The Integration of Social-Haptic Communication in Deafblind Interpreting and Educational Settings
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Touch and Haptic Sensations in Conversations Between Deafblind Signers and in Tactile Interpreting

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Abstract This study explores how individuals with acquired deafblindness perceive touch and haptic sensations. Using authentic conversational data, it examines how deafblind signers experience and exchange tactile signals alongside sign language, including hesitations and incomplete expressions. The research compares peer interactions with tactile interpreting, noting differences in how interpreters use touch on hands, arms, and backs. Findings reveal that deafblind signers employ hands, arms, and knees for tactile communication, highlighting distinct uses of haptic sensations and expanding understanding of semiotic resources in tactile discourse.

Keywords Social-haptic communication. Deafblind. Tactile conversation. Tactile signing. Touch and haptic sensation. Corpus analysis.

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1 Introduction

Deafblind individuals with acquired deafblindness have different hearing and sight loss types, which may have occurred at different times in their lives (Raanes, Berge 2017). This includes deaf or hard-of-hearing people with Usher syndrome, which results in limited vision or blindness. Approximately 400 individuals are included in the Swedish Usher Register (Wahlqvist et al. 2020). The communication systems used by deafblind people for face-to-face interaction vary greatly, according to the perceptual preferences and needs of the individual. Most deafblind individuals using tactile sign language first knew a visual sign language and afterward switched to the tactile mode.[1] Deafblind signers use tactile signing by physical contact through the hands of their interlocutors. In this way, they formulate signs and utterances using their own and the other interlocutor's body to co-form utterances, which may entail sign construction (Mesch, Raanes, Ferrara 2015). Social-haptic communication consists of touch and haptic sensations performed on the signer's body (arm, hand, back, knee, foot), providing brief messages revealing key happenings in the context (e.g., someone is leaving the room, the audience is laughing) (Lahtinen 2008; Volpato, Mantovan 2021; Manns et al. 2022).

Subsequently, this paper addresses several challenges associated with studying tactile signed languages using corpus linguistics as a methodology. Corpora allow researchers to observe language patterns based on larger datasets of semi-spontaneous and elicited data (Mesch 2023). Moreover, the corpus contains authentic materials wherein deafblind signers may hesitate and produce incomplete expressions, which are inherent parts of natural conversations. The study pursues two central research questions: a) What types of haptic signs and signals are employed in the corpus examples, and b) In what ways does the use of haptic signs and signals differ between conversations among deafblind interlocutors and interpreted events?

Additionally, the study investigates the pragmatic situations when deafblind signers receive touch and tactile sensations and sign utterances and how they exchange between signs and touch/haptic sensations. Furthermore, observations are noted about how interpreters use touch and haptic sensations.

1 Edwards, Brentari 2021; Mesch 2001; Manns et al. 2022; Willoughby et al. 2018.

2 Haptic Communication and Its Different Approaches

Researchers use the term 'haptic' in many different ways, potentially leading to confusion. In physiology, haptic feedback means movement or touch of an object on the skin – for example, many smartwatches give haptic feedback by pulsing on the wearer's skin to give notifications. In this sense, all deafblind signing is haptic since it is perceived through touch. However, the term is also used more specifically in the literature (e.g., Volpato 2023).

In social-haptic communication, haptices are brief tactile messages, such as touches and signs on the arm, hand, knee, and back of a deafblind person (Lahtinen 2008). Lahtinen et al. (2012) describe haptices as codes for individuals with a dual sensory loss to convey information about the actual environment and emotional feedback of individuals or audiences. A haptice is also semiotic by using different signals and handshapes for describing, for example, pressure, speed, length, pause, movement, and direction (i.e., haptemes in Lahtinen 2008). For other researchers on deafblind signing, haptic communication is often synonymous with communicative resources that are not found in the associated visual sign language. For example, a sign (handshape, e.g., index hand for the Swedish sign TOILET) is articulated on the interlocutor's upper arm instead of the signer's chest.

In interpreted meeting situations with several deafblind participants and their sign language interpreters, haptices can be used for signaling turn-taking. One example is showing where in the room the speaker is located. Another example is to signal to a deafblind participant to wait his/her turn, which is done by the interpreter using their hands to cover the deafblind participant's hand(s). In addition to interpreting linguistic information, interpreters for persons with deafblindness also commonly provide environment descriptions (Raanes, Berge 2021), including pointing, showing direction and marking location.

