

Remote Healthcare Interpreting: a methodology to investigate quality

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(Received 20/12/18; final version received 25/03/19)

ABSTRACT

In consonance with our digital era, healthcare interpreting services are increasingly embracing technology. Research on remote public service interpreting indicates that the use of technology adds up to the already complex character of interpreter-mediated communication. Yet, in healthcare settings, little is known about the exact impact of the remote conditions on communication quality. The present explorative study provides a methodological framework to compare two types of remote interpreting (telephone interpreting and video interpreting) with face-to-face interpreting. Its preliminary findings suggest that there were few differences at the level of message equivalence across the three conditions. However, changes in the interactional dynamics, partly resulting from the remote conditions, did impact on the effectiveness of the communication.

Keywords: remote interpreting; healthcare interpreting; public service interpreting; interpreting quality

RESUMEN

En consonancia con nuestra era digital, los servicios de interpretación sanitaria están adoptando cada vez más la tecnología. La investigación sobre la interpretación a distancia en los servicios públicos indica que el uso de la tecnología se suma al carácter ya complejo de la comunicación mediada por intérpretes. Sin embargo, en los entornos de atención sanitaria, se sabe poco sobre el impacto exacto de las condiciones remotas en la calidad de la comunicación. El presente estudio exploratorio proporciona un marco metodológico para comparar dos tipos de interpretación a distancia (interpretación telefónica e interpretación por vídeo) y la interpretación cara a cara. Sus conclusiones preliminares sugieren que hubo pocas diferencias en el nivel de equivalencia de mensajes entre las tres condiciones. Sin embargo, los cambios en la dinámica interactiva, en parte como resultado de las condiciones remotas, sí afectaron la eficacia de la comunicación.

Palabras claves: interpretación a distancia; interpretación sanitaria; interpretación de servicio público; calidad de la interpretación

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IN KEEPING WITH our digital era, technology is increasingly used in interpreting services. Especially in the domain of healthcare interpreting, technology is rapidly gaining ground and remote interpreting (RI) by telephone (TI) and video link (VI) is progressively replacing face-to-face (F2F) interpreting. The research in this field is dominated by medical studies that measure the effect of different interpreting modes on equitable access to healthcare, quality of care, efficiency, and patient satisfaction (Pöchhacker and Schlesinger, 2007, p. 4–5). However, empirical research concerning interpreter performance, accuracy, etc. has been largely absent in this setting (Braun and Taylor 2012, p. 45). In other settings, numerous research projects on RI that do empirically examine the interpreting performance, have been undertaken (e.g. Braun and Kohn, 2001; Braun 2003, 2004; Braun and Taylor, 2012; Ko, 2006; Lee, 2007; Oviatt and Cohen, 1992; Rosenberg, 2007; Wadensjö, 1999; Wang, 2017). Although research methods and scopes vary substantially, the studies agree that the use of technology adds up to the already complex character of interpreter-mediated communication.

The present paper reports on the methodological framework which is part of a doctoral research project that was designed to compare quality of interpreter-mediated communication in healthcare settings under three conditions: (1) face-to-face interpreting, (2) telephone interpreting and (3) video interpreting. It attempts to establish to what extent observed problematic issues may be attributed to the remote conditions by investigating relationships between problematic issues at the level of message equivalence, interaction management and technological factors. Moreover, possible benefits and drawbacks of adding image to the audio channel are examined, which is of particular importance to healthcare interpreting, as in this setting, VI is rapidly gaining ground at the expense of TI.

For this purpose, a dataset based on three series of three simulations of interpreter-mediated doctor–patient consultations was created. Within each series of simulations, a professional female interpreter performed her task consecutively in three interpreting modes (F2F, TI, VI). After each simulation, all three participants (doctor, patient and interpreter) were questioned about their perceptions of the quality of the interpreting and the communication, the quality of the provided healthcare and their preferences with regard to the different interpreting modes. The simulations, nine in total, were videotaped, transcribed and annotated. Subsequently, the observed problematic instances were submitted to a comparative, multi-modal analysis, the results of which were triangulated by the findings of the participants' perceptions to establish the influence of the remote conditions on the successfulness of the communication.

The present paper will elaborate on the methodology underlying this research project and will first provide details of the conceptual framework, explaining key concepts, such as quality assessment in interpreting. Subsequently, we will explain the research design, including the different steps taken in the data analysis. Finally, the most salient findings of

the first series of simulations will be described and discussed in the light of previous research on remote interpreting in community settings.

