita & P. Pardeshi (Eds.), *Iconicity in Language and Literature* (pp. 13–34, Vol. 16). John Benjamins Publishing Company. https://doi.org/10.1075/ill.16.02din

Ferrara, L., & Halvorsen, R. P. (2017). Depicting and describing meanings with iconic signs in Norwegian Sign Language. *Gesture*, *16*(3), 371–395. https://doi.org/10.1075/gest.00001.fer

Lepeut, A., Lombart, C., Vandenitte, S., & Meurant, L. (2024). Spoken and signed languages hand in hand: parallel and directly comparable corpora of French Belgian Sign Language (\textsc{lsfb}) and French. *Corpora*, *19*(2), 241–253. https://doi.org/10.3366/cor.2024.0309

Lu, J. C., & Goldin-Meadow, S. (2018). Creating Images With the Stroke of a Hand: Depiction of Size and Shape in Sign Language. *Frontiers in Psychology*, *9*, 1276. https://doi.org/10.3389/fpsyg.2018.01276

McKee, R., Safar, J., & Alexander, S. P. (2021). Form, frequency and sociolinguistic variation in depicting signs in New Zealand Sign Language. *Language & Communication*, *79*, 95–117. https://doi.org/10.1016/j.langcom.2021.04.003

Meurant, L. (2015). *Corpus LSFB. First digital open access corpus of movies and annotations of French Belgian Sign Language (LSFB)* [LSFB-Lab, University of Namur]. http://www.corpus-lsfb.be

Van Hoey, T. (2023). A semantic map for ideophones. In F. T. Li (Ed.), *Handbook of Cognitive Semantics, Vol. 2* (pp. 129–175). Brill.

A dynamic network of WHAT constructions in ASL: A usage-based constructionist approach

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Keywords: usage-based grammar, construction grammar, multi-word expressions

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We propose that the distributional patterns that a family of four distinct 'what'-signs from American Sign Language (ASL) participate in can be best accounted for in a usage-based, construction-theoretic framework (Lepic, 2019; Wilkinson et al., 2023). Those patterns of 'what' signs reveal they are constructed as units and can be expressed as recurring multi-word expressions similar to what have been observed in numerous studies in spoken languages, particularly English. Those studies on recurring multi-word expressions in spoken languages have been instrumental in guiding linguists to recognize the domain-general processes involved in language processing and use (e.g., Dąbrowska, 2014; Ambridge, 2020). Of these, one key process is the automation of frequent routines (Bybee, 2006). Frequency and entrenchment in the interplay of language structure and language use has also been explored in signed languages, but to a lesser extent (Wilkinson, 2016; Janzen, 2018; Lepic, 2019).

In our talk, we present a preliminary dynamic network of constructions with the 'what'-signs, which 9 hours' worth of ASL data was collected on the internet.

a. WHAT.pu (391 tokens)	b. WHAT.do (166 tokens)	c. WHAT.1 (52 tokens)	d. WHAT.FS (4 tokens)

Figure 1. ASL 'what' signs (Hochgesang et al., 2025, https://www.signingsavvy.com/sign/what/10110/1)

Analysis is based on 613 tokens of these four signs, and we examine what preceding and following signs co-occur with 391 tokens of WHAT.pu; 166 tokens of WHAT.do; 52 tokens of WHAT.1, and 4 tokens of WHAT.fs. Analysis reveals that 'what'-signs often appear in recurring sequences (e.g. [WHAT.do HAPPEN] occurred 19 times; [WHAT.pu MEANING] occurred 5 times) with analyzable structure in a dynamic network of constructions as shown in **Figure 2** (based on the constructional hierarchy model in Langacker, 2008, p. 239). Those construction examples in Figure 1 show that

our data analysis cannot be limited to looking for individual one-to-one form-meaning mappings but rather extended to looking at recurring constructions in ASL to better understand their functions in discourse.

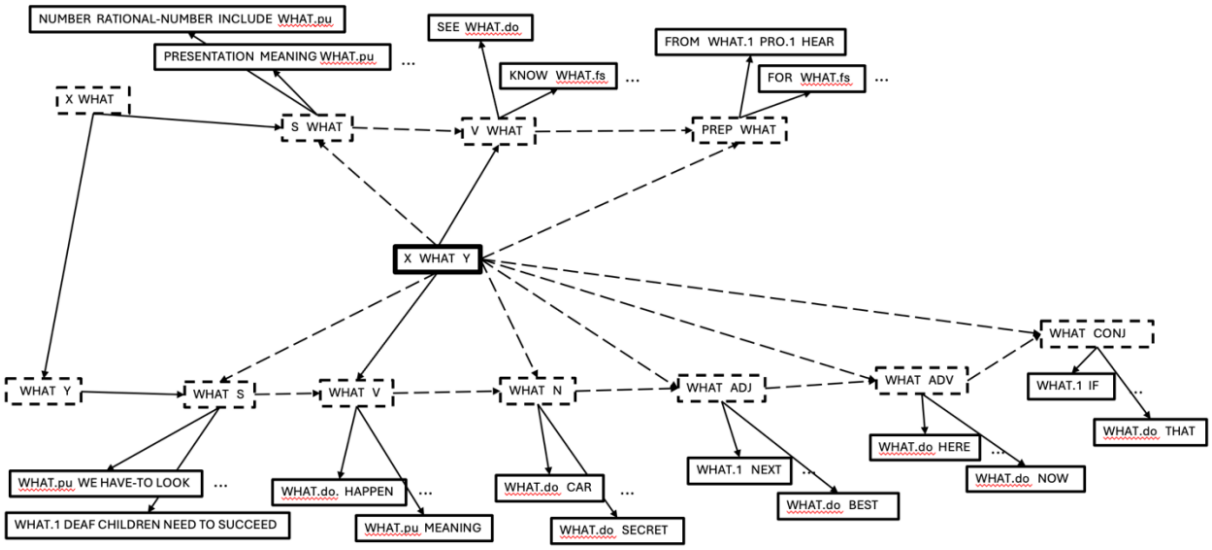

Figure 2. A partial sketch of the network for 'what' signs in ASL

We propose that sequential ASL constructions with 'what' signs that rest on a continuum from more flexible to more highly fixed. These examples demonstrate that ASL users frequently produce and re-use analyzable units, whether individual signs or larger multi-word expressions. We also observe that ASL constructions are recycled as structured units that display different levels of fixedness and complexity, and at multiple levels of schematization. We analyze these constructions as participating in emergent networks of relatively fixed, conventionalized constructions. These constructions become repurposed with more specialized grammatical functions in wider contexts and repackaged as increasingly holistic units. Such an approach provides a useful template for analyzing SL data, expands our understanding of the structure of ASL, and appeals to our human capacity to categorize individual signs and larger, multi-sign structures in which particular signs recur across constructions.

Acknowledgments

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References

Ambridge, B. (2020). Against stored abstractions: A radical exemplar model of language acquisition. *First Language*, *40*(5), 509–559. https://doi.org/10.1177/0142723719869731

Bybee, J. L. (2006). From usage to grammar: The mind's response to repetition. *Language*, *82*(4), 711–733. https://doi.org/10.1353/lan.2006.0186

Dąbrowska, E. (2014). Recycling utterances: A speaker's guide to sentence processing. *Cognitive Linguistics*, *25*(4), 617–653. https://doi.org/10.1515/cog-2014-0057

Hochgesang, J., Crasborn, O., & Lillo-Martin, D. (2025). ASL Signbank. https://doi.org/10.6084/M9.FIGSHARE.9741788

Janzen, T. (2018). KNOW and UNDERSTAND in ASL: A usage-based study of grammaticalized topic constructions. In K. A. Smith & D. Nordquist (Eds.), *Studies in Language Companion Series* (pp. 59–87, Vol. 192). John Benjamins Publishing Company. https://doi.org/10.1075/slcs.192.03jan

Langacker, R. (2008). *Cognitive grammar: A basic introduction* (1st ed.). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195331967.001.0001

Lepic, R. (2019). A usage-based alternative to "lexicalization" in sign language linguistics. *Glossa: a journal of general linguistics*, *4*(1). https://doi.org/10.5334/gjgl.840

Wilkinson, E. (2016). Finding frequency effects in the usage of NOT collocations in American Sign Language. *Sign Language & Linguistics*, *19*(1), 82–123. https://doi.org/10.1075/sll.19.1.03wil

Wilkinson, E., Lepic, R., & Hou, L. (2023). Usage-based grammar: Multi-word expressions in American Sign Language. In T. Janzen & B. Shaffer (Eds.), *Signed Language and Gesture Research in Cognitive Linguistics* (pp. 357–388). De Gruyter. https://doi.org/10.1515/9783110703788-014

Posters

Exploring the role of pointing in Brazilian and Polish Sign Languages

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Keywords: pointing signs, Libras, PJM, comparative linguistics, sign language linguistics

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As noticed by Cooperrider & Mesh (2022) pointing signs are fundamental elements in sign languages, serving referential, locative, and pronominal functions. While pointing is a well-documented phenomenon, comparative studies between different sign languages remain scarce. This research addresses this gap by investigating similarities and differences in pointing strategies between Libras and PJM, aiming to contribute to the broader understanding of linguistic diversity in sign languages.

The primary research questions include: What are the linguistic functions of pointing in Libras and PJM? How do the structural differences between Portuguese and Polish influence the use of pointing signs in these languages? This study employs a qualitative, corpus-based approach to analyze pointing signs. The data sources include two corpora: KorpusPJM from the University of Warsaw and Corpus Libras from the Federal University of Santa Catarina. Additionally, two video narratives from the RISE project, presenting the same children's story about COVID-19 in both Libras and PJM, were analyzed. Pointing signs were categorized based on Johnston's (2013) classification, including referential, determiner, locative, and pronominal functions. The data were organized in tables to compare the frequency and distribution of pointing signs across both languages.

The analysis revealed notable differences in the use of pointing signs. The Libras video (6 minutes and 39 seconds) contained 17 pointing occurrences, primarily classifiers (11 instances), followed by agreement verbs (4 instances) and pronominal references (2 instances). In contrast, the PJM video (2 minutes and 34 seconds) exhibited 15 pointing occurrences, with agreement verbs being the most frequent (6 instances), followed by classifiers (4 instances), pronominal references (2 instances), and locative functions (3 instances). These results indicate that while both languages utilize classifiers and pronominal references, PJM employs more agreement verbs and explicit localization strategies, whereas Libras relies more heavily on classifiers. This preliminary analysis provides insights into the structural and functional aspects of pointing signs in Libras and PJM. The findings suggest that while both languages share common linguistic strategies, their distinct grammatical structures influence the way pointing signs are employed. Future research will expand this comparative analysis by incorporating a larger dataset and further examining the grammatical roles of pointing in sign languages.

By bridging linguistic and cultural perspectives, this study contributes to the recognition of sign languages as complex linguistic systems and underscores the importance of comparative research in sign linguistics.

References

Cooperrider, K., & Mesh, K. (2022). Pointing in gesture and sign. In A. Morgenstern & S. Goldin-Meadow (Eds.), *Gesture in language: Development across the lifespan.* (pp. 21–46). De Gruyter Mouton. https://doi.org/10.1037/0000269-002

Johnston, T. (2013). Formational and functional characteristics of pointing signs in a corpus of Auslan (Australian sign language): are the data sufficient to posit a grammatical class of 'pronouns' in Auslan? *Corpus Linguistics and Linguistic Theory*, *9*(1), 109–159. https://doi.org/10.1515/cllt-2013-0012

Is the frequency of mouth actions age dependent? A corpus-based study of Polish Sign Language

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Keywords: sign language, mouth actions, frequency, corpus-based study

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MOUTHINGS, i.e. mostly silent articulations of words or parts of words while signing, despite being regarded by some as an interference from the surrounding spoken language, seem to be ubiquitous in many sign languages of the world (Crasborn et al., 2008). As has been shown for ASL (Nadolske and Rosenstock, 2007), BSL (Sutton-Spence, 2007), or NGT, the extent of their prevalence can depend on the given sign language and on various sociolinguistic factors such as the degree of bilingualism of the signers, their education etc. However, no such results have been published to date for the Polish Sign Language (PJM).

Our goal is to investigate the frequency of mouthings in PJM and to compare the results with a similar study for NGT conducted by Bank et al. (2011). Our study is based on the data from the Polish Sign Language Corpus that contains signed material gathered from 150 Polish Deaf informants (Wójcicka et al., 2020). The PJM Corpus is the second largest sign language corpus in the world.

For this study, we identified a list of most common signs in the Open Repository (pointing signs excluded) with the aim to analyze mouth actions – i.e. mouthings and mouth gestures – that co-occur with these signs, and to determine how often they are present in PJM, taking also into account the age and gender of the signers. For each of these signs, 100 tokens were randomly chosen, and short clips including these tokens with an approximately 5-second margin for context were prepared with the use of a Python script. We annotated these tokens in ELAN, adding information about the presence or absence of a mouth action and its type. The data selected for this study consisted of utterances produced by signers representing the following age groups (at least 27 persons each, Figure 1):

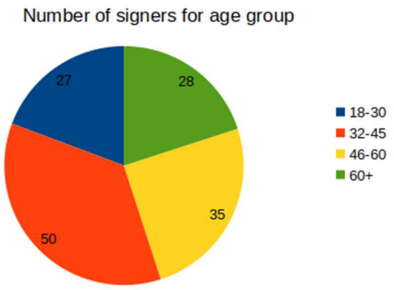

Figure 1

There were 74 women and 66 men among these informants.

As shown in Figure 2, the main finding of our study is that the distribution of mouth actions in PJM texts is dependent on the signer's age. In particular, the number of signs accompanied by mouthing was by far the highest in the oldest population (60+). In our conclusions, we link this fact to the sociolinguistic context of the Deaf education model in Poland.