Environmental description provides a wide repertoire of multimodal tools such as signs, fingerspelling, bodily movement, and orientation (Raanes 2020). In Gabarró-López and Mesch (2020), we see how environmental information is conveyed to deafblind participants by sign language interpreters in the context of a guided tour of a cathedral. In this context, the interpreters use various strategies, such as tactile sign language, locative points, drawing shapes on the palm, touching objects and elements with hand and foot, and walking at a distance. Hardly any haptic signs are used during this tour. In the interviews with deafblind visitors discussed in the project undertaken by Raanes and Mesch (2019), one participant said that part of the reason for this was that she had only one interpreter with her on the tour. She had a backpack on her back, so the interpreter

did not use any haptic on her back, but only haptic signals placed on the arm and hand.

Haptic signs are mostly provided by sighted interpreters or guides. Volpato (2023) shows the pragmatic, contextual factors in the use of haptics in different communicative contexts as activities where deafblind participants receive haptics from sighted or deafblind providers, such as 'you can start', 'go straight', 'no'.

Protactile communication is another approach to deafblind signing popular in the US. Centered on the notion of co-presence, its distinguishing features include co-articulation of descriptions of tactile and proprioceptive iconicity of objects as well as forms of backchanneling used reciprocally by both deafblind signers and any sighted/hearing partners in the interaction (Edwards 2015; Edwards, Brentari 2021). A deafblind researcher, Lisa Van Der Mark (2023), shows increased use of protactile communication outside of the US and made an experiment of two types of descriptions in tactile sign language and protactile signing with the purpose to show a deeper understanding of receiving touch and haptic sensations.

Regardless of the communication approach used, touch and haptic sensations are important resources for pragmatic, contextual use and turn-taking in tactile signed language. One example is pointing to the interlocutor's chest, so the receiver can feel a touch for addressing a turn. Touching and tapping one's hand/finger on a deafblind interlocutor's hand serve as backchannel markers, while the positioning of the hands in the signing space – both relative to the signer and the addressee and on the dimension of height – can be cues used to signal turn taking (Mesch 2001).

Further examples of the use of touch and haptic sensations are given in Mesch and Raanes' (2023) analysis of conversations between a Swedish deafblind and a Norwegian deafblind signer. In this cross-signing context, we see touch and haptic sensations used for intersubjective and pragmatic cues. For example, backchannels 'tapping' or emotional marker 'laugh' is made on the interlocutor's knee, but also the drawing of a question mark on the knee to signal that the previous utterance was a question, not a statement (Mesch, Raanes 2023).

Mesch et al. (forthcoming) describe how when deafblind signers locate referents/elements in space, their movements are more emphasized. This reminds us that emphasis and stress are themselves also types of touch and haptic sensation that carry meaning in deafblind interactions. For example, a deafblind signer produces an abrupt movement with the hand that is placed on the interlocutor's hand in order to indicate that there is a chair against the wall by a depicting sign for CHAIR articulated by the right hand and depicting a sign for WALL articulated by the left hand (see also Holmström, Mesch 2018).

Willoughby et al. (2018, 253) mention the use of haptic signs for simple and quick communication when the deafblind person is attending to another matter – such as indicating food options while walking around a buffet table. The term 'touch and haptic sensations' is used by Manns et al. (2022) to describe duality, where touch is what I do to you, and haptic sensation is the result that you experience. Each action in tactile signed conversations has both a touch and a haptic sensation component. It inspired me to use this term in this study. My paper aims to investigate the rendition of deafblind individuals' use of touch and haptic sensations in conversation and observe how deafblind individuals receive different types of touch and haptic sensations in different activities.

3 Data and Methods

Data for this paper falls into two types – that collected as part of corpus-based projects, and that collected as part of field observations to search answers to the two research questions. The focus in all cases are interactions in Tactile Swedish Sign Language (*taktilt svenskt teckenspråk*, Tactile STS). The research corpora consist of spontaneous and elicited conversations, wherein deafblind signers may hesitate and produce incomplete expressions, which are authentic materials in natural conversations. The annotation scheme for basic annotations is employed for selected portions of the data in ELAN.[2] The data obtained from field observations are added in order to show similarities and differences in touch and haptic sensations from real-world settings where participants are acting as spectators to the actions of third parties. The composition of each data set is described in detail below. In all cases, participants have given express consent for their images to be shown in academic publications, as well as corpus participants consenting to the archiving of their data in line with the processes outlined in the project's ethics application (in some cases, consent was not given, and the face is hidden, as in figure 4b below).