Conceptual Framework

Given that interpreting is a complex cognitive, linguistic, cultural and social process, the issue of quality is multifaceted (Grbić, 2015, p. 334). When assessing the quality of different forms of remote healthcare interpreting as compared to face-to-face interpreting, we must therefore attempt to respect its compound character as much as possible. Following experts in bilingual healthcare communication such as Hsieh (2017) and Meeuwesen et al. (2010), the present study wants to transcend disciplinary-confined approaches to interpreting quality and combine insights from both interpreting studies and studies on healthcare communication. From the perspective of the latter discipline, Hsieh (2017) argues that the interpersonal dynamics between healthcare provider, patient and interpreter may shape the process and content of interpreter-mediated medical encounters. Therefore, if we want to assess the successfulness of intercultural communication in healthcare settings, the examination must incorporate all participants. From a discourse-analytic perspective, adopted by many researchers in interpreting studies, conversations are determined by a process of turn-taking, which is concerned with the way in which participants jointly determine who will speak, who will listen, and how transitions are made between these roles (Goffman, 1981; Gumperz, 1982; Sacks & Jefferson, 1974; Schiffrin, 1994). The participants' collaborative work in constructing turns systematically modifies the structure of each sentence "by adding to it, deleting from it, and changing its meaning" (Goodwin, 1979, p. 112). The interpreter, just like the primary participants, shifts between different roles, expressed through his or her acts of translating, requesting and providing clarifications, engaging in non-verbal behaviour et cetera. Through these actions, the interpreter contributes to the primary participants' interaction, both verbally and non-verbally (Krystallidou, 2014; 2016).

Although in interpreting studies the concept of equivalence (i.e., the relationship between the source text and its rendition in the target language) remains a central issue in the examination of interpreting performances (Pöchhacker, 2004), today, the assessment of equivalence goes far beyond the correct transfer of content. Wadensjö (1998) uses the concept of *closeness* as an indication of source- and target-text correspondence at the linguistic, cultural and interactional level. This correspondence is achieved through accuracy in the transfer of content and by means of coordinating activities (Baraldi & Gavioli, 2014). Therefore, message equivalence and interaction management are closely connected. Of course, measurements of accuracy are extremely complex and should consider not only content, but also style (Hatim & Mason, 1990), including includes affective elements and specific stylistic source message characteristics such as register, which give meaning to the message (Wadensjö, 1998).

Furthermore, in evaluations of interpreting quality, it is important to bear the discourse environment into mind, i.e. the larger, overall institutional and social context in which the interpreter-mediated doctor–patient interaction is embedded (Angelelli, 2004, 26). Just like other institutional communicative events, medical consultations consist of different phases, or genre steps, each of which involves its own specific communication dynamics (e.g., Byrne & Long, 1984; 1976; Heath, 1992; Heritage & Maynard, 2006), and of which the interpreter must be aware (Baraldi & Gavioli, 2014; Tebble, 1993; 1999; 2012).

Independent of which research approach is adopted, we can assume that the purpose of healthcare communication mediated by professional interpreters is to achieve effective communication in terms of mutual understanding between patient and healthcare provider. From the perspective of healthcare communication studies, three aspects that affect the successfulness of the interpreter-mediated interventions are: (1) miscommunication; (2) changes in translation and (3) side-talk activities (Meeuwesen et al., 2010, p. 202). These indicators correspond to the two important dimensions of interpreting quality as considered from the perspective of interpreting studies, discussed earlier in this section, namely (1) message equivalence and (2) interaction management. In the present research, we combine these perspectives on the effectiveness of interpreter-mediated bilingual healthcare communication and assume that instances of miscommunication and changes in translation lead to lower mutual understanding between the primary participants. Therefore, if we want to investigate mutual understanding, we must examine miscommunication. In addition, the communication takes place within a certain interactional environment that impacts of the communication. As a result, we must also look at the way the interaction is managed and examine the actions other than translating (e.g., repair, side-talk activities). In addition, factors independent of the participants, such as issues caused by the environment (e.g., noise) or by the technological conditions in which an interpreter-mediated event takes place (e.g., bad sound quality), may also affect the successfulness of the communication.

Whereas the quality aspects mentioned above can be assessed by means of objective methods, quality can also be assessed via user perceptions. Given that satisfaction with the manner of interpreting and the communication in general is an important key to the establishment of rapport between the participants, examining the perceptions by the users is extremely useful to examine the effectiveness of the communication. Figure 1 represents the most important elements with regard to quality in interpreter-mediated interaction discussed in this section.



Figure 1. Quality of interpreter-mediated communication

Methodology

Research Questions

To evaluate the quality of different forms of remote healthcare interpreting as compared to face-to-face interpreting, we must attempt to respect RI's multifaceted character as much as possible. In line with the focus of this research, the following five research questions were formulated:

1. Are there differences at the level of message equivalence between interpreter-mediated doctor–patient consultations in the three interpreting conditions face-to-face interpreting (F2F), telephone interpreting (TI) and video interpreting (VI)?
2. Are there differences in the interactional dynamics in interpreter-mediated doctor–patient consultations between F2F, TI and VI?
3. Is there a relationship between issues that occur at the level of message equivalence and the interactional dynamics?
4. Can possible quality differences between the remote conditions (TI, VI) and the F2F condition be attributed to environmental and/or technological factors?
5. Are there, within the remote modes (TI, VI), benefits related to the quality of the communication of using an audio-visual channel (VI) in comparison with an audio-only channel (TI)?

