

The Body as Part of the Construction of Meaning: What Do Sign Languages Reveal About Language?

Tommi Jantunen – The Finnish Academy of Science and Letters’ “Evening of Science” event at Ritarihuone, Helsinki, September 14, 2026

[A presentation for the general public on my recent research; requested duration: 15 minutes. This text is a DeepL translation of the original Finnish text.]

Slide 1: [Title]

- Hello, everyone!
- We often think that language consists primarily of spoken words and sentences that can be described unambiguously, for example, in dictionaries and grammar books. However, when studying sign languages, one quickly realizes that the entire body also plays an important role in the construction of meaning, and that not everything expressed through the body may be easily described.
- Today I’ll share some key points about what we’ve learned regarding meanings produced through the body in our research over the past few years, and how these findings challenge the established view of language as a phenomenon based solely on sound and precise rules.

Slide 2: Research Group

- (But before we begin...)
- Research is rarely the work of a single person. Although I am standing here alone today to speak, the main findings of my presentation are the result of collaboration with a broader research group. Here are the members of our group, and I’d like to extend my warmest thanks to all of them for their excellent work! Any errors in what I’m about to say are, of course, my own.

Slide 3: Bodily showing in Sign Language and Spoken Language

- (Now, let’s get to the point.)
- At the heart of our research is one fundamental question: how do people convey meaning through their bodies and its various parts? It has long been known that the use of the body to convey meaning is common in sign languages. In practice, however, this phenomenon is not limited to sign languages; it is also used by speakers, for example. The phenomenon is illustrated for both signers and speakers on the accompanying slide.

- The slide shows two images taken from video recordings, both of which depict the “Snowman” story, familiar from Christmas Eve television broadcasts. On the left, the story is told in Finnish Sign Language, and on the right, in spoken Finnish. In both images, the storyteller is depicting the moment when the story’s main characters—the snowman and the boy—are sitting in a car. The primary way the signer conveys the meaning of “to sit” is through the dictionary sign ISTUA, formed with the hands. The speaker uses the spoken Finnish verb form “istuvat” for the same purpose.
- But if we look more closely, we notice something else. Neither of them merely signs or says “sit”; at the same time, they also use their bodies to demonstrate what kind of sitting is being described. The ways they demonstrate this differ—they are not governed by strict conventions—but in practice, for both storytellers, their body posture, movements, and orientation illustrate their interpretation of the act of sitting. This is precisely what bodily meaning-making is all about, and this is exactly the phenomenon we are studying in sign languages!

Slide 4: The Data and Methods We Used

- Our research is based on a variety of data and methods. Among other things, we use extensive, machine-readable multimedia corpora containing sign language, data on body movements collected using motion capture technology, and, more recently, data based on electroencephalogram (EEG) measurements. We analyze these datasets using both computational and qualitative methods. The use of diverse datasets and methods helps us construct as comprehensive and generalizable a picture as possible of how meanings are produced and understood.
- Next, I will first highlight one of the main findings of our corpus study. After that, I will discuss one of our key findings from the movement and EEG measurements.

Slide 5: Results — Sign Language Corpora

- One of our most interesting findings relates to differences between generations. When we analyzed the sign language corpus data, we noticed that older signers, those over 50, used bodily showing significantly more in their stories than younger signers, those under 40. This finding was somewhat surprising and led us to ask a follow-up question: what caused this? We conducted further analysis of our corpus data and the associated background information, and gradually our attention turned to the signers’ educational backgrounds and the various language practices and ideologies that have prevailed in the education of the Deaf.
- The history of sign language education is not a straightforward one, and the status of sign languages in education has varied greatly over the decades. One educational turning point occurred at the turn of the 1970s and 1980s. Prior to that, the use of sign language in schools was severely restricted, and many deaf people received no instruction at all in their native language. Starting in the 1980s, the situation began to

change. In practice, the status of sign language in education was strengthened, but at the same time, a very neutral style of signing based on conventional units emerged as the ideal.

- The educational approach and ideology that preceded the late 1970s—which prohibited the use of sign language—meant that the language was used outside of the classroom. This allowed for a freer construction of meaning through various bodily resources. Since the use of the language was not guided by norms maintained and reinforced by the educational system, bodily expression was, in our interpretation, also an effective way to create meaning and be understood. The popularity of bodily expression is still evident today in the language of the older signers in our data.
- After the early 1980s, the role of education in standardizing the language increased. However, the focus on conventional hand movements standardized language use in a direction that rejected bodily expression as perhaps an overly expressive language strategy—in other words, bodily expression was not considered a feature of proper language use. The school years of the younger signers in our data set fall after the turn of the 1980s. Bodily expression does occur in their language, but to a lesser extent than in the older generation.

