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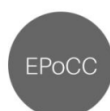
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BOOK OF ABSTRACTS



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Contents

Keynotes	1
Action as common ground: insights of action representations in gesture and sign (<i>Gerardo Ortega</i>)	1
Conceptual action: Some ways in which hands make sense (<i>Jürgen Streeck</i>) .	2
Talking about space with space: Insights from cross-linguistic comparison and language development (<i>Pamela Perniss</i>)	3
Invited talks	5
What, if anything, is a gestural cognate effect? (<i>Benjamin Anible</i>)	5
The neural mechanisms of how iconic gestures boost degraded speech comprehension in native and non-native listeners (<i>Linda Drijvers</i>)	7
Towards multidimensional data and a mixed method approach in the research on constructed action in Finnish Sign Language (<i>Tommi Jantunen</i>)	7
Taming multimodal constructions in spontaneous interactions (<i>Jakub Jehlička & Eva Lehečková</i>)	8
Using hands to point to words: anaphoric gestures in Czech talk-in-interaction (<i>Petr Kaderka</i>)	10
Recurrent gestures and the systematicity of diversity (<i>Silva Ladewig</i>)	11
Modeling the mystery of iconic gesture (<i>Jan P. de Ruiter</i>)	13
Theoretical and practical aspects of crossmodal collostructions (<i>Peter Uhrig</i>)	14
Poster presentations	17
Comparing “palm-up” gestures and PALM-UP (PU) signs. (<i>Anastasia Bauer</i>) .	17
Metaphorical height contrasts across sign languages and in cross-signing (<i>Carl Börstell</i>)	19
Grammaticalization in Czech Sign Language (<i>Hana Buchtelová</i>)	20
Give a hand: An experimental pragmatic study of multimodal communicative acts (<i>Sandy Ciroux</i>)	21
Constructed actions in clause-like units in the Polish Sign Language corpus (<i>Joanna Filipczak & Anna Kuder</i>)	23

A study on the effects of an embodied humanoid robot representing sign language (<i>Jennifer J. Gago, Bartek Łukawski, Juan G. Victores, & Carlos Balaguer</i>)	26
Techniques for the translation of metaphors into Spanish Sign Language (<i>Rayco H. González-Montesino, Silvia Saavedra-Rodríguez, & José María Criado Aguado</i>)	29
Varying levels of lexicalization in the L1 acquisition of depicting handshapes (<i>Julia Gspandl</i>)	31
Vertical Palm Away/Oscillate: A recurrent form associated with negation in spoken and signed language (<i>Simon Harrison</i>)	32
Means of nonverbal communication in Down syndrome children (<i>Kamila Homolková</i>)	34
Czech Deaf children’s socio-cognitive competence assessed through the Theory of Mind (<i>Andrea Hudáková</i>)	35
The relationship between speech and gestures in aphasic patients (<i>Martin Janečka</i>)	36
Learning to use Prepositions – an experiment with gesture and theater (<i>Natasha Janzen Ulbricht</i>)	37
Gesture retraction: A turn-final “go signal” for timing turn-transition (<i>Junfei Hu</i>)	39
The nonmanuals-gesture-interface: An emic approach for evaluating the status of nonmanuals by sign language users (<i>Andrea Lackner</i>)	42
The influence of utterance-related factors and individual differences on the use of direct and indirect speech (<i>Jianan Li, Joran Jongerling, Katinka Dijkstra, & Rolf A. Zwaan</i>)	43
GESTURE – SIGN: Emergence of Czech Sign Language (on the background of the works of 19th century authors) (<i>Lenka Okrouhlíková</i>)	44
A common taxonomy for coding iconic representational strategies in gestures and signs (<i>Morgana Proietti^{o*}, Alessio Di Renzo^o, Anita Slonimska^o, & Olga Capirci^o</i>)	45
Activating and counteracting verticality in singing: A study on multimodal metaphors (<i>Valentijn Prové, Kurt Feyaerts, Toon Goedemé, & Timothy Callemeyn</i>)	47
Perspective in Norwegian Sign Language (<i>Torill Ringsø</i>)	49
Gestures in Theatre Productions (<i>Beatrix Schönher</i>)	51
Principles of initialization in formation of anthroponyms in Czech Sign Language (<i>Markéta Šestáková</i>)	52

Author Index	53
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Keynotes

Action as common ground: insights of action representations in gesture and sign

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For thousands of years, and before the presence of linguistic structure, humans have used their bodies to perform actions to interact with the world. More recently in evolutionary history, the body also became the home of gestures and signs. It is therefore intriguing that both forms of manual communication have been traditionally studied in relationship to arbitrary linguistic systems and not as representations that may resemble recognisable bodily actions. In this talk I will argue that representations of bodily actions, which are grounded in our sensorimotor experiences, are an important point of intersection between sign languages and gestures. I will present evidence showing that action-related representations play an important role in gesture production, sign language acquisition, processing, and emergence. These data suggest that while there are unquestionable differences between gestures and signs, the representations of actions are an important common denominator that reveal important commonalities between both forms of communication. Investigating signs and gestures in relationship to actions will reveal further insights about the nature of manual communications and will expand our understanding of the human capacity of language.

Conceptual action: Some ways in which hands make sense

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The most common type of gestural activity — conceptual action or ‘gesticulation’ — is also the most mysterious one. While the communicative value and deliberateness of gesturing are evident when people show and explain the world to each other by indexical and depictive gestures, when people ‘gesticulate’ during conversation, they are typically unaware of what their hands are doing, and yet their hands make sense in accountable ways: they con-ceive — ‘grasp’, ‘take hold’ — a bit of content or context by construing it in terms of an action schema, which itself is derived from, and understood as, a practical engagement in the world at hand. Gesticulation is not an expression, but a form, of thinking: it articulates and makes sense of what is not available to the senses in terms of the hands’ concrete understandings of the world. Gesticulation, in other words, is a strange and distinct expression of the human ‘animate form’ (Sheets-Johnstone), which is distinguished by its ability to make material worlds through manual action, as well as to make sense of, and build upon, what is being found and what is being made in continuous action-perception loops.

In my presentation, I will try not only to show some of the ways in which conceptual gestures contribute to intersubjective understanding, but also seek to answer the question, ‘what do conceptual gestures tell the speaker (who is not aware of making them)?’ I suggest that gestures evoke enactive kinesthetic sensations — feelings of (familiar) actions — in the speaker which, by way of the meanings inherent in them, provide conceptual structure for the content or situation at hand.

Talking about space with space: Insights from cross-linguistic comparison and language development

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Sign languages use the hands and the space in front of the body for linguistic encoding. For spatial relationships, e.g. *cup on table*, this affords the direct and iconic expression of a real-world relationship in the signing space: one hand, curved to represent the shape of a cup, is placed on top of the other hand, flat to represent the shape of a table. Such analogical representation of spatial relations seems straightforward. Indeed, these direct mapping affordances of the visual modality have been assumed to give rise to a high degree of similarity between sign languages in the spatial domain. However, the use of space to talk about space poses a number of challenges. For example, how are more complex spatial scenes represented in space, when the mapping between referents and articulators is no longer straightforward? How are viewpoint-dependent spatial relationships, e.g. *cup to left of table*, represented, where what a signer places on the left of signing space (e.g. a cup) is seen by the addressee as being on the right. In this talk, I explore encoding in the spatial domain in the visual modality. I offer cross-linguistic comparison of locative expression, as well as insights from children learning to sign and from bimodal (spoken-signed) bilinguals on the effects of modality on encoding of spatial relations and on the interplay of spatial semantics and conceptual representation.

Invited talks

What, if anything, is a gestural cognate effect?

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In spoken language bilingual research, the cognate effect concerns facilitation of lexical access due to phonological co-activation across languages with similarities in pronunciation, and/or orthography. It remains an open question to what extent and in what capacity spoken and signed languages can have cognates. Signed language researchers have noted that signs overlapping in form with co-speech gestures are guessed more accurately and judged as more iconic by non-signing adults (Ortega, et al., 2017). Both cognate concepts (Christoffels, et al., 2007) and iconic concepts (Thompson, et al. 2009) facilitate picture naming speeds. Additionally, the typical novice bilingual preference for faster backward (L2 – L1) *lexically mediated* translation and slower forward (L1 – L2) *conceptually mediated* translation (Kroll & Stewart, 1994) is not found for spoken language cognates (Christoffels, et al., 2003), or for iconic signs (Baus, et al., 2013). The comparison of cognate and iconicity effects, particularly for a translation direction paradigm is additionally affected by concreteness/imageability; a semantic variable that modulates the directionality effect through activation of concept-level links. Both concreteness and cognate co-activation facilitate translation for spoken language bilinguals regardless of direction, but the cognate effect is greater for more highly trained translators. This indicates that experts experience more facilitation from cognate effects than concreteness effects (García et al., 2014).