2 ELAN 6.9 (2024) is a software developed by the Max Planck Institute for Psycholinguistics (available at The Language Archive, `https://archive.mpi.nl/tla/elan`).

3.1 Data from the Corpora of Tactile Swedish Sign Language Corpus

The selected conversational data is from the Tactile Swedish Sign Language Corpus, which consists of 4:30 hours video recording with four cameras from the dyadic (and triadic) conversations of 8 deafblind signers (5 female, 3 male), aged 38-77, mean 55. The project was financed by Mo Gård Research Fund (Mesch 2023). The elicitation method for data collection differs from other sign language corpora because of the limited possibilities of using a picture book, cartoons, or video for elicitation. The elicitation task is such as 'touch to explore objects and tell', and the objects are a dollhouse and its furniture, two unmatched fruits of apple and pear, and two unmatched pairs of gloves. However, free conversations were also recorded, as was the case for other visual corpora of Swedish Sign Language (Mesch 2016).

The other selected conversational data of Tactile Swedish Sign Language is from The Corpora of Tactile Norwegian Sign Language and Tactile Swedish Sign Language, funded by the Norwegian University of Science and Technology and the Royal Norwegian Society of Sciences and Letters, and contains 25 hours of data (Mesch, Raanes 2025). It involves two Swedish and two Norwegian deafblind signers (three females and one male, age +50), alongside eight interpreters. The study employs diverse data collection methods, including tactile elicitation tasks, interviews, dyadic conversations, cross-signing, interpreted discussions, visits to the Deaf Museum and Nidaros Cathedral, and conversations during breaks. Participants also shared meals and engaged in guiding, descriptions, presentations, and formal and informal discussions over three days. This comprehensive approach captures various aspects of tactile communication and social interaction among deafblind individuals and interpreters.

3.2 Data from Field Observations

Field observation serves as a supplementary method in this study, utilizing a small dataset of video recordings obtained through private recordings (with full consent as outlined above) of deafblind participants' social engagements, collected for research purposes and for use as teaching sign language interpreting students at Stockholm University (Mesch 2022). The aim is to contrast touch and haptic sensations used by sighted interpreters/providers with those used in tactile conversations between deafblind signers. The vignettes used in this paper have a total duration of four minutes and cover environmental descriptions from four activities where three deafblind individuals were spectators or participants: an ice hockey match, a horse show, a game of golf, and lecture by a deafblind individual where she was the lecturer.

4 Findings and Discussion

The section presents the findings of data analysis and discussions of the use of touch and haptic sensations. Subsection 4.1 focuses on the use of touch and haptic sensations in turn-taking and pragmatic context in conversations between two deafblind signers, with the purpose to find which types of haptic signs and signals are employed in the corpus examples (research question 1: what types of haptic signs and signals are employed in the corpus examples). This stands in contrast to the further subsections, which discuss the use of haptic signals in tactile interpreting (research question 2: in what ways does the use of haptic signs and signals differ between conversations among deafblind interlocutors and interpreted events). Subsection 4.2 begins this discussion by exploring pointing with haptic sensation in tactile interpreting, while subsection 4.3 discusses how audience feedback and interpretation of a PowerPoint presentation is conveyed during a lecture of a deafblind lecturer. In subsection 4.4, I discuss the use of haptic sign depicting and describing situations such as ice hockey matches and horse shows. The section closes with a case study on haptic signals/haptic description during a golf activity in subsection 4.5.

4.1 Turn-Taking and Pragmatic Context

One example is shown in figure 1, which shows how two deafblind peers communicate with each other. Humor and laughter appear, and they are conveyed through body movement, hand movement, and touch on their interlocutor's hand and knee. Touch and haptic sensation convey laughter in conversation. The signer A to the left shakes with her claw hand on B's knee, and the signer B to the right taps once with her hand on A's knee.

Figure 1
Touch and haptic sensation convey laughter in conversation (corpus data from Mesch, Raanes 2025)

Earlier, some research described similar observations in conversations among deafblind individuals, where touch and haptic sensations focus on turn-taking, including feeling turn levels and backchannels (Mesch 2001; Raanes 2006; Willoughby et al. 2018).