Research Design

To respond to these questions, we compared interpreter-mediated interaction in the three conditions. This comparative method, which is frequently used in medical studies on RI (among others Hornberger et al., 1996; Nápoles et al., 2010; Price et al., 2012; Saint Louis et al., 2003), is a useful approach to investigating the impact of the remote conditions on the communication in each condition, while at the same time transcending the idiosyncrasies of the individual interpreters and participants. Despite the artificial nature of role plays, we

decided for this option, to avoid difficulties with obtaining ethics approval for using authentic data, and more importantly, because role plays allow for a systematic comparison. In total, the data set consisted of 9 simulations and 27 post-simulation interviews.

Participants

The three interpreters were based on the following five selection criteria:

1. female interpreter currently working as community/healthcare interpreter;
2. minimum of five years' experience in healthcare interpreting;
3. holder of a university degree;
4. having followed specific interpreting training;
5. member of a professional interpreting organization.

The doctor involved was a practising, experienced gynaecologist who participated on a voluntary basis. The role of the patient was played by a professional actress with ample experience as a simulation patient. Prior to the simulations, informed consent of all participants was obtained.

The language combination that was used was French-Dutch. The doctor was a native speaker of Dutch with non-specialized language proficiency in French; the simulation patient was a native speaker of French with limited knowledge of Dutch.

Procedure

The simulations took place in two rooms. In the doctor's room, the participants were seated in the traditional triadic constellation during face-to-face interpreting. During the remote sessions, the doctor and patient were each seated along a corner of the table, with either the telephone or the tablet in between them. The interpreting room was provided with a telephone and a laptop, equipped with a webcam, while the doctor's room was equipped with a telephone with speaker function and a tablet on a movable display. For the telephone connection, a local landline was used. During the VI sessions, a connection by means of a dedicated platform provided by a professional interpreting agency, which had been arranged and tested well beforehand, had to be abandoned during the implementation of the first series because of technical problems. As a result, Skype video calling had to be resorted to, which consequently had to be repeated for the remaining six simulations of Series II and III, in order to maintain constant experimental conditions. The interpreters were given the choice whether or not to use a headset, which all of them declined, citing reasons such as feeling awkward or unnatural while wearing headsets.

To increase authenticity, the role-plays were designed around three themes from real-life gynaecology practice (Table 1). This was made possible with the help of a second professional gynaecologist. The three main themes were (1) weak pelvic floor; (2) abundant menstruation and (3) pregnancy/infertility. For each themes, three scenarios were created,

which contained slightly different descriptions of the personal circumstances of the patient to avoid repetition for the participants. The scripts contained a minimum of information, to leave space for spontaneous interaction between the participants. The scenarios were played in a different order of conditions, as illustrated in Table 1, to avoid a distorted picture of the exact influence of the remote conditions, since fatigue and cognitive overload may have been heavier by the end of the third simulation. For example, in Series I, during the F2F mode, scenario A of theme 1 (weak pelvic floor) was played, in the VI mode, scenario B of theme 2 (abundant menstruation) was played and in TI, the scenario played was C of theme 3 (pregnancy/infertility).

Table 1. Order of the scenarios across the series and conditions

Series	Themes/Scenarios		
	Theme 1: Weak pelvic floor	Theme 2: Abundant menstruation	Theme 3: Pregnancy/infertility
I	Face-to-face interpreting (F2F): scenario 1A	Video interpreting (VI): scenario 2B	Telephone interpreting (TI): scenario 3C
II	Telephone interpreting (TI): scenario 1B	Face-to-face interpreting (F2F): scenario 2C	Video interpreting (VI): scenario 3A
III	Video interpreting (VI): scenario 1C	Telephone interpreting (TI):	Face-to-face interpreting (F2F): scenario 3B

Data Analysis

Annotation

As a first step in the process of analysing the effectiveness of the communication, the transcriptions of the video-recorded simulations were annotated. For this purpose, an annotation scheme was designed (Table 2), which combines the most important aspects related to quality as discussed in the section ‘Conceptual Framework’, as well as contextual factors, which are of specific interest to examine the impact of the remote conditions. This resulted in the creation of three main annotation categories:

1. Issues (message equivalence and interaction)
2. Interaction management (repair and optimization of the communication and backchannelling)
3. Environment & technology