More nuanced understandings of iconicity are becoming widely recognized as consisting of both *absolute iconicity* characterized by one-to-one form-meaning mappings and *relative iconicity* where similar forms are schematically linked to similar meanings (Dingemanse, et al., 2015). Mounting evidence suggests that relative iconicity in signed languages is more significant as language experience increases due to spreading activation of related forms within the language (Occhino, et al., 2017). To what extent do the effects of different types of iconicity resemble those of concreteness and cognates in spoken language bilinguals? This study uses a word translation paradigm to

test the similarity of spoken language concreteness/cognate effects and signed language iconicity effects. Reaction time and accuracy measures are reported for novice and expert English-ASL bilinguals (N=57) who translated verbs (N=48) both forward and backward while controlling for imageability and iconicity. Relative iconicity was measured by the speed participants could name pictures highlighting schematic visual features of ASL forms; items named faster were judged to have more accessible relative iconicity. Number of translation equivalents and lexical frequency were included as fixed effects. Relative iconicity facilitated translation speed both forward and backward, but the effect was stronger for experts than for novices. Imageability facilitated forward translation, but only for novices. These results suggest that relative iconicity may impart a “gestural cognate effect” due to shared activation where both forward and backward translation are conceptually mediated, but show an increased affect for experts similar to spoken language cognates.

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The neural mechanisms of how iconic gestures boost degraded speech comprehension in native and non-native listeners

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Face-to-face communication integrates auditory input, such as speech, with visual input, such as iconic co-speech gestures. These iconic gestures can enhance speech comprehension in adverse listening conditions. In this talk, I will address how the neural integration of iconic gestures and speech is modulated by speech degradation and native listener status, and how this can be indexed by modulations of event-related potentials, such as the N400. Furthermore, I will address how modulations of low- and high-frequency oscillatory power in language, motor visual areas of the brain support gestural enhancement of degraded speech comprehension in both native and non-native listeners. In this work, we propose a mechanistic role for oscillatory brain dynamics in engaging brain areas that contribute to multimodal semantic integration. We demonstrate that low- and high-frequency oscillations with distinct spatiotemporal characteristics can predict the degree of integration of audiovisual information in a semantic context for both native and non-native listeners.

Towards multidimensional data and a mixed method approach in the research on constructed action in Finnish Sign Language

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In this talk I will outline the work our team has done in Jyväskylä University, Finland, in order to better understand the use and variation of constructed action (CA) – a form of gestural enactment (Cormier et al., 2015) – in Finnish Sign Language (FinSL). I will discuss both the types of data used in this work as well as the main results. First, I will introduce Corpus FinSL and show briefly how we have exploited it in the investigation of the interplay of CA with syntactic units as well as in the study of the variation of CA according to discourse types (see Jantunen, 2017). After this, I will present a subset of the corpus to which we have added computer-vision data on the signers' nonmanual activity (Jantunen et al., 2016) and which we have used in the analysis of discourse-cohesive functions of head movements during stretches of CA. Finally, I will turn to our annotated corpus-like material comprising synchronized motion capture, eye-tracking and video data (Burger et al., 2018) and show how this material has enabled us to approach the articulation and rhythm of CA in completely new ways. Overall,

the talk emphasizes the benefits of using diverse technologies to produce what we call multidimensional corpus data and speaks for a mixed method approach to linguistic phenomena.

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Taming multimodal constructions in spontaneous interactions

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In our talk, we focus on various methodological problems related to quantitative assessment of multimodal constructions (Schoonjans, 2017; Zima & Bergs, 2017) observed in spontaneous interactions. To date, a common source of data for the studies carried out under the label of Multimodal Construction Grammar (MCxG) has been television broadcasts (Cánovas & Valenzuela, 2017; Uhrig, 2018; Zima, 2014). These studies brought forward a variety of theoretical problems associated to MCxG (addressed by Schoonjans, 2017) and also methodological issues, in particular the problem of limited applicability of quantitative corpus analysis methods (Uhrig, 2018).

We present two different methodological approaches to identifying multimodal constructions in two multimodal corpora of naturalistic spontaneous data (English multimodal corpus AMI (Carletta, 2006), and our own work-in-progress corpus of Czech interactions (CZICO, <https://sites.google.com/view/epocc/czico>). We will briefly present two case studies, both illuminating different methodological obstacles related to MCxG:

Case study 1 is a quantitative crosslinguistic corpus analysis of multimodal expression of event structure, focusing on the association between bounded and unbounded events in Czech and English and bounded and unbounded gestures (cf. Becker et al.,

2011; Cienki & Iriskhanova, 2018). In this study, we investigate the degree of “constructionalization” of gesture-speech chunks by quantifying gesture’s incorporation in the constructional profile of a particular construction (Kuznetsova, 2015).

Case study 2 addresses the constructional potential of flat hand – palm lateral – away-body gesture family. This particular gesture family has been linked to various functions (negative assessment (Bressem & Müller, 2017), or spatio-temporal metaphor expression (Cánovas & Valenzuela, 2017)). In our case study, we extracted instances of the target gesture in the two corpora and then we identified clusters of types of constructions in which the target occurs. Finally, we assessed the “constructional potential” of the respective types (by measuring their relative frequency), while focusing on crosslinguistic differences.

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Using hands to point to words: anaphoric gestures in Czech talk-in-interaction

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Hand pointing is among the best-researched gestural practices. Its prototypical function is to direct the interlocutor's attention to a physical object at hand or in sight or to indicate location or direction. Scholars of gesture have described a range of pointing practices tied to interlocutors' surroundings, ranging from a simple indication of an object to complex combinations of pointing and depicting (cf. McNeill, 1992; Kita, 2003; Kendon, 2004; Goodwin, 2007; Streeck, 2009). In addition, they have demonstrated that hand pointing is not limited to pointing to physical objects. Alternative aims of pointing gestures can also be abstract and imagined objects. In spite of these scholarly achievements, a distinct class of hand pointing practices remains under-researched – the practices of anaphoric gesturing, i.e. pointing to propositions that have been previously mentioned (but cf. the study by Cristilli, 2014, on anaphoric components in representational and deictic gestures).

The presentation will focus on the practices of anaphoric gesturing in Czech talk-in-interaction. The data come from televised talk, theatre performance, focus group discussion and everyday interaction. Based on close analyses of selected examples, the presentation will aim at a description of both formal and functional properties of anaphoric gesturing. Special attention will be devoted to a discussion of contextual features and arrangements that entail the production of anaphoric gestures. The overall character of the analysis will be praxeological – the analysis and interpretation of the findings will try to preserve the relevancies and understandings of the actors.

The evidence of anaphoric gesturing will be interpreted, inter alia, as a contribution to Karl Bühler's (2011 [1934], p. 94f.) general theory of deixis. It provides a correction of Bühler's view of anaphora as a mode of pointing specific to language (in contrast to other modes of pointing, ocular demonstration and imagination-oriented deixis, explicated by Bühler himself using the example of pointing gestures). The theoretical problem of unimodal, multimodal and crossmodal anaphora will also be briefly discussed.

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Recurrent gestures and the systematicity of diversity

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Recent years have seen an upsurge interest in “recurrent gestures” (Ladewig, 2014b). While researchers initially investigated the formal and functional range of recurrent gestures in different speech communities (Calbris, 2003; Kendon, 2004; Müller, 2004), more recently their relation to grammar has developed into a larger field of research. Amongst the examples studied are the gestural expression of aspect (Ruth-Hirrel, 2018) or negation (Bressem & Müller, 2014; Harrison 2018). Moreover, the formation of stable form meaning units of recurrent gestures and verbal constructions (“multi-modal constructions”, Andrén, 2010; Bressem & Müller, 2017; Zima, 2014) has become a major topic within linguistic approaches to gesture.

The point of departure of the studies on recurrent gestures is their stable unit of form and meaning, yet this talk will focus on the “diversity of recurrency” (Harrison, 2018, p. 213ff.) and shift the focus of attention to variants of recurrent gestures for which the notion of “gesture family” has been introduced (Fricke, Bressem, & Müller, 2014; Kendon, 2004). In fact, similar to spoken or signed constructions that may show “synchronic contextual variation” (Heine 2002: 83) indicative of stages of grammaticalization (Johnston Schembri 2010; Mroczynski 2012), recurrent gestures show meaning variants of different degrees of stabilization. Some variants of a recurrent gesture are closer to spontaneous gestures showing a low degree of schematization and form stabilization whereas others are closer to emblematic gestures showing a higher degree of schematization and form stabilization (Ladewig 2011, 2014a; see also Müller 2018). Using the example of the Cyclic gesture, this aspect will be illuminated in this talk. Moreover, by arguing that these different variants may have developed into grammatical or lexical markers of sign languages, a link between recurrent gestures and signs will be discussed.

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Modeling the mystery of iconic gesture

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When people produce spontaneous speech, they usually make hand movements that appear to be semantically related to the topic of their talk. These hand movements are called *speech-accompanying gestures*, or *gesticulation*, and they are very different than the hand movements of the sign language of the deaf. There are distinct types of speech-accompanying gestures, and the most intriguing type is the so-called *iconic* gesture. Iconic gestures are special because they do *not* have a conventionalized form-to-meaning mapping, like most of our communicative signals do. I will talk about a number of puzzles and controversies surrounding iconic gestures: What is their function? How are they generated? What is their relation to the simultaneously produced speech? And last but not least: how to incorporate them in cognitive models of communication?

Theoretical and practical aspects of crossmodal collocations

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In this presentation I will show how we can use the concepts of crossmodal collocation to systematically study the relation of meaningful co-speech gestures and verbal constructions, possibly both lexical and more abstract ones. After a short discussion of current approaches to multimodal communication in constructionist and related frameworks (e.g. Cienki, 2017; Hoffmann, 2017), I will demonstrate how we can extend the original approach to collocations (Stefanowitsch & Gries, 2003, Gries & Stefanowitsch, 2004) to calculate the strength of association between items on the gestural and on the verbal modalities.

