

Exploring the semiotic complexity of the information exchange process in healthcare interpreting: How gestural omissions and additions can impact the amount and type of information exchanged

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Abstract

A large body of research shows that interpreters actively shape meaning and can make changes to the originals in order to coordinate mutual understanding. In this paper, we broaden the discussion by investigating the potential impact of gestural shifts on the information exchange process and the coordination of common ground in interpreter-mediated medical encounters. A qualitative analysis of three excerpts shows that omitting and/or adding representational iconic and deictic gestures can potentially lead to changes in meaning, i.e., less/more concrete renditions. Moreover, as visualization is considered a cognitive aid strategy, omitting or adding gestures can make it more/less demanding for patients to capture the full meaning of the rendered composite utterances. However, the gestural shifts can, but may not necessarily, lead to communicative troubles. This paper thus supports the idea that interpreting entails an act of strategic decision-making, yet stresses the importance 1) of raising awareness about the use of the gestures amongst interpreters and 2) of informing healthcare providers about the complexity of integrating visual information in dialogue interpreting. This paper is therefore also a warm invitation to both parties to collaboratively seek for effective strategies to cope with the semiotic complexity of healthcare communication.

Keywords

Information exchange process, coordinating mutual understanding, gestural shifts, multimodality, healthcare interpreting

1. Introduction

A topic that has received a significant amount of scholarly attention in the field of Interpreting Studies is the relation between the primary participants' utterances, i.e., the originals, and the interpreters' renditions in terms of accuracy, completeness and fidelity (Pöchhacker, 2022). In order to evaluate the interpreters' performances, many researchers focus on the interpretation product and quantify the occurrences of deviations or so-called errors (e.g., Aranguri et al., 2006; Barik, 1992; Flores et al., 2003). Wadensjö (1998), however, rather opts for a more descriptive approach to the study of "originals" and "renditions" and argues that interpreting entails strategic decision-making and thus that interpreters can opt to modify, omit or add information in order to accomplish message equivalence. In that way, altering or omitting (parts) of the originals might even be recommendable in order to achieve accuracy within a particular interactional context (Wadensjö, 1998; see also Cirillo, 2012; Major & Napier, 2012).

In this paper, we aim to explore how gestural shifts in the interpretation process can potentially impact the information exchange process and the coordination of mutual understanding in healthcare interpreting. Through a qualitative analysis of three excerpts taken from authentic interpreter-mediated medical consultations, we investigate how gestural omissions and additions can potentially lead to shifts in meaning between the primary participants' utterances and the interpreter's renditions. In doing so, we thus explore how particular types of gestural shifts in the interpreting process can impact the negotiation of meaning and the coordination of common ground.

The reasons for analyzing multimodal shifts, i.e., gestural omissions and additions, in this type of discourse are twofold. First, successful information exchange is a key factor in healthcare communication (e.g., De Haes & Bensing, 2009; Menichetti et al., 2021). Clear and viable information is essential to achieve successful healthcare and good health outcomes, and to promote patient participation and shared decision-making. Yet, a large number of studies indicate that exchanging medical information is especially challenging in language discordant medical consultations (e.g., De Wilde et al., 2019; Jacobs et al. 2017). Second, existing studies already point towards the importance of the use of gestures and other visual resources in this specific setting. Healthcare providers (henceforth HCPs) use, for instance, a variety of cognitive aid strategies, including repetitions and simplifications, but also visual information such as pictures and drawings (Riloff et al., 2014; Menichetti et al., 2021) and iconic gestures that depict, for instance, medical procedures (Beukeleers et al., 2023). Therefore, we believe that interpreter-mediated medical consultations provide us with a good empirical testbed to investigate multimodal interpreting strategies.

In the following sections, we first provide a brief overview of existing studies on the relation between originals and renditions and the impact of shifts in the interpreting process in healthcare settings (Sections 1.1 and 1.2). In section 1.3, we zoom in on insights derived from Gesture Studies and Cognitive Linguistics that elaborate on multimodal meaning construction and support the idea that gestural shifts, i.e., adding, modifying and/or omitting gestures, in the interpretation process can sometimes lead to shifts in meaning (Section 1.3). Subsequently, we introduce the aims of the current study (section 2) and elaborate on the methodology (section 3). Section 4 then presents 3 excerpts that illustrate how gestural shifts in the interpreters' rendition can impact the information the patient receives. Finally, in section 5, we discuss some implications of our analyses on the conceptualization of the information exchange process in Interpreting Studies and on both HCPs' and interpreters' communicative practices.

1.1. On the relation between originals and renditions in healthcare interpreting

As exchanging clear and accurate information is essential in medical encounters, many scholars have investigated the relation between the utterances of the primary participants, i.e., originals, and the interpreters' renditions thereof in healthcare interpreting. When reviewing the literature, it appears that there are two approaches to studying this. The first one entails researchers comparing the originals with the interpreters' renditions, and quantifying and categorizing interpretation errors, often in order to evaluate interpreters' performances (e.g., Aranguri et al., 2006; Flores et al., 2003; Hsieh, 2016). Overall, these studies indicate that interpreting errors, especially omissions, are omnipresent. Moreover, most of the interpreting errors—especially those made by informal interpreters—had a potential clinical impact, for instance because the interpreter omitted information related to the dose, frequency and duration of a particular medicine (Flores et al., 2003). Therefore, authors adopting this point of view often stress that “faithful transmissions” of all utterances should be the main focus of interpreting training programs (Flores et al., 2003, p. 10).

The second approach to the analysis of the relation between originals and renditions in healthcare interpreting does not merely describe shifts in the interpreting process as “good” or “bad” in terms of the quality or “faithfulness” of the translation, but rather starts from the idea that interpreting is a situated practice and an act of strategic decision-making (e.g., Angelelli, 2004, 2019, Major & Napier, 2012; Wadensjö, 1998). Scholars working within this framework aim to capture—and thus describe, rather than prescribe—the different roles that interpreters adopt. In doing so, they describe the different interpreting strategies and their impact on the interaction.

Overall, these studies show that interpreters modify and reshape the primary participants' utterances, i.e., they omit, reduce and expand the originals. On the one hand, zooming in on elements that are often omitted, it appears that interpreters often leave out cohesive elements, such as conjunctions (Major & Napier, 2012) and affective elements, such as emotions or empathic responses to emotions (e.g., Amato, 2004; Bolden, 2000; Cirillo, 2012; Davidson, 2000; Gutierrez et al., 2019; Major & Napier, 2012; Theys et al., 2023). On the other hand, interpreters also expand the primary participants' utterances in their interpretation by, for instance, making implicit information more explicit (Major & Napier, 2012; Theys et al., 2023), adding repetitions and/or adding cohesive elements (Major & Napier, 2012). Moreover, interpreters even add zero renditions, i.e., autonomous contributions that are not translations of the primary participants' utterances (Wadensjö, 1998). For instance, when patients ask for more information or for clarification, some interpreters tend to not relay the question but provide an answer to the question themselves (e.g., Amato, 2004; Cirillo, 2012). Furthermore, interpreters autonomously initiate questions or topics during the information exchange process (e.g., Amato, 2004; Bolden, 2000; Cirillo, 2012) and autonomously add empathic opportunities when relaying patients' utterances, which also prompt empathic responses, such as acknowledgements of the patients' feelings, from the HCPs (Theys et al., 2023). As such, these studies thus move away from the idea that interpreting is merely about producing accurate renditions and rather suggest that interpreters are active co-participants that engage in the information exchange process and in establishing a good doctor-patient relationship.