Table 2. Annotation model

(1) Issues		(2) Interaction management		(3) Environment & technology
Message Equivalence	Interaction	Repair & Optimization	Backchannelling	
Omission	Overlapping speech	Request for clarification	Reactive expression	Operation of equipment
Addition	False start	Clarification/ Repetition	Resumptive opener	Image quality
Substitution	Pause	Meta comment	Gaze/Mutual gaze	Sound quality
False fluency	Near false start	Correction	Posture	Synchronisation
	Language mixing	Compensation	Gesture	Out of shot
	Reported speech	Transform reported speech	Facial expression	Seating
		Renditional formulation	Nod/Shake head	Noise
		Change in order	Repetition	External disturbance

The annotation model is based on the assumption that there are two parallel levels of communication. The first level is the main level of communication, which is the linguistic content as expressed by the participants, wrapped up in the paralinguistic features (e.g., register, prosody) that give meaning to it. When the source-text content, including the paralinguistic features, is altered or omitted in the rendition in the target-text by the interpreter, this is considered an issue at the level of message equivalence. To analyse shifts in message equivalence, a combination of categories used to express accuracy in interpreting studies and medical studies based on Braun & Taylor (2012), Balogh & Hertog (2012) and Flores (2012) was applied. In total, four categories of issues were annotated: (1) omission: the interpreter omits relevant information or affective elements; (2) substitution: the interpreter alters information or affective elements; (3) addition: the interpreter adds information or affective elements, and (4) false fluency: the interpreter uses a word/phrase that does not exist in the target language or an incorrect word/phrase that substantially alters its meaning (Flores et al., 2012, p. 546).

Parallel to the main level, communication takes place at an interactional level. This level provides a context to the way information is exchanged at the main level. During the interaction between the participants, issues which inhibit smooth communication may occur. These interactional issues can become problematic in interpreter-mediated communication and may be heightened in remote interpreting (Braun & Taylor, 2012). Issues which were annotated in this category were overlapping speech, often in combination with or caused by pauses and/or false starts, as well as near false starts. Other interactional issues which may indicate underlying communication problems and/or cognitive overload, are reported speech and language mixing. In the case of reported speech, the use of the personal pronoun, a form to be used preferably by interpreters according to most codes of ethics, is abandoned and a participant is referred to by means of the addition of a reporting verb (e.g., “he says”) and a change in personal pronoun (e.g., from “I” into “he” or “she”) (Bot, 2005). In the case of language mixing, the interpreter speaks in two languages within a single turn, which can happen due to confusion and/or cognitive overload. The interactional phenomena of reported speech and language mixing can also be part of repair and optimization strategies.

At the interactional level, all participants are engaged in the conversation management by giving each other feedback on the comprehension of the information exchanged at the main level. They do this in order to optimize the communication and prevent miscommunication, for example by explicitly commenting on the discourse meta structure (e.g., when the doctor announces: “I will now ask you a few short questions, one by one”). Interaction management can also be aimed at repairing miscommunication, for example by explicitly requesting clarification. Other repair and optimization strategies that were annotated include clarifications/repetitions, meta comments, corrections, compensations, changes in order and renditional formulations. Renditional formulations are interpreter renditions specifically designed to summarise, gloss or develop the gist of the previous answer (Baraldi & Gavioli, 2012; Heritage, 1985).

The signalling of non-comprehension or non-agreement with an utterance by another speaker can also be expressed in a less explicit way, such as facial expressions. We will refer to these signals as ‘backchannelling’, i.e. visual behaviour by means of which speakers and listeners derive key information to clarify content and provide feedback (Whittaker & O’Connell 1997, p. 28–29): gaze, gesture, posture and facial expression.

Together, the main level and the interactional level form a subtle verbal and nonverbal interplay between listener and hearer, who constantly exchange turns following a certain turn-taking pattern, in line with their discourse environment. The two levels can also affect each other, and can in their turn be directly or indirectly influenced by external factors that impact on smooth communication, due to the environment or technological conditions. This annotation category consists of problems with the operation of equipment, image quality, sound quality, synchronization of image and sound, out of shot (being within the field of the

camera or not), seating (the way the participants are seated within the room), noise and external disturbances.

Identification of Issues

After having been annotated, all issues at the level of message equivalence and interaction were submitted to a quantitative analysis. It must be stressed that, given the small size of the corpus, the purpose of this was not to generate statistically significant data, but to identify problematic issues and subsequently enable a qualitative examination of relationships between issues occurring at different communication levels at the same time.

At the level of message equivalence, all annotated issues were scrutinized and ranked as *problematic* issues, if they led to a loss of information or change of meaning, with possible clinical consequences (Flores, 2012) or a loss of empathy and emotions. The reasoning behind this was that, if all typical error categories, such as omissions, were considered inaccuracies at the level of single turns or adjacency pairs (question–answer pairs), the complex interactional process of achieving mutual understanding through verbal and nonverbal resources and by coordinating activities would be overlooked. However, it must be noted that the assessment of the problematic character of the annotated issues was not always clear-cut and involved a certain degree of subjectivity, especially since there was only one annotator, given the limited size of the present research project. In cases of doubt about whether a certain issue was to be considered problematic or not, the video recordings of the moment in which a particular instance happened were re-examined thoroughly, as well as the turns preceding and following this instance.