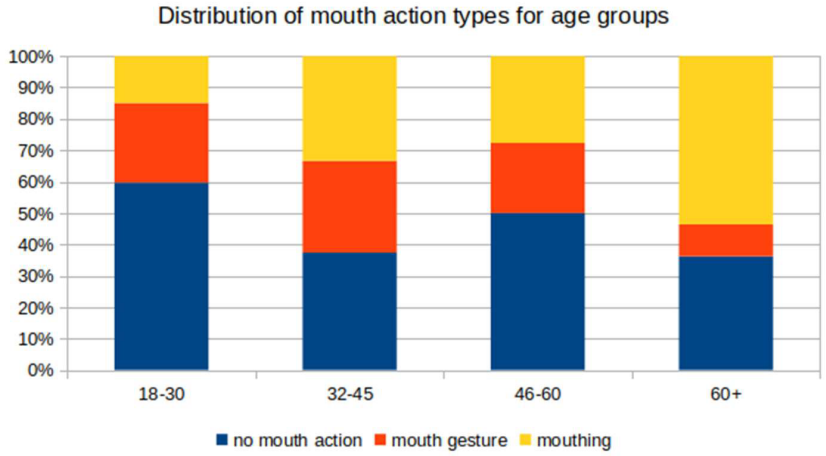

Figure 2

Interestingly, another factor that has often been linked to the frequency of mouthings, namely the signer's gender (see e.g. Proctor and Cormier, 2023), does not seem to play a role in the data we have analyzed so far (Figure 3).

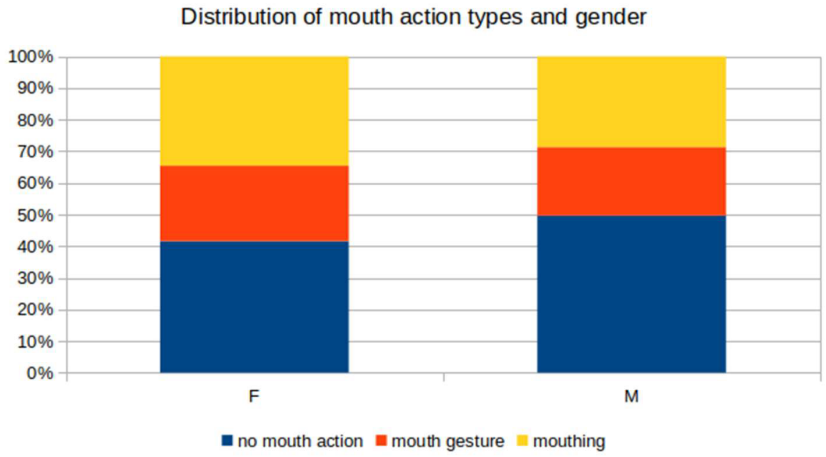

Figure 3

The aim of the proposed poster is to present the details of our analysis for the dataset consisting of 20 most frequent lexical items.

References

Bank, R., Crasborn, O. A., & Van Hout, R. (2011). Variation in mouth actions with manual signs in Sign Language of the Netherlands (NGT). *Sign Language & Linguistics*, *14*(2), 248–270. https://doi.org/10.1075/sll.14.2.02ban

Crasborn, O. A., Van Der Kooij, E., Waters, D., Woll, B., & Mesch, J. (2008). Frequency distribution and spreading behavior of different types of mouth actions in three sign languages. *Sign Language & Linguistics*, *11*(1), 45–67. https://doi.org/https://doi.org/10.1075/sll.11.1.04cra

Nadolske, M. A., & Rosenstock, R. (2007). Occurrence of mouthings in American Sign Language: A preliminary study. In P. M. Perniss, R. Pfau, & M. Steinbach (Eds.), *Visible Variation* (pp. 35–62). Mouton de Gruyter. https://doi.org/10.1515/9783110198850.35

Proctor, H., & Cormier, K. (2023). Sociolinguistic variation in mouthings in British Sign Language: A corpus-based study. *Language and Speech*, *66*(2), 412–441. https://doi.org/10.1177/00238309221107002

Sutton-Spence, R. (2007). Mouthings and simultaneity in British Sign Language. In M. Vermeerbergen, L. Leeson, & O. A. Crasborn (Eds.), *Current Issues in Linguistic Theory* (pp. 147–162, Vol. 281). John Benjamins Publishing Company. https://doi.org/10.1075/cilt.281.07sut

Wójcicka, J., Kuder, A., Mostowski, P., & Rutkowski, P. (Eds.). (2020). *Open Repository of Polish Sign Language Corpus*. Wydział Polonistyki Uniwersytetu Warszawskiego. Retrieved August 21, 2025, from https://www.korpuspjm.uw.edu.pl/en

Expression of motion events in Deaf children with late acquisition of French Sign Language (LSF)

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Keywords: late acquisition, deaf children, late signers, motion events, French Sign Language

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AMONG Deaf children, only 5% are born into a Deaf family and receive a language input in sign language from birth (Humphries et al., 2019). Most are introduced to it late in childhood or adolescence, which impacts acquisition of several aspects of sign language grammar. Previous research highlights its effects on spatial language use, particularly in the use of classifier predicates, which are used less frequently due to their morphological complexity, since they are composed of two morphological elements (manual configuration and movement) to provide information on the motion event of the referent.

In our study, we encode motion events in production by Deaf children who acquired LSF late (the majority of whom acquired it from the age of 5). Here we focused on the encoding of Path and Manner given that these elements require a mastery of iconic structures which are the result of cognitive transfer operations, anamorphosing real or imaginary experiences in the space of signing (Cuxac, 2000).

To explore this question, we analyzed the productions of ten late signers children, divided into three age groups (7-8, 9-10, and 11-12 years). The youngest had an average of 2.5 years of exposure to LSF, a duration proportional to age in the other groups. In the absence of a control group, we ensured comparability by aligning our methodology with that of Schoder (Schoder, 2019), which enabled us to draw relevant parallels with her data on deaf children signers of deaf parents. Stimuli videos from the ESPACE project (Hickmann et al., 2009), illustrating motion events, served as elicitation support.

Our results show that children mainly use two iconic structures to encode movement: Classifier Predicates (CP) and Constructed Actions (CA). CP are used for all target movements and is expressed more with a locative in older children, mainly used to encode Path. Then, CA often encode Path and Manner simultaneously to express motion. These structures are often realized in a proto-linguistic form, meaning that these structures are not produced with all the necessary parameters (often, the non-manual parameters are missing). But their presence in all age groups suggests that, despite a late acquisition context, children develop complex spatial strategies to express a motion event. Although their use of spatial structures is lower than deaf children of deaf

parents in terms of frequency, they successfully use alternative strategies, including proto-linguistic forms, pointing, and tracing in space.

References

Cuxac, C. (2000). *La langue des signes Française (LSF): Les voies de líconicité*. Ophrys.

Hickmann, M., Taranne, P., & Bonnet, P. (2009). Motion in first language acquisition: Manner and Path in French and English child language*. *Journal of Child Language*, *36*(4), 705–741. https://doi.org/10.1017/S0305000908009215

Humphries, T., Kushalnagar, P., Mathur, G., Napoli, D. J., Rathmann, C., & Smith, S. (2019). Support for parents of deaf children: Common questions and informed, evidence-based answers. *International Journal of Pediatric Otorhinolaryngology*, *118*, 134–142. https://doi.org/10.1016/j.ijporl.2018.12.036

Sallandre, M.-A., Schoder, C., & Hickmann, M. (2018). Motion expression in children's acquisition of French Sign Language. In M. Hickmann, E. Veneziano, & H. Jisa (Eds.), *Trends in Language Acquisition Research* (pp. 365–390, Vol. 22). John Benjamins Publishing Company. https://doi.org/10.1075/tilar.22.18sal

Schoder, C. (2019). *L'expression du déplacement par l'enfant sourd en langue des signes française : vers une perspective translinguistique* [Doctoral dissertation, University of Paris 8 Vincennes Saint-Denis].

Interactional sequences from signing patterns in the Swedish Sign Language Corpus

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Keywords: corpus linguistics, interaction, conversation, discourse, Swedish Sign Language

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ABOUT two decades since the first sign language corpora launched, a number of sign language corpora are now at a stage where they are used in linguistic research (Fenlon and Hochgesang, 2022). However, many such studies involve additional – and substantial – manual annotation work targeting their specific research questions. Here, I explore the possibilities of using signing patterns from sign annotations alone to identify and analyze interactional sequences in the Swedish Sign Language (STS) Corpus (Öqvist et al., 2020).

A number of scholars have used sign language data to explore the pragmatics of conversation, such as in turn-taking and repair sequences, through manual annotation of interaction (De Vos et al., 2015; Skedsmo, 2020). However, Börstell (2024) illustrated that continuer backchannels could be identified in the STS Corpus through sign distribution alone, without extra annotating.

In this paper, I look at all sequences of 10 chronologically ordered – but potentially overlapping – signs from the dyadic conversational texts in the STS Corpus (153,947 sign tokens) and use the signing patterns as an indicator of the type of interaction happening in each sequence. For example, if all 10 signs belong to one signer, it is mainly a monologue-type sequence; if there is a single-sign insertion, it might be backchanneling; if both signers sign, it could either be a signer change (turn-taking) or parallel signing (negotiation/overlap) (Figure 1). Such profiles are identified calculating both signer diversity (entropy) and number of changes within each 10-sign window.

Using these sequences and their classification, I explore what types of signs are relatively more frequent in each type (e.g., monologue vs. the other more interactive types) (Figure 2). While monologue sequences involve "content" signs (e.g., nouns/verbs/depiction), the interactive sequences are more likely to involve functional/pragmatic signs (e.g., interjections/gestures/pointing) – which is the pattern one would expect. Thus, this methodology utilizes existing sign annotations to identify dynamic patterns in sequences within texts that otherwise require extensive manual annotation work. Such sequential patterns can then be explored further: by quantifying sign occurrences within sequences (Figure 2) as well as serving as a starting point for qualitative analysis; a combined approach for corpus-based pragmatics.

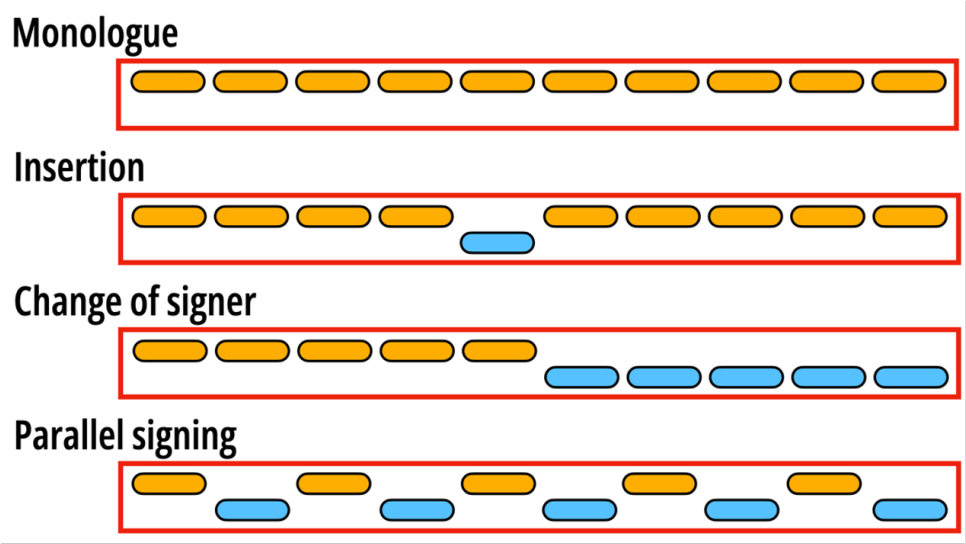

Figure 1. Schematic representation of interactional profiles in signing sequences. Shapes represent consecutive sign annotations and fill colors and vertical position represent signer

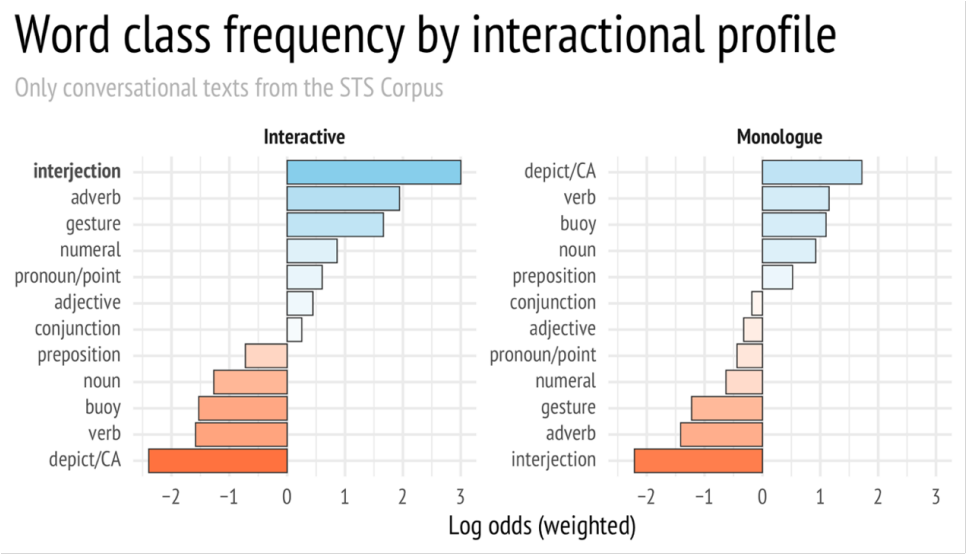

Figure 2. Relative frequency (weighted log odds) of sign types in interactive vs. monologue signing sequences

References

Börstell, C. (2024). Finding continuers in Swedish Sign Language. *Linguistics Vanguard*, *10*(1), 537–548. https://doi.org/10.1515/lingvan-2024-0025

De Vos, C., Torreira, F., & Levinson, S. C. (2015). Turn-timing in signed conversations: coordinating stroke-to-stroke turn boundaries. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.00268

Fenlon, J., & Hochgesang, J. A. (Eds.). (2022). *Signed Language Corpora*. Gallaudet University Press. https://doi.org/10.2307/j.ctv2rcnfhc

Öqvist, Z., Kankkonen, N. R., & Mesch, J. (2020). STS-korpus: A Sign Language Web Corpus Tool for Teaching and Public Use. In E. Efthimiou, S.-E. Fotinea, T. Hanke, J. A. Hochgesang, J. Kristoffersen, & J. Mesch (Eds.), *Proceedings of the LREC2020 9th Workshop on the Representation and Processing of Sign Languages: Sign Language Resources in the Service of the Language Community, Technological Challenges and Application Perspectives* (pp. 177–180). European Language Resources Association (ELRA). Retrieved August 21, 2025, from https://www.sign-lang.uni-hamburg.de/lrec/pub/20014.pdf

Skedsmo, K. (2020). Multiple Other-Initiations of Repair in Norwegian Sign Language. *Open Linguistics*, *6*(1), 532–566. https://doi.org/10.1515/opli-2020-0030

The corpus sample comprises fifteen glosses with five sentences each. These glosses were selected based on several criteria to determine if and how these influence sentence selection: they represent a variety of concepts (e.g. concrete things, abstract concepts, verbs) and they yield a varying number of results when searching the corpus annotations. This provided valuable insights into the impact of search parameters, the type of corpus elicitation task and the software used, i.e. Eudico Language Annotator (ELAN).