Touch and haptic sensations manifest differently in tactile conversations between two deafblind individuals than in interactions involving a deafblind individual and a provider/interpreter. Mesch and Raanes (2023) outline various instances, such as pointing at the interlocutor's chest or an object, palm-up gestures for turn-taking, tapping on the hand or knee to signify agreement, sensing subtle laughter movements, and drawing a question mark on the knee to signal confusion. In dyadic conversations, the signer may not only sign on the interlocutor's hands but also utilize their arms or fingers, intending certain meaning and enactment as semiotic elements (Mesch, Raanes, Ferrara 2015; Van Der Mark 2023).

4.2 Pointing with Haptic Sensation

In tactile interpreting, touch and haptic sensations are employed in various ways, especially when articulation on the deafblind receiver's back is not feasible. As an example, for pointing with haptic sensation in figure 2, the interpreter points toward an object and moves with a distinct endpoint, indicating its location to the right (see Gabarró-López, Mesch 2020). Consequently, the deafblind individual can perceive a slight hand movement with an abrupt motion.

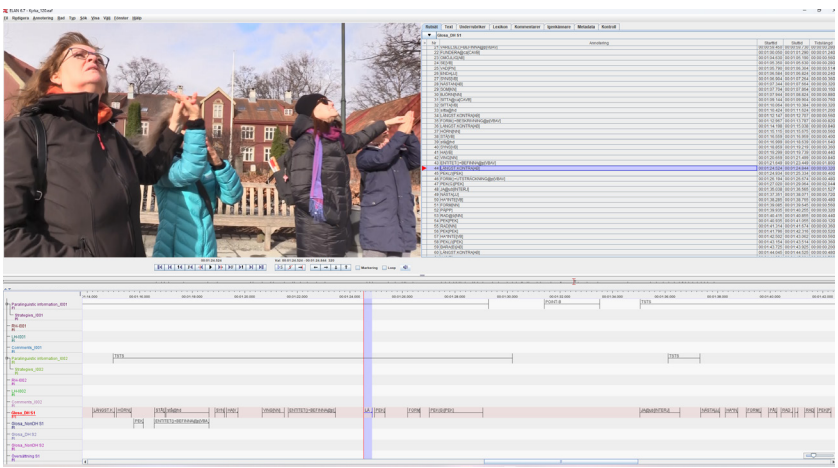


Figure 2 ELAN screenshot where the interpreter (in turquoise coat) points towards the object with a flat hand, and the deafblind recipient feels the direction of pointing with an abrupt movement (corpus data from Mesch, Raanes 2025)

Pointing markers and other signals are crucial in touch and haptic communication, particularly in environmental description. For instance, a provider may point on the back of a deafblind individual to indicate that a video recording has started, demonstrating someone pressing the start button of a video camera, as depicted in figure 3.

Figure 3
A pointing marker on the back of a deafblind individual lets her know about the start of the video recording
(corpus data from Mesch, Raanes 2025)

4.3 Providing Feedback from the Audience

This is an example of how touch and haptic sensations are used in lecturing, which was the first activity recorded as part of the field observation study. The deafblind lecturer gives a lecture for sign language interpreting students in the classroom. The interpreter/provider articulates on the lecturer's back what is happening in the classroom, where they are sitting in a half circle, if one of them is walking in or is distracted, or if there are no questions from the students. She taps on the lecturer's upper arm when the lecturer turns toward her and asks her to tap the next PowerPoint presentation picture **[figs 4a-b]**. Sometimes, she switches to tactile signing to clarify what is said or happening.

Figure 4a
The provider stands behind the deafblind lecturer and articulates diverse signals on the lecturer's back

Figure 4b
The provider taps the lecturer's upper arm to show that she can start (a field recording with consent form)

4.4 Depicting and Describing the Situation

One primary use of articulating tactile signs, touch, and haptic sensations on the back of the deafblind individual is to describe the current situation and environment. A deafblind individual can receive this information simultaneously with tactile signs from a sign language interpreter, while a provider gives touch and haptic sensations behind the deafblind individual.