Excerpt 1 illustrates the difference between a message equivalence issue and a *problematic* message equivalence issue: in the F2F session of Series I, the Interpreter (I) omits (OM, turn 79) a part of the instructions provided by the Doctor (D) in turn 78, namely the fact that the Patient (P) has to hand in urine at the laboratory. Since the treatment had been discussed earlier on during the consultation, there is no clear risk of misunderstanding. However, in the same rendition, a reference to patient participation is substituted (SUB: “to discuss the results together” → “we are going to see how everything is going”), which is considered as problematic. Both issues are marked in bold in Excerpt 1.

Excerpt 1. Example of problematic and non-problematic ME issues

- 79 D: [...] daar geef ik de papieren voor mee, **dan kunt u bij het laboratorium urine inleveren**, krijgt u bij de balie de vragenlijsten, verwijs ik u naar de fysiotherapeut en als u daar de intake hebt gehad en dat loopt, komt u nog een keer terug **om de uitslag samen te bespreken**.
- D: [...] for that I will give you the papers **then you can hand in urine at the laboratory**, you will receive the questionnaires at the desk, I direct you towards the physical therapist and when you will have had your intake there and it's running, you will return once more to me **to discuss the results together**.
- 80 I: Euh, je vais vous donner un papier pour **aller au laboratoire**. Vous pouvez chercher à l'accueil également le questionnaire pour le compléter. Je vais prescrire la physiothérapie. Et puis je vais vous demander après un certain temps de revenir vers moi, **on va voir comment tout se passe** [...].
- I: Euh, I am going to give you a paper **to go to the laboratory**. You can also go to the desk for the questionnaire to complete it. I am going to subscribe the physiotherapy. And also I am also going to ask you after a certain time to come back to me, **we are going to see how everything is going** [...].

Note: D = Doctor, I = Interpreter, SUB = substitution, OM = omission
For a further explanation of transcription and translation decisions, see endnote¹

Apart from the identification of issues, an inventory was made of the interaction management, i.e. strategies aimed at repairing miscommunication and optimizing communication. These quantitative results were compared across the three conditions (face-to-face, telephone and video interpreting).

Analysis

Both at the level of message equivalence and at the level of interaction, a distinction was made between issues which concurred with issues in other categories (concurrences) and issues which happened independently from issues in other categories (non-concurrences). Subsequently, in order to establish the role of environment and technology in miscommunication, observed instances of concurring problematic issues were submitted to multi-modal analyses. In the multi-modal analyses, the way the participants dealt with the interaction management was also taken into account. Finally, to evaluate the subjective effectiveness of the communication, the qualitative analyses were triangulated by the findings from the participants' perceptions.

Preliminary Findings

In this section, we will summarize the preliminary findings of the analyses of the first series of simulations. Consecutively, we will discuss issues, the concurrence of issues at different levels and the interaction management. Examples from the data analysis will be provided to illustrate differences in the interactional dynamic between the three conditions.

Issues

Since there were no written-out scenarios, the three simulations varied in their total duration. To be able to compare the relative weight of the issues which occurred in the three role plays, we synchronized them on the basis of their average duration in seconds. The relative weight of the number of problematic issues that happened (Table 3) was calculated as follows: the absolute number of issues was multiplied by the average duration of all nine simulations (1250 seconds). Subsequently, the resulting product was divided by the total duration of the simulation in question in seconds. In Table 3, we read, for example, that in the face-to-face session of Series I, the absolute number of problematic message equivalence issues which occurred was 33. The total duration of this simulation was 23 minutes and 59 seconds, or 1439 seconds, while the average duration of the simulations was being 1250 seconds. This was calculated as: 33 (absolute number of issues) $\times 1250$ (average duration in seconds of the simulations) $/ 1439$ (duration in seconds of the simulation under analysis) = 28.66 . In a last step, this outcome was rounded up to 28.7 , which is the relative number of issues in the face-to-face session of Series I.