1.2. The potential impact of shifts in the interpretation process

Researchers who conceptualize interpreting as a process of strategic-decision making, and thus see interpreters as active co-participants, reflect on the impact of shifts on the final interpretation and suggest that it is not possible to classify omissions or other types of changes to the originals as systematically good or bad for the coordination of mutual understanding

and the coordination in the interaction more generally (e.g., Angelelli, 2004, 2019; Cirillo, 2012; Major & Napier, 2012; Wadensjö, 1998). Rather, whereas some shifts might lead to miscues, others might promote message equivalence and mutual understanding. For example, although omitting empathic information in the interpretation process might sometimes prevent the primary participants from establishing a good doctor-patient relationship (e.g., Gutierrez et al., 2019; Hsieh, 2016; Theys et al., 2023), some omissions might be strategic in nature. Interpreters can, for instance, opt to not relay empathic communication and thus restrict themselves to information they deem to be relevant for diagnostic purposes (e.g., Amato, 2004; Bolden, 2000; Cirillo, 2012; Davidson, 2000).

Moreover, interpreters can choose not to relay empathic information to avoid a potential misunderstanding. Theys et al. (2023), for instance, found that interpreters tend to relay HCPs' empathic responses to patient-initiated empathic opportunities, i.e., verbal expressions of emotion, challenge or process (Bylund & Makoul, 2002) as a close match. Doctors' empathic responses, which go from denial of the empathic opportunity to the doctor and patient sharing a feeling or experience (Bylund & Makoul, 2002), to interpreter-initiated empathic opportunities, however, are often omitted or reduced. Theys et al. (2023) suggest that when interpreters add a verbal expression of emotion or challenge to the interpretation of the patient's original and thus initiate an empathic opportunity, they might deliberately choose to omit or reduce the doctor's response to this empathic opportunity. This omission or reduction can be regarded as being strategic in nature, because patients might not relate to the emotions, challenges or progress introduced by the interpreter. Consequently, even though relaying the doctor's responses to these interpreter-introduced empathic opportunities might lead to more accurate renditions, they might cause misunderstandings and disrupt the coordination of mutual understanding. Thus, omitting and reducing empathic communication in the interpretation process can be seen as a strategy to optimize the HCPs' and patients' mutual understanding of empathic communication and promote a good patient-doctor relationship (Theys et al., 2023, p. 57).

1.3. owards a multimodal approach to the analysis of the information exchange process in healthcare interpreting

As sections 1.1 and 1.2 have shown, a large body of research highlights that (healthcare) interpreting entails strategic decision making based on a variety of contextual factors. However, when reviewing the literature, most of these studies have mainly focused on the analysis of verbal utterances. This is striking because research has shown that interlocutors use a variety of bodily resources when engaged in interaction and that they combine speech with other semiotic resources in the creation of larger composite utterances that prompt meaning construction (e.g., Clark, 1996; Enfield, 2009, 2013; Kendon, 2004; McNeill, 1992). These gestures serve a variety of functions, including referential, performative, modal and discursive functions (e.g., Müller 1998; Müller et al., 2013).

What is of particular importance here, is that gestures, especially representational gestures, can not only be co-expressive, but they can also add meaning that is not expressed in the verbal part of the utterance (e.g., Gerwing & Allison, 2009; Kendon, 2004; McNeill, 1992; Rowbotham et al., 2011). In a study on pain descriptions, for instance, Rowbotham et al. (2011) show that speakers frequently use gestures, and specifically representational gestures when talking about past pain experiences. Zooming in on the semantic speech-gesture interplay, it appears that a significant amount of information was expressed via gestures only or via speech-gesture composites. Information related to the location and size of the pain, for instance, was mainly captured in speakers' gestures only. Information related to the quality of the pain, however,

was expressed significantly more often via gesture-speech composites than in either the gestural, or the verbal mode only. Therefore, Rowbotham et al. (2011) not only suggest that gestures can add meaning onto the verbal parts of the utterance, but also that the creation of gesture-speech composites might be necessary to provide more accurate information.

Relating this back to the information exchange process and the coordination of mutual understanding in healthcare interpreting, these findings imply that omitting, modifying and/or adding gestures can impact the amount of information and thus the accuracy of the information that is transferred in the interpreting process in interpreter-mediated (medical) encounters. Indeed, also within the domain of Interpreting Studies there is an increased interest in the multimodal nature of face-to-face interaction. However, existing studies that investigate interpreters' and primary participants' bodily actions in dialogue interpreting mainly approach these in relation to multimodal interaction management and/or the creation of participation and engagement frameworks (see Davitti, 2019 for a recent overview). To the best of our knowledge, there is no study on how non-verbal shifts in interpreters' renditions can impact the amount and quality of the information exchanged between the primary participants in dialogue interpreting.

2. Positioning and aim of this paper

The current paper is part of a larger study that zooms in on multimodal shifts in the interpretation process, part of which has been presented at the IPrA 2023 conference. It appears that a substantial amount of the omitted gestures were of the representational type, which we—based on McNeill (1992)—defined as manual gestures and bodily enactments that refer to persons, objects, locations or events. These gestures might in some contexts add information to the verbal part of the composite utterance (cf. Kendon, 2004; McNeill, 1992). Consequently, gestural omissions, additions or modifications might lead to changes in meaning and can thus impact the information exchange process and the coordination of mutual understanding.

In the context of dialogue interpreting, gestures produced by one of the primary participants are often also visible to the other primary participant, i.e., to the addressee of the utterance. In the context of our data, this would imply that patients could perceive the HCPs' embodied behavior and map their meanings onto the verbal referents of the composite utterance when the interpreters translate the HCPs' utterances. As such, they could capture the full meaning of the HCP's composite utterances even when the interpreter does not repeat the HCP's gestures. However, as healthcare interpreters are often interpreting consecutively (cf. Pöchhacker, 2022), there can be a large temporal distance between the gestures in the originals and the interpretation of the verbal referents in the patient's mother tongue. This temporal gap makes it more difficult for the patient to semantically integrate the information provided via the spoken words and gestures and thus to capture the full meaning of the composite utterance (Özyürek, 2014).

The current paper addresses the potential impact of gestural shifts by providing a qualitative analysis of gestural omissions and additions in authentic interpreter-mediated interactions. We adopt a descriptive approach and do not consider additions and omissions as systematically good or bad, but we rather start from the idea that interpreting entails a process of strategic decision-making and thus from the idea that omissions or additions might even be recommendable in order to coordinate mutual understanding in dialogue interpreting (cf. Major & Napier, 2012; Wadensjö, 1998). In our analyses, we will thus consider how gestural omissions and additions can potentially affect the quality and amount of information being exchanged and the coordination of mutual understanding in healthcare interpreting.

3. Methodology

3.1. Dataset

As highlighted above, this paper takes findings from Beukeleers et al. (2023) as a starting point to further explore how gestural shifts can impact the amount and type of information that is being provided by healthcare providers. We selected three excerpts from the same authentic interpreter-mediated medical consultations. These consultations were recorded in an urban hospital in Flanders, the Dutch-speaking part of Belgium. The data were collected as part of the recently concluded project “Empathic Care for All” (Theys, 2021). In the consultations, a healthcare provider and foreign language-speaking patient communicated through a professional interpreter. The consultations were recorded at the departments of gynecology or endocrinology of the hospital. The interpreters were all trained and certified by an independent translation and interpreting agency funded by the Flemish government (*Agentschap voor Integratie en Inburgering*) and were hired by the hospital on a freelance basis. Before the consultation participants received informed consent in their native languages. The patients’ informed consent forms were translated by professional translators. The duration of the consultations varied from 15 to 38 minutes. The study was approved by the hospital ethics committee (Belgian registration number: B322201835332).

The excerpts selected for this paper were taken from consultations with a Turkish-speaking patient and a Russian-speaking patient. None of the HCPs in this study were able to communicate in the patient’s mother tongue. Patients reported that their language proficiency in Dutch varied from very limited to average. All patients and HCPs had already participated in an interpreter-mediated medical encounter before. The consultations were all first encounters between the patient and that particular HCP. However, in two consultations the interpreter and the patient had already met during a previous consultation with another HCP.