Finally, I will show practical applications of the theory in the form of case studies illustrating such crossmodal collocations both with manual and with fully automatic gesture annotation on a multimodal corpus (see Uhrig, 2018, for a description of the corpus). This includes a discussion of the benefits and limitations of automatic annotation and the relevant error rates. This part will include a brief description of the tools and data available for such research in the *Distributed Little Red Hen Lab* (see e.g. Steen et al., 2018), mostly based on the *UCLA Library Broadcast NewsScope* (Steen & Turner, 2013).

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Poster presentations

Comparing “palm-up” gestures and PALM-UP (PU) signs.

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In spoken language discourse, we frequently observe a manual gesture called “palm-up” (Kendon, 2004; Müller, 2004). It is produced by rotating one or both open hands towards an upward palm orientation. A similar in form sign is also frequently observed in sign language conversation and is referred to as PALM-UP (PU) sign (McKee & Wallingford, 2011). PU has been previously described to always appear with non-manual signals, such as body shift, head nod, head shake, affective facial expressions, mouth gestures and mouthings (Engberg-Pedersen, 2002; Conlin et al., 2003; Kooij, Crasborn & Ros, 2006).

Loon, Pfau & Steinbach (2014, p. 2141) hypothesize for PU a modality-specific grammaticalization path from co-speech gesture to a functional element. In contrast with spoken languages, sign languages offer the unique property to grammaticalize both manual and nonmanual gestures (Herrmann & Steingach, 2013). This study aims at discovering whether the nonmanual elements accompanying the “palm-up” gesture have also undergone a grammaticalization process in sign.

This paper studies the PU sign and the “palm-up” gesture in combination with nonmanuals, comparing their use in Russian Sign Language (RSL) and Russian speech in combination with gestures.

We examine the “palm-up” gesture and PU sign from three datasets: the RSL Corpus (Burkova, 2015) (see Figure 1), Multimodal Russian Corpus (MURCO) (<http://www.ruscorpora.ru/search-murco.html>) (see Figure 2) and annotated interviews recently broadcast on Pozner Show, a Russian television program (<https://www.1tv.ru/shows/pozner/vypuski>) (see Figure 3).

To investigate the similarities and the differences in nonmanual elements accompanying palm-up gestures and PU signs, we analyzed 400 tokens of PU and “palm-up” gesture. We annotated each of the identified instances in ELAN software on the following tiers: eyebrows, eye gaze, eyes, mouth action, head, nose, cheeks, shoulders

and body. The PU annotations were done by a native RSL signer; the “palm-up” gestures by the author. Our findings demonstrate that, although PU and “palm-up” gestures appear superficially similar, there are important differences in the use of non-manuals.

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Figure 1: RSL PU sign Figure 2: “palm-up” gesture Figure 3: “palm-up” gesture

Metaphorical height contrasts across sign languages and in cross-signing

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Sign languages and gesture use spatial metaphors, including timelines ('then' vs. 'now') or valence scales ('good' vs. 'bad') along spatial axes (e.g., Cooperrider & Núñez 2009; Woodin & Winter 2018). In this study, I look at representations along the vertical axis in 1) a cross-linguistic sample of 786 property signs (positive vs. negative, following the metaphors UP IS GOOD vs. DOWN IS BAD) from 27 sign languages, using the SpreadTheSign database (European Sign Language Center 2012), and 2) ad hoc constructions in first-time cross-signing encounters between signers of different sign languages, using conversational data from a Dutch and a Chinese deaf signer.

First, a mixed effects model (R Core Team 2017) – with valence (positive vs. negative) as fixed effect and language as random effect – shows that positive and negative properties are associated with different directionality in signing space ($p < .001$), in that positive valence signs are significantly more often articulated upwards (see Figure 1). This supports previous findings by e.g. Yap et al. (2014) on a smaller sample of sign languages.

Second, it is found that cross-signing interactions make use of vertical distinctions in signing space for various metaphors. In the 15-minute segment analyzed, signers express *age* (e.g. high='adult, older' vs. low='child, younger'), *quantity* (e.g. high='increase, many' vs. low='decrease, few'), and *valence* (e.g. high='positive') distinctions with the help of vertical contrasts (see Figure 2). This shows that metaphorical height contrasts are not only found across established sign languages, but constitute a shared iconic device in cross-signing situations with limited shared lexicon.

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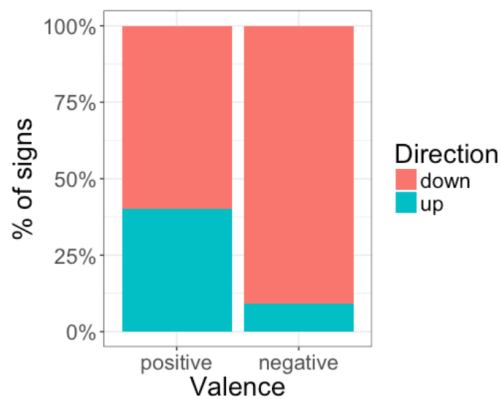


Figure 1: Directionality and valence of property signs

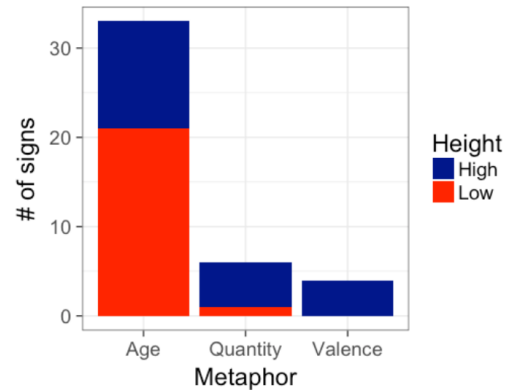


Figure 2: Uses of vertical contrast

Grammaticalization in Czech Sign Language

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In signed languages, as in any other spoken languages, language change occurs (Frishberg, 1979; Pfau Steinbach, 2013). This poster presents a study of one particular component of the language change phenomenon in Czech Sign Language (CSL), specifically the process of grammaticalization (Anible & Occhino, 2014; Janzen & Shaffer, 2002; Pfau & Steinbach, 2006) of the CSL sign STÁT-SE/STALO (HAPPEN). Concerning the sign languages, the main focus is on those aspects of changes where the shift of lexical meaning and the modifications of sign usage in statement occurs. The case study is based on an analysis of both of these changes as manifested in Czech Sign Language sign STÁT-SE/STALO.

The present paper has its roots in analogical published paper examining the process of grammaticalization of the sign HAPPEN in American Sign Language (Anible Occhino, 2014). Excerpted data origins from a facebook group which is mostly used by deaf people who share their day to day experience using short video-format. In total, we analyzed 50 signs of HAPPEN from 20 deaf signers. These clips were transcribed using ELAN 5.2 annotation software, where phonological form, syntactic position and mouthings were tagged. Each token of sign HAPPEN has been analyzed from several different points of view: phonological reduction, syntactic position, position within discourse, how often was the sign connected with time markers and if there was any change in mouthings in addition to a function of the sign.

According to the results, it seems that for HAPPEN, grammaticalization in CSL occurs. The sign HAPPEN is generally described as a verb, but results show that it also fulfils a function of discourse marker and nominal function.

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Give a hand: An experimental pragmatic study of multimodal communicative acts

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Speech Act Theory is not new and has been revised and/or applied for more than five decades. Theories of gestures, on the other hand, are newer as they started to emerge about 30 years ago, and have since then gained more and more attention. This research wishes to align to this growing interest in multimodality by exploring the use of hand gestures as parts of communicative acts or, more specifically, illocutionary acts produced with the help of hand gestures. As this study only proposes a pilot experiment no strict hypothesis is made. Rather, using the annotation tool ELAN and the Linguistic Annotation System for Gestures (Bresse et al., 2013) for my analyses, I inquire into the following two aspects. (1) I question the place of verbal and non-verbal supports in the production of illocutionary acts. (2) I investigate the contributive aspect of gestures, i.e. I pose the question whether they contribute to the illocutionary force or rather (are related) to the propositional content. A particular focus is put on the methodological aspect. Nonetheless, as it is important to determine the literature on which this work is based before embarking on the experimental study proper, I also briefly review the literature dealing with so-called Speech Act Theory from a specific perspective. The idea is namely to review the literature on illocutionary acts in order to pinpoint how it tackles multimodality. In other words, some speech acts theorists

(and other theorists of communication) are put under scrutiny in terms of what they tell us about gestures.

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Constructed actions in clause-like units in the Polish Sign Language corpus

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The importance of conducting a reliable annotation process based on the identification of clause-like structures was pointed out by Trevor Johnston (Johnston, 2017). Analysis of syntax structures in sign language corpus data begun to be quite a new trend in sign language linguistics (Cormier, Smith & Zwets, 2013; Hodge, 2013; Hodge & Johnston, 2014; Puupponen, Jantunen & Mesch, 2015; Jantunen, 2017). Recently the Polish Sign Language Corpus reached the point of 500 000 annotated sign tokens. The most recent addition to the annotation process is delineating clause structures conducted along with additional tagging for argument structures and semantic roles of their constituents. Based on the detailed tag schema (developed in cooperation with Professor Trevor Johnston and inspired by his Annotation Guidelines for the Auslan Corpus) we identified more than 4300 clauses (clause-like units, CLUs) and 1200 non-clause units (tagged as CLU_fragments). We will present statistical data of constituent order in single clause-like units in PJM corpus with additional information about their part of speech functions and semantic roles. Furthermore, we would like to focus on those CLUs (approx. 300 of 4302 identified CLUs) that take constructed actions (CA, example 1, 2 and 3), depicting constructions (DS, example 4 and 5) or both CA and DS (example 6) as their predicates or CA as their arguments (utterance as an argument of the CLU, example 7). Those examples illustrate that CA/DS elements take grammatical verbal-like position in clause units in PJM. Our analyses show that those elements should be treated as equal to lexical signs with predicative functions in CLUs – a phenomenon which can broaden our perspective on grammatical status of such elements in sign languages.