Gebarometer: how to measure the spread and use of signs?

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Keywords: lexicography, community sourcing, sign language dictionary

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CORPUS Linguistics is usually seen as the gold standard to verify the existence of lexemes in a language (Fenlon and Hochgesang, 2022; Prinsloo, 2015). However, sign language corpora are nowhere near as large or as easily searchable as spoken language corpora (Fenlon and Hochgesang, 2022; Fenlon et al., 2015; Zwitserlood et al., 2013). In order to maintain momentum in expanding a sign language dictionary, it is necessary to complement this approach with other methods, i.e. community engagement (Berding and Hanke, 2015).

To complement irregular and infrequent physical community expert meetings, a more sustainable additional method was sought. A small but daily lexical survey through email appeared to be the most feasible and affordable approach. In September 2021 a four week pilot took place. Five emails a week were sent to a group of 15 highly proficient signers through MailChimp. Each email contained one sign which was not included yet in the dictionary. Below the gif showing the sign and the possible translation(s), a poll was embedded with four options:

- Yes, I know this sign and yes I use it myself,
- Yes, I know this sign but no I do not use it myself,
- No, I do not know this sign,
- I have my doubts about this sign.

Despite the small group of participants, the system proved promising. All feedback and insights gained from this pilot were implemented before the official launch in January 2022.

Since then, the group has increased to 67 deaf signers, from varying age groups etc. All participants were specially selected for their strong command of the language and their strong ties to the local signing community. Only people included in the mailing list can reply to the poll, meaning the team has full control over the results.

Embedding the poll allows participants to respond with one single click in the email itself. Precisely because it is so short and simple, response rates have remained relatively stable since January 2022.

In September 2022 a user-evaluation of Gebarometer[1] was conducted. This showed a

[1]Translation: sign-o-meter, combining sign and (baro)meter, since it is meant to 'measure' how and where signs are used.

positive attitude towards the surveys, some participants even indicated wanting more than one sign every weekday. Since then the amount has therefore been increased.

Future challenges still include: determining regional variation and automating the process.

References

Berding, S., & Hanke, T. (2015). Documentation of the Feedback-System and its Integration into iLex [Publisher: Universität Hamburg Version Number: 2]. https://doi.org/10.25592/UHHFDM.829

Fenlon, J., Cormier, K., & Schembri, A. (2015). Building BSL SignBank: The Lemma Dilemma Revisited. *International Journal of Lexicography*, *28*(2), 169–206. https://doi.org/10.1093/ijl/ecv008

Fenlon, J., & Hochgesang, J. A. (Eds.). (2022). *Signed Language Corpora*. Gallaudet University Press. https://doi.org/10.2307/j.ctv2rcnfhc

Prinsloo, D. (2015). Corpus-based Lexicography for Lesser-resourced Languages — Maximizing the Limited Corpus. *Lexikos*, *25*. https://doi.org/10.5788/25-1-1300

Zwitserlood, I., Kristoffersen, J., & Troelsgård, T. (2013). Issues in Sign Language Lexicography. In H. Jackson (Ed.), *The Bloomsbury companion to lexicography*. Bloomsbury Academic.

Syntactic properties of classifier predicates in Polish Sign Language (PJM) – research challenges and initial results

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Keywords: Polish Sign Language, classifier predicates, sign language syntax

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One of the most important areas of Polish Sign Language (PJM, *polski język migowy*) syntax that has not yet received a comprehensive study is classifier predicates, which are composed of classifiers and morphemes denoting a referent's movement or location, or the handling of referents (Zwitserlood, 2012). An in-depth description of their syntactic properties has been made in few extensive analyses, one of them being a corpus-based study of clause-like units (CLUs – explained below) in Auslan (Hodge, 2013).

I am currently conducting a study of syntactic properties of classifier predicates in PJM as a part of my PhD project. The aim of this study is to analyze PJM utterances with classifier predicates in terms of their argument structure, valency changes, referent clarification, and relation to non-manual elements and constructed action (CA). Furthermore, the goal is to expand on findings for CLUs with classifier predicates in Auslan in Ferrara (2012) and Hodge (2013).

The research material comes from the Corpus of Polish Sign Language (Wójcicka et al., 2020) created by the Section for Sign Linguistics at the University of Warsaw, which is currently one of the world's largest annotated sign language corpora. For this study, I chose to analyze data from the comic strips retelling task (task #13), as it potentially includes a large number of utterances with classifier predicates.

The annotation is conducted using the ELAN software. The crucial step is the annotation stage involving dividing the sign texts into clause-like units, finding the right predicates and arguments, assigning semantic roles and valency to those elements. This part is currently underway and is one of the most challenging ones, that is why I want to present it as a part of my poster. Clause-like units (CLUs) are defined as "basic articulatory chunks of propositional meaning" (Johnston, 2019). Identifying and analyzing clause-like units in the PJM Corpus is based on a theoretical framework of composite utterances, lexicogrammar and clause linkage and on methods used by Hodge (2013). Predicates and arguments are being assigned semantic roles from the list proposed in the Auslan Corpus Annotation Guidelines (Johnston, 2019).

The purpose of the annotation is to collect a comparable number of CLUs with and without classifier predicates (about 1000 in each category). There are tendencies that have been observed based on the data annotated so far (around 117 CLUs with CL predicates from 4 informants):

- About 60% of CL predicates were accompanied by a noun sign referring to the classifier within the same CLU or in close proximity (to 3 CLUs).
- So far no CLUs with CL predicates and a verb-argument structure were found, only CLUs with argument-verb structure.
- In most CLUs with CL predicates the predicate is in the sentence-final position or is followed by non-arguments.

The preliminary results correspond with patterns described cross-linguistically in Emmorey (Emmorey, 2003).

References

Emmorey, K. (Ed.). (2003). *Perspectives on classifier constructions in sign languages* [OCLC: 1166779858]. Psychology Press.

Ferrara, L. (2012). *The grammar of depiction: Exploring gesture and language in Australian Sign Language (Auslan)* [Doctoral dissertation, Macquarie University].

Hodge, G. (2013). *Patterns from a signed language corpus: Clause-like units in Auslan (Australian sign language)* [Doctoral dissertation, Macquarie University].

Johnston, T. A. (2019). Clause constituents, arguments and the question of grammatical relations in Auslan (Australian Sign Language): A corpus-based study. *Studies in Language*, *43*(4), 941–996.

Wójcicka, J., Kuder, A., Mostowski, P., & Rutkowski, P. (Eds.). (2020). *Open Repository of Polish Sign Language Corpus*. Wydział Polonistyki Uniwersytetu Warszawskiego. Retrieved August 21, 2025, from https://www.korpuspjm.uw.edu.pl/en

Zwitserlood, I. (2012). Classifiers. In R. Pfau, M. Steinbach, & B. Woll (Eds.), *Sign Language: An International Handbook* (pp. 158–186). DE GRUYTER.

Negative nonmanual markers in Brazilian Sign Language

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Keywords: negation, nonmanual markers, headshake, mouth shape, Brazilian Sign Language

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DIFFERENT sign languages express negation using manual and/or nonmanual markers. Manual markers include the standard negative sign NOT, negative pronouns, such as NOBODY and NOTHING, or verbs with incorporated negation. Nonmanual markers vary across languages and can involve head movements and mouth articulation. Typically, sign languages can use both types of markers, but they have been typologically categorized as either manual dominant or nonmanual dominant, referring to their obligatory type of negation markers (Zeshan, 2004). This paper presents a study on negative nonmanual markers in Brazilian Sign Language (Libras), using corpus data and a Computer Vision approach.

Previous research on Libras suggests that the obligatory negative marker in this language is nonmanual (Quadros, 1999; Arrotéia, 2005; Quadros, 2019, Garcia, 2024, Garcia and Lourenço, 2025). Arrotéia (2005) describes the negative nonmanual markers in Libras as a negation face (eyebrow lowering, a specific mouth shape, and a head nod) and an optional headshake, the latter being affective rather than syntactic according to her. Garcia (2024) analyzed the modification of the mouth shape as the main negative marker in Libras.

This study analyzed ten Libras signers, whose videos were extracted from the Corpus Libras (Quadros et al., 2020), resulting in approximately 193 minutes of annotated data. We additionally annotated ELAN files for headshakes, mouth markings, and negative signs. We found 483 negated sentences and 525 negative signs. Regarding the manual component, about 95% of the sentences are articulated with a negative sign. Mouth marking was present in 66% of the sentences, with 'puckered lips,' 'lips corners down,' and 'dimpled lips' being the most frequent shapes. About 68% of the sentences included headshake and it spread beyond the scope of the negative sign in 50.3% of the headshake occurrences. Additionally, 93.2% of the sentences containing headshake also included a manual negative sign, emphasizing the secondary role of headshake.

Following Kimmelman et al. (2024), we used Computer Vision to study kinetic properties of the headshakes, employing OpenFace (Baltrusaitis et al., 2018) to extract head rotation measurements (yaw axis representing the headshake). We found that duration and amplitude of headshake were significantly higher with spreading.

These results seem to indicate that although nonmanual marking is significantly present in negative sentences in Libras, the negative sign is the most frequent marker of negation, and nonmanual-only marked negation in Libras is rare. We also observed more

variation in the mouth shapes used in negative sentences compared to the initial description of 'negation face'.

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References

Arrotéia, J. (2005). *O papel da marcação não-manual nas sentenças negativas em Língua de Sinais Brasileira (LSB)* [Master's thesis, Universidade Estadual de Campinas].

Baltrusaitis, T., Zadeh, A., Lim, Y. C., & Morency, L.-P. (2018). OpenFace 2.0: Facial Behavior Analysis Toolkit. *2018 13th IEEE International Conference on Automatic Face & Gesture Recognition (FG 2018)*, 59–66. https://doi.org/10.1109/FG.2018.00019

Garcia, R. K. P. (2024). *Marcadores manuais e não-manuais em sentenças com negação na Língua Brasileira de Sinais: uma descrição baseada em corpus* [Doctoral dissertation, Universidade Federal de Minas Gerais].

Garcia, R. K. P., & Lourenço, G. (2025). Negação em Língua Brasileira de Sinais: uma descrição baseada em corpus. *Revista da ABRALIN*, 922–946. https://doi.org/10.25189/rabralin.v23i2.2171

Kimmelman, V., Oomen, M., & Pfau, R. (2024). Headshakes in NGT: Relation between Phonetic Properties & Linguistic Functions. In E. Efthimiou, S.-E. Fotinea, T. Hanke, J. A. Hochgesang, J. Kristoffersen, & J. Mesch (Eds.), *Proceedings of the LREC-COLING 2024 11th Workshop on the Representation and Processing of Sign Languages: Evaluation of Sign Language Resources* (pp. 159–167). European Language Resources Association (ELRA).

Quadros, R. M. d. (1999). *Phrase structure of Brazilian Sign Language* [Doctoral dissertation, Pontifícia Universidade Católica do Rio Grande do Sul].

Quadros, R. M. d. (2019). *Libras*. Parábola.

Quadros, R. M. d., Schmitt, D., Lohn, J. T., & Leite, T. d. A. (2020). *Corpus de Libras*. Retrieved August 21, 2025, from http://corpuslibras.ufsc.br/

Zeshan, U. (2004). Hand, head, and face: Negative constructions in sign languages. *Linguistic Typology*, *8*(1), 1–58. https://doi.org/10.1515/lity.2004.003

A cognitive study on medical text comprehension in the Deaf: The role of Polish Sign Language translations and Easy-to-Read Texts

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Keywords: text adaptation, ETR texts, text simplification, translations, informational accessibility, communication accessibility

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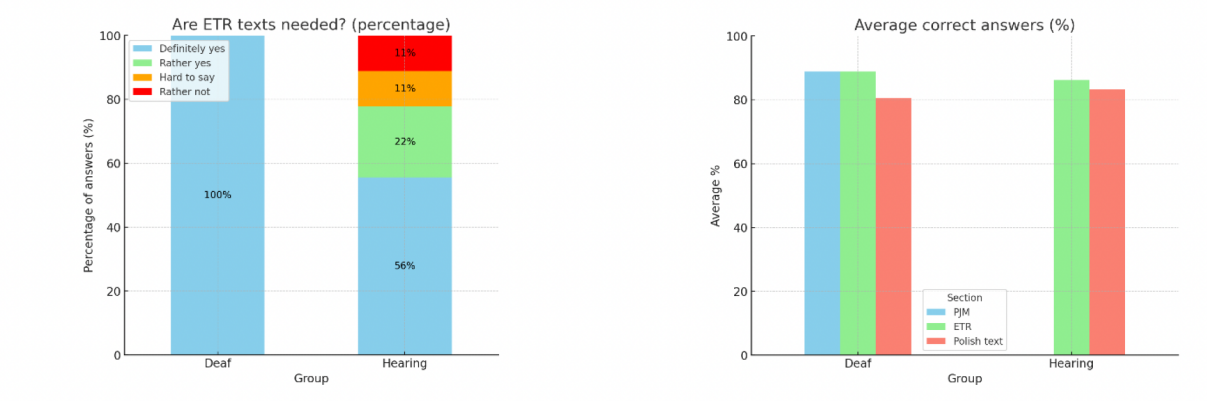
THE aim of this paper is to investigate comprehension of medical texts among Deaf individuals in Poland, with a focus on the role of text adaptations such as Easy-to-Read (ETR) versions, and Polish Sign Language (PJM) translations. Reading skills are crucial for processing information, but recent data show that 39% of Polish adults struggle with understanding written texts (Sitek et al., 2024). In Poland, as in many other countries, the Internet has become a key source of knowledge. However, online texts often contain specialized and complex vocabulary, which can be challenging even for native speakers. For the Deaf, who acquire Polish as a second or even third language, these texts present an even higher barrier (Kotowicz, 2013). International research highlights that Deaf communities encounter persistent barriers in healthcare access, including limited availability of comprehensible health information (Chandanabhumma et al., 2024). Prior studies in the United States show that simplifying medical texts can significantly improve comprehension for Deaf readers (Kushalnagar et al., 2018).