3.2. Transcription and translation

Professional translators—who were also native speakers of Russian and Turkish—transcribed the data and translated it into Dutch. Subsequently, translations were also revised by lecturers in the Linguistics Department of KU Leuven. For the purpose of the current study, the HCPs’ utterances and the interpreters’ renditions thereof were annotated in the ELAN annotation tool (Wittenburg et al., 2006).

3.3. Methods

In order to explore the impact of multimodal shifts, we identified all HCPs’ utterances in which medical information, i.e., information related to the patient’s illness and/or treatment (De Haes & Bensing, 2009), was conveyed to the patient as well as the interpreters’ renditions of these utterances.

3.3.1. Identifying gestures

To be able to analyze multimodal shifts in our dataset, we first identified the HCPs’ gestures. The beginning of a gesture was defined here as the onset of the preparation phase and the onset of the retraction phase was considered the end of a manual gesture (cf. Kita et al., 1998). For this paper, we aim to explore the impact of gestural omissions and additions in the interpretation process on the amount and type of information that the patient receives. Therefore, we focus on representational gestures, which we define as manual gestures and bodily enactments that refer to persons, objects, locations or events. They include iconic, deictic and specific types of metaphoric gestures (McNeill, 1992):

- Iconic gestures: imagistic gestures that depict formal characteristics of the person, object, location or event they refer to.
- Metaphoric gestures: imagistic gestures that depict abstract referents, such as knowledge, language or time.
- Deictic gestures: pointing gestures that indicate persons, objects, locations or events in the immediate environment or indicate non-present referents that are associated with a location in the gesture space.

When HCPs used a pen or the cursor on the computer to indicate a particular referent, these actions were coded as deictic gestures.

In case one gesture exhibited properties of two or more different categories, we aimed to identify the main function of the gesture within that particular context and annotated the gesture accordingly.

In this analysis, we also annotated segments during which the HCP used other artifacts to visually represent, i.e., to depict the medical information. These segments were annotated on the same tier and marked as:

- Drawing (e.g., drawing or showing a picture of an organ)
- Manipulating an object (e.g., folding a paper to depict a part of the treatment)

Finally, we created another tier to identify the interpreter's manual gestures and bodily enactments. They were annotated according to the same procedure as described above.

3.3.2. Identifying gestural shifts

We compared the HCPs' composite utterances with the interpreters' composite renditions in order to identify gestural shifts in the interpretation process. We thus compared HCPs' and interpreters' renditions both in terms of speech and in terms of embodied behavior in order to identify different types of gestural shifts and shifts in meaning in this study. We thereby adopted an inductive approach and established different types of shifts as they occurred in the data. In this paper, we selected excerpts that contained omissions and/or additions of representational gestures as these types of shifts were omnipresent in our data. We define these types of gestural shifts as follows:

- Omissions: HCP produced a manual gesture or enactment, but there is no equivalent gesture in the interpreter's rendition. Thus, the interpreter did not use the same or a similar gesture with the same function, nor did he/she verbalize the information captured in the gesture.
- Additions: manual gestures or enactments that were introduced autonomously by the interpreter for which there was no equivalent present in the HCP's original.

Note that we also considered the surrounding speech and other bodily actions when identifying the different types of shifts. In theory, interpreters could also verbalize information that was communicated via gestures only in order to relay the information. However, this did not occur in our dataset.

3.3.3. Analyzing the impact of a gestural shift

Subsequently, the three examples of gestural omissions or additions presented in this paper are analyzed for how the shift potentially impacted the information provided to the patient. In order to investigate this, we identified gesture-speech composites in the HCPs' utterances and analyzed which piece of information was described, indicated, and/or depicted in each modality (cf. Clark, 1996; Enfield, 2009). We define these different methods as follows (e.g., Clark, 1996; Enfield, 2009):

- Describing: communicating a referent by telling, i.e., representing it categorically (e.g., referring to the location of the surgery with the linguist category of ‘blatter’).
- Indicating: anchoring a referent to the real world by locating it in space and time (e.g., indicating the location of the surgery with indexicals like “it”, “there”, pointing gestures or eye gaze).
- Depicting: communicating a referent by showing how it looks, sounds, or feels like (e.g., showing the location of the surgery by using an iconic gesture that depicts the organ or by drawing the organ on a piece of paper) .

Note here that these are methods of communication and that they cannot be easily distinguished from one another in actual language use. Speakers combine these methods in the creation of composite semiotic signs (Clark, 1996; Enfield, 2009). Thus, one word, one gesture or one utterance often reflects different methods simultaneously and/or sequentially. After analysing the HCPs’ utterances, we identified the equivalents in the interpreter’s renditions. We investigated whether, and if so, which piece of information was modified or omitted in the interpretation process as a result of the gestural omission. In a similar vein, we identified speech-gesture composites in the interpreters’ renditions that were annotated as additions and analyzed them in the same manner as the composite utterances with gestural omissions, i.e., we compared the HCP’s original and the interpreter’s renditions thereof in terms of describing, depicting and/or indicating information.

4. Analyses

In this section, we present the three examples of gestural shifts and elaborate on their impact on the information exchange process and the coordination of mutual understanding. The examples in 4.1 and 4.2, respectively, show how interpreters omit or add iconic gestures. The final example illustrates how omitting deictic gestures can lead to repair initiation, i.e., an interlocutor signaling difficulties in understanding (part of) the previous turn-at-talk (Schegloff, 2000) and how chunking can aid in relaying visual information to the patient (4.3).

4.1. How gestural omissions can impact the amount and type of information exchanged

The first excerpt is taken from a medical encounter with a Russian-speaking patient, a Dutch-speaking HCP and a professional interpreter. The patient had already visited the department of Endocrinology, and surgery to remove the thyroid was scheduled. However, the patient had decided to cancel the surgery. She now returns to the hospital and at the start of this consultation, it appears that the patient had not fully understood the result of the puncture taken during the previous consultation. She seems to be in doubt about whether the lump in her thyroid is malignant or not. Therefore, the HCP is explaining how a puncture works and why surgery is recommended. In doing so, the HCP uses a variety of representational, often iconic, gestures that depict a puncture and the analysis of the cells taken during this procedure. These gestures are, however, omitted by the interpreter. In this section, we zoom in on the possible impact of the shift on the amount of information that the patient receives.

Excerpt 1¹

- | | |
|---------------|---|
| 1. HCP | <i>Dus (0.8) we hebben (0.7) als wij een (0.9) knobbel zien uhm die er verdacht</i> |
| 2. (00:06:36) | <i>So (0.8) we have (0.7) if we see a (0.9) lump that looks uhm suspicious,</i> |
| 3. | <i>#Fig. 1-----</i> |
| 4. | <i>uitziet, gaan we daar in prikken. (0.5) En dan (0.9) kunnen we nooit 100%</i> |
| 5. | <i>we are going to prick it. (0.5) And then (0.9) we can never be a 100%</i> |
| 6. | <i>#Fig. 2-----</i> |

¹ We have included transcription conventions in the appendix of this paper.