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Examples

1) CLOCK DS(shape): HANDS-OF-CLOCK CA: LOOK-ANGRY

The clock is looking angrily [at him].



Fig. 1. CA: LOOK-ANGRY

2) BIKE BIKE | CA:(LOOK-DOWN)

He was riding a bike and noticed [a basket].

3) BUNNY JUMP/CA:(EYES-CLOSE)

Bunny was jumping with his eyes closed.



Fig. 2. Simultaneously signed: JUMP and non-manual CA: EYES-CLOSE

4) MISS DS: PUSH | CA: SCARED | DS: TAKE-FROM-THE-GROUND | GO

A lady pushed [a window] and he got scared, took [a rock] from the ground and went away.

5)HELP CA: OK | DS: GATHER-FROM-THE-GROUND | BOY SMALL HELP
| DS: GATHER-FROM-THE-GROUND

They agreed to help, they are picking [pears] from the ground. They are helping this small boy and are picking [pears] from the ground.

6) WITH CIGARETTE SLEEP GO | CA: FALL-ASLEEP/DP: CIGARETTE-IN-HAND

He went to bed with a cigarette. He fell asleep with a cigarette in his hand.



Fig. 3. Simultaneously signed: DP: CIGARETTE-IN-HAND and non-manual CA: FALL-ASLEEP

7) BOY TIRED | CA SLEEP DP: GO-UP | CA GOOD GOOD

The boy was tired, he said he is going to bed upstairs. [They replied:] O.K. O.K.

A study on the effects of an embodied humanoid robot representing sign language

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The humanoid robot TEO is an assistive household companion which is able to represent Spanish Sign Language (LSE) vocabulary and dactylology thanks to its under-actuated robotic hands. Prior studies on sign language representation through the simulation of the humanoid robot TEO revealed that end-users' predisposition to communicate with robots via sign language was over 80% positive. Moreover, around 65% of reticent end-users changed their minds after their first experience with the simulated robot. Unexpectedly, a new developed study has shown that embodiment has dropped satisfaction rates drastically and increased comprehension rates.

The under-actuated movement of the real hands has been modelled according to three generators based on three different neural networks, and the data obtained in previous simulation. Therefore, four different dactylology models have been shown to end-users. It has to be considered that the notion of embodiment is required where there is cohesive interaction between the environment and the body. Despite this, recent end-user feedback has shown some recurring criticisms referring to the embodied robot that did not arise with the simulation experiments. Among the most recurrent topics, the demand of facial expression is emphasised.

In terms of demographics, the decision of grouping the academic background groups into two main sectors (university and non-university studies) relies on the link between university and research. Therefore, university students and graduates are expected to be more aware of actual robotics state of the art and, consequently, to be more critical towards the scientific implementation. As expected, lower satisfaction rates are detected among university students and graduates. Differences in comprehension rates are not significant. Nevertheless, a more pronounced overall age-related comprehension decreasing trend is identified for non-university graduates.

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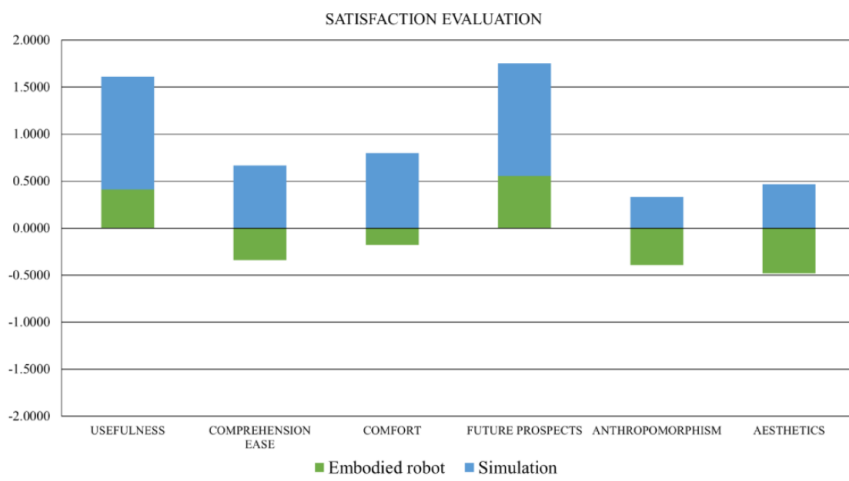


Figure 1: End-user satisfaction evaluation

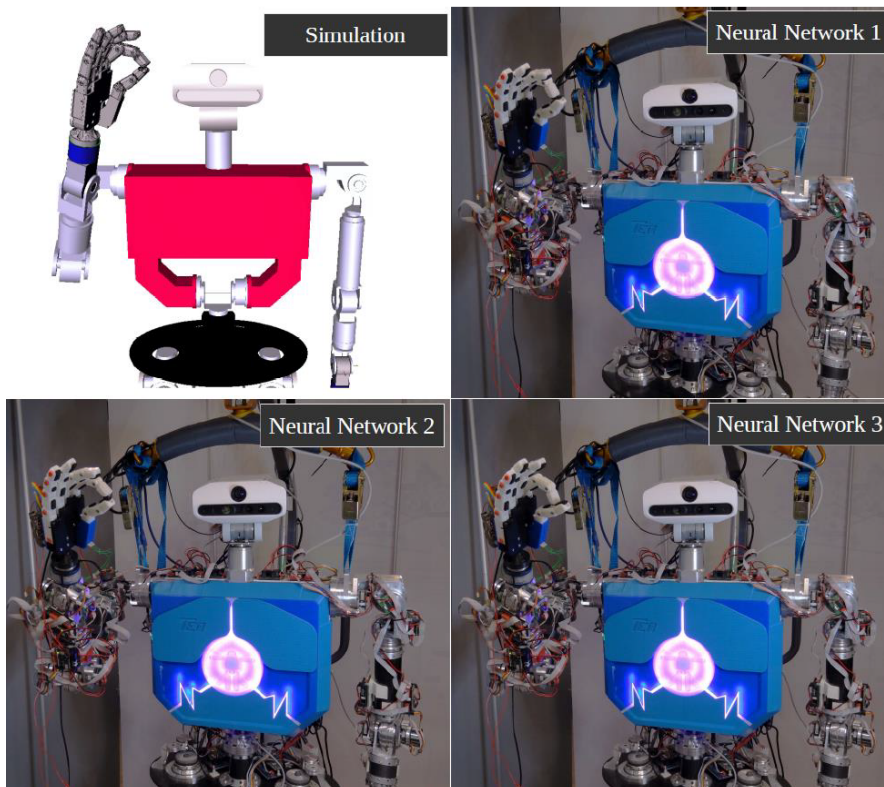


Figure 2: Dactylology representation simulated and generated by different neural networks

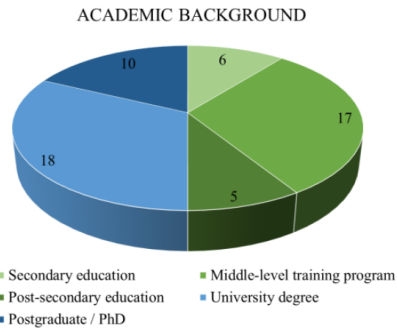


Figure 3: End-user academic background

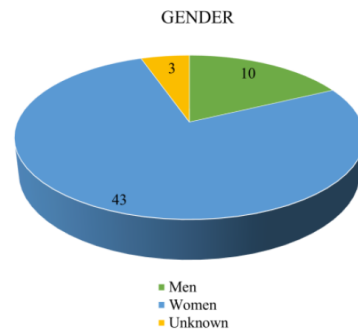


Figure 4: End-user gender distribution

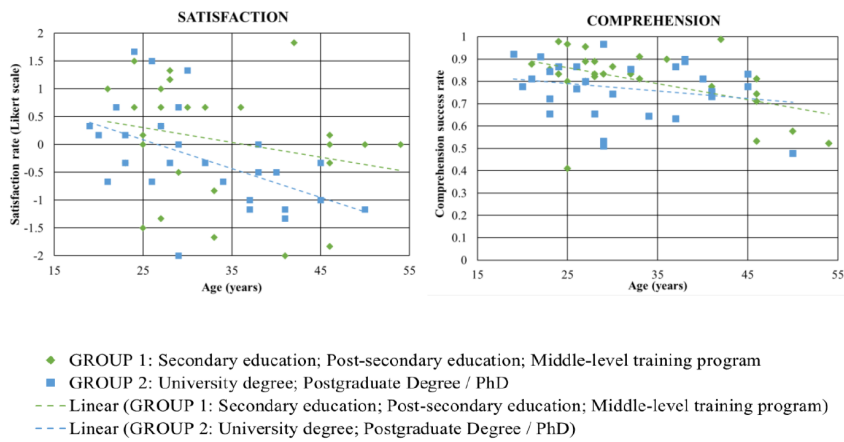


Figure 5: Satisfaction outcome in relation to age

Figure 6: Comprehension outcome in relation to age

Techniques for the translation of metaphors into Spanish Sign Language

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In recent decades, the socio-economic importance of the Spanish wine sector has led professional translators to specialise in these texts and language, facilitating the marketing of these products. This has meant that the language of wine and this type of specialised translation are the object of analysis and research (Ibáñez Rodríguez 2003, 2017).