Slide 6: Results — Motion Capture and Brain Research

- What, then, about our measurements based on motion capture and EEG data? In this regard, our main finding was that the boundaries between different modes of meaning-making are not as clear-cut as is often assumed. Strongly established signs and grammatical structures, on the one hand, and freer and more variable bodily expression, on the other, do not form two separate categories but rather a kind of continuum.
- We observed this continuum in the motion capture data. The more the signers' expressions involved bodily showing of meaning, the larger and faster the movements of, for example, the head and upper body became. At the same time, hand movements became smaller and slower. These changes did not occur in sudden jumps from one category to another, but rather gradually.
- A similar phenomenon was also observed in brain activity. In EEG measurements, we found that an increase in bodily expression in sign language affected how linguistic information was processed in the brain. It was particularly interesting that, among native-signing deaf individuals, an increase in body-based expression seemed to facilitate a certain type of meaning processing. In other words, the stronger the body-exploiting showing, the fewer specific resources the brain needed to process the meaning of the message. In this case as well, the change occurred gradually, without a clear cutoff point.

- It is important to note, however, that many things happen simultaneously in brain activity. Furthermore, not all of our results were exactly the same across different sign language groups. For example, the phenomenon was somewhat different among hearing native signers, and we are currently investigating this further. At this point, it seems possible that different language environments may also influence how sign language is processed in the brain.

Slide 7: The Continuum of Bodily showing in Sign Language

- I'd like to elaborate a bit more on the concept of the continuum I described earlier, because this is precisely where our research most clearly begins to challenge established notions about language.
- The image on the slide illustrates the basic idea of the continuum. On the left is a sign from Finnish Sign Language that means "to shout." The sign is produced in its neutral dictionary form without any specific additional body movements. As we move to the right, the role of the body in producing the sign increases. At the same time, the expression begins to convey not only the act of shouting but also, for example, how one is shouting, at whom one is shouting, or what kind of person is doing the shouting. Ultimately, the meaning "to shout" can be conveyed almost entirely by demonstrating the action itself, which is the case in the image on the far right. Our key observation is that there does not appear to be a clear boundary between these extremes.
- It is precisely at this point that our study becomes particularly interesting from a linguistic perspective. The fact is that the image on the left has traditionally been associated not only in research but also more generally with "proper" language. The expression shown in the image on the right, on the other hand, has traditionally been referred to as pantomime or a full-body gesture. If we now take this line of thought a step further, the continuum shown in the slide suddenly implies that "gesture" merges with "language" without a clear boundary.
- In traditional thinking, language and gesture have generally been viewed as two separate phenomena. Our findings, however, suggest that these are not, after all, two separate phenomena, but rather a single, broader system of meaning-making that is connected to all our other activities and in which the body also plays a central role.

Slide 8: Conceptions of Language, Linguistic Research, Society

- The continuum we have identified—and sign languages more broadly—ultimately serve as a gateway to a critical examination of our conceptions of language. I would therefore like to conclude by taking a moment to reflect on what our research reveals about language more generally.
- Based on our research, language as a phenomenon appears to be a broad and multifaceted entity, containing clearly identifiable units and structures in some places,

but alongside them also, for example, bodily, gestural, and context-dependent ways of constructing meaning. From the perspective of sign languages, it is also clear that language is in no way bound to vocalization alone.

- However, language is often discussed as a system consisting solely of clearly defined units and the strict rules governing their use. It is also common for the phenomenon of language to be equated with speech. This perspective, however, is too narrow. For example, it excludes meanings produced by all kinds of gestures from the realm of language. This perspective has also meant that, throughout history, the status of sign languages as languages has repeatedly had to be defended.
- The question of what we consider to be a language is not merely a theoretical one. It is also a social issue. This means that our conception of the nature of language influences how people are encountered and treated in society. We may not necessarily pay attention to these effects in our daily lives, but with a little focus, examples are easy to find. One example concerns deaf children: today, the notion of what constitutes “the right language” still significantly influences the opportunities a deaf child born to hearing parents, for instance, has to be part of an environment that supports the development of sign language. If societal structures—and in some cases even research—overemphasize the importance of speech, the road ahead is often long and rocky.
- Ladies and gentlemen! Sign languages and research on them reveal a number of significant biases in our understanding of language. I see correcting these biases as a positive challenge for the future!

Slide 9: References

- Here is a quick overview of the literature on which the content of this presentation is based...

Slide 10: [In Conclusion]

- ...and here are my contact details, which you can use to request a copy of these slides, among other things.
- Thank you for your interest!