7. zeker zeggen op basis van die punctie alleen (.) of het nu echt kanker is of niet.
8. *certain based on the puncture only (.) whether it is cancer or not.*
9. Ma we kunnen daar wel een graad van verdachtheid uit afleiden en bij haar
10. *But we can use it to determine a degree of suspicion and in her case (.)*
11.
12. was er een hoge verdachtheid (.) uhm dat het mogelijks kwaadaardig kan zijn
13. *there was a high degree of suspicion (.) uhm that it can possibly be malignant.*

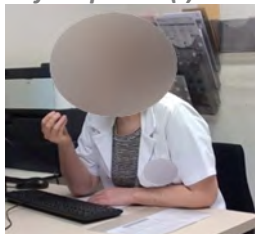


Figure 1. HCP producing an iconic gesture to depict “puncture”

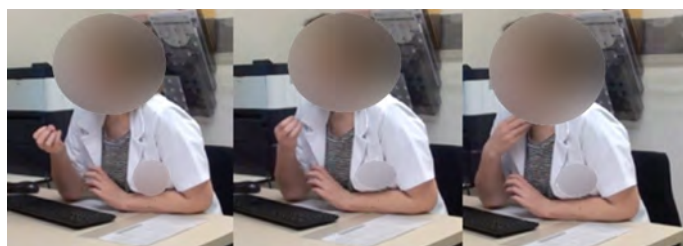


Figure 2. Reintroduction of the iconic gesture for “puncture”

54. I Когда мы видим узело (0.5) узелок ээ нам кажется подозрительным (.)
55. (00:07:41) *When we see a lump (0.5) a lump that u::h looks suspicious to us (.)*
56.
57. мы берем пункцию и никогда пункция не может дать сто процентов
58. *we do a puncture and never can a puncture give a 100%*
59. #Fig. 3----- #Fig. 4-----
60. гарантии злокачественно это или не злокачественно (.) мы берем
61. *certainty that it is malignant or not malignant (.) we take*
62.
63. только несколько (.) клеток и на основе этих клеток (.) этого результата (.)
64. *only a few (.) cells and on the basis of these cells (.) of this result (.)*
65.
66. мы не можем рисковать чтобы говорить это сто процентов так или
67. *we cannot risk to say that it is 100% like this*
68.
69. это сто процентов не так но (0.5)
70. *or that it is 100% like that but (0.5)*
71.
72. мы можем степень подозрительности все-таки более менее определить
73. *we can still determine more or less the degree of suspicion*
74.
75. у Вас она была достаточно подозрительна
76. *and with you it was sufficiently suspicious*

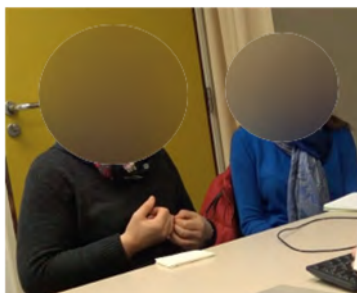


Figure 3. Interpreter (on the right) during her interpretation of the medical procedure “puncture”

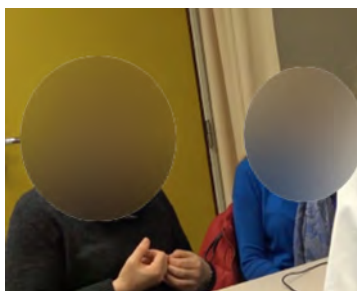


Figure 4. Interpreter (on the right) during her interpretation of “puncture”

In lines 1-8, the HCP explains that they tend to do a puncture if they find a lump that looks suspicious. The HCP starts with *“So we have”* (line 1), pauses briefly and subsequently restarts with *“if we see a lump that looks uhm suspicious, we are going to prick it”* (lines 1-5). Zooming in on her bodily movements, she initiates an iconic gesture as a strategy to depict the puncture in line 1 (Fig. 1), which is interrupted as she produces a restart of her utterance but is reintroduced during *“we are going to prick it”* (line 5, Fig. 2). The HCP’s right hand enacts the holding of the needle and thus depicts what the procedure looks like (Müller, 2014). Moreover, as she moves her hand to her neck, she also uses her own body to depict where the patient has had a puncture, i.e., she indicates that a puncture was taken from the thyroid (Fig. 2). Whereas the verbal part of the utterance thus accurately describes the action performed (pricking the lump), the gesture adds a depiction of what the action looks like and an indication of the exact location (cf. Clark, 1996, 2016; Enfield, 2009).

When comparing the HCP’s original utterance with the interpreter’s rendition, we see shifts on both the verbal and non-verbal level. First, the interpreter modifies *“we are going to prick it”* with *“puncture”*, rather than using a similar simplified explanation (line 57). Moreover, the interpreter leaves her hands on her lap during her interpretation and does not produce any (clearly visible) gestures here (Fig. 3 and 4). This implies that the visualization and the reference to the thyroid in the HCP’s original are not rendered by the interpreter and thus that the HCP’s speech-gesture composite entails more information and also uses more modes of representation, i.e., she also visualizes the information.

Both the HCP’s bodily actions, i.e., the visualization, and the verbal counterpart of the utterance contain cognitive aid strategies (cf. Menichetti et al., 2021). The HCP first provides a simplified explanation of the medical procedure, i.e., *“pricking the lump”*, before introducing the medical term *“puncture”* (line 8). Next, while she pronounces *“based on the puncture”*, the HCP repeats the iconic gesture she previously used to explain what a puncture is and reduplicates its movement until the end of *“puncture”* (line 8, Fig. 3). Thus, even when reintroducing the referent, she does not only use the more technical term *“puncture”*, but also repeats the depiction thereof.

In sum, this excerpt shows that omitting an iconic gesture in the interpretation process can lead to changes in the amount and type of information that is being provided to the patient. Whereas the HCP combines the verbal description of the puncture with a vivid depiction of this particular medical procedure and with an indication of the location, the interpreter only renders the verbal description. Moreover, as the interpreter has omitted both the verbal simplification for “puncture” and the visualization of the medical procedure, which can also be regarded as a cognitive aid strategy (cf. Menichetti et al., 2021), it might be more demanding for the patient to capture the full meaning of “puncture” based on the interpreter’s rendition than based on the HCP’s explanation. We will return to this in the discussion (cf. section 5).

4.2. How adding iconic gestures can result in more concrete renditions

In the second example, we zoom in on an excerpt in which the interpreter adds an iconic gesture during her interpretation and, in doing so, makes the original utterance more concrete. This example is taken from a consultation at the department of Endocrinology. The HCP, a Turkish-speaking patient and a professional interpreter are engaged in an encounter about surgery to remove an adenoma in the patient’s pituitary. At this point, the patient is, however, reluctant, as he had an operation in Turkey already. As they did not manage to remove everything, and he still had many health issues afterwards, he is not sure whether additional surgery would solve his issues.

Excerpt 2

1. **HCP** In iedere operatie (.) er zijn altijd risico’s verbonden (.) ik weet niet (.) wat er
2. *Each surgery (.) comes always with certain risks (.) I don’t know (.) what*
3. *gebeurd is in Turkije want daar bent u geopereerd (.) Ik zag dat u ook (.) wat euh*
4. *happened in Turkey because you had your surgery there (.) I also saw that (.) u::h*
5. *euh lekkage heeft gehad (.) euh waardoor dat u waarschijnlijk wat afgezien heeft*
6. *u::h you also had a leak (.) u::h and because of that u have probably been suffering*
7. *(0.9) maar (0.5) euhm (1.5) het is wel zo (0.6) dat als (0.7) euh (1.2) als wij*
8. *(0.9) but (0.5) uhm (1.5) it is a fact (0.6) that if (0.7) euh (1.2) als wij*
9. *voorstellen (.) om te gaan kijken om het te opereren (.) euh het is voor*
10. *suggest (.) to take a look, to do the surgery (.) u::h it is the aim to do*
11. *een volledigheid van de resectie (.) en we moeten dit ook (.) voorleggen*
12. *a full resection (.) and we also have to (.) present this*
13. *aan de neurochirurgen (.) om te zien (.) als het (.) wel toch (.) een mogelijkheid*
14. *to the neurosurgeons (.) to see (.) whether it (.) is (.) a possibility*
15. *(0.6)*
16. *Nu (1.9) we kunnen niet (0.8) we weten niet wat er gebeurd is in Turkije dus*
17. *Now (1.9) We cannot (0.8) we don’t know what happened in Turkey so*
18. *ik kan niet zeggen ja het was niet mogelijk om die volledig weg te doen ook niet*
19. *I can’t say that yes, it was not possible to fully remove it or not*
20. *Da weten we nie e*
21. *We don’t know that huh*
22. *(1.7)*
- 23.
24. **I** şimdi (.) her ameliyat riskli (.) hı=
25. *now (.) each surgery is risky (.) hu=*
26. **P** =e tabii ki=
27. *=uhu of course*
28. *=ama biz burada diyosak hani ameliyat ol diye he tabii bunu ameliyat eden*
29. *=but if we say here, you know, do the surgery hu (.) then of course the*
30. *doktorun da görmesi gerekiyor önceden (.) ama buradaki amaç hepsini almak*
31. *doctor that operates has to see this beforehand (.) but the aim is to remove it all*