One of the aspects that has most interested researchers has been how the translator reaches the interlinguistic equivalence of rhetorical figures such as metaphor and metonymy (Negro Alousque 2011, 2013, 2014; Viviana Bosio and Cubo de Severino 2012; Michaud Maturana 2014). Negro Alousque (2014) establishes a total of five types of metaphors that are usually used in tasting notes and states that, in the translation of these from Spanish to English, the basic principle is to preserve the conceptual metaphor in the target language. In addition, this author finds that the main technique used is literal translation. However, as Suárez Toste (2009, p.79) points out "one of the greatest difficulties we encounter is that the metaphors that make up the language of wine are not universal. (...) And it is not because of the language, it is because of the culture".

This motivated us to consider what would happen if, in addition to cultural issues, languages present a different linguistic modality. Our main objective is to analyse the translation into Spanish Sign Language (LSE) of the metaphors used to describe wine in a corpus of tasting notes, which included the five types of metaphors identified by Negro Alousque (2014), and to determine the main techniques used. To do this, we simulate a translation order to an experienced interpreter whose mother tongue is the LSE, with the intention of finding in the result all the linguistic nuances of this vis-gestual language and a correct adaptation to the Deaf culture.

Using a qualitative methodology and a case study research method, we analysed the translation process carried out by the professional and the techniques he used when translating metaphors into LSE. For this, we used as research techniques an open and semi-structured interview with the translator and also the analytical observation of the eight videos in LSE, which are the product of the translation of eight wine tasting notes written in Spanish. To determine the techniques used, we adapted Hurtado Albir's (2001) proposal for translation techniques to LSE.

The interview with the translator shows that the main difficulties when carrying out this type of translation is the need for sufficient time for its preparation, to face

the specialty language itself, and to evaluate how to carry out a correct linguistic and cultural adaptation for Deaf people. As for the translation techniques applied, we find that the most used are literal translation, amplification and, to a lesser extent, description. In addition, we observe the omission or substitution of metaphors for wine without an adequate equivalent in LSE.

The main conclusions of this pilot study are that, in the translation of wine tasting notes into LSE, conceptual metaphors are also maintained as a translating principle, it is necessary to use an interpretative-communicative translation method and the important use of resources of this linguistic modality when using translation techniques, such as predicative classifiers and non-manual components. We hope that this first study will bring new perspectives and generate new questions for future works on this subject.

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Varying levels of lexicalization in the L1 acquisition of depicting handshapes

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A unique feature of signed languages is the existence of depicting handshapes or sign language “classifiers” which represent referents based on certain salient features in complex morphological structures called depicting constructions. Any depicting handshape may be located on a continuum, ranging from gestural to completely lexicalized handshapes (Cormier, Quinto-Pozos, Sevcikova, & Schembri, 2012).

The following reports on a study carried out with six native-signing Deaf children in Austria aged 3;9 to 13;0 and examines whether handshape type (object versus handling (depicting) handshapes) influences the selection of lexicalized depicting handshapes (as defined by Hilzensauer, 2015) over more gestural choices.

Children were tested through two tasks by a Deaf examiner, eliciting object and handling handshapes, respectively. All target utterances were varied for morphosyntactic complexity (Schick, 1990) and phonological complexity (Boyes Braem, 1990). Each child was seen individually and recorded. The videotapes were annotated using ELAN and the resulting 186 tokens were rated according to type and degree of lexicalization. Not completely lexicalized tokens are non-standard handshapes not documented in Hilzensauer (2015) and may include incorrect depicting handshape choices.

The study’s outcome reveals a lower frequency of fully lexicalized tokens for handling handshapes. Overall, results demonstrate a more predictable acquisition of object handshapes in which children learn to use more lexicalized forms with increasing age, as illustrated in Figure 01. This may indicate that the higher degree of iconicity of handling handshapes makes for a greater influence of gesture on their acquisition. Further research is required to confirm this hypothesis.

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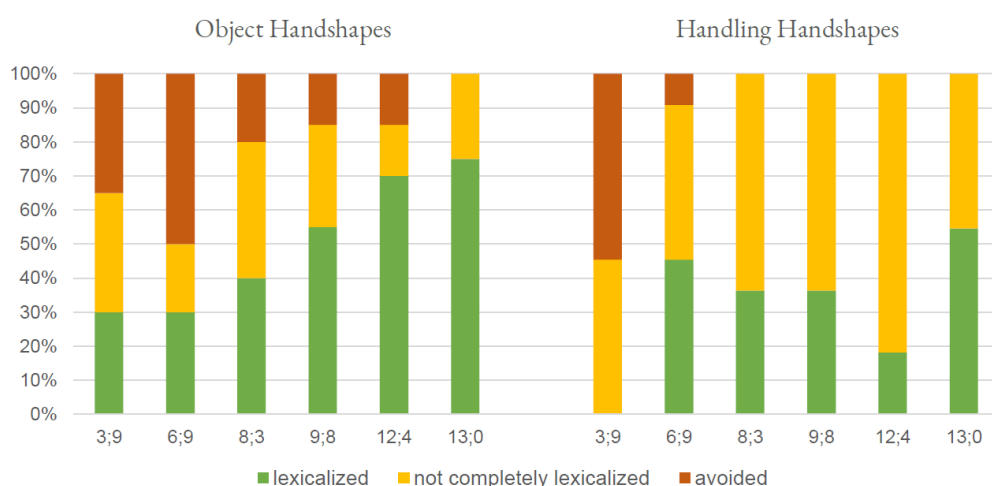


Figure 1: Acquisition of object and handling handshapes according to the subjects' age.

Vertical Palm Away/Oscillate: A recurrent form associated with negation in spoken and signed language

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The Vertical Palm Away/Oscillate form is a recurrent gesture (Ladewig, 2014) associated with the expression of negation in spoken languages, as shown for Italian (Kendon, 2004), French (Calbris, 2011), German (Streeck, 2009; Bresse & Müller, 2014), and English (Harrison, 2018). In light of these gesture studies, Johnston (2018) has suggested that “we can look back at signed language negation” (p. 222). This poster presents a study of negation during a French Sign Language class, focusing on the Vertical Palm Away/Oscillate form in the communicative repertoire of the Deaf teacher..

The 60-minute recording will be analysed with frameworks and methodologies from both gesture studies and signed language linguistics, yielding qualitative and quantitative results. By treating the Vertical Palm Away/Oscillate or ‘VPO/A’ form as a visible bodily action (Kendon, 2004), a qualitative analysis of the data has already identified pragmatic, interactive, and linguistic functions (Harrison, 2018). These functions are now proposed as categories for a quantitative analysis of the VPO/A’s frequency and distribution over the 1-hour classroom interaction. The results can be discussed in relation to (a) corpora of FSL (Blondel & Boutet, 2016), (b) acquisition

studies of French Signed/Spoken negation (Blondel et al., 2017; Morgenstern et al., 2018), and (c) linguistic typological studies of signed language negation (e.g. Zeshan 2004; Johnston, 2018).

This study might fit under what Müller (2018) has recently called a “synchronic comparison of spoken and signed languages” (p. 2). It should therefore shed light on “the functional integration of gestures within a signed or spoken utterance” and illustrate the context of “contact situations between spoken and signed languages” (p. 2).

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Means of nonverbal communication in Down syndrome children

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Down syndrom (hereby DS) is the most common genetic disorder caused by a surplus chromosome 21, which results in a mental disability of various extent and therefore in a general slowdown of the child's cognitive, motoric, and communicative development. As previous research shows (e.g. Pochon et al., 2017), social and emotional development tends to be very sufficient.

While typically-developing children start using words around the age of 1 and two-word utterances at 18 months (Saicová Římalová, 2016), DS children start acquiring verbal communication later: first words at the age of two and multi-word utterances around the age of 4 (Buckley, 2001). Generally speaking, verbal communication is usually preceded by nonverbal communication (e.g. eye contact, mimics, limb movement) and later by a combination of verbal and nonverbal means. This developmental stage lasts significantly longer in DS children and natural gesticulation is an inherent part of their communication until they learn to pronounce words properly (Selikowitz, 2005).

Nonverbal communication of DS children in the early state of language development can be also easily supported by alternative and augmentative communication (Rvachew & Folden, 2018). This talk will thus focus not only on the development of nonverbal communication but also on alternative sign systems (representing verbal words) used both in the Czech Republic and abroad (e.g. Makaton, GuK) and so called loud gestures, representing consonants, which combine gestures, visualisation and voice. Description is based on long-term observation of a Czech boy with DS, comparing with available sources.

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Czech Deaf children's socio-cognitive competence assessed through the Theory of Mind

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Socio-cognitive competence acquired through childhood is fundamental to social interaction and the future development in general. Nonetheless, any experimental research of Czech Deaf children's socio-cognitive skills is still an ignored area. Our research question is: What is socio-cognitive competence of Czech Deaf children – both Czech Sign Language (CzSL) users and spoken Czech language users?