To address these issues, we used a medical text on oncology, sourced from a publicly available website. The material was divided into three fragments and then adapted into three versions: the original text, an ETR adaptation based on Inclusion Europe standards, and a PJM video translated by a Deaf interpreter. Deaf participants received all three versions, while hearing participants were given two (excluding PJM). After each fragment, they answered comprehension questions and completed background and preference questionnaires. Comprehension was assessed through test results and qualitative feedback, with readability additionally measured using tools developed by Charzyńska et al. (2015).

The following was observed:

- Deaf participants demonstrated notably higher comprehension with PJM translations and Easy-to-Read (ETR) texts compared to standard Polish, whereas hearing participants showed equal comprehension for both original and ETR texts. This highlights that PJM and ETR formats are especially effective for Deaf readers.



- All respondents stated that ETR texts were easy to understand and stressed the importance of providing such adaptations for different groups, especially where clear communication is necessary.
- Text adaptations were shown to enhance accessibility not only for Deaf individuals but also for others with limited proficiency in Polish.

We conclude that text adaptation – whether through ETR or PJM translation – plays a crucial role in improving the accessibility of medical information for Deaf communities. However, further research with a larger sample is needed to confirm these findings and to explore how different adaptation strategies can be optimized for diverse audiences.

References

Chandanabhumma, P. P., Ratakonda, S., Panko, T., Cuculick, J., Hauser, P., Paasche-Orlow, M. K., Fetters, M. D., & McKee, M. M. (2024). Examining the differences of perceptions and experience with online health information accessibility between deaf and hearing individuals: A qualitative study. *Patient Education and Counseling*, *122*. https://doi.org/10.1016/j.pec.2024.108169

Charzyńska, E., Gruszczyński, W., Broda, B., Dębowski, Ł., Hadryan, M., Nitoń, B., & Ogrodniczuk, M. (2015). Measuring Readability of Polish Texts. In *Human Language Technologies as a Challenge for Computer Science and Linguistics Proceedings of the 7th Language & Technology Conference* (pp. 445–449). Fundacja Uniwersytetu im. Adama Mickiewicza.

Kotowicz, J. (2013). Proces czytania głuchych. *Rocznik Komisji Nauk Pedagogicznych, LXVI*, 173–184.

Kushalnagar, P., Smith, S., Hopper, M., Ryan, C., Rinkevich, M., & Kushalnagar, R. (2018). Making Cancer Health Text on the Internet Easier to Read for Deaf People Who Use American Sign Language. *Journal of Cancer Education*, *33*(1), 134–140. https://doi.org/10.1007/s13187-016-1059-5

Sitek, M., Pokropek, A., Penszko, P., Chyl, K., & Haman, J. (2024). *Główne wyniki międzynarodowego badania umiejętności dorosłych PIAAC 2023*. Instytut Badań Edukacyjnych. Warsaw. Retrieved September 4, 2025, from https://ibe.edu.pl/images/Badania%20midzynarodowe/Publikacje/Raport-PIAAC-2023.pdf

Who Signs More? A Corpus-Based Analysis of Narrative Length in Polish Sign Language

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Keywords: narratives, corpus linguistics, economy, PJM

THE aim of this paper is to analyze narrative economy in sign language discourse in terms of the number of linguistic units (e.g., signs) used to describe an event. While a language user's individual preferences undoubtedly shape narration (i.e., some aspects of narrative economy may be considered a stylistic choice), the number of words used to describe an event may also be plot-driven. By analyzing word count as a measurable variable, we can explore how the event structure of a given story shapes the signer's information packaging in narration. In this paper, we analyze to what extent the length and structure of narratives in Polish Sign Language (PJM) differ between signers and whether the age or gender of signers affects the length of narratives. To address the above research questions, we examined a selection of narratives coming from the PJM Corpus (Rutkowski et al., 2017; Wójcicka et al., 2020), a large annotated collection of video recordings of Deaf PJM users. For the purposes of the present study, we analyzed narratives elicited with 6 comic stories, produced by more than 50 Deaf individuals (age groups: 18-30, 31-45, 46-60, and 61+).

We compared the distribution of tokens in narratives produced for each comic, considering gender and age group as variables. We also compared the distribution of tokens between stories. The Mann-Whitney test was used to compare the number of tokens among women and men (for each comic), and the Kruskal-Wallis test to compare age groups. Furthermore, we analyzed the image complexity of the comic stimuli (cf. Mahon and Lukasiewicz, 2024). Some of our findings are shown below:

Fig.	Median	Range of tokens
1	29	from 18 to 86
2	27	from 13 to 68
3	23	from 10 to 63
4	19	from 10 to 57
5	18	from 10 to 39
6	19,5	from 10 to 74

Fig.	Avg. number of sign tokens per story	
	F	M
1	32	29.5
2	34	28
3	26.11	26.34
4	24	26
5	20	18.5
6	23	22

Fig.	Complexity (Mahon, 2024)
1	46.19
2	45.06
3	45.02
4	44.68
5	44.33
6	47.57

The following was observed when it comes to the narrative economy of the examined signed narratives:

- The analysis showed that neither gender nor age significantly affects the length of narratives in PJM.

- The image complexity of the stimuli (comics) was similar, suggesting it did not influence narrative length.
- There are significant differences in the length and structure of narratives between different signers (as shown by the range of tokens used). These differences may result from individual factors such as style, experience, and proficiency in PJM.
- The average length of the narratives is determined by the stimulus/topic (i.e., it is plot-driven – it depends to a large extent on the content of the narrative). There were significant differences in the median number of signs between stories.

We conclude that corpus-based research offers a valuable framework for analyzing sign language narratology, enriching our understanding of narrative construction and text structure economy in the visual-spatial modality. Further research is needed with a larger sample and diverse stimuli. It could be insightful to compare the above results with studies on other sign languages and investigate the impact of other factors (e.g., education level) on utterance length and structure.

References

Mahon, L., & Lukasiewicz, T. (2024). Minimum description length clustering to measure meaningful image complexity. *Pattern Recognition*, *145*. https://doi.org/10.1016/j.patcog.2023.109889

Rutkowski, P., Kuder, A., Filipczak, J., Mostowski, P., Łacheta, J., & Łozińska, S. (2017). The design and compilation of the Polish Sign Language (PJM) Corpus. In P. Rutkowski (Ed.), *Different faces of sign language research* (pp. 125–151). Wydział Polonistyki Uniwersytetu Warszawskiego.

Wójcicka, J., Kuder, A., Mostowski, P., & Rutkowski, P. (Eds.). (2020). *Open Repository of Polish Sign Language Corpus*. Wydział Polonistyki Uniwersytetu Warszawskiego. Retrieved August 21, 2025, from https://www.korpuspjm.uw.edu.pl/en

Syntactic Variation in Egyptian Sign Language Frog Stories

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Keywords: syntax, variation, language contact

One Deaf and One CODA, both signers of the Alexandrian variety of Egyptian Sign Language from birth, were asked to perform a retelling of the wordless picture story "Frog, Where Are You?" (Mayer, 1969). Those stories were filmed, glossed, and translated using ELAN and subsequently analyzed for their morphosyntactic structures. The differing language experiences of the two storytellers clearly affect the devices chosen to tell the story. Although both rely on strategies unique to the visuomanual modality such as constructed action and size and shape specifiers (SASS), the two storytellers use different basic word orders: SOV by the Deaf signer and VSO (congruent with standard Arabic) by the CODA signer. The CODA produced some highly marked Arabic structures such as fingerspelling the standard Arabic word for subordinating "when" [عندما], using the preposition "on" [على] between the verb "search" and its object, and a calqued relative clause.

Word order grammaticality judgements were also elicited from both storytellers and are summarized in table 1 below. The Deaf signer judges VSO word order less acceptable, although SOV is the unmarked order in standard Arabic, and the most-used structure by the CODA in his rendition of the Frog Story. The CODA judges SOV ungrammatical, although SOV word order was observed in the CODA's signing outside of the narrative context– indicating that presentational registers invite stronger influence from Arabic.

Analysis of the narratives also revealed several conjunctions in the language which had previously been claimed to lack conjunctions (Jamīl, 2002), as well as some insights into motion event constructions (Slobin, 2004).

Although both storytellers are from the same community, their differing language experiences result in the use of distinct constructions in their narratives, with Arabic syntax strongly influencing the CODA's prepared narrative, reflecting a tension between sign-native and Arabic-borrowed grammatical structures in terms of congruence, prestige, and register. This is akin to syntactic variation in other sign languages whose unmarked syntactic structures are incongruent with those of an ambient spoken language, but this may be the first described case of a VSO–SOV alternation.

Stimulus Type + Example	**Deaf Storyteller's Judgements**	**CODA Storyteller's Judgements**
SOV: BOY CHICKEN EAT	✅	X*
SVO: BOY EAT CHICKEN	✅	✅
OSV: CHICKEN BOY EAT	X	X
VSO: EAT BOY CHICKEN	??	✅
VOS: WHO EAT CHICKEN WHO? EAT CHICKEN ME DESIRE EAT CHICKEN 1SG.WANT	✅ In question answering or some modal constructions	X

Table 1. Word order grammaticality judgements.

Structures used by Deaf Signer	**Structures used by both**	**Structures used by CODA**
SOV, SVOV	SV(O)	VSO
	Conjunctions	Calqued relative clause
	Figure:DH-Ground:NDH Motion Event Constructions	Fingerspelling of function word
WH Rhetorical Question	Size and Shape Specifiers	Prepositions distinguished from verbs via reduplication
Right-headed Compound	Constructed Action	Left-headed Compound
More adverbial and other mouthing		More Arabic Mouthing
		Mirative Headshake

Table 2. Summary of Grammatical Structures Observed in narratives.

References

Jamīl, S. S. (2002). *Lughatu l-ishārati wa tawasuli ma' l-hayāti*. Asdaa' Association.

Mayer, M. (1969). *Frog, where are you?* Dial Books for Young Readers.

Slobin, D. I. (2004). The Many Ways to Search for a Frog: Linguistic Typology and the Expression of Motion Events. In S. Strömqvist & L. Verhoeven (Eds.), *Relating events in narrative: Vol. 2. Typological and contextual perspectives* (pp. 219–257). Lawrence Erlbaum Associates.

Conceptualizing TIME in Austrian Sign Language

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Keywords: time, metaphorical concepts, temporal signs and constructions, Austrian Sign Language (ÖGS), ÖGS corpus, LedaSila lexicon databank

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ACCORDING to Langacker (1987) TIME as well as SPACE, MATERIAL, COLOR and others are 'basic domains' as they date from embodied human experience. Evans (2013) adds that human temporal concepts are subjective ones, as they are based on real experiences. With these experiences, we possess the ability to perceive different aspects of them: we can perceive temporal simultaneity, succession, event/activity order, events in the present and those settled in the past, and so on. With sign language (SL) research, Wilcox (2002) and Taub (2001) highlight that iconicity and metaphorical mapping are essential processes in creating signs, including more abstract ones.

Following a functional-cognitive language description, the current study on Austrian Sign Language (ÖGS) is two-folded: The first analysis focus on identified temporal signs and/or signed constructions of expressing TIME in ÖGS Corpus date. In doing so, several temporal devices and coding strategies of TIME have been identified implying:

(A) Using *timeline-based signing* as a kind of grid.

(B) Using individual *time signs*, either based on timelines or not, which are used solely to coding temporal meaning or which express both temporal and another related/unrelated meaning such as aspect or negation.

(C) Using *special manual and nonmanual patterns* to indicate temporal meaning.

(D) Using *temporal anaphor*.

These findings allow to identify the use of different subdomains of TIME, including time process, time order, time span (duration and sequential process), human-development-based time, nature-based time, and perceiving time. Furthermore, the occurrence of temporal indication varies significantly across different signed discourses. Analyses show that both the frequency of temporal indications and the types of temporal devices used primarily depend on the type of discourse.

The second study investigates metaphorical concepts of TIME based on Deaf Native Signers' associations with time-related signs which date from the LedaSila lexicon databank. First, Deaf Native Signers were asked to determine whether they associate individual elements of the various SL parameters with a concrete entity, action, or anything else that, in their estimation, related to the given time-related signs. Second, they were asked to note whether they perceive a correlation between the time concept ex-

pressed by each time-related sign and a concrete concept of an entity, action, or anything else.

The analyses show that – due to the informants' devices – common features lead to groups of time-related signs which show different conceptual strategies and thus reasons for the motivation of creating time-related signs. These groups are:

(A) Spatial-temporal concepts of metaphor

(B) Body-part-based-temporal concepts of metaphor

(C) Metonymic-temporal concepts

(D) Character-/Number-temporal concept of metaphor

References

Evans, V. (2013). *Language and Time: A Cognitive Linguistics Approach*. Cambridge University Press. https://doi.org/10.1017/CBO9781107340626

Langacker, R. W. (1987). Foundations of cognitive grammar. Vol. 1: Theoretical prerequisites. Stanford Univ. Press.