Figure 5
The provider articulates with two fingers to show WALKING down on the deafblind individual's back as the horse moves forward in the arena (a field recording with consent form)

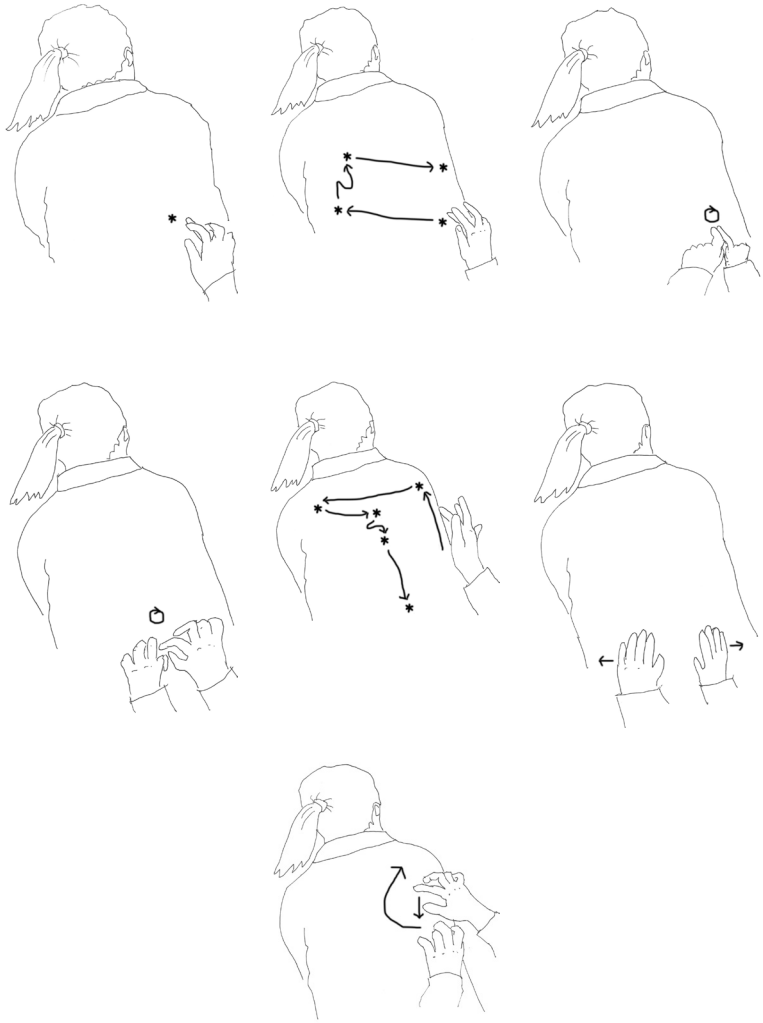
The description of a horse show **[fig. 5]** was the second activity recorded in the field observation study. The provider conveys the actual situation, articulating the horse's path on a deafblind individual's back, while the other interpreter gives a Tactile STS interpretation. The provider articulates with two fingers to indicate the horse walking (down) on the deafblind individual's back to represent how the horse is moving forward in the arena. Then the provider articulates with two index fingers to show that the horse hesitates and backs up a little. The deafblind receiver asks the interpreter, "Back up? Which horse?". The provider signals EAT on the deafblind individual's back as the interpreter describes the scene: the horse handler offers something from the box of balls to the hesitant horse. Eventually, the horse walks over the box, signaled by WALKING

FINGERS down the back. The receiver asks, "Did the horse walk over? Successful?". The interpreter confirms, and the provider touches the recipient's back reassuringly.

The third activity recorded within the field observation study is one deafblind individual's experience watching an ice hockey match. The picture in figure 6 shows the back of a deafblind individual and the starting point of a description where a provider moves her hand to show the situation in the ice hockey game, while the other interpreter provides Tactile STS in front. The provider continues articulating with the right hand to describe the path of an ice hockey player skating around the rink toward the goalkeeper. Different hand shapes represent various players, such as a middle finger for one player, two middle fingers for two players, and a claw hand for several players. Using the middle finger may be easier for feeling emphasis than the index finger. Occasionally, while articulating the path on the deafblind individual's back, the provider switches to the sign SKATING with the side of the hands to indicate player movement, then resumes using the middle finger to denote skating trajectory.