Theory of mind (ToM) in Deaf children (i.e. understanding of person's mental states like emotions, beliefs, desires, etc.) has been intensively studied in the last years around the world (e.g. Peterson, 2009; Wellman & Peterson, 2013). We decided to realize the first study testing Czech Deaf children's competence in ToM tasks, as a view to their socio-cognitive skills.

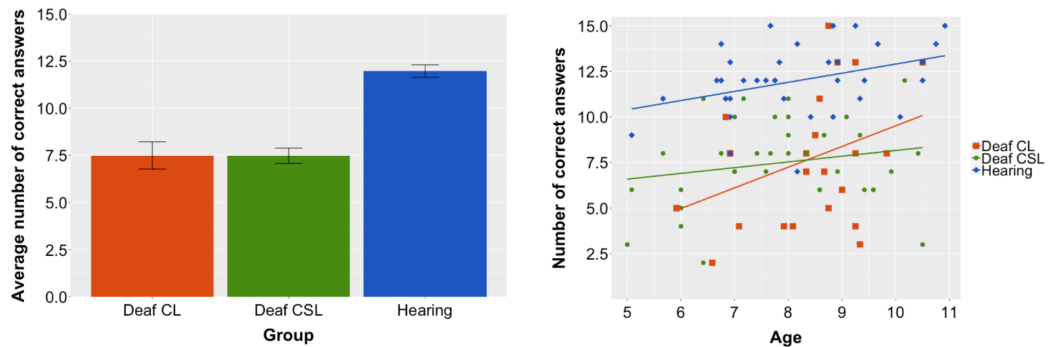
Thus, we have used the Theory of Mind Test Battery (ToMTB, Hutchins & Prelock, 2014) and have adapted it to CzSL and spoken Czech (Hudakova & Filippova, 2017) to test Czech children. Overall 94 children aged 5–10 were tested up to this day: 35 Deaf-CzSL users, 24 Deaf-spoken Czech users and 35 typically developing hearing children.

Preliminary results revealed that most of Deaf children (both CzSL users and spoken Czech users) achieved lower score compared to their hearing peers. Nevertheless, we are convinced (in accordance with Peterson, 2009, and others), this delay is not a consequence of deafness per se. It is necessary to further study why Czech Deaf children reached lower score in ToMTB. Increase of number of tested children, detail analysis and interpretation of collected data (including the circumstances of the language acquisition) are desirable. Various influences and factors should be verified in the next phases of our study. A lack of exposure to everyday conversations about mental states (i.e., emotions, desires, beliefs, knowledge, intents, etc.) could be one of them (see Harris, 2006).

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Charts 1 and 2: The maximal number of correct answers is 15, higher value indicates higher competence.

Deaf CL = Deaf spoken Czech language users: $n = 24$; age: $M = 8,23 \pm 1,22$ years; score: $M = 7,5 \pm 3,55$

Deaf CSL = Deaf CzSL users: $n = 35$; age: $M = 7,86 \pm 1,51$ years; score: $M = 7,49 \pm 2,41$

Hearing: $n = 35$; age $M = 8,14 \pm 1,45$ years; score: $M = 11,97 \pm 1,95$

The relationship between speech and gestures in aphasic patients

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In my research I work with 5 patients with diagnosed aphasia and 10 verification persons (or persons with no evident speech deficiency). From methodological point of view, I point out a necessity to include description of nonverbal elements into grammar description and, at the same time, to describe damaged data on aphasic patients as well. I also introduce some possible perspectives of exploring categories and extent of speech damage by aphasic patients and different ways, how they substitute verbal deficiency with the help of gestures. As a basic typology of gestures I take over the classification by Hogrefe (2009): in the wide group of so called pictographs (semantic gestures) belong iconographs and kinetographs. Other independent groups of gestures are deictic gestures (concrete and abstract) and so-called emblems

From the viewpoint of data processing methods, I explore speech parameters on the one hand: among others quantity of words, length of phrases and their complexity and lexical diversity, and parameters of gestures on the other hand: quantity of gestures, diversity of gestures etc.

I verify two fundamental hypotheses established by Jakob et al. (2011):

Hypothesis no. 1) Patients with aphasia produce more gestures than so called verification persons during interpretation of texts.

Hypothesis no. 2) The more speech restricted an aphasic patient is, the more gestures he/she produces during the interpretation of a text.

My data show that both hypotheses and their subhypotheses proved on German speakers by Jakob (2011) were also successfully verified on Czech speakers.

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Learning to use Prepositions – an experiment with gesture and theater

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When observing the position or trajectory of objects in space, we are usually oblivious to imposing categorical distinctions on the scene. However, talking about position and movement requires that space be divided into basic spatial categories. Although effortless in a language we know well, learning to use spatial terms in a foreign language is often a difficult task. While research has shown that gesture, language and thought are closely linked (Kita, Alibali, & Chu, 2017; Willems & Hagoort, 2007), how to best use

them in diverse classrooms is unknown. In the context of learning a foreign language play, the experiment detailed here investigates pairing specific linguistic items with specific codified gestures. Classroom-based studies of gesture have previously shown the importance of embodiment in L2 use and situated learning, substantiating the idea that gestures play an important role as a teaching tool (Janzen Ulbricht, 2018). Here we investigate how two teaching methods involving speech-gesture combinations of different linguistic complexity influence long-term preposition learning on a transfer task. Results in figure 1 showed no differences in initial ability, but a higher gain in preposition accuracy after training for learners exposed to words and gestures at the level of morphology, as opposed to the same words with gestures at the sentence level plus the written text. Four weeks later, at the final measurement, however, a similar gain was also reached by the group taught with sentence-level gestures. These preliminary results emphasise the symbolic function of both signed and spoken language, and suggest that gesture complexity can influence long-term preposition learning outcomes.

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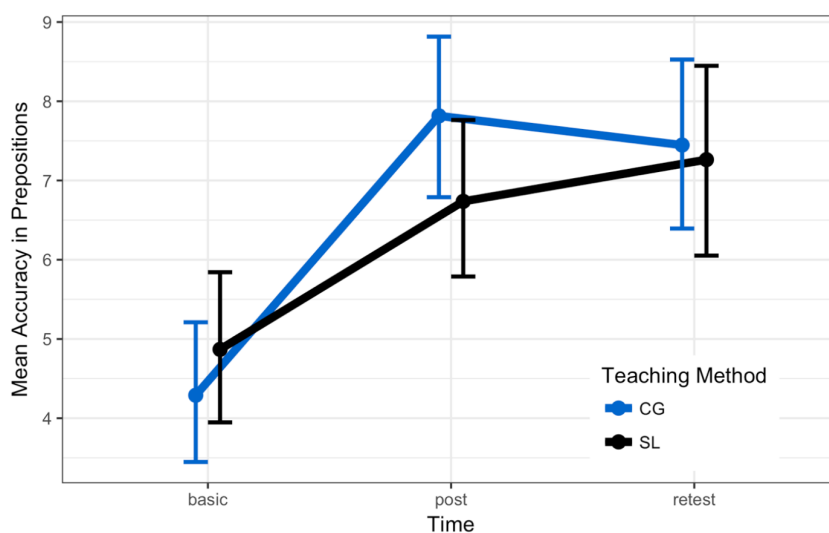


Figure 1: Change in mean preposition accuracy over time between teaching methods. The x-axis plots the three preposition tests, basic (before instruction), post (one week after instruction), and retest (five weeks after instruction) for the codified gesture (CG) and scenic

learning (SL) experimental groups. The y-axis plots the mean number of correct test items per teaching method. For the sake of clarity, error bars plot unadjusted 95% confidence intervals. The mean gain in prepositions (posttest – baseline) for the CG condition was $M = 3.52$ ($SD = 2.28$) and for the SL group $M = 1.86$ (2.00), $t(72.73) = 3.36$, $p = 0.001$ two-tailed, $d = 0.77$, indicated that the experimental groups the children belonged to had a significantly different effect.

Gesture retraction: A turn-final “go signal” for timing turn-transition

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Background: It's not a news that for realizing smooth alternation between interlocutors during natural conversation, at least two tasks need to be done: (i) preparing response in advance and (ii) detecting the ending point of the incoming turn so that speakers can release the pre-prepared utterance right on time. Almost every turn-taking model (Duncan, 1972; Garrod & Pickering, 2015; Levinson & Torreira, 2015; Sacks, Schegloff, & Jefferson, 1974) elucidates interlocutors exploit linguistic (i.e., lexical, syntactic and prosodic) and non-linguistic (i.e., gaze, facial expression and gesture) information together to time turn-transition in conversation. But obviously, most of the case studies failed to genuinely take non-linguistics signals into account. Till now, we still know surprisingly little about to what extent do interlocutors exploit non-linguistic information to manage turn-transition in communication. Recent research reported in face-to-face conversation question with gesture accompanied usually got faster response comparing with those without gesture accompanied, and interlocutors tended to utter responses right after the onset of gesture retraction (Holler, Kendrick, & Levinson, 2018). Noteworthy, gesture apex is subject to co-occur with pitch peak, and gesture retraction tends to appear directly after gesture apex. Therefore, the corpus analysis could only cautiously claim that gesture retraction and pitch peak might conjoinedly result in faster response.

Question: The present study intends to investigate whether gesture retraction is actually used by interlocutors to detect turn-end and as a “go signal” of uttering responses. And by manipulating the pitch peaks of stimulus, I try to disentangle gesture retraction's effects on timing turn-transition from the effects of pitch peak.