Taub, S. F. (2001). *Language from the Body: Iconicity and Metaphor in American Sign Language*. Cambridge University Press. https://doi.org/10.1017/CBO9780511509629

Wilcox, S. (2002). The iconic mapping of space and time in signed languages. In L. Albertazzi (Ed.), *Advances in Consciousness Research* (pp. 255–281, Vol. 41). John Benjamins Publishing Company. https://doi.org/10.1075/aicr.41.12wil

Limitations on the encoding of temporally simultaneous events: Evidence from Uruguayan ad German Sign Language (LSU & DGS)

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Keywords: classifier constructions, simultaneity, phonology, Uruguayan Sign Language, German Sign Language

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THIS paper explores limitations of simultaneous encoding of in temporally parallel event descriptions. In caused change-of-state (cos) events, e.g. pressing a spoon flat, the causing action (pressing) may overlap temporally with the cos (flattening). A bimanual classifier construction with an entity classifier depicting the press and another entity classifier depicting the spoon can show both subevents simultaneously – but signers seem to prefer sequential over simultaneous representations here (e.g. Loos, 2017). Grammatical constraints have been put forward to account for this dispreference of simultaneous structure: Supalla (1990) posits that sign languages strive towards sequentiality as a result of universal constraints on information packaging in verb roots, which tend not to encode both manner and path (Talmy, 1972). Similar constraints on combining manner and result in one verbal root have been posited for spoken languages (Rappaport Hovav and Levin, 2010).

In this study, we systematically investigate phonological constraints that may limit the simultaneous expression of parallel events in classifier constructions in LSU and DGS. Specifically, we investigate in how far Battison's (1978) Dominance Constraint restricts iconic event encoding. According to Eccarius & Brentari (2007), classifier constructions are subject to a revised version of Battison's Symmetry and Dominance constraints. Revised Dominance states that in bimanual signs with different selected fingers and/or joint specifications, one hand must be passive, and the form as a whole is limited to two marked phonological structures. In the present studies, we manipulate 2 factors on the non-dominant hand: (i) passive vs. actively moving and (ii) phonological complexity. We predict that both will influence the acceptability of iconic simultaneous representations of events in LSU & DGS classifier constructions.

We conducted acceptability rating studies using a 2x2 design (passivity x markedness) with 20 items per condition. 24 participants of each language first saw a context video showing a press flattening different objects. They then watched LSU/DGS sentences containing a classifier construction simultaneously showing pressing and flattening. Object classifier handshapes varied in complexity and constructions varied in whether the hand representing the press molded the hand representing the object via touch (passive non-dominant hand) or both hands moved independently. Participants

judged each utterance on a 6-point Likert scale.

Both LSU & DGS signers rate classifier constructions best that do not violate the Dominance constraint (5.1 rating). They disprefer an active non-dominant hand (4.6), especially if that hand assumes a marked handshape (4.4). Nonetheless, even such double violations of Dominance are fairly acceptable, suggesting that the revised Dominance Condition represents a trend rather than a hard constraint across classifier constructions in unrelated sign languages. Caused cos events with temporal overlap between causing and cos subevents can be represented iconically in LSU & DGS, suggesting that no hard grammatical event-structure constraints bar temporally iconic event representations.

References

Battison, R. (1978). *Lexical borrowing in American sign language*. Linstok Press.

Eccarius, P., & Brentari, D. (2007). Symmetry and dominance: A cross-linguistic study of signs and classifier constructions. *Lingua*, *117*(7), 1169–1201. https://doi.org/10.1016/j.lingua.2005.04.006

Loos, C. (2017). The syntax and semantics of resultative constructions in Deutsche Gebärdensprache (DGS) and American Sign Language (ASL). *Sign Language & Linguistics*, *20*(2), 296–303. https://doi.org/10.1075/sll.00007.loo

Rappaport Hovav, M., & Levin, B. (2010). Reflections on Manner/Result Complementarity. In M. Rappaport Hovav, E. Doron, & I. Sichel (Eds.), *Lexical Semantics, Syntax, and Event Structure* (pp. 21–38). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199544325.003.0002

Supalla, T. (1990). Serial verbs of motion in ASL. In S. D. Fischer & P. Siple (Eds.), *Theoretical Issues in Sign Language Research* (pp. 127–152, Vol. 1). The University of Chicago Press.

Talmy, L. (1972). *Semantic structures in English and Atsugewi* [Doctoral dissertation, University of California, Berkeley].

Autonomous non-manual elements in Polish Sign Language: preliminary study

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Keywords: non-manual elements, non-manual features, modal communication

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THE aim of this study is to provide a detailed analysis of autonomous non-manual markers (NMM) in Polish Sign Language (PJM). Autonomous NMM are understood here as elements that function as independent communicative units, capable of conveying meaning on their own in interaction, without simultaneous manual signs.

The research material consists of observations and real-time notes taken during interactions of 140 Deaf and hard-of-hearing participants at sports events in 2025. The analysis has so far identified at least 81 individual autonomous NMM, with the expected inventory likely to reach above one hundred elements.

Preliminary findings indicate that autonomous NMM serve diverse functions. On the semantic level, they express emotions and evaluations such as agreement, approval, disapproval, or disgust. On the pragmatic level, they play a crucial role in feedback, turn-taking regulation, topic shifts, and closing conversational sequences. On the grammatical level, they signal visual intonation, negation, modality (necessity, possibility, uncertainty), as well as focus and topicalization.

The study demonstrates that autonomous non-manual elements constitute an important and so far insufficiently described component of interaction in PJM, regularly co-occurring with manual signs and contributing essential communicative content. The analysis of the inventory of autonomous NMM deepens our understanding of multimodality in sign languages and highlights the unique properties of PJM, enriching its grammatical and pragmatic description.

References

Baker-Shenk, C. L., & Cokely, D. (1983). *American Sign Language: a teacher's resource text on grammar and culture*. Gallaudet Univ. Press.

Kuder, A. (2017). Ikoniczność sygnałów niemanualnych. In P. Rutkowski (Ed.), *Ikoniczność w gramatyce i leksyce polskiego języka migowego (PJM)* (pp. 205–222). Wydział Polonistyki Uniwersytetu Warszawskiego.

Liddell, S. K. (2003). *Grammar, gesture, and meaning in American Sign Language*. Cambridge University Press.

Sandler, W., & Lillo-Martin, D. (2006). *Sign Language and Linguistic Universals*. Cambridge University Press. https://doi.org/10.1017/CBO9781139163910

Tomaszewski, P. (2010). *Fonologia wizualna polskiego języka migowego*. Matrix.

Tomaszewski, P., & Farris, M. (2010). Not by the Hands Alone: Functions of Non-Manual Features in Polish Sign Language. In *Studies in the Psychology of Language and Communication* (pp. 289–320). Matrix.

The multimodal grammaticalization of aspectual markers in Turkish Sign Language (TİD)

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Keywords: grammaticalization, aspect, nonmanual, multimodality, mouthings

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In the TİD literature, the manual BİT1 'finish' has been considered as a "completive marker" (Zeshan, 2003), an "aspectual marker" (Gökgöz, 2011), and a "perfective marker" (Karabüklü and Wilbur, 2021). With respect to the nonmanual 'bn', it has been defined as a [+past, +telic] marker (Kubuş and Rathmann, 2009) and a completive marker (Dikyuva, 2011). In a more recent study, Karabüklü and Wilbur (2021) advanced the claim that although these two aspectual markers can cooccur, they are classified as distinct morphemes: (i) 'bn' functions as a "perfective marker", existing with all event types and statives, apart from states, (ii) BİT1 appears exclusively with statives, [initiator, path] verbs, and certain [process] verbs.

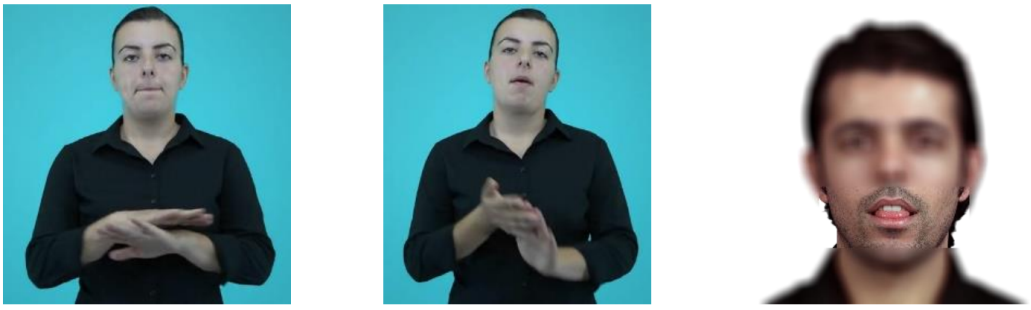

Figure 1. The manual signs BİT1 and BİT2 and the nonmanual 'bn' TİD.

However, an analysis of the dataset (comprising 74,387 sign tokens) from TİD Corpus (see Dikyuva et al., 2017 for details) revealed that (i) not limited to BİT1, the manual sign BİT2 'finish' also functions as an aspectual marker, (ii) full mouthings /bit/, reduced mouthing /bi/ or mouth gesture 'bn' cooccur simultaneously with BİT1 and BİT2 functioning not only aspectual marker but also main verb or sequence marker, (iii) BİT1 is found to be acceptable with change of state verbs like RELAX, (iv) BİT2 is compatible with [initiator, process, resultee] verbs like TREE.FALL, (v) BİT2 occurs with some verbs such as GROW in the category [process].

The current study offers a comprehensive analysis of the forms and functions of aspectual mouth activities in TİD, focusing on the role of Turkish full/reduced mouthings (i.e., /bit/, /bi/) and mouth gestures (i.e., 'bn' tongue protrusion) in aspectual constructions with/without the manual aspectual markers BİT1/BİT2. This research puts forth the hypothesis that BİT1/BİT2 and 'bn' function as analogous aspectual morphemes contrary to the previous claims and it is a fallacy to regard them as distinct

aspectual markers. Also, the mouth gesture of tongue protrusion 'bn' is argued to represent a temporarily reduced form of congruent mouthings /bit/ and gains an aspectual function through morphosyntactic development (see Figure 2). In conclusion, the results necessitate a reevaluation of the hypotheses pertaining to the grammaticalization of the mouth gesture phenomenon.

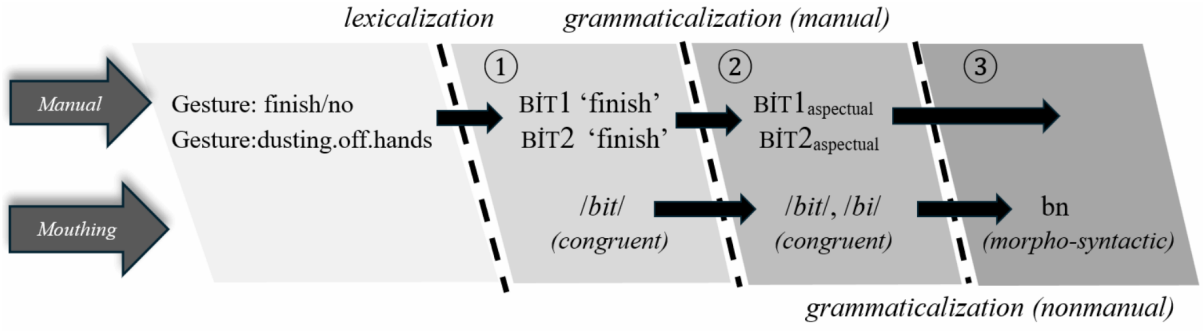

Figure 2. The lexicalization and multimodal grammaticalization schema of BİT1 and BİT2 in TİD.

References

Dikyuva, H. (2011). *Grammatical nonmanual expressions in Turkish Sign Language (TİD)* [Master's thesis, The University of Central Lancashire].

Dikyuva, H., Makaroğlu, B., & Arık, E. (2017). *Turkish Sign Language grammar*. Ministry of Family; Social Policies Press.

Gökgöz, K. (2011). Negation in Turkish Sign Language: The syntax of nonmanual markers. *Sign Language & Linguistics*, *14*(1), 49–75. https://doi.org/10.1075/sll.14.1.04gok

Karabüklü, S., & Wilbur, R. B. (2021). Marking various aspects in Turkish Sign Language: bıt ('finish') and 'bn'. *Sign Language & Linguistics*, *24*(2), 182–225. https://doi.org/10.1075/sll.20006.kar

Kubuş, O., & Rathmann, C. (2009). Past and telic meaning contributed by non-manual marker (pt) in Turkish Sign Language (TİD). *Paper presented at Workshop on Non-manuals in Sign Languages*.

Zeshan, U. (2003). Aspects of Türk Isaret Dili (Turkish Sign Language). *Sign Language & Linguistics*, *6*(1), 43–75. https://doi.org/10.1075/sll.6.1.04zes

Modification of directional verbs in textbooks and language use: From intuitions to corpus-based knowledge

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Keywords: directional verbs, modification, textbooks, corpus-based research, Finnish Sign Language

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BASIC-LEVEL Finnish Sign Language (FinSL) textbooks (e.g., Vivolin-Karen and Alanne, 2006) state that directional verbs include information about the agent and the patient/recipient. They explain that utterances expressing (di)transitive events, such as 'a boy gives a girl an apple,' are produced by assigning distinct locations in signing space to the referents – one on the left and the other on the right. The directional verb is then expected to move between these locations, from the agent's location toward the recipient's, as shown in Example 1.

(1) GIRL PT$^{\rightarrow 4}$/ BOY PT$^{\rightarrow 3}$ APPLE GIVE$^{3\rightarrow 4}$
'A boy gives a girl an apple.'

This knowledge is based on research primarily involving intuitions and isolated sentences (Rissanen, 1985; 1998). Academic literature (e.g. Rissanen, 1985; Jantunen, 2010) describes directional verbs in FinSL as expressing the semantic roles by directing the verb from the location associated with the agent towards the location associated with the patient/recipient. This creates the impression that this modification is mandatory. However, no usage-based research on FinSL has examined whether this modification is obligatory or how frequently the verbs are directed between participants. Corpus studies on other sign languages challenge this assumption, showing that such modification is not necessarily required e.g. in Australian (De Beuzeville et al., 2009) and British Sign Language (Fenlon et al., 2018).