Figure 6
With the right hand and sometimes with the left hand, the provider articulates a description of the path of the ice hockey player skating inside the hockey rink toward the goalkeeper (a field recording with consent form)

Let us closely examine some details of the haptic description **[figs 7a-g]**. The provider touches the deafblind individual's back and indicates the location of an ice hockey puck **[fig. 7a]**. Mirroring the actions of the ice hockey player, the provider moves her right hand in different directions with some stops **[fig. 7b]**. When two players are competing closely, the provider articulates with both index hands to show their game **[fig. 7c]**. Then, when many players form a scrum, the provider articulates with the claw hands moving in a circle **[fig. 7d]**. Then, a player skates on the rink's edge, moving in different directions and finally towards the goal. The provider articulates with the right hand to describe the path of the ice hockey player skating around the rink toward the goalkeeper **[fig. 7e]**. The provider articulates both hands apart from each other to describe the referee's gesture WASH OUT **[fig. 7f]**. Then, the provider articulates both claw hands moving in a circle to describe that the players go toward the exchange **[fig. 7g]**.



Figures 7a-g. The sequence of the (selected) haptic description of the ice hockey match and environmental information (illustration: J. Mesch)

4.5 Haptic Signals or Haptic Description

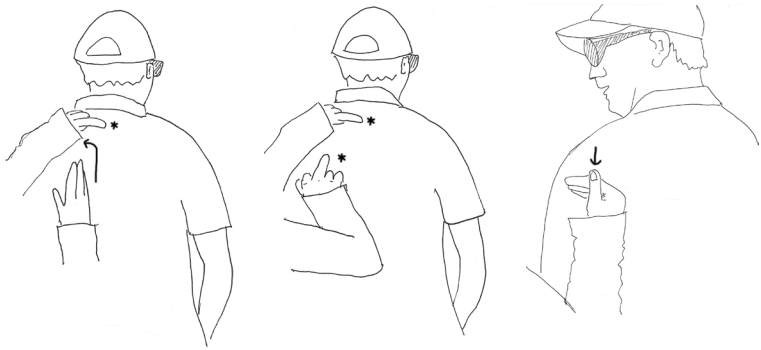
In the fourth activity recorded within the field observation study, the provider assists a deafblind golfer in tracking a golf ball's flight path and direction. Initially, the provider helps position the golf ball and places a golf club blade behind it **[fig. 8a]**. With two taps on the golfer's arm, the golfer is prompted to start. The golfer feels the golf ball through an easy touch with a golf club blade and hits it. After hitting the ball onto the fairway, the provider touches the golfer's back and indicates the location of a golf flag with the left index finger and gestures with the right hand to show the flight path and direction of the golf ball **[fig. 8b]**. As the ball veers slightly left of the flag, the golfer turns to the provider, who articulates with an angled hand on the upper arm to convey that the ball is slightly behind the flag. Then the provider signs tactilely ACTUALLY NICE AND GOOD on the golfer's hand.

Figure 8a
The provider helps the deafblind golfer find a golf ball position

Figure 8b
The provider articulates with the left index finger as a point where a golf flag is located and with the right hand to show a path for the flight and direction of the golf ball
(a field recording with consent form)

Here is a close study of the haptic description. The provider touches the golfer's back, indicates the location of the golf flag with the left index finger, and articulates with the right hand to show the flight path and direction of the golf ball that veers slightly left of the flag **[fig. 9a]**. The provider points to the back where the ball has landed

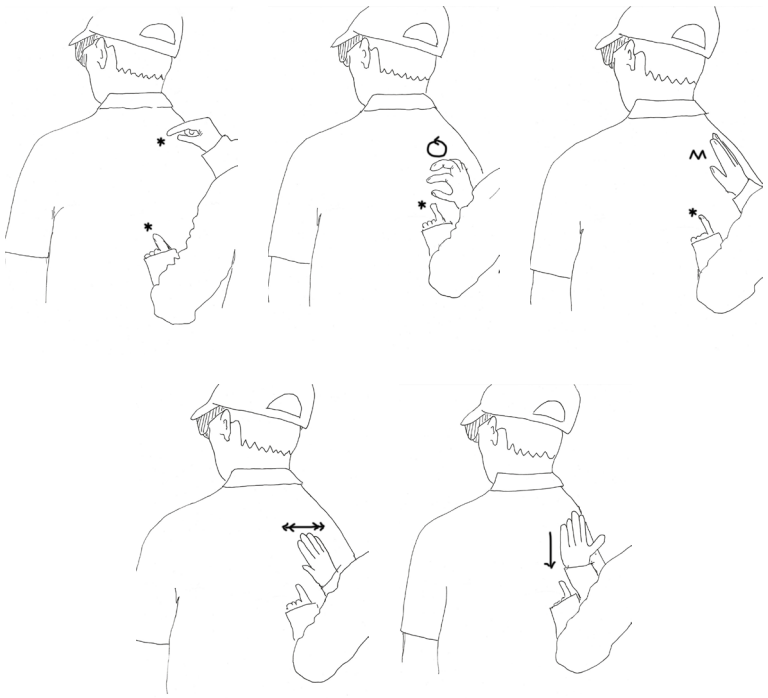
behind the flag **[fig. 9b]**. Then the provider articulates with an angled hand on the upper arm to convey that the ball is slightly behind the flag **[fig. 9c]**.