Table 3. Quantative summary issues Series I

Issues	Interpreting condition								
	Face-to-face interpreting (F2F)			Telephone interpreting (TI)			Video interpreting (VI)		
	ABS	REL	CONC	ABS	REL	CONC	ABS	REL	CONC
ME	33	28.7	30.3%	37	26.1	32.4%	32	26.7	50.0%
IA	12	10.4	58.3%	22	15.5	50.0%	21	17.8	80.9%

Note. ME= message equivalence, IA= interaction, ABS/REL= absolute/relative incidence, CONC = concurrence

As far as miscommunication at the level of message equivalence is concerned, the analyses showed few quantitative differences across the conditions (F2F: 28.7/TI: 26.1/VI: 26.7). The reason why in, in spite of the increased relationship between the issues at different levels during remote interpreting, the number of issues at the level of message equivalence was finally comparable across the conditions, may be linked to differences in the average turn duration. Since the turns were much longer in the F2F session (24.81 seconds), almost twice as long as the average duration in TI (15.82 seconds) and VI (14.92 seconds), the cognitive strain on the interpreter may have been higher during the F2F session, resulting in an increase in the number of equivalence issues. Contrary to the level of message equivalence, at the interactional level, differences between the remote modes (TI: 15.5/VI: 17.8) and the F2F mode (10.4) can be observed, with the highest number of issues occurring in the VI mode, although the difference in number between the two remote modes is relatively small.

With regard to concurrence, both at the level of message equivalence and interaction, the F2F and TI mode show similar percentages (F2F-ME: 30.3%; F2F-IA: 58.3%; TI-ME:

32.4%; TI-IA: 50%), whereas in the VI mode, at both levels, concurrence was clearly higher (VI-ME: 50.0%; VI-IA: 80.9%). Of course, these numbers are only meant to identify possible causes of miscommunication and potential relationships between issues concurring at different levels, which were further explored by means of multimodal analyses.

Interaction Management

Compared with the F2F condition (12.2 instances of repair and optimization), the interaction management was increased in the TI condition (24.3), and even more so in the VI session (38.3).

Table 4. Quantative summary repair and optimization Series I

	Interpreting condition					
	Face-to-face interpreting (F2F)		Telephone interpreting (TI)		Video interpreting (VI)	
	ABS	REL	ABS	REL	ABS	REL
RO	14	12.2	28	24.3	46	38.3

Note. RO = repair and optimization, ABS/REL = absolute/relative incidence

In the next section, we will illustrate the differences in the way miscommunication occurred across the conditions by means of few examples, concerning the most prevailing interactional issue, namely overlapping speech. We will also discuss differences in the way the interaction was managed across the conditions.

Face-to-face interpreting

Although overlapping speech dominated the interactional issues in all conditions, its effect differed in the remote modes in comparison with the face-to-face mode. During F2F, overlapping speech happened frequently, but concurred only in a few cases with issues at other levels. When it occurred, non-verbal and verbal backchannelling between the participants sufficed to quickly repair the miscommunication. This is illustrated in Excerpt 2: the Interpreter leaves a short pause after her rendition and then corrects herself (COR) during the same turn (39) by adding “not to be pregnant”. Meanwhile, the Patient has understood the message and has started answering “I did not start again with the pill”, causing a false start (FS, turn 40), leading to overlapping speech (OS). The Interpreter requests clarification (RCL, turn 41) by asking “After?”, directly to the Patient. The Patient repeats her phrase and adds “after”: “I did not start again after” (CLA, turn 42). The Interpreter summarizes these turns in one renditional formulation (RF, turn 43). The only content that is lost is: “for the moment”, which is not considered crucial for understanding the message or adapting the message in an important way.

Excerpt 2. (F2F-1)

39 PS CORR	I: qu'est-ce que vous utilisez pour protéger (..) <u>pour ne pas être enceinte?</u>	I: what do you do to protect? (..) not to be <u>pregnant?</u>
40 FS→OS	P: <u>Pour l'instant</u> (.) on utilise des préservatifs, j'ai pas repris la pilule.	P: <u>For the moment</u> (.) we are using condoms, I did not start again with the pill.
41 RCL	I: Après?	I: After?
42 CLA	P: J'ai pas repris après.	P: I didn't start again after.
43 RF	I: Ik ben niet herbegonnen met mijn pil, wij gebruiken enkel preservatieven.	I: I have not restarted the pill, we are only using condoms.

Note. PS = pause, CORR = correction, FS = False start, OS = overlapping speech, RCL = request for clarification, CLA = clarification, RF = Renditional formulation
(.) = pause of 1 second, **bold** = overlapping speech

Telephone Interpreting

In the TI mode, we observed that repair of overlapping speech was more difficult than in the face-to-face mode. This is illustrated in Excerpt 3: the Interpreter has trouble comprehending the Doctor's message (turn 41), which is expressed by her frowning and hesitation. There is a problematic substitution (SUB) in her rendition (42) of the Doctor's turn, that changes the message content: important information is missing, namely the burden the treatment may put on the couple, while the idea that both the Patient and her husband have a chance to succeed is added. Moreover, the order in which information was given is changed (CO): the Interpreter places the chances of succeeding "per cycle" at the end of the rendition, after a short, intra-turn pause. Meanwhile, the Patient has already started asking for clarification (RCL, turn 43), causing overlapping speech (OS) which in its turn leads to a series of repair strategies (turns 44–47). What adds up to the miscommunication, is noise in the hallway. Since the volume transmitted by the speaker mode was already reduced and caused a slight echo, noise from outside complicated repair strategies and required more efforts from the participants to understand what was being said. Both Doctor and Patient lean ostentatiously forward to listen. At the same time, the Interpreter corrects herself twice during her rendition (COR), rendering the communication flow altogether less smooth.