In this presentation, I compare how the modification of directional verbs of FinSL appears in actual language use, based on corpus data, with how it is presented in textbooks. The data of the study consists of conversations, narratives, and informational texts from two different FinSL corpus projects, focusing on the most frequent directional verbs. These verbs are identified using ID glosses and annotated for modification using ELAN. This presentation highlights the significance of usage-based analysis and emphasizes the need to update educational material on grammatical structures that remain under-researched yet crucial for language learners.

Acknowledgments

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References

De Beuzeville, L., Johnston, T., & Schembri, A. C. (2009). The use of space with indicating verbs in Auslan: A corpus-based investigation. *Sign Language & Linguistics*, *12*(1), 53–82. https://doi.org/10.1075/sll.12.1.03deb

Fenlon, J., Schembri, A., & Cormier, K. (2018). Modification of indicating verbs in British Sign Language: A corpus-based study. *Language*, *94*(1), 84–118. https://doi.org/10.1353/lan.2018.0002

Jantunen, T. (2010). Suomalaisen viittomakielen pääsanaluokat [The main parts of speech in FinSL]. In *Näkökulmia viittomaan ja viittomistoon* (pp. 57–78). Jyväskylän yliopisto.

Rissanen, T. (1985). *Viittomakielen perusrakenne*. University of Helsinki, Dept. of General Linguistics.

Rissanen, T. (1998). *The categories of nominals and verbals and their morphology in Finnish Sign Language* [BA thesis]. University of Turku.

Vivolin-Karen, R., & Alanne, K. (2006). *Viittomakieli: 1, Suomalaista viittomakieltä aikuisopiskelijoille [Sign language: 1, Finnish Sign language for adult learners].* Finnish Associaton of the Deaf.

The semantics of colour signs in Kenyan Sign Language: Origins, universal patterns, and cultural associations

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Keywords: lexicon, colour terms, Kenyan Sign Language, free/word associations

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THE colour lexicon of sign languages (SLs) can provide clues about the development of a language and its cultural origins due to (i) predictive ordering of colour terms – i.e., Berlin Kay's implicational hierarchy (1991) – and (ii) iconic strategies that reveal etymologies. In this study, we look at how these two factors are intertwined in Kenyan Sign Language (KSL), and a third factor: conceptual associations with colours. This study adds to a sparse literature on colour terms in African SLs (Sagara and Zeshan, 2016) and in SLs in general (Woodward, 1989; Hollman and Sutrop, 2010).

Research questions.

1. What is the basic descriptive information about KSL colours?
2. Do KSL signs reflect the implicational hierarchy for colour terms?
3. What conceptual associations do signers make to certain colours? Universal semantic associations? Culturally-specific ones?

Methods. To determine basic descriptive information, the first author – a fluent KSL signer – used her knowledge of the language, supplemented by feedback from other KSL signers. For the third question, a dataset of free associations collected in Kenya was used. Ten signers (5M,5F) watched a video of a single sign and responded with the first three signs that came to mind, recorded on video. Each person viewed 300 signs. The final dataset is 9,059 cue-response pairs, annotated using glosses in a lexical database of 2,800+ KSL signs. The current study uses 253 pairs involving colours.

Findings. (1) There are 13 conventionalised colour signs in KSL: BLACK, WHITE, RED, YELLOW, GREEN, BLUE, PURPLE, PINK, ORANGE, BROWN, GOLD, SILVER, GREY, and CREAM. Three iconic strategies are evident: indexing (BLACK, WHITE, RED, BROWN), handling (YELLOW, ORANGE, GOLD), and object (GREEN), while the others have obscure iconic roots or contain modifiers. YELLOW and GOLD reference embodied practices in Kenya/Africa, while BLUE and PURPLE refer to experiences in deaf schools.

(2) KSL reflects the implicational hierarchy of colour terms. Indeed, the use of indexing of colour using body parts (BLACK>hair; WHITE>teeth; RED>tongue) implicates the three most basic signs with most direct semiotic referencing. Colours in KSL furthest from the core are not monomorphemic; e.g., GREY = BLACK^'ish'.

(3) Preliminary findings in free associations shows that 31.6% of colour cues prompted

a colour term, indicating strong associative strength as a semantic group. Colours also show cultural salience; e.g., BLACK→CHARCOAL, BLUE→OMO(SOAP). The most core colours in Berlin & Kay were most frequent in responses, as shown in Figure 1.

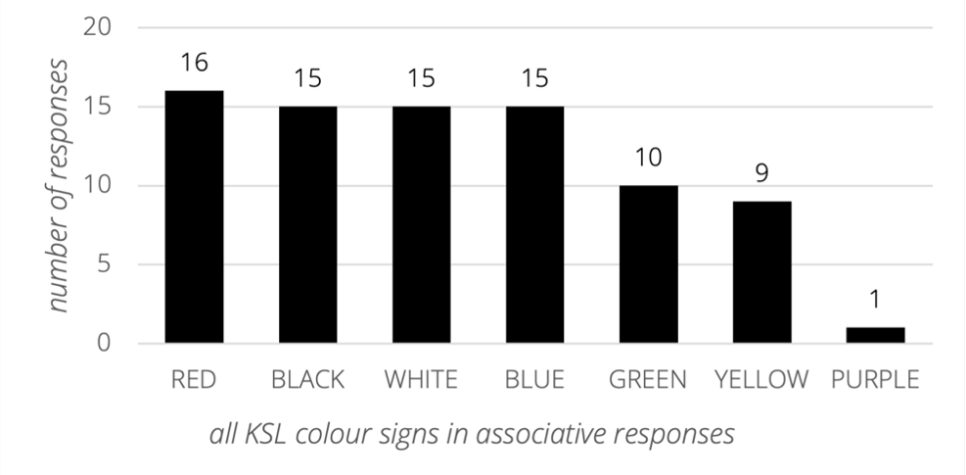

Figure 1. Number of free/word association responses by colour (comprising 81 responses from a total of 9,059 responses

References

Berlin, B., & Kay, P. (1991). *Basic color terms: their universality and evolution*. University of California Press.

Hollman, L., & Sutrop, U. (2010). Basic Color Terms in Estonian Sign Language. *Sign Language Studies*, *11*(2), 130–157.

Sagara, K., & Zeshan, U. (2016). Semantic fields in sign languages – A comparative typological study. In U. Zeshan & K. Sagara (Eds.), *Semantic Fields in Sign Languages* (pp. 3–38). De Gruyter. https://doi.org/10.1515/9781501503429-001

Woodward, J. (1989). Basic Color Term Lexicalization across Sign Languages. *Sign Language Studies*, *63*(1), 145–152. https://doi.org/10.1353/sls.1989.0021

The Emergence and Evolution of Czech Sign Language: A Diachronic Perspective

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Keywords: Czech Sign Language, deaf education, historical linguistics, language contact, sign language emergence

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CZECH Sign Language has long been an underexplored area within historical sign language linguistics. This presentation offers an analysis of its origins and development, drawing on an extensive corpus of over 150 historical sources, including dictionaries, pedagogical texts, and archival documents from the 18th and 19th centuries. By systematically examining these materials, we reconstruct the linguistic and sociocultural influences that contributed to the formation of Czech Sign Language.

The establishment of the Prague Institute for the Deaf and Dumb in 1786 marked a turning point not only in the education of the deaf in the Czech lands but also in the formation of the Czech Sign Language. This study reveals that while Czech Sign Language is traditionally classified within the French Sign Language family, it shares a stronger historical connection with Austrian Sign Language and German-speaking countries. Our research demonstrates that early Czech Sign Language was influenced not only by methodical signs and finger alphabet inspired by de l'Épée's model (De l'Épée, 1776; 1784) but also by indigenous sign practices, home sign systems, gestures and linguistic influences from German and later Czech language (e.g., Gross, 1790; Stork, 1786; Weinberger, 1806).

Using a sign language archaeology approach and lexicostatistics, we trace these multiple linguistic inputs that contributed to Czech Sign Language's formation, including contact with other emerging European sign languages (particularly on Austrian and German territory). Historical records of the signs and descriptions of their formation (e.g., Venus, 1826; Reitter, 1828; Mücke, 1834; Czech, 1836) provide invaluable insights into the structure and development of the vocabulary of Czech Sign Language and show how the signs were formed over time.

A crucial period of development for Czech Sign Language occurred in the mid-19th century with the contributions of Frost's Prague method (e.g., Frost, 1859), which emphasized the natural development of sign language, rejecting artificial methodical signs and the finger alphabet in favour of a structured but organic and natural signing system. This approach played a crucial role in differentiating Czech Sign Language from its Austrian counterpart. Jarisch's 1851 dictionary, featuring both written descriptions and pictorial representations, is a rare and critical source for analysing the early lexicon of Czech Sign Language.

This study significantly advances our understanding of sign language emergence by providing concrete historical evidence for the linguistic evolution of Czech Sign Language . It contributes to the refinement of the model of sign language genealogy and emphasizes the role of deaf education in the formation of linguistic identity. Our findings highlight the necessity of further diachronic linguistic research on European sign languages, emphasizing the interplay between language contact, education policies, and community-driven language change.

Acknowledgements

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References

Czech, F. H. (1836). *Versinnlichte Denk- und Sprachlehre mit Anwendung auf die Religions- und Sittenlehre und auf das Leben*. Vienna: In Comm. der Mechitaristen-Congregations-Buchhandlung.

De l'Épée, C. M. (1776). *Institution des sourds-muets par la voie des signes méthodiques*. Paris: Chez Nyon l'aîné.

De l'Épée, C. M. (1784). *La véritable manière d'instruire les sourds et les muets*. Paris: Chez Nyon l'aîné.

Frost, W. (1859). Die Unterrichtsmethoden bei Taubstummen. *Der Österreichische Schulbote (11-12 Mar)*, 98–100.

Gross, J. A. (1790). Verfassung des Taubstummeninstituts zu Prags beschrieben von Joseph Anton Groß in einem Briefe an seinen Freund. In *Kalender für Aufseher, Katecheten und Lehrer der Nationalschulen im Königreiche Böhmen auf das Jahr 1790* (pp. 83–106).

Mücke, J. (1834). *Anleitung zum Unterrichte der Taubstummen in der Lautsprache nebst einigen Bemerkungen über die Geberdenzeichen der Taubstummen*. Prague.

Reitter, M. (1828). *Methoden-Buch zum Unterricht für Taubstumme*. Vienna: Verlag von J. G. Heubner.

Stork, J. F. (1786). *Anleitung zum Unterrichte der Taubstummen nach der Lehrart des Abbé de l'Épée*. Vienna.

Venus, M. (1826). *Methodenbuch oder Anleitung zum Unterrichte der Taubstummen*. Vienna: Gedruckt und verlegt bey Carl Gerold.

Weinberger, J. M. (1806). *Versuch über eine allgemein anwendbare Mimik in Beziehung auf die methodischen Geberdenzeichen der Taubstummen: Eine Einladungsschrift zur öffentlichen Prüfung der Taubstummen, welche Montag den 20. October 1806 bey St. Anna Vormittag von 9 bis 12 Uhr gehalten wird*. Vienna.

Do signers interpret R-loci as regions or points? An on-line probe recognition task

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Keywords: R-loci, referential use of space, Sign Language of the Netherlands, on-line probe recognition task, pointing signs

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SIGN languages use space referentially by associating discourse referents with R(eferential)-loci. The traditional model of referential use of space assumes that such R-loci can, in principle, be set up anywhere in horizontal signing space. However, this implies there are infinitely many potential R-loci, which poses a theoretical problem (it makes R-loci 'unlistable') and seems empirically inaccurate.

Steinbach & Onea (2016) instead propose that R-loci represent regions, not points. The first introduced referent gets associated with the area on one side of the signer; the second on the opposing side. Additional referents are accommodated by subdividing regions.

This proposal has not been experimentally verified. We therefore created an on-line probe recognition task influenced by the design of similar ASL studies (a.o., Emmorey and Lillo-Martin, 1995). 30 native/early signers of Sign Language of the Netherlands (NGT) participated.

Participants saw 100 signed trial items (Figure 1) consisting of a context sentence introducing two referents (A/B) localized with a point, and a continuation sentence with pronominal pointing to the exact same location as the localizing point for A (=precise point), to a different location but in the same area (=imprecise point), or without pointing (=control). Then, signers saw a probe sign, which either matched A (CAT), mismatched A (but matched B; DOG), or was a distractor (e.g., RABBIT).

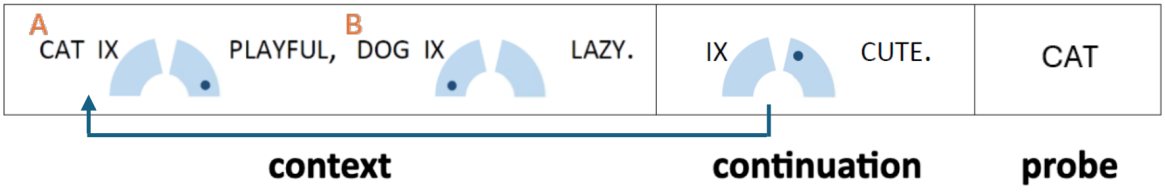

Figure 1. Example of a trial item with an imprecise point and a matching probe.

If R-loci represent regions, as we hypothesize, we expect equally fast RTs to matching probes following precise vs. imprecise pointings, because both suffice to 'reactivate' the matching referent. Alternatively, if R-loci represent points, imprecise pointings would yield slower RTs.

As predicted, we find faster mean RTs for trials with matching probes – regardless of whether the pointing was precise (M = 1169.73; SD = 276.67) or imprecise (M = 1155.31; SD: 277.58) – than to trials with probes mismatching with the referent reactivated in the continuation sentence with a precise (M = 1237.74; SD = 303.79) or imprecise (M = 1238.66; SD = 315.14) point; see Figure 2.