Method: 30 monolingual speakers of Chinese were presented five trials blocks (as detailed in Fig. 1) each containing 25 target turns and 15 distracting turns. In condition

1, target contained both pitch peak and gesture retraction. Condition 2 only showed the retraction. Condition 3 only presented pitch peak. In Condition 4, neither pitch peak nor gesture retraction could be clearly identified. And in condition 5, participants were presented the contents of the turn first, then they did the button-press test. There was a naming task between each block serving as the filler. I created 5 experiment lists and permuted the block order according to Latin-square design in each list. Each of the target turns appeared in all five conditions across the list but none appeared twice within the same experiment list. Participants were instructed to press the button when they thought the ongoing turn was going to the end. As soon as the participants pressed the button, the speaker's turn immediately stopped. Then, next trial was presented. All targets in the experiments were declarative sentences in SVO structure. The pitch peak only appeared on the first tone character. The duration of the targets ranged from 9s to 13s. The present study followed the way Riest and colleagues (2015). used. I will calculate the BIAS that is defined as response time minus the duration of the target turn. A repeated ANOVA will be run to see how will the presentation condition (independent variable) play effects on BIAS (dependent variable)?

Prediction: This study is still in progress. Therefore, I can only demonstrate my anticipation here. Since participants could get no meaningful information in condition 4, they are assumed to press the button simply based on their reaction completely. However, in condition 5, they read the contents of the turns in advance, so they should know how would the turns end. As a result, they should have the shortest response time. I hope the distribution of the BIAS in condition 1 and 3 will look like Fig. 2. That will confirm the corpus-study result reported by Holler and colleagues (2018) as well as show an extended conclusion that declarative utterance with gesture tends to get a faster response relative to that without gesture. Also, I expect that ANOVA analysis can show a significant result between condition 4 and 5, and BIAS in condition 5 will be smaller than that in condition 4 (if they are all negative), then I can claim that people do use their prediction-capacity to predict the turn-end. And non-significant result can be noticed between condition 1, condition 5 and condition 2 and significant result can be gotten between condition 1 and condition 3. These results will indicate that interlocutors truly make use of gesture retraction as a “go signal” for timing turn-transition in face-to-face conversation.

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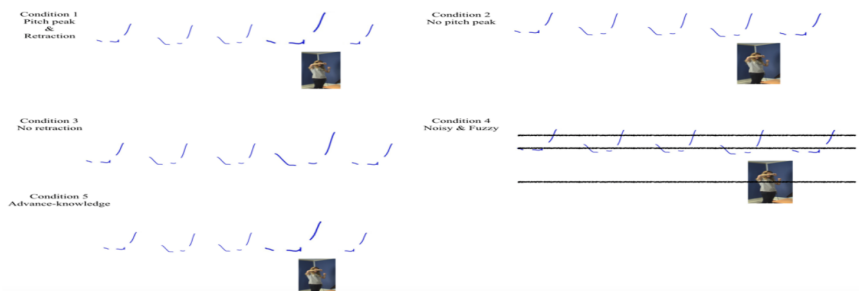


Figure 1: Five conditions in the present study.

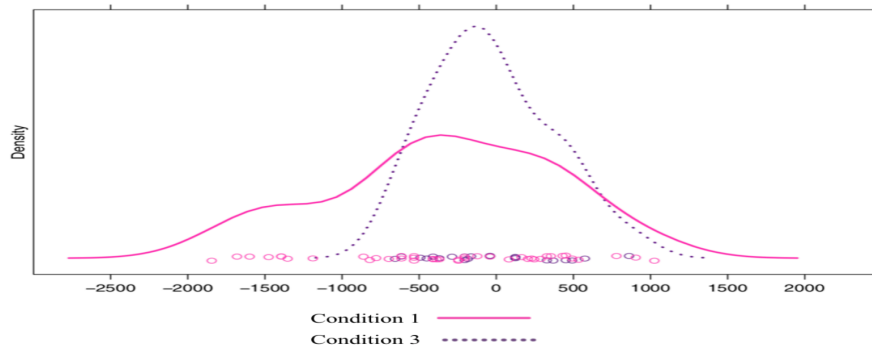


Figure 2: Distribution of the BIAS condition 1 and condition 3.

The nonmanuals-gesture-interface: An emic approach for evaluating the status of nonmanuals by sign language users

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In sign languages (SLs) nonmanuals can fulfill clear linguistic roles, however, a discussion on the language and/or gesture status of these nonmanuals is still on-going (cf. among several others Sweetser, 2010, or Dotter, 2018).

We present an emic approach that is based on feedback of sign language users' on nonmanuals, co-occurring in Austrian SL (ÖGS) corpus-data. The following steps are implemented:

1. Determining nonmanuals: ÖGS-users are asked to identify nonmanuals, which co- occur/are associated with clause-like-units and which are associated with propositional- semantics, discourse-pragmatics, and/or interactive functions.
2. Describing functions associated with nonmanuals: The ÖGS-users are asked to allocate possible functions to the identified nonmanuals by using a templates of selectable functions which can be completed by individual feedback.
3. Judging the nonmanuals' language status: With respect to already annotated nonmanuals, ÖGS-users are asked to judge (a) whether particular clause-like-units would be well- formed if the co-occurring nonmanual(s) were not present, and (b) which other elements could replace a particular nonmanual element.

Within analysis, we discuss the language status of certain nonmanuals using the following criteria: systematic recognition of forms, systematic association of meanings/functions in different context, and subjective awareness of usage rules by SL-users. We expect to get information on acceptability and variation, and on how strongly particular elements are grammatically integrated into the signed structure.

This approach could also be applied to gesture data in spoken language including a comparison of nonmanuals in a particular SL and co-occurring nonmanuals of the SL's surrounding spoken language(s).

The influence of utterance-related factors and individual differences on the use of direct and indirect speech

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People produce and encounter direct (*Paul said: "I am hungry"*.) and indirect speech (*Paul said that he was hungry.*) in everyday communication. Direct and indirect speech differ from each other in both syntactic and semantic features. Previous studies have shown that the distinct properties of these two reporting styles lead people to perceive, comprehend and represent them differently. However, the factors that impact the selection between these two modes of reporting during language production are under-investigated. The current study aimed at addressing this question from two perspectives. We examined how utterance-related factors (i.e., vividness of non-verbal information and utterance type) and individual differences (i.e., gender) affected the use of direct and indirect speech in the context of a narrative. Participants were asked to watch and retell four movie clips. All participants' retellings were videotaped and then transcribed verbatim for analysis. The data were analyzed using a mixed effects logistic regression model. The results showed that two utterance-related factors significantly predict participants' way of reporting. Utterances that were accompanied by vivid-nonverbal information were more likely to be reported in direct speech than in indirect speech. Utterances that belonged to the main clause phenomenon were more likely to be reported in direct speech. In addition, gender significantly predicted the use of direct and indirect speech. Females used more direct speech than males.

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GESTURE – SIGN: Emergence of Czech Sign Language (on the background of the works of 19th century authors)

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The development of Czech Sign Language was closely associated with the establishment of the first Institute for the Deaf and Dumb in Prague in 1786. Therefore more detailed information on the visual-gestural communication of the deaf can be found in the literature focused on *deaf-and-dumb* education. The authors of these texts are predominantly educators (teachers, directors) working in institutes for deaf children (Beran, Frost, Fuchs, Huleš, Kmoch, Kolář, Krs, Malý, Mücke, Škornička, Staněk – see sources). Although these texts can be considered as naive and non-linguistic, we can find there interesting information about the origin and the development of sign language. All authors considered sign language to be the mother tongue of the deaf. The deaf was seen as gifted, almost predestined to create, in interaction with his hearing surroundings, an nearly universal language based on natural gestures: *natural sign-gesture speech* (*přirozené posunování, řeč známková přirozená, přirozená posuňková řeč*) – home signs in current terminology. Then the child enters the institute and meets other deaf. New signs emerge at school, based on the convention between the teacher and the pupils, the sign-gesture speech is constantly evolving and transforming, and signs for abstract concepts are also created. Thus, *artificial sign-gesture speech* (*řeč posuňková, posuňková, známková umělá*) – sign language in current terminology – emerges and is passed on to future generations of pupils of the deaf Institute. If we look at the current trends in sign language linguistics and gestures studies, we can find some parallels with information contained in texts from the 19th century.

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A common taxonomy for coding iconic representational strategies in gestures and signs

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The capacity of iconizing the practical and perceptual experiences of the world is typical of all sign languages (SL). This capacity is reflected in the two ways of signifying in SL: ‘telling and showing’ with the use of the Highly Iconic Structures (HIS), or ‘telling without showing’, using lexical units (LU) and pointing. The way of signifying in spoken languages increases its iconicity with the presence of gestures. Gestures do not share the complexity of linguistic structure observed in sign languages, but it is possible that the representational techniques used in both systems are related to some extent (Cormier et al., 2013; Pettenati et al., 2010). The aim of this study is to compare the range of representational techniques and HIS in co-speech gestures with those in sign language.

Ten deaf adults (signers of Italian Sign Language) and 10 hearing adults (speakers of Italian), watched and retold wordless “Tom and Jerry” cartoon, consisting of two

different episodes involving animate versus inanimate referents. Gestures and signs produced by participants were coded according to representational technique used to analyze co-speech gestures (Capirci et al., 2011; Marentette et al., 2016): HAND-AS-OBJECT; HAND-AS-HAND; SIZE-AND-SHAPE; ALL-BODY. Gestures and signs were then coded according to the typology of HIS used to analyze sign languages (Cuxac & Sallandre 2007): PERSONAL TRANSFER (PT); TRANSFER OF SIZE AND SHAPE (SST); SITUATIONAL TRANSFERS (ST).