Figures 9a-c The provider indicates the flag's location with the left hand, articulates the path with the right hand, and indicates the ball's location with the right hand. The last illustration shows that the deafblind person wants to know its location of the ball, so uses speech to ask the provider. The provider has an angled hand moving down on the upper arm to convey that the ball is slightly behind the flag (illustration: J. Mesch)

Another example is from the next hole, where the provider indicates the location of a golf flag but this time with the right hand and articulates with the left hand (index finger) to show the flight path and direction of the golf ball **[fig. 10a]** and stopped in the middle of the path. The provider articulates A BUSH with the right hand **[fig. 10b]** and lets him know that it is finished with a tapping twice with the right hand **[fig. 10c]**. But the golfer wants to know if it is outside of the fairway (speaks to the provider). The provider replies NO by shaking the right hand **[fig. 10d]**. The provider articulates the border of the fairway with the right hand moving down **[fig. 10e]**.

Effective communication requires negotiation between the deafblind individual and the interpreter. There is growing interest in conventional social-haptic communication emerging in the various national communities (e.g., the contributions about social-haptic communication in this volume). However, the examples in this study show that at least in this context, what is being used is not conventionalised haptic communication. Rather, deafblind people and providers make use of flexible haptic descriptions that respond to the specific demands of the communicative context they find themselves in.



Figures 10a-e The sequence of the haptic description of the golf ball's location and environmental information (illustration: J. Mesch)

5 Conclusion

In this article, I have set out the ways in which deafblind individuals use touch and haptic sensations in peer conversation, and contrasted these with observations of different types of touch and haptic sensations used by providers and interpreters when undertaking various activities. A key finding is that haptic communication is used quite differently across these two contexts, and that this relates to the different sensory access of deafblind interlocutors versus sighted interpreters and providers. Deafblind signers in conversation with each other mostly use touch and haptic sensations to give backchanneling, laugh or clarify something in a pragmatic way, while interpreters tend to use haptic sensations more for conveying information, environmental description or actual message.

In further studies, it could be interesting to look for pragmatic signals in touch and haptic modulation, such as topic or focus information. These haptic inputs might also encode focalization

strategies. It would also be interesting to explore spatial signing and body-related semiotic strategies, like bodily enactments or constructed action in tactile signing. As part of this, it would be instructive to elaborate in the data analysis how cognitive processes are taken into account in this study. Deafblind signers receive touch and tactile input, along with contextual information resources. Tactile perception adequately fulfills the cognitive demand for language use, so it investigates cognitive processes in future studies.

Multimodality, including tactile interpreting and conversation, enhances communication during manual activities. Studies on tactile signed languages often rely on datasets with few participants and interpreters/providers in specific situations. By expanding the scope of these studies to encompass larger datasets and more varied communicative contexts, researchers can gain a broader understanding of how interactions unfold and produce theories that better account for the full gamut of communicative resources drawn on in deafblind signing contexts. This is where the development of corpus methods becomes a valuable opportunity for advancing knowledge in the field.

In conclusion, the study underscores the intricate dynamics of tactile communication and social interaction among deafblind individuals, shedding light on the diverse methods and resources employed in facilitating communication and understanding. Through meticulous data collection and analysis, the research deepens our understanding of touch and haptic sensations, and tactile signing within deafblind communities. The corpora of Tactile Swedish Sign Language offer invaluable insights into the lived experiences and communication strategies of deafblind individuals and interpreters, contributing to intersubjectivity. The findings underscore the importance of continued research and support for tactile communication methods and the deafblind community. An ongoing focus on the tactile modality for communication can enrich tactile signing and bodily interaction further.

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