Excerpt 3. (TI-1)

- | | | |
|------------------------|--|--|
| 41 | D: [...] Euh, en ik kan zo meteen uitleggen wat een cyclus van ivf euh inhoudt euhm en de belasting voor u en voor uw partner, de kans per cyclus dat u zwanger wordt is ongeveer 25 procent. | D: [...] Euh, and I can explain you in a short while what a ivf cycle means euhm and the strain it puts on you and your partner, the chance per cycle that you get pregnant is around 25 per cent. |
| 42
SUB
COR
CO | I: [...]Euhm, moi je vais vous expliquer qu'est-ce qu'un cycle de in vitro fait, qu'est-ce que ça signifie et les chances que vous avez alors de de réussir et c'est pour vous et pour votre partenaire de 25 pour cent (..) Par cycle. | I: [...]Euhm, I am going to explain to you what an in vitro cycle does what it means and the chances you have well to succeed and it's for you you and your partner 25 per cent (..) Per cycle. |
| 43
OS
RCL | P: 25 pour cent de chance de plus d'avoir un enfant? | P: 25 per cent of chance more to have a child? |
| 44
COR | I: 20...25 per cent kans meer om zwanger te worden (.) om een kind te krijgen? | I: 20...25 per cent chance of getting pregnant (.) to have a child? |
| 45
RCL | P: Ou bien dans 25 pour cent des cas je tombe enceinte? | P: Or in 25 per cent of the cases I get pregnant? |
| 46
COR | I : Of is het dat ik in 5..25 per cent gevallen zwanger word? | I: Or is it that in 5..25 per cent of the cases I get pregnant? |

Note. SUB= substitution, COR= correction, CO = change of order, OS= overlapping speech, RCL= request for clarification

(..) = pause of 2 seconds, **bold** = overlapping speech

Video Interpreting

Of the three conditions, instances of overlapping speech were most problematic during the VI mode. The increased interaction management resulted partly from the interactional behaviour by the primary participants: spontaneous reactions, for example, when the Doctor did not wait for the rendition by the Interpreter when she had understood the Patient, especially during the short verbal examination (involving yes/no answers), caused overlapping speech. In the VI mode, overlapping speech caused a distortion of the sound and often resulted in disruption of the communication flow. In addition, repair was more complicated and often, chain reactions of issues happened: an issue at one level caused issues at other levels, while during the repair of the miscommunication, additional issues occurred which in their turn had to be repaired. An example of such a chain reaction is provided in Excerpt 4: the Doctor has asked the Patient what kind of pain killer she is using. The Patient is trying to find the name of the medicine and is speaking hesitantly, with

reduced voice quality (turn 34). When the Patient pauses, the Interpreter overlaps (OS) by requesting clarification (RCL) to the Patient (turn 35). The Doctor helps to solve the problem by asking the Patient if it is a kind of paracetamol (RCL, turn 36), which the Patient acknowledges (CLA, turn 37), in overlap with the Doctor's answer (OS). This causes no problems of understanding between the Doctor and the Patient, but since the overlapping speech disturbs the sound quality, the Patient's answer is inaudible to the Interpreter, who provides a renditional formulation (RF, turn 40) in reported speech (RS), summarizing the previous turns. In fact, this rendition is redundant, since the Doctor and Patient have already reached mutual understanding. However, since the Interpreter does not have full access to all the backchannelling between the Doctor and the Patient in turn 36–37, she cannot follow the communication. Her frowning, smiling and constant manipulation of the mouse point to stress and insecurity. Moreover, the Interpreter's strategy of translating everything that has been said, including meta communication (obliged by most interpreters' codes of ethics), makes the communication less efficient, while the reported speech increases the distance between the participants.