32. (.) hi (.) şimdi Türkiye' de ne İduğunu bilmiyorum çünkü hani sonradan
33. (.) *hu (.) I don't know what happened in Turkey because you know after the*
34. ameliyattan sonra akıntı o:İmuş falan hani
35. *surgery you had some discharge*
36. **#Fig. 5-----**
37. baya rahatsızlık olmuşsun ama neler olduğu bilmediğim için Türkiye' de (.)
38. *which was really disturbing but because I don't know what happened in Turkey*
39. [bir şey diyemiyorum
40. *I can't say anything about that surgery*



Figure 5. Interpreter adding an iconic gesture that depicts “discharge”

While explaining that each surgery comes with risks, the HCP refers to the patient’s surgery in Turkey. In line 5, the HCP mentions that it is indicated in the patient’s medical record that he had a leak from which he was probably suffering. In her utterance, however, it is unclear what type of leak the HCP exactly refers to. This contrasts with the interpreter’s rendition. In line 35, we see that she also uses a broad term to refer to the patient’s health condition with “*you had some discharge*”. However, in contrast to the HCP, the interpreter also produces an iconic gesture that depicts the discharge (Fig. 5). She uses an open hand that starts at her mouth and moves away from her body. In this way, the interpreter depicts the movement of the discharge and indicates that it came from the patient’s mouth by pointing at her own mouth at the start of gesture (cf. Clark, 1996; Enfield, 2009). This might indicate that the patient had to vomit often after the surgery or that he would throw up blood. In that way, the interpreter does provide more specific information to the patient than the HCP, i.e., she narrows down the options of types of discharge. At this point in the encounter, the patient had not mentioned this symptom. Later in the encounter the patient also only mentions that he has been suffering from a runny nose, but he does not refer to vomiting or any other type of discharge that could be related back to this iconic gesture. Thus, by adding an iconic gesture that specifies a particular type of discharge, the interpreter renders a more specific composite meaning that is potentially wrong.

If the patient indeed often had to throw up after the surgery and if the HCP is indeed referring to that particular complaint at this moment in the interaction, one could argue that adding the iconic gesture is an efficient interpretation strategy that results in a more concrete rendition and thus facilitates the information exchange process and the coordination of common ground. However, as highlighted above, there is no reference to “throwing up” as a complaint in the entire consultation. The interpreter in this consultation was present in previous consultations with this patient and another HCP at the department of Endocrinology. As such, she has prior knowledge of the patient’s health condition and she might thus have learned about this complaint in a previous consultation and use this information in her interpretation at this moment in the consultation. In that case, it could be that the addition of the gesture does not necessarily lead to an interpretation error. However, even then, there is no interactional evidence that the HCP is referring to this particular complaint or another in the excerpt above. It thus remains uncertain whether the rendered composite utterance is correct.

In sum, the excerpt above illustrates how interpreters can render more concrete meanings compared to the meaning of the primary participant's original by adding an iconic gesture that depicts a medical symptom. As gestural addition can contribute to more specific information and to visualization, one could argue that adding iconic gestures can facilitate the negotiation of meaning and that they promote the coordination of mutual understanding within a particular interaction environment. However, as illustrated above, making information more concrete and/or visualizing information comes with certain risks as it can potentially lead to incorrect composite utterances, and thus to errors in the information exchange process, as well. We return to this in the discussion.

4.3. Repair initiation after omitting deictic gestures

The final example is taken from the same consultation at the department of Endocrinology as excerpt 1 (cf. 4.1). At this moment, the HCP in this consultation updates the professor and brings her in to talk to the patient. The professor encourages the patient to raise her questions and concerns, but first wants to recapitulate the results from the ultrasound diagram and the puncture that were taken during the previous consultation. She does this by showing the ultrasound diagram and explaining what they have found. In this excerpt, we focus on the deictic gestures and the process of mapping verbal meanings onto the visual referents on the ultrasound diagram only.

Excerpt 3

1. HCP *Dus (.) euhm (2.5) dit is hier de luchtpijp (2.6) de luchtpijp e (0.9) en hier is*
2. *So (.) uhm (2.5) this is here the trachea (2.6) the trachea huh (0.9) and here is*
3. *#Fig. 6-----*
4. *eigenlijk de rechterkant van de schildklier (1.0) en het witte gedeelte is eigenlijk*
5. *actually the right side of the thyroid (1.0) and the white part is actually*
6. *#Fig. 7----- #Fig. 8-----*
7. *normaal (0.9) maar heel (0.8) die inliggende donkere zone (.) is eigenlijk het gezwel*
8. *normal (0.9) but this entire (0.8) internal dark area (.) is actually the tumor*
9. *#Fig. 9-----*
10. (1.6)
11. *Misschien kan je dat al [effe]kes vertalen?*
12. *Maybe you can already translate this for a bit?*
13. I *[ja]*
14. *[yes]*
15. *То есть вот здесь у Вас проходит трубка*
16. *So here is the tube through*
17. *через которую мы дышим. Здесь с правой стороны (.) светлое белое место (.)*
18. *which we breathe (.) Here on the right side (.) is a bright white spot (.)*
19. *Это нормальная часть Вашей щитовидки*
20. *That is the normal part of your thyroid*
21. P *Это вот это да? Нормальная..*
22. *That is this then, right? The normal...*
23. *#Fig.10-----*
24. HCP *Dit is normaal*
25. *This is normal*
26. *#Fig. 11-----*
27. (0.5)
28. I *да*
29. *Yes*
30. *#Fig. 12----*
31. HCP *Dit is luchtpijp*

32. ***This is trachea***

33. **#Fig. 13-----**

34. (0.6)