We compared several linear mixed effects models with RT as the dependent variable and continuation (precise/imprecise pointing) and probe (matching/mismatching) as independent variables, hypothesizing that probe but not continuation is a significant predictor of RT.

In line with our hypothesis, probe has a significant positive effect on RT (β = 0.03, SE = 0.01, t(862.14) = 5.16, p < 0.001), while continuation is not a significant predictor of RTs (β = 0.0, SE = 0.0, t(862.14) = -0.95, p = 0.34).

These findings support the hypothesis that R-loci represent regions, not points, thus providing novel empirical insight into how signers interpret referential use of space.

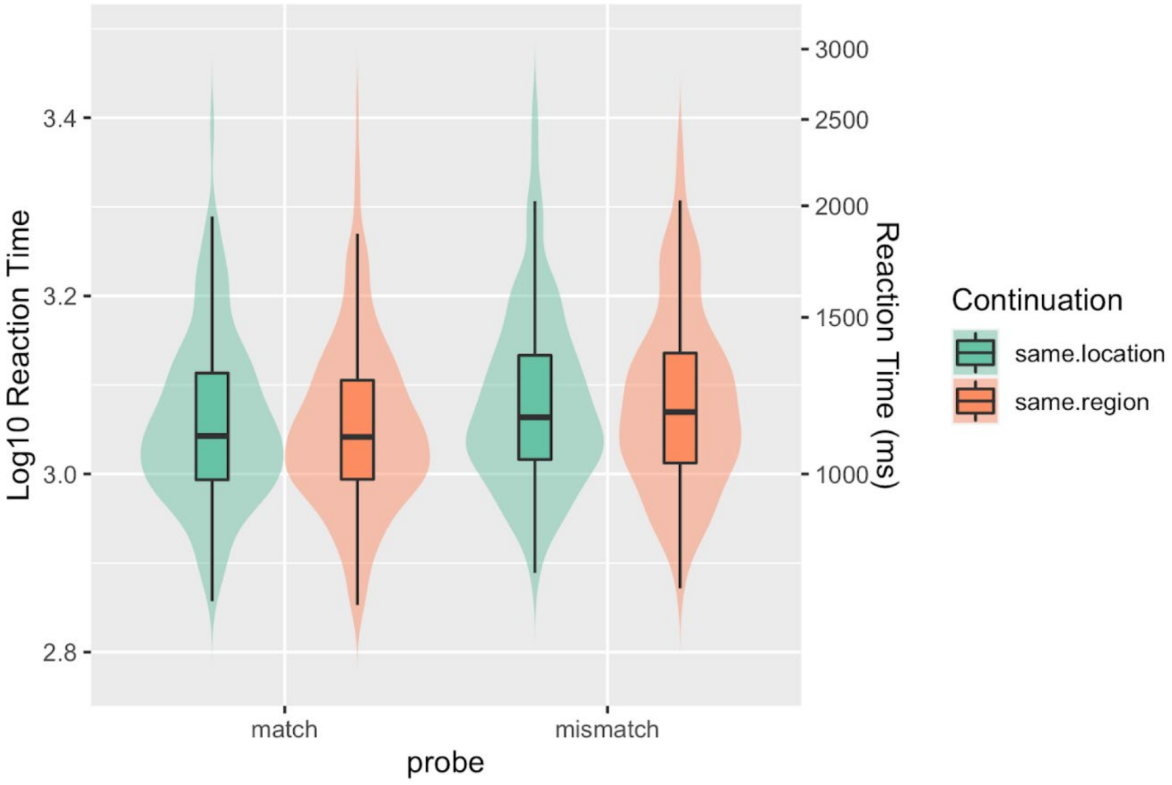

Figure 2. A violinplot showing the distribution of RTs for each condition.

References

Emmorey, K., & Lillo-Martin, D. (1995). Processing spatial anaphora: Referent reactivation with overt and null pronouns in american sign language. *Language and Cognitive Processes*, *10*(6), 631–653. https://doi.org/10.1080/01690969508407116

Steinbach, M., & Onea, E. (2016). A DRT Analysis of Discourse Referents and Anaphora Resolution in Sign Language. *Journal of Semantics*, *33*(3), 409–448. https://doi.org/10.1093/jos/ffv002

The Order of Elements within the Noun Phrase in British Sign Language (BSL)

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Keywords: British Sign Language (BSL), noun phrase, corpus linguistics, judgement task, language ideology

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THIS study investigates the order of elements within noun phrases (NPs) in British Sign Language, focusing on adjectives, numerals, and demonstratives. Sutton-Spence and Woll (1999) state that adjectives in BSL are usually postnominal, while Rutkowski et al. (2015) found that in Polish Sign Language (PJM), adjectives generally follow the noun, contrasting with spoken Polish where they are mainly prenominal.

The study aimed to determine if the preferred order of modifiers in BSL NPs aligns with English (i.e., [(Dem) (Num) (Adj) N] - round brackets here show optionality, thus [(Dem) (Num) (Adj) N] includes e.g. [Dem Num N]) and if these orders are homomorphic, meaning they reflect the underlying semantic scope relation in Figure 1.

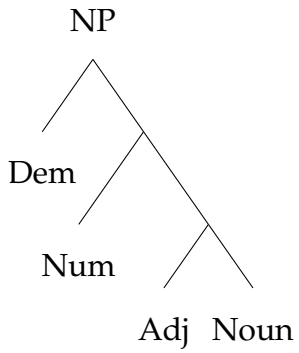

Figure 1. Posited scope relationship between elements of a NP

We analysed the first 100 sign tokens from personal narratives and spontaneous conversations of 34 deaf fluent signers from the BSL Corpus (Schembri et al., 2014), resulting in 3400 sign tokens. NPs (specifically, nominal and pronominal elements and their modifiers) were identified using a functional approach (Van Valin and LaPolla, 1997).

Results showed that 39% of the sign tokens were within NPs, with 1035 NPs identified. Most NPs (76%) consisted of a single element, while 18% had 2 elements, and 6% had 3+ elements. We found that NPs with modifiers in the order [(Dem) (Num) (Adj) N] were more than twice as common (13% of the total) compared to those with other orders (5%). Homomorphism was applicable to NPs with at least two different modifiers on the same side of the noun, with eight out of twelve such NPs being homomorphic. Of these eight, seven followed the same order as English, and one did not.

Additionally, a judgement task was conducted with 92 deaf BSL signers to rate the typicality of various BSL NPs with different modifier orders. This revealed that English-like NPs were rated more typical than other arrangements, except for NPs with just a noun and an adjective, where the order [N Adj] was preferred. Homomorphic orders were generally judged more typical than non-homomorphic ones, including for NPs with widely spaced modifiers in terms of semantic scope. In contrast, for NPs where the modifiers were not widely spaced regarding semantic scope, there was no significant preference for homomorphic orders. This is in line with Culbertson Adger (2014).

The findings suggest that BSL's NP structure is similar to English and possibly influenced by it, differing from PJM/spoken Polish. The preference for [N Adj] in the judgement task may be due to language ideologies within the deaf community (Kusters et al., 2020) combined with salience of order in shorter NPs, or influence from BSL teaching materials. The study highlights the need for accurate documentation of BSL usage and its reflection in teaching materials. This research represents a first analysis of NPs in BSL using spontaneous and judgement data from a large number of signers.

References

Culbertson, J., & Adger, D. (2014). Language learners privilege structured meaning over surface frequency. *Proceedings of the National Academy of Sciences*, *111*(16), 5842–5847. https://doi.org/10.1073/pnas.1320525111

Kusters, A., Green, M., Moriarty, E., & Snoddon, K. (2020). Sign language ideologies: Practices and politics. In A. Kusters, M. Green, E. Moriarty, & K. Snoddon (Eds.), *Sign Language Ideologies in Practice* (pp. 3–22). De Gruyter. https://doi.org/10.1515/9781501510090-001

Rutkowski, P., Kuder, A., Czajkowska-Kisil, M., & Łacheta, J. (2015). The structure of nominal constructions in Polish Sign Language (PJM): a corpus-based study. *Studies in Polish Linguistics*, *10*(1), 1–15. https://doi.org/10.4467/23005920SPL.15.001.3228

Schembri, A., Fenlon, J., Rentelis, R., & Cormier, K. (2014). British Sign Language Corpus Project: A corpus of digital video data and annotations of British Sign Language 2008-2014. Retrieved September 5, 2025, from https://api.semanticscholar.org/CorpusID:61739117

Sutton-Spence, R., & Woll, B. (1999). *The Linguistics of British Sign Language: An Introduction*. Cambridge University Press.

Van Valin, R. D., & LaPolla, R. J. (1997). *Syntax: structure, meaning and function*. Cambridge University Press.

The data collected in the SignToKids project in schools welcoming deaf children will allow us to better understand the developmental path in LSF and French written skills in deaf children according to their age of SL acquisition and frequency of signed and written exposure. This innovative project will also fill the lack of specific tools for signing deaf children.

Seeing the signs of morphology: Iconicity and learnability in BSL grammar

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Keywords: British Sign Language, iconicity, learnability, morphology, hearing non-signers

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ICONICITY is a core property of language (Perniss et al., 2010) which may drive the evolution of grammatical structure in sign languages (Aronoff et al., 2005; Sandler et al., 2011). Many signing communities have a large proportion of signers with variable sign language acquisition experiences, and it has been suggested that this may impact sign language structure (e.g., Schembri et al., 2018), perhaps resulting in a greater proportion of systematically iconic and highly learnable structures.

In the SignMorph Project, we are exploring novel ways to answer questions about the nature and role of iconicity in British Sign Language (BSL) grammar. In a first set of studies, we investigate iconicity in BSL grammar by testing hearing non-signers on whether they correctly identify the meaning of morphological modifications in BSL, using both (1) a forced-choice guessing task and an (2) open-response task. We presented 100 hearing non-signers with 40 pairs of signed stimuli: a citation form of a sign (including a translation into English) and the same sign with morphological modification (without a translation). Stimuli included directionality, plural marking (sweep vs. repeated movement), aspect marking (fast vs. slow reduplication), and non-manual modification (puffed cheeks vs. tongue protrusion).

Combining descriptive and inferential statistics, our data suggests that the meaning of BSL morphology is guessable in the forced choice task even without language knowledge. A Bayesian binomial regression analysis (random intercepts per item and participant) suggests that the accuracy of hearing non-signers in picking the correct response was reliably much better than chance for all four categories of morphological modification. In the open response task with 20 participants, however, we found lower levels of accuracy overall. Together, these findings suggest that iconicity in sign language morphology is partly accessible without sign language knowledge due to shared human cognition. Showing that hearing non-signers can access iconicity in morphological structures suggests it may be a core property in language emergence and change.

We are now designing a second set of studies looking at the relationship between iconicity and learnability in BSL morphology. Following Smith (Smith, 2024), we showed

hearing non-signers images of animals performing movements (e.g., a giraffe moving horizontally) accompanied by videos of BSL descriptions consisting of a lexical item followed by a classifier construction depicting both the referent and the movement. Our stimuli consist of six animals performing three movements (18 stimuli total). We will test how accurately and how quickly non-signers can produce the BSL morphological constructions used to describe these scenes in at least two conditions: an iconic BSL condition pairing scenes with the relevant iconic BSL descriptions and a counter-iconic condition randomly pairing BSL descriptions to scenes. We will run the experiment on Prolific Academic. Because of the iconic properties of sign language morphology, we expect participants in the BSL condition to produce classifier constructions that are more accurate and faster than participants in the counter-iconic condition. Together, these two sets of studies represent innovative combinations of existing experimental methods to investigate the iconicity and learnability of BSL morphology.

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References

Aronoff, M., Meir, I., & Sandler, W. (2005). The Paradox of Sign Language Morphology. *Language*, *81*(2), 301–344. https://doi.org/10.1353/lan.2005.0043

Perniss, P., Thompson, R. L., & Vigliocco, G. (2010). Iconicity as a General Property of Language: Evidence from Spoken and Signed Languages. *Frontiers in Psychology*, *1*. https://doi.org/10.3389/fpsyg.2010.00227

Sandler, W., Aronoff, M., Meir, I., & Padden, C. (2011). The gradual emergence of phonological form in a new language. *Natural Language & Linguistic Theory*, *29*(2), 503–543. https://doi.org/10.1007/s11049-011-9128-2

Schembri, A., Fenlon, J., Cormier, K., & Johnston, T. (2018). Sociolinguistic Typology and Sign Languages. *Frontiers in Psychology*, *9*, 200. https://doi.org/10.3389/fpsyg.2018.00200

Smith, K. (2024). Simplifications made early in learning can reshape language complexity. In J. Nölle, L. Raviv, K. E. Graham, S. Hartmann, Y. Jadoul, M. Josserand, T. Matzinger, K. Mudd, M. Pleyer, A. Slonimska, S. Wacewicz, & S. Watson (Eds.), *Proceedings of the International Conference on the Evolution of Language 2024 (Evolang XV)* (pp. 489–491). The Evolution of Language Conferences. https://doi.org/10.17617/2.3587960

Question constructions in Finland-Swedish Sign Language (FSTS)

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Keywords: Finland-Swedish Sign Language, question construction, corpus based research

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In this presentation, I give an analyses of question constructions in the Corpus of Finland-Swedish Sign Language (CFSTS; University of Jyväskylä, 2024): what kind of question constructions the 12 signers in the corpus use and how they combine both manual and non-manual signals for questions in their signing.

I look at question constructions as parts of the language usage in the corpus. I see constructions as form-meaning pairings (Wilcox and Martínez, 2025), or as assemblies of symbolic structures (Langacker, 2003). Also, often in a construction, the ordering of the elements can be rearranged without a change in the basic meaning (Lepic, 2019). By question construction, I mean any of the in the previous research (e.g., Arnold, 2024) mentioned ways of signaling a question: the signers use a manual WH-question sign (e.g., WHAT, WHY, WHERE, WHO), they signal their question with a PALM-UP gesture or a pointing gesture directed at their interlocutor. The question construction may also be produced with non-manual signals such as facial expressions or head/body leans. These signals can co-occur with the manual signals, but they can also work alone. This is suitable for constructions: There is no need for a binary distinction of either or since a construction can consist of both manual and non-manual elements and both lexical and gestural elements (Wilcox and Martínez, 2025).