Excerpt 4 (VI-1)

- | | | |
|-------------------|--|--|
| 33 | P: Perdo feminin ou Perdolan euh (.) bon euh oui (.) <u>Ça dépend.</u> | P: Perdo feminin or Perdolan euh (.) well euh yes (.) <u>It depends.</u> |
| 34
OS
RCL | I: <u>Euh, vous avez</u> dit Perdolan seulement? | I: <u>Euh, did you</u> only say Perdolan? |
| 35
CLA | P: Perdo feminin ou Perdolan euh d'antidouleur comme ça euh (.) du euhm, comment on l'appelle encore (..) oui, pas de, oui enfin, tout ce que je trouve d'antidouleur. | P: Perdo feminin or Perdolan euh pain killers like that (.) of euhm, how are they called again (..) yes, not, yes well actually, any pain killer I find. |
| 36
RCL | D: <u>Is het een vorm van paracetamol?</u> | D: <u>Is it a kind of paracetamol?</u> |
| 37
OS
CLA | P: <u>Oui, voilà.</u> | P: <u>Yes, that's it.</u> |
| 38
META
MIX | I: <u>Oui, euh, het..., hebt u het begrepen?</u> | I: <u>Yes euh, [Dutch] it..., did you understand?</u> |
| 39
OS | P: <u>C'est du paracétamol.</u> | P: <u>It's paracetamol.</u> |

40 REP RF RS	I: Paracetamol. Mevrouw zei Perdolan of Perdolan voor vrouwen, Perdo féminin, euhm alles wat ik kan gebruiken zei ze dan, ja, aan pijnstillers.	I: Paracetamol. Madam said Perdolan or Perdolan for women, Perdo féminin, euhm anything I can use, she said then, yes, of pain killers.
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Note. OS= overlapping speech, RCL= request for clarification, CLA= clarification, META-MIX: meta comment-language mixing, REP= repetition, RF= rendition formulation, RS= reported speech

Conclusion and Discussion

This paper has presented a methodology for investigating possible differences in the quality of interpreter-mediated communication by telephone and video link as compared to face-to-face interpreting. In addition, we have discussed the preliminary results of the first series of simulations, which are part of a larger research framework consisting in total of nine simulations and involving three different interpreters.

When we evaluate the effectiveness of the communication in the first three simulations, we can conclude the following. As far as miscommunication at the level of message equivalence is concerned, the quality assessment showed few irregularities between the conditions. This corroborates findings by Crossman et al. (2010), who verified the concordance between healthcare providers original diagnosis and its rendition in face-to-face and remote interpreting, and observed no significant differences. In addition, the types of issues were similar across the conditions: more than half of the problematic equivalence issues were omissions.

At the interactional level, we did observe an increased number of interactional issues during both remote modes. Concerning the types of interactional issues, however, there were no differences between the conditions, with overlapping speech dominating in all three conditions. In the remote modes, overlapping speech concurred more often with issues at the level of message equivalence and technological and environmental issues than during F2F. This is in line with findings in VI research by Balogh & Hertog (2012), Balogh & Salaets (2018) and Braun (2004, 2007), who reported an increase in interactional issues and established a correlation between overlapping speech and omission in remote conditions.

Not surprisingly therefore, the assessment of the interaction management showed large differences in the number of repair and optimization strategies between F2F, TI and VI, with the highest number of repair and optimization strategies occurring in VI. This confirms that in the remote conditions, an increased amount of the communication that was attributed to interaction management, as was found in previous research on TI (e.g., Oviatt & Cohen, 1992; Rosenberg (2007; Wadensjö, 1999) and VI (e.g., Braun 2015).

The increased number of interactional issues, the heavier interaction management and elevated number of strategies of repair and interaction in the technology-mediated simulations, made the communication less successful in the remote conditions. Moreover,

possible positive benefits of adding video and thus being able to see one another (as opposed to the TI sessions) were in fact undermined by the effect of the technical limitations of the video conferencing equipment, as a result of which overlapping speech caused sound quality problems, creating a need for repair and complicating repair at the same time.

Of course, given the small scale, these findings are not representative and must be considered as a case study. Moreover, the findings are preliminary and need to put in the perspective of the larger research framework. However, the analyses of these first three simulations shows that the designed methodology is well-suited to study the multidisciplinary phenomenon of remote interpreting in a systematic way, and already point at interesting differences in interactional dynamics between the three conditions. The analysis of the three series together should provide us with a clear picture of the shifts in interactional dynamics which we may expect in technology-mediated healthcare interpreting, and of the role of technology in this. This knowledge will be useful to all practitioners of interpreter-mediated remote communication in healthcare: doctors, patients and interpreters.

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Endnote

For the transcriptions, created our own conventions instead of using more detailed ones such as the much used transcription conventions proposed by Jefferson (1974). This choice was guided by the holistic approach of the present research, which wants to examine several phenomena at the same time (equivalence issues, interaction issues, and the influence of environmental and technological factors) and illustrate these issues by means of examples. In these examples, a granular description of all discourse-analytic features is not necessarily relevant and may rather inhibit the readability of the represented exchanges. With respect to the translations of the transcriptions (which are in Dutch and French, the languages used in the simulations) in English, we have opted for a pragmatic approach (Hale 2004: 213), and have attempted to remain close to the source text, while at the same time avoiding ungrammatical constructions or non-idiomatic expressions, unless this was the case in the original utterance or rendition.