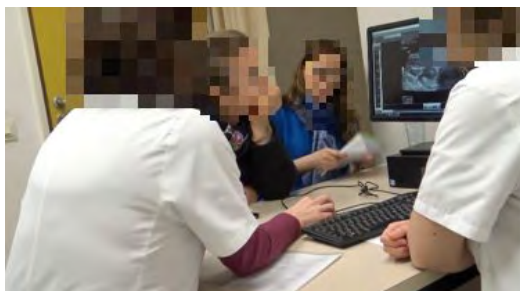


Figure 6. Professor indicating the trachea

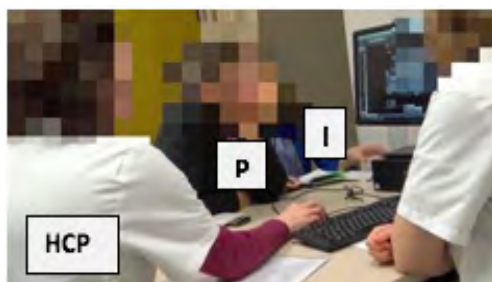


Figure 7. Professor indicating the right side of the thyroid

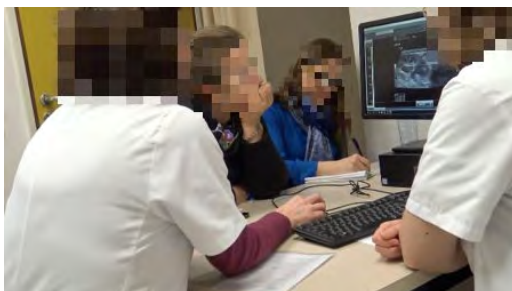


Figure 8. Professor indicating the white part

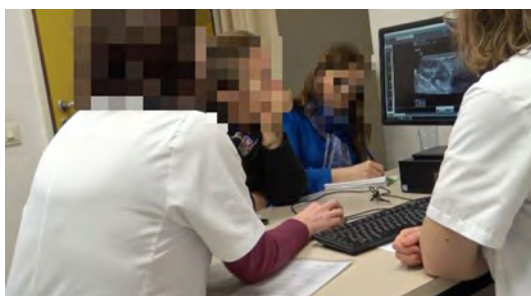


Figure 9. Professor indicating the tumor

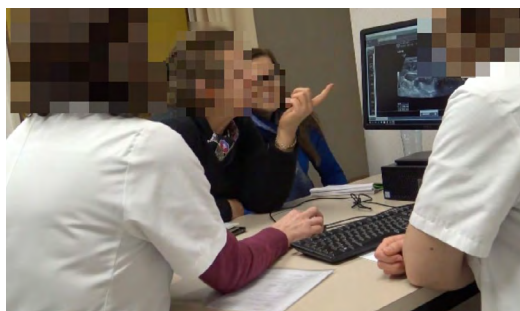


Figure 10. Patient initiating repair with a deictic gesture

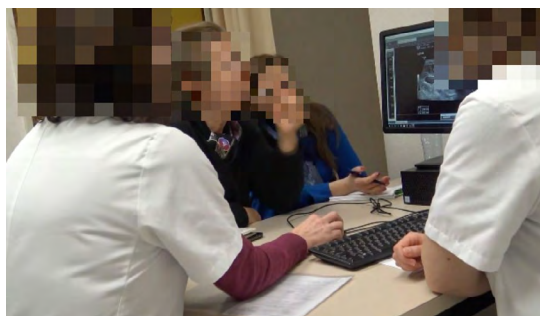


Figure 11. Professor again indicating the normal part of the thyroid

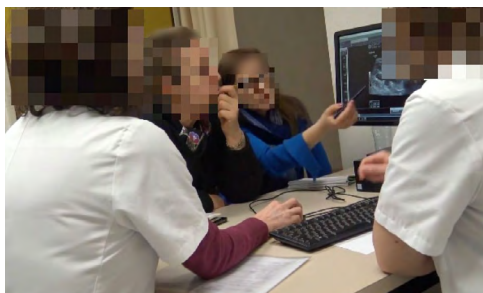


Figure 12. Interpreter relaying the professor's repair turn and indicating the normal part of the thyroid

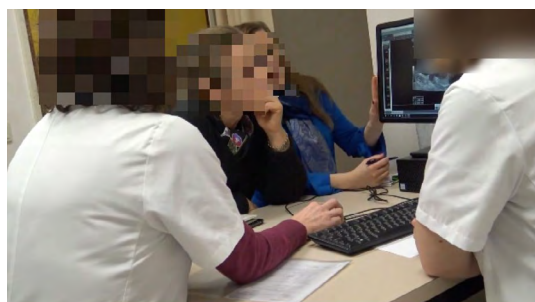


Figure 13. Professor indicating the trachea

35. P «Luchtpijp» что та[кое?

36. «Trachea» what is [that?

37. I [Это то через которое мы дышим с Вами только

38. [That is what you and I need to breathe through, [but

39.

40. HCP

41.

42.

[Dit zijn
[These are
#Fig. 14----

43. *normale bloedvaten*
44. *normal blood vessels*
45. ---
46. I Это нормальные кровяные сосуды
47. *These are normal blood vessels*
48. HCP *En dit is eigenlijk de rechterkant van de schildklier*
49. *And this is actually the right side of the thyroid*
50. #Fig.15-----
51. I Это правая часть Вашей щитовидки
52. *That is the right side of your thyroid*
53. HCP *Waarbij dat dat lichtgrijze nog normaal is maar het donkergrijze is eigenlijk het*
54. *And the light grey is still normal (.) but the dark grey is actually the*
55. *Fig. 16----- #Fig. 17-----*
56. *gezwel waarin we geprikt hebben*
57. *tumor which we pricked*
58. I Светло-серая часть это еще нормальная,
59. *the light grey part that is still normal (.)*
60. темная часть, это та часть в которой мы брали пункцию
61. *the dark part, that is the part in which we took a puncture*
62. (1.5)
63. P Это значит вот это
64. *That is then that part?*
65. #Fig.18-----
66. I *Dat is hier dus?*
67. *So, that is this here?*
68. -----

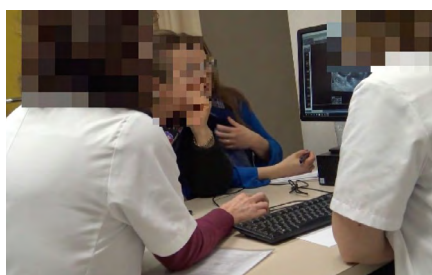


Figure 14. Professor indicating the normal blood vessels

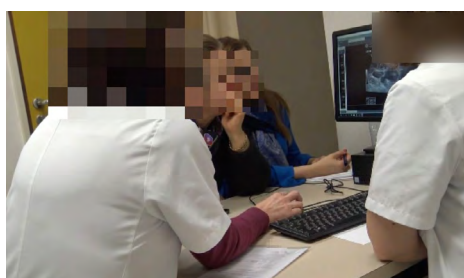


Figure 15. Professor indicating the right side of the thyroid

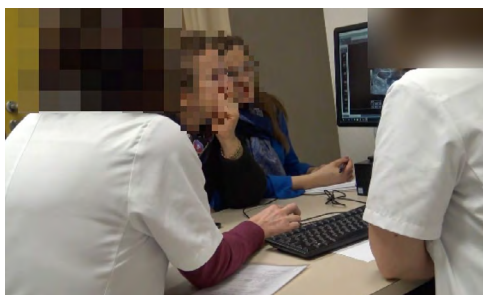


Figure 16. Professor indicating light grey area

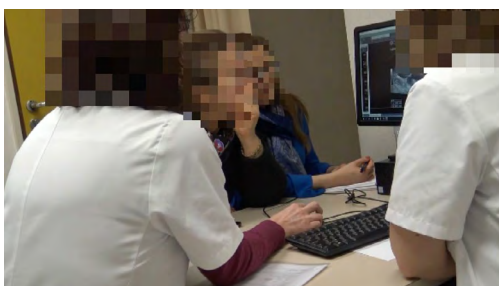


Figure 17. Professor indicating dark grey area

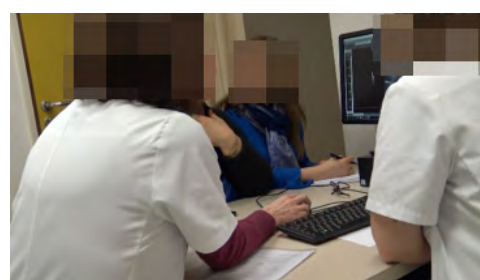


Figure 18. Patient indicating thyroid on her own body

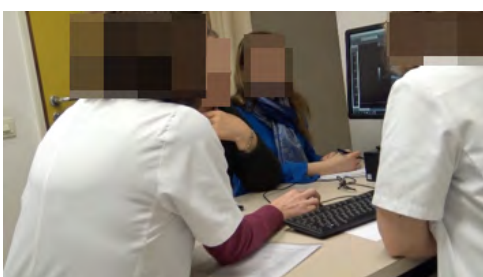


Figure 19. Professor indicating the needle

69. **HCP** *Dus ja en dit is eigenlijk de naald hier van de vorige punctie*
70. *So yes and this is actually the needle here from the previous puncture*
71. **#Fig.19**-----
72. **I** *Это здесь иголка из прошедшей, из прошлой пунк[ции]*
73. *This is here the needle from the past, from the previous puncture*
74. -----
75. **HCP** [ja?]
76. [yes?]
77. *En dus ja d-die e daar dat staal dat toen is opgestuurd naar het labo (.)*
78. *And so yes, t-that uh that sample that was then sent to the lab (.)*
79. *ik denk dat we da (.) vorige keer ook ook met u besproken hebben (.) das*

80. *I think that we (.) the last time also have discussed this (.) all in*
81. *in het Nederlands allemaal maar ik wil het toch nog eens tonen aan u dat u echt*
82. *Dutch (.) but I want to show you that one more time so you are really*
83. *overtuigd bent (.) hier staat besluit e (0.7) papillair schildklier carcinoom (.) [dat*
84. *convinced (.) here is the conclusion hu (0.7) papillary thyroid carcinoma (.) [that*
85. *betekent] dit is carcinoom*
86. *means] this is carcinoma*
87.
88. **P** [carcinoom
89. [carcinoma
90. *ja]*
91. *yes]*

In lines 1-12 the HCP explains what they can see on the ultrasound. During her explanation, she first introduces the trachea (line 1). While describing the referent verbally, she traces its shape and indicates its location on the ultrasound with the cursor of her mouse (Fig. 6). Subsequently, the professor traces the right side of the thyroid on the echography, explaining that the white part is normal and that the entire dark area is the tumour (Fig. 7-9). The cursor movements as such do not only indicate the referents on the ultrasound diagram but also depict their size and shape by tracing them. The professor then pauses, however, as the interpreter does not initiate a turn just yet, she self-selects again and explicitly asks the interpreter to relay this information already (line 12).