Results revealed striking equivalences across the two taxonomies of analysis, indicating that there is a valid possibility of investigating the similarities and differences between the iconic principles used in spoken and signed languages. Furthermore, we found that signers and speakers generally used the same strategies, the choice of which was mainly based on the narrative context. Results reveal that the representational techniques in sign and gesture are related by virtue of the shared visual-manual modality.

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Activating and counteracting verticality in singing: A study on multimodal metaphors

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Language provides conventional ways of talking about pitch. In Dutch or English for instance, a vertical metaphor (‘high tones’ and ‘low tones’) is used to describe this relation between audible frequency and the human sense of hearing and cognition. Importantly, such metaphorical language also becomes visible in bodily depictions. According to a recent definition by Clark (2016), depicting qualifies as a method of communication as opposed to describing and indicating in the sense that people represent a scene by staging a physical analog, using different modalities. A nice illustration are melodies, which are commonly depicted with a rising or a descending line in the gesture space (Küssner et al., 2014; Lemaitre et al., 2018). Empirical, psycholinguistic evidence has shown that this is not only a linguistic correlation, but also a matter of conceptualization (Casasanto et al., 2013). As Dolscheid et al. (2014) argue, this cross-domain mapping is the result of both schematization of bodily experience and language use. Cox (2016) and Shayan (2011) identify culture-bound and experiential correlations between pitch and vertical relations. However, these observations do not suffice for establishing a claim about the existence of an embodied metaphor. What is also required, Casasanto and Gijssels (2015) argue, is a demonstration that the metaphor is implemented in modality-specific systems, meaning that a sensorimotor simulation of the source-domain representation should be made observable. In this paper, we present the results of two related, empirical studies that deal with the bodily basis of the pitch metaphor.

First, on the basis of observations of head movement as a response to musical stimuli (Baptist, 2014; Jensenius, 2017), this paper presents the results from an experiment, in which the embodiment hypothesis was tested by looking for correlating vertical behaviour while reproducing falling and rising melodies in native speakers of Dutch. For this experiment, we used the OpenPose framework (Cao et al., 2017) to detect the position of the participant’s nose. In order to examine the physical impact of metaphor, we relied on an experiment carried out by Dolscheid et al. (2013), who found that a linguistic training can influence pitch reproduction. Accordingly, we hypothesized the head movements of our participants to be less prominent following an alternative fifteen-minute metaphor training (‘thin tones’ and ‘thick tones’). Our findings reveal a strong correlation between rising pitch contours and upward head movement as well as between falling pitch contours and downward head movement. However, the training did not have a significant effect on either the mean amplitude nor on the slope of the head movement.

For our second study, we take a dynamic perspective on metaphor (Müller Tag, 2010; Kolter et al., 2012) as we distinguish between different degrees of metaphorical activation. We collected video data from seven singing classes and analysed the sequential placement of iconic, both mono- and multimodal, depictions that foregrounded verticality, which we found in the form of the gestures and in speech, as well as in learnables (Reed & Szczepek Reed, 2014) that can be paraphrased as counteracting vertical behaviour. In line with Müller and Ladewig (2013), our data highlight the temporal orchestration of demonstrations on the sensorimotor level (e.g. falling to the knees as an exercise while singing a rising melody), gestural depictions (e.g. a gesture combining upward and downward movement) and verbal descriptions, through which metaphorical meaning emerges within the usage event. Even though different singing teachers have their own creative and idiosyncratic ways of activating the metaphor, we were able to identify recurrent formal movement aspects of gesture across different speakers (Bressem, 2013), through which the focus on the vertical metaphor is being avoided.

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Perspective in Norwegian Sign Language

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This study investigates the interaction between depicting signs (DS) and particular vantage points (VP) during the depictions of spatial scenes in NSL. Previous research has found that certain types of depicting signs canonically align with the use of particular vantage points, e.g. character perspective (inside, moving vantage point) aligns with the use of handling depicting signs, and observer perspective (outside, stationary vantage point) aligns with entity depicting signs (Perniss, 2007; Cormier et. al., 2012; Stec, 2012). Perniss (2007, p. 1322) adds the qualification that a strict alignment of perspective and the use of particular types of depicting signs may not apply when studying actual discourse.

To investigate this matter further, 179 spatial descriptions in NSL were annotated for manual signs, including types of DS. Then VP was annotated for position and mobility. An analysis of the alignment between VP and DS showed that all types of DS

were used with all types of VPs (see Table 1 2). For example, signs depicting location and size and shape were used most when the VP was static and outside the scene (observer perspective), which aligns with previous studies. However, it was also found that the same signs were used to depict from a mobile vantage point, inside a scene (e.g. character perspective). These findings along with the qualitative analysis conducted shows that VPs are established and maintained with DS as well as other actions, such as eye gaze, body orientation and sign placement, highlighting the multimodal nature of these text types.

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Depicting signs	VP	
	static	mobile
Location	276	54
Movement or displacement of entity	88	76
Size and shape of entities	125	34
Handling of entities	4	3

Table 1: VP static/mobile related to depicting signs

Depicting signs	VP	
	in	out
Location	103	227
Movement or displacement of entity	87	76
Size and shape of entities	54	104
Handling of entities	4	3

Table 2: VP in/out related to depicting signs

Gestures in Theatre Productions

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Research addressing nonverbal communication and research upholding the paradigm of multimodality have both proven that gestures play a crucial role in face-to-face interaction and relate closely to the verbal message. These findings hold true not only for the pragmatic aspects of conversation, but also for the most central dimensions of speech —namely, syntax and semantics (cf. Schönherr, 1997; Fricke, 2012). Co-occurrences of speech and gesture are thereby stable enough to be observed when an utterance is not produced spontaneously, but recited, as is the case with conversations on stage. In this poster presentation, theatre data are considered to be a special kind of natural data. From a cognitive point of view, since the act of memorizing and reciting language differs starkly from spontaneous utterance, the multimodal analysis of scenes on stage can provide new insights into the relationships among speech, prosody and gesture. In this poster presentation, scenes from classical German plays are analyzed following the approach of interactional linguistics (cf. Selting & Couper-Kuhlen, 2001). It is shown how prosody and gesture structure speech and foreground important information as well as elucidate reformulations regarding their semantic and pragmatic implications. In this respect, prosody and gesture on stage do not differ from natural conversations. This result seems not to be very surprising, but if you keep in mind the entirely different conditions in which prosody and gesture on stage are produced, then the similarity between exchanges on stage and natural conversations cannot be regarded as a matter of course.

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Principles of initialization in formation of anthroponyms in Czech Sign Language

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The initialization is one of the sign-formation processes in Czech sign language. This process uses manual alphabet (usually two-handed in the case of Czech sign language) to derive signs from written forms of words in spoken language. The aim of this research was to examine the differences between the fingerspelled letters (production of manual alphabet) and initialized and locally initialized signs for anthroponyms.

The language material for this research was taken from the news programme in Czech Sign Language (*Zprávy v českém znakovém jazyce*) because of the high concentration of anthroponyms. Firstly, all productions of anthroponyms were examined and put into categories based on the ways in which they were formed – some of these types are not normally used in regular communication. Then the research focused on the initials and the ways they were modified in comparison with the production of manual alphabet were analysed in the programme ELAN 5.1.

In total, eight types of modification were identified – the most common ones were repeated contact and added vertical circular motion. Other types were more marginal in comparison and in some cases, there was no modification. The research has also shown that there are some differences between signers.

Author Index

- Łukawski
Bartek, 26
- Šestáková
Markéta, 52
- Anible
Benjamin, 5
- Börstell
Carl, 19
- Balaguer
Carlos, 26
- Bauer
Anastasia, 17
- Buchtelová
Hana, 20
- Callemein
Timothy, 47
- Capirci
Olga, 45
- Ciroux
Sandy, 21
- Criado Aguado
José María, 29
- de Ruiten
Jan P., 13
- Di Renzo
Alessio, 45
- Dijkstra
Katinka, 43
- Drijvers
Linda, 7
- Feyaerts
Kurt, 47
- Filipczak
Joanna, 23
- Gago
Jennifer J., 26
- Goedemé
Toon, 47
- González-Montesino
Rayco H., 29
- Gspandl
Julia, 31
- Harrison
Simon, 32
- Homolková
Kamila, 34
- Hu
Junfei, 39
- Hudáková
Andrea, 35
- Janečka
Martin, 36
- Jantunen
Tommi, 7
- Janzen Ulbricht
Natasha, 37
- Jehlička
Jakub, 8

Jongerling	Morgana, 45
Joran, 43	Prové
Kaderka	Valentijn, 47
Petr, 10	Ringsø
Kuder	Torill, 49
Anna, 23	Saavedra-Rodríguez
Lackner	Silvia, 29
Andrea, 42	Schönherr
Ladewig	Beatrix, 51
Silva, 11	Slonimska
Lehečková	Anita, 45
Eva, 8	Streeck
Li	Jürgen, 2
Jianan, 43	Uhrig
Okrouhliková	Peter, 14
Lenka, 44	Victores
Ortega	Juan G., 26
Gerardo, 1	Zwaan
Perniss	Rolf A., 43
Pamela, 3	
Proietti	

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