The data set consists of 12 videos of dyadic conversations signed in FSTS (1h 52 minutes in total). In these conversations, a pair of signers each make two conversational tasks. In the writing moment, 10 of the 12 videos are annotated and so far, I have found 101 questions that occur in the beginning of a signer's turn ('initiating') that require an answer from the interlocutor and 45 questions that occur later in a signer's turn ('continuing') and require an answer. The questions that are rhetorical or otherwise don't require an answer from the other signer are left out from this study.

I am going to analyze the question annotations and see how the signers use manual WH-signs, PALM-UPs, pointings, and/or non-manual elements when signaling a question. With the analysis, I am going to show that question construction is a resource the signers utilize in various ways depending on the situation. I am going to ponder what kind of role the context has for the interlocutors to choose between these possible question constructions. Is there a tendency for using a certain question construction in certain situations?

References

Arnold, B. M. (2024). *Investigating Question-Asking in Norwegian Sign Language: A Multi-Method Approach* [Doctoral dissertation, Norwegian University of Science and Technology].

Langacker, R. W. (2003). Constructions in cognitive grammar. *English Linguistics*, *20*(1), 41–83. https://doi.org/10.9793/elsj1984.20.41

Lepic, R. (2019). A usage-based alternative to "lexicalization" in sign language linguistics. *Glossa: a journal of general linguistics*, *4*(1). https://doi.org/10.5334/gjgl.840

University of Jyväskylä. (2024). *Corpus of Finland-Swedish Sign Language: conversations* (data set). Kielipankki. http://urn.fi/urn:nbn:fi:lb-2024090321

Wilcox, S., & Martínez, R. (2025). Constructional Approaches to Signed Language. In M. Fried & K. Nikiforidou (Eds.), *The Cambridge Handbook of Construction Grammar* (pp. 405–436). Cambridge University Press.

Duration, velocity and amplitude of blinks in French Sign Language: a statistical analysis

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Keywords: sign language, French Sign Language, blink duration, blink velocity, blink amplitude

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EYE blinks have been shown to be an important prosodic marker in sign languages (e.g. Sze, 2008). While several studies have looked at functions of eye blinks in sign languages, very little attention has been directed at their formal properties and whether such properties correlate with the different functions. In this study, we examined the role of eye blinks in French Sign Language (LSF), including their linguistic and non-linguistic functions, and analyzed their formal properties (duration, velocity, and amplitude).

We used eight video recordings by three LSF signers from the Dicta-Sign-LSF-v2 corpus (Belissen et al., 2020). The dataset contains video recordings of dyadic conversations on the topic of European travel. We identified 1078 eyeblinks, and annotated their function based on the context in which they occur. We distinguished nine distinct blink types in LSF, six linguistic and three non-linguistic, see below. Some blinks have multiple potential functions (e.g. turn-taking events are often accompanied by eye-gaze change), so for further analysis we only focused on single-function blinks (n=650).

We used MediaPipe (Lugaresi et al., 2019) to locate eye lid landmarks in order to calculate the Eye Aspect Ratio (EAR, Soukupová and Cech, 2016), which is a measure of the relation between eye width and the distance between the eyelids. We calculated amplitude as the total range of EAR per blink, and velocity as average change in EAR between frames per blink. Duration is based on the annotation in ELAN. We applied mixed effects regression models to assess the effect of blink type on these measurements.

Our analysis revealed that linguistic blinks have significantly longer duration compared to non-linguistic ones, averaging 0.239 seconds, which is 0.029 seconds longer than non-linguistic blinks ($p<0.001$). In contrast, these two groups of blinks do not significantly differ in amplitude or velocity.

With non-linguistic blinks, we compared gaze direction blinks and blinks to moisten the eyes. Here we do not find a significant difference in duration, but the gaze direction blinks have a significantly higher amplitude (by 0.048 EAR units, $p<0.0001$), and a significantly higher velocity (by 0.076 EAR units/frame, $p<0.001$).

Among linguistic categories, while we did not find significant differences in duration, prosodic and lexical blinks exhibited significantly lower velocity and significantly

lower amplitude than addressee feedback blinks. This research shows that different blink types (at least in LSF) have different formal (kinematic) characteristics, demonstrating the validity of such categories, and provides a foundation for future cross-linguistic comparison.

References

Belissen, V., Braffort, A., & Gouiffès, M. (2020). Dicta-Sign-LSF-v2: Remake of a Continuous French Sign Language Dialogue Corpus and a First Baseline for Automatic Sign Language Processing. In N. Calzolari, F. Béchet, P. Blache, K. Choukri, C. Cieri, T. Declerck, S. Goggi, H. Isahara, B. Maegaard, J. Mariani, H. Mazo, A. Moreno, J. Odijk, & S. Piperidis (Eds.), *Proceedings of the Twelfth Language Resources and Evaluation Conference* (pp. 6040–6048). European Language Resources Association.

Lugaresi, C., Tang, J., Nash, H., McClanahan, C., Uboweja, E., Hays, M., Zhang, F., Chang, C.-L., Yong, M. G., Lee, J., Chang, W.-T., Hua, W., Georg, M., & Grundmann, M. (2019). MediaPipe: A Framework for Building Perception Pipelines [Version Number: 1]. https://doi.org/10.48550/ARXIV.1906.08172

Soukupová, T., & Cech, J. (2016). Real-Time Eye Blink Detection using Facial Landmarks. https://api.semanticscholar.org/CorpusID:21124316

Sze, F. (2008). Blinks and intonational phrasing in Hong Kong Sign Language [Meeting Name: Theoretical Issues in Sign Language Research]. In J. Quer i Carbonell (Ed.), *Signs of the time: selected papers from TISLR 8* (pp. 83–107). Signum.

Predicational nonverbal clause constructions in the PJM Corpus

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Keywords: corpus data, CLU tagging, Polish Sign Language, nonverbal predication

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THIS study examines predicational nonverbal clause constructions in the Polish Sign Language (*polski język migowy*, PJM) corpus.

Nonverbal predication is defined as the use of a nonverbal predicate with an appropriate number of arguments (Hengeveld, 1992). It occurs in clauses that lack a typical verb and may sometimes include a copula as an auxiliary (Dik, 1987). A predicational nonverbal clause is "a nonverbal clause with a topic-comment structure" (Haspelmath, 2025).

In sign language research, nonverbal predication has been explored in only a handful of languages, including ASL, FinSL, VGT, ÖGS, HZJ, and TİD. To date, no study has investigated nonverbal clause constructions in PJM - a gap this study aims to fill.

For this analysis, we selected a subset of annotated data from the PJM Corpus (Kuder et al., 2022), consisting of 30 texts (100 minutes of annotation) from six dyads.

Before the study, the data was tokenized and glossed (N = 11,441) and tagged for clause-like units (CLUs = 4,526, Johnston, 2019), part of speech (PoS), argument structure, and semantic functions. Within this dataset, we extracted all nonverbal clauses with an 'A1A2' argument structure, where constituents were interpreted with the semantic roles of 'topic' and 'comment.'

Based on this corpus material, we address the following research questions:

1. What is the frequency of these constructions in the analyzed data?
2. What is their internal structure from a functional perspective?

In the dataset, 153 clauses with an 'A1A2' argument structure were identified as nonverbal, constituting approximately 3.38% of all clauses in the data subset. By analyzing PoS tagging, we identified trends in the internal structure of PJM nonverbal clauses, with the most common pattern being a pointing sign followed by either an adjective/adverb, or proper noun (details in Figure 1).

By the time of the conference, the dataset will have been expanded. The presentation will detail the tagging process and subsequent analyses, supported by relevant examples, and conclude with an explanation of the obtained results.

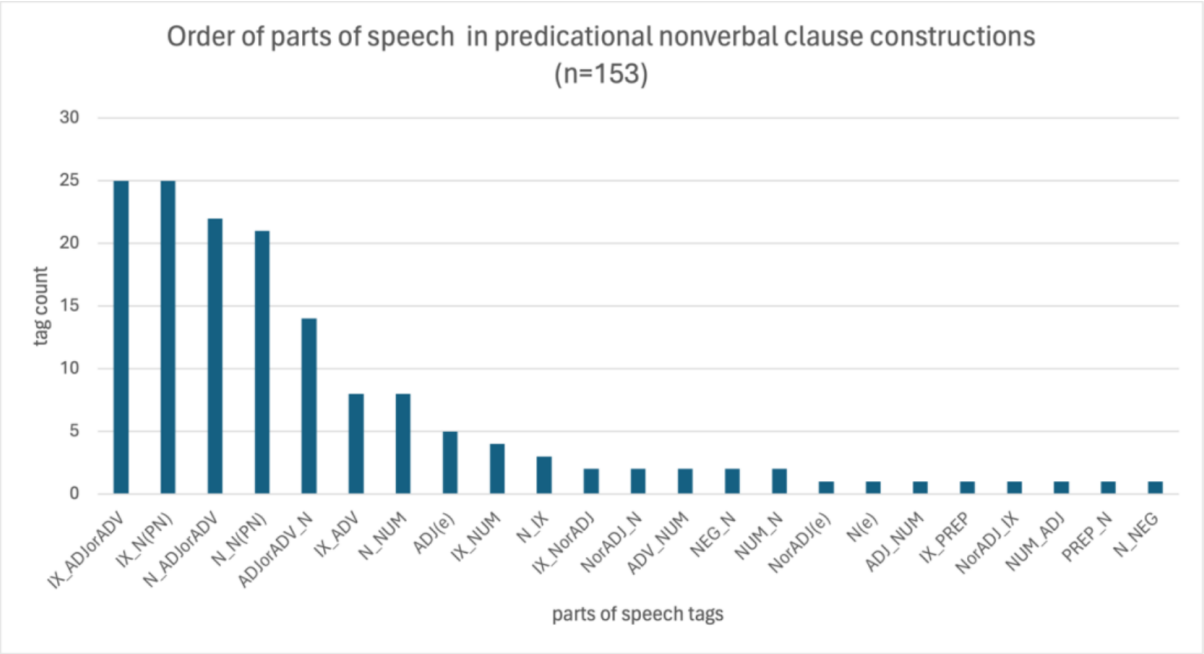

Figure 1. POS tag distribution in predicational nonverbal clause constructions in the PJM dataset.

References

Dik, S. C. (1987). Copula Auxiliarization: How and Why? In M. Harris & P. Ramat (Eds.), *Historical Development of Auxiliaries* (pp. 53–84). DE GRUYTER MOUTON. https://doi.org/10.1515/9783110856910.53

Haspelmath, M. (2025). Nonverbal Clause Constructions. *Language and Linguistics Compass*, *19*(2), e70007. https://doi.org/10.1111/lnc3.70007

Hengeveld, K. (1992). *Non-Verbal Predication: Theory, Typology, Diachrony*. De Gruyter Mouton. https://doi.org/10.1515/9783110883282

Johnston, T. (2019). Auslan Corpus Annotation Guidelines (August 2019 version). https://media.auslan.org.au/django-summernote/2020-09-04/69f180d0-04bf-4831-b59c-0b0b8f07cbb5.pdf

Kuder, A., Wójcicka, J., Mostowski, P., & Rutkowski, P. (2022). Open Repository of the Polish Sign Language Corpus: Publication Project of the Polish Sign Language Corpus. *Proceedings of the LREC2022 10th Workshop on the Representation and Processing of Sign Languages: Multilingual Sign Language Resources*, 118–23. https://aclanthology.org/2022.signlang-1.18

Migam.ai: Revolution in Sign Language Translation through Artificial Intelligence

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Keywords: ethical AI, sign language, artificial intelligence, automatic translation, data protection, copyright, accessibility, 3D avatar, computational linguistics

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MIGAM.AI is an advanced platform utilizing artificial intelligence for automatic real-time translation of text and speech into sign languages. Our technology is based on transformer architecture with a model containing 1.4 billion parameters, enabling the capture and reproduction of sign language nuances. It is being developed in collaboration with Deaf individuals.

Technological Innovations

The platform employs a photorealistic 3D avatar created using Unreal Engine technology, which performs natural gestures, facial expressions, and expressions consistent with the visual grammar of sign languages. The system processes complex grammatical structures, idioms, and cultural context, ensuring translation accuracy comparable to human interpreters.

Our neural architecture consists of three integrated modules:

- **Language Recognition and Analysis Module** - processing text and speech with consideration of semantic context
- **Interlingual Translation Module** - adapting grammatical structures of spoken language to visual-spatial patterns
- **Gesture Generation Module** - producing natural body, hand, and facial movements in 3D space

Practical Applications

Migam.ai finds application in translating recordings/text or live speech across all spheres of social life:

- live translation of news, entertainment, and educational programs on television or digital platforms
- content accessibility in sign languages for schools (educational materials and lectures), administration, and businesses

- communication between Deaf individuals and officials, doctors, customers, and salespeople

Collaboration with Higher Education Institutions

A key element in Migam.ai's development is partnership with universities that have sign linguistics departments. We offer:

- **"Sandbox" analytical tools** - a research environment enabling analysis of linguistic corpora and benchmark creation, algorithm testing, and translation validation by linguists specializing in sign languages.
- **Creation and sharing of datasets for research purposes** - collaboration in building high-quality linguistic corpora with linguistic annotations, essential for training next-generation AI models.
- **Doctoral research opportunities** - making the platform available as a research tool for work on translation automation, linguistic analysis, and communication accessibility.

Our vision is simple: "AI must go to university to pass translator exams." This means that technology development must be based on solid linguistic knowledge, translator certification standards, and collaboration with academic experts.

Migam.ai is not just a technological solution – it is a bridge between the world of science and the needs of millions of sign language users worldwide. By combining the latest achievements in artificial intelligence with linguistic and cultural knowledge, we are creating a future of barrier-free communication.

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