The interpreter meets the request and relays the professor's explanation (line 15-19). Most relevant for our analysis is the fact that the interpreter does not use any (deictic) gestures to indicate the referents on the echography. The only indexical elements in her rendition are the verbal elements (вот (*here*), Здесь (*here*), Это (*this*)). However, a physical connection between the verbal and the visual referents is lacking during the rendition, which might make it more difficult for the patient to establish the right meaning mappings. Note that this could be related to the fact that the interpreter was taking notes during the professor's explanation and thus was looking in the direction of her booklet, rather than in the direction of the ultrasound diagram (cf. Fig. 6-9).

The idea that the absence of physical points towards the visual referents might lead to difficulties in the grounding process, i.e., in the coordination of mutual understanding, becomes apparent in line 22. The patient initiates repair immediately after the interpreter's renditions, i.e., she signals that she could not understand part of the information by asking "*That is this then, right? The normal ...*" (Schegloff, 2000). While raising the question, the patient also simultaneously traces part of her thyroid on the ultrasound diagram, i.e., she thus indicates and depicts the referent she couldn't understand on the computer screen (Fig. 10). As such, the repair initiation supports the idea that the patient had difficulties with mapping the verbal onto the visual referents. In what follows, the interpreter—as the speaker of the turn with the trouble source—does not relay or immediately reply to the question. Rather, the professor understands that the patient is having trouble with identifying the referents on the ultrasound diagram and immediately provides a repair turn herself. She repeats "*this is normal*" (Fig. 11). Note that this time, all participants are oriented towards the computer screen and the interpreter is not taking notes. Rather, the professor pauses briefly and provides the interpreter the time to relay this brief segment. After a brief pause (0.5), the interpreter confirms to the patient that this area is normal, by replying "*yes*" to the patient's question and by indicating the location with a deictic gesture (line 32, Fig. 12).

In what follows, the professor repeats the different referents visible on the ultrasound diagram introduced earlier in a similar vein, i.e., by verbally describing them and by indicating them

on the screen with her cursor. However, this time she chunks the information into smaller segments, i.e., she pauses after each referent to provide the interpreter with the opportunity to relay the information immediately. The interpreter relays each referent again only by translating the verbal utterance. However, as the information is chunked into brief segments and the cursor still indicates the referent, this does not seem to cause any misunderstanding.

Only in line 63, the patient again initiates repair. As she asks “*That is this then, it’s that part?*”, she uses a deictic gesture to indicate the location of her thyroid on her own body (Fig. 18). Thus, the repair initiation does not indicate difficulties with the mapping on the echography diagram, i.e., does not indicate the absence of a pointing gesture or another physical deictic element in the interpreter’s turn as the trouble source, but rather the absence of the mapping of the referents onto her own body. The interpreter relays the patient’s repair initiation and, subsequently, the professor provides a repair by confirming with “yes” and by indicating the needle of the puncture on the ultrasound diagram (line 69, Fig. 19).

The interpreter immediately relays the repair turn (line 72). She does not produce a gesture to indicate the needle on the echography, as the professor does. However, the cursor is still visible and the interpretation again considers a brief chunk of information with one referent. Consequently, the gestural omission does not seem to be problematic. This is supported by the fact that the patient releases her deictic gesture on her thyroid when she hears the interpretation, indicating that the repair has succeeded. Moreover, towards the end of the interpreter’s rendition, the professor explicitly checks for addressee comprehension by looking in the direction of the patient and asking “yes?”. The patient confirms by producing a non-verbal acknowledgment token, i.e., by nodding multiple times (Gardner, 2001). As such, the participants orient towards sequence closure (Schegloff, 2007). In the next line, the professor then initiates a new course of action by showing the conclusion of the analysis and explaining that it is for sure malignant.

In sum, this excerpt shows that omitting deictic gestures in the interpretation process can lead to difficulties in the interactional process of establishing common ground (Clark & Brennan, 1990). However, in the repair organization, we see that chunking seems to be an efficient cognitive aid strategy that allows patients to reconstruct meaning and interpreters to relay information without having to point to the ultrasound diagram themselves. We will return to this in the discussion.

5. Discussion

5.1. On the semiotic complexity of the information exchange process

We presented three excerpts in which HCPs and/or interpreters used iconic and/or deictic gestures that aided in the visualization of the medical information. The excerpts thus illustrate how both HCPs and interpreters do not only describe a medical procedure or symptom but also depict and/or indicate some aspects of that meaning. By visualizing the information, they often integrate information into their composite utterances that is not expressed verbally at all. In our examples, this mainly involved a deictic and/or an iconic feature, i.e., the indication of a location and/or the depiction of a particular movement. In a similar vein, the deictic gestures in the HCPs’ utterances can aid in the visualization of the medical information. First, they are physical points that provide a cue on how to map the verbal referents onto their visual counterparts on the ultrasound diagram (cf. Clark, 1996; Enfield, 2009). Moreover, some of the deictic gestures also traced the size and shape of their referent and can thus be regarded as also adding a depictive element to the composite utterance. These examples thus support the idea that speech-gesture composites can be more concrete than information that is provided through speech only (cf. Clark, 1996; Enfield, 2009; Gerwing & Allison, 2009; Rowbotham et

al., 2011) and point towards the semiotic complexity of the information exchange process in healthcare settings and in healthcare interpreting. Moreover, as previous studies mainly described the use of pictures or images as visual cognitive aid strategies in medical settings (cf. Menichetti et al., 2021), the current study adds the use of representational gestures in this regard.

5.2. Gestural shifts and their potential impact on the information exchange process

When comparing the originals and the renditions, it appears that interpreters omitted iconic and/or deictic gestures, or added iconic gestures. The gestures depicted a medical treatment, a symptom, the size and shape of a referent and/or indicated locations (i.e., the location of organs on the body or on an echography). The analyses in this paper do not only illustrate that gestural shifts occur but also shed light on the potential impact of the shifts on the type and quality of information that is being exchanged and thus on the coordination of mutual understanding in more general. First, we have seen that gestural omissions and/or additions can lead to less/more concrete renditions. On the one hand, as interpreters often omit the representational iconic and deictic gestures, the visual information provided through them (e.g., size and shape, locations, enactments) is often not relayed. The second excerpt, on the other hand, shows that interpreters can also make information more concrete by adding iconic gestures. Thus, the analysis of excerpt 2 shows that—in dialogue interpreting—it is not sufficient to only/mainly include verbal analyses of interpretations in order to determine the degree to which an interpreter's rendition can be considered accurate (cf. Aranguri et al., 2006; Flores et al., 2003; Hsieh, 2016) or to describe (shifts in) the information exchange process (cf. Angelleli, 2004, 2019; Wadensjö, 1998). Rather, when investigating message equivalence and the coordination of mutual understanding in interpreter-mediated discourse, including visible bodily action in the analyses can yield different insights (cf. Angelleli, 2004, 2019; Theys, 2021; Theys et al., 2023; Wadensjö, 1998).

Moreover, the excerpts presented in this paper support the idea that omissions and/or additions of gestures cannot be systematically categorized as being either errors in the process or good interpretation strategies (cf. Major & Napier, 2012; Wadensjö, 1998). This is illustrated in the second excerpt, where the addition of an iconic gesture makes a particular symptom more concrete, i.e., it narrows down the types of discharge the patient can suffer from. On the one hand, the gestural addition can be an effective strategy for visualizing and/or providing more concrete information and thus as an effective strategy that promotes the coordination of mutual understanding. However, in this example there is no interactional evidence that “discharge” refers to the meaning of “vomiting” or “throwing up”. Even when the interpreter relies on prior knowledge and his/her common ground with the patient, it remains unclear whether “vomiting” is the exact symptom that the HCP is referring to at this moment in the interaction. Therefore, the addition of the iconic gesture can potentially lead to an interpretation error and thus to difficulties in the information exchange process and in the coordination of mutual understanding.

Finally, the analysis of the third excerpt illustrates that the omission of deictic gestures can lead to repair initiations when the patient is provided with large chunks of information. However, when chunking the information and reducing the amount of information, it does not appear to be problematic to omit the deictic gestures. Therefore, the analyses in this paper support the idea that omitting, and/or adding (gestural) information in the interpreting process does not necessarily lead to interpreting errors and/or communicative troubles (cf. Angelleli, 2004, 2019; Cirillo, 2012; Napier, 2004; Major & Napier, 2012; Theys et al., 2023; Wadensjö, 1998). Rather, interpreting is an act of strategic decision-making, which implies that interpreters can

omit, modify and/or add information to the originals based on the interactional context and their understanding of the (medical) information in order to coordinate mutual understanding. This paper, however, adds the dimension of visible bodily action to this discussion.

5.3. Visualization and gesturing in light of “cognitive aid strategies”

As visualization is considered a cognitive aid strategy that HCPs use to simplify complex medical information (cf. Menichetti et al., 2021), the excerpts presented in this paper also suggest that—depending on whether the interpreter omitted and/or added gestures—interpreters’ renditions can be either more or less difficult to comprehend compared to the HCPs’ utterances. When considering gestural omissions, we acknowledge that patients in our examples are involved in face-to-face interaction and thus often have full visual access to the HCP’s visible bodily action. Thus, they could perceive the HCPs’ gestures and subsequently map them onto the interpretation, i.e., the verbal utterance of the interpreters to capture the full meaning of the provided information. However, as highlighted in section 2 of this paper, the temporal gap between the composite utterance of the HCPs and the interpretation thereof might make it more difficult for the patient to semantically integrate the information provided via the spoken words and the gestures (cf. Özyürek, 2014). In other words, it might make it more difficult to capture the full meaning of the composite utterances. This becomes particularly apparent in the third example of this paper, where we have shown that the omissions of deictic gestures that physically point towards visual referents can in some cases, especially when there is a large temporal gap between the original and the rendition, lead to difficulties in the coordination of common ground and, consequently, can lead to repair initiations. Furthermore, research has shown that gestures, and in particular speech-related iconic gestures, facilitate the automatic semantic integration of gesture and speech (Chui et al., 2018) and that addressees are significantly better at recalling and recounting information accurately when iconic gestures are available (Beattie & Shovelton, 2001). Relating this to an interpreter-mediated context, it thus appears that omitting or modifying gestures can make it more demanding for patients to process the information. Furthermore, the use of iconic, metaphoric, and/or deictic gestures can also aid the interlocutors with the semantic processing and the coordination of common ground (Chui et al., 2018). In that regard, omitting, modifying and/or adding gestures or visual input does not only relate to the notion of ‘accuracy’ and the quality of the information exchanged, but also to the use of cognitive aid strategies.

On the one hand, the excerpts analyzed in this paper can help interpreters to recognize visual cognitive aid strategies used by HCPs. On the other hand, the excerpts can also inspire interpreters to initiate visual communication strategies autonomously in order to facilitate the coordination of mutual understanding. As we have seen in excerpt 2, interpreters can visualize medical information by adding iconic gestures and, as visualization can be regarded as a cognitive aid strategy (cf. Menichetti et al., 2021), one might argue that this can be an efficient strategy for interpreters to promote a better understanding of the medical information. However, as discussed above, the additions can potentially lead to errors and healthcare interpreters are not medical experts themselves. Therefore, caution is always warranted (see also Major & Napier, 2012 on visualization as an effective interpreting strategy in Australian Sign Language).

5.4. Coping with the semiotic complexity of healthcare communication

In this paper, we have explored the semiotic complexity of healthcare interpreting and the impact of gestural shifts on the coordination of common ground. One factor that is worth considering in this discussion is the fact that interpreters in dialogue interpreting are often relaying consecutively and thus are also often involved in notetaking (cf. Pöchhacker, 2022). In the examples we discussed here, interpreters frequently engaged in notetaking and mainly

gazed at their booklet. This implies that they might not have had full visual access to the primary participants' visible bodily action, i.e., they might not have seen the gestures or have only registered them in their periphery view. Consequently, it might not be straightforward to integrate visual information in their performances. Therefore, it is not only important to raise awareness about the use of gestures (in healthcare settings) amongst interpreters but also to inform HCPs about the complexity of integrating visual information in the interpreting process. In that way, they can collaborate and seek more effective and efficient communication and interpreting strategies in order to ensure that the patients have full access to the complex composite utterances and thus that they receive the most optimal interpretation.

In the third example, the repair organization indicates that chunking can, for instance, be an effective strategy to cope with the semiotic complexity of healthcare communication. On the one hand, it reduces the cognitive load for interpreters (Huang et al., 2023) and, as the information is provided in brief chunks, they do not have to take notes. Thus, it allows them to look at the primary participants' bodily actions and integrate such visual information in their interpretation. On the other hand, it also reduces the cognitive load for patients (Menichetti et al., 2021), as chunking reduces not only the amount of information per chunk, but also the temporal gap between the HCPs' visible bodily action and the interpretation in the patients' mother tongue. This might also aid patients in processing speech and gesture automatically (Özyürek, 2014). In other words, it might allow them to still map a gesture onto its verbal meanings, even when the interpreter does not mirror the HCP's gesture, just like in our third example.

5.5. Limitations and suggestions for future research

This paper is a first exploration of the impact of gestural shifts, i.e., gestural omissions and/or additions, on the relation between primary participants' originals and of interpreters' renditions and thus on the information exchange process in healthcare interpreting. We provided a qualitative analysis of three excerpts taken from authentic interpreter-mediated medical consultations. However, future research could replicate the analyses presented here on a larger dataset and add a quantitative dimension—which we have not conducted in our analyses so far. In doing so, such a follow-up study could provide a stronger empirical basis and a more thorough understanding of the phenomena discussed here.

Following up on this, our dataset consisted of only patients with a Russian or a Turkish background. As we know that the use of gestures varies across cultures, it might be relevant to include more cultural and linguistic variation and zoom in on cross-cultural variation in the use of gesture. Finally, we have mainly looked at HCPs' utterances in the information exchange process. As this process also entails patients providing information about their lived experiences in order to make a diagnosis and in order to be able to participate the decision making, a follow-up study could replicate our analyses on their turns-at-talk and the interpretations thereof in order to corroborate our understanding of multimodal information exchange and interpretation strategies in healthcare communication.

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8. Appendix

Transcription conventions

HCP	Healthcare professional
I	Interpreter
P	Patient
Speech	utterance as produced by the interlocutor
Speech	translation of the utterance into English
(.)	a brief pause (<0.2 ms)
(0.5)	duration of a pause in tenths of a second
[carcino]ma	start and end of overlapping speech
#Fig. 1	occurrence of gesture as illustrated in figure 1
-----	duration of gesture



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