The opening phase of telemedicine consultations: An analysis of interaction☆

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ABSTRACT

This paper describes communication in the opening phases of real-time, video-mediated telemedicine consultations, using the method of conversation analysis, in three NHS settings in the UK. The literature on interaction analysis in face-to-face medical consultations indicates that physicians' capacity to determine topics in consultations is established in the opening phases of the encounter. This is because patients concede the communicative floor to physicians who claim it for themselves by using well-established patterns of interaction. Drawing on 10 teleconsultations, the analysis shows that, for health care professionals and patients, video-mediated telemedicine is unfamiliar terrain, where communication requires constant negotiation of skills and roles, this complexity being added to by the fact that more than one professional participates in the encounter. Analysis of the opening phases of teleconsultations shows them to involve 'floor negotiation' between professionals and between professionals and patients in which they experience *discrepancies* between suggested 'frames', a term coined by Goffman [Goffman, E. (1974). Frame analysis. New York: Harper and Row.] to indicate interpretive schemas that allow people to understand the meaning of events in interactions in which they participate. Frame attunement is achieved during floor negotiation through various interruptions, interjections and attachments that professionals produce to defend their agenda. The novelty of the setting also made participants negotiate the physical space in which the encounter took place. We make tentative suggestions for the training of participants, based on the limited evidence of this study, which requires extending by further studies based on direct observation.

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Introduction

The objective of this study is to identify the range of skills participants use in the opening phases of video-mediated telemedicine consultations. Several recent studies have examined telemedicine with regard to cost effectiveness (Johnston, Wheeler, & Deuser, 2000; Roine, Ohinmaa, & Hailey, 2001; Whitten et al., 2002), patient satisfaction (Guilfoyle et al., 2003; Mair & Whitten, 2000) and the adequacy of telecommunication technologies, systems, software and connectivity (Buzug, Handels, & Holz, 2000; Darkins & Cary, 2000; Ferrer-Roca & Sosa-Iudicissa, 1998). To be effective in providing telemedicine services, financial viability, technological competence and skills are essential. Equally essential, however, is the study of human experience and skills. As Whitten, Sypher, and Patterson (2000) put it, 'we know a good deal about

bandwidths and resolutions, but little about the human dimensions that make practice possible' (p. 112).

Although some studies have investigated communication in telemedicine (reviewed below) we argue that further research is needed to analyse telemedicine interaction as an accomplishment of social actors within an environment that has specific organizational, spatial and technological characteristics. Skills and interaction should be understood as an integrated part of the newly constructed social and communicative order in video-mediated teleconsultation, requiring systematic investigation.

Miller (2001) explains that early attempts to address the issue of interpersonal quality in telemedicine relied predominately on studies of patient and physician satisfaction. Indeed some researchers (Dick, Filler, & Ravan, 1999; Harrison, Clayton, & Wallace, 1999; Loane, Bloomer, & Corbett, 1998; Pedersen & Holand, 1995; Wakefield, Kienzle, Zollo, Kash, & Band Uden-Holman, 1997) employed post-encounter surveys to explore issues of acceptance as well as provider and patient satisfaction. More recently, Mair and Whitten (2000) and the "2001 Report to U.S. Congress on Telemedicine" (U.S. Department of Health and Human Services, 2001) refer to 32 and 174 studies, respectively, where patients and physicians were moderately to highly satisfied with telemedicine. Mair,

Whitten, May, and Doolittle (2000) reporting the general satisfaction of patients with videoconferencing in oncology and haematology clinics, also report patients with overall satisfaction who nevertheless have concerns about this experience: 50% of the patients expressed a 'view regarding the limitations of telemedicine service' and 50% of the patients had some 'concerns about certain aspects of communication because the doctor was not physically present' (p. 37). Watts and Monk (1997) interviewed 17 professionals across three telemedicine settings to analyse collaborative activity in telemedicine sessions. Five videorecorded consultations were also examined to support the data drawn from interviews. They found that telemedicine sessions involve five main activity characteristics: 'pictures are being used as shared resources', 'most of medical consultation is about talking', 'consultations often involve several parties', 'speech is designed for specific recipients' and that 'patient confidence is important' to all parties (p. 594).

Based on their systematic review of 32 studies of patient satisfaction Mair and Whitten (2000) claimed that most of this research has been based on questionnaires inadequately designed to explore interpersonal communication. Further, most of these studies have had a 'technological focus' (p. 1519).

Viewed from the perspective of a health care delivery system, telemedicine does not appear to be a new medical discipline but is a medium that facilitates medical communication (Harrison, Clayton, & Wallace, 1996). The introduction of telehealth care technologies has had major consequences on the organisation of work and interaction in health care. The changing doctor–patient relationship under this new communication order raises questions about the quality of telemedical consultations in relation to professional skills, clinical processes and outcomes. Miller (2002) argues that since there is evidence in the literature (ten Have, 1990, 1997; Silverman, 1987, 1997) that doctor–patient communication is related to health outcomes, this could be relevant when considering telemedicine. Interactions in telemedicine may influence health outcomes because of variability in interpersonal skills or communication with patients and their families, or the use or non-use of technical jargon (Whitten, 2000).

A number of transformations emerge in telemedicine, as much because of the presence of different kinds of health care professionals as by the presence of new technology. Nevertheless, technology plays a significant part. There is a substantial literature on video-mediated communication (reviewed below), much of which focuses on human-computer interaction and computer-supported collaborative work.

Although video-mediated communication retains a 'sense of telepresence', as a rule, communicational space is found by researchers to be 'distorted' and 'asymmetrical' (Boudourides, 2000, p. 3). The term telepresence signifies the extent to which one feels present in a mediated environment rather than in an immediate physical environment. Similarly, Heath and Luff (1993) comment that despite the important contributions made by video mediating technologies in supporting collaborative work between physically dispersed individuals, it is important to note that the technological medium provides a communicative environment, which markedly differs from actual physical co-presence. A number of studies primarily concerned with the introduction of videoconferencing in various work places have investigated the effect of video-mediated interaction on communication, under the prisms of social psychology (Rutter & Stevenson, 1977), ergonomics (Cohen, 1982) and sociology (O'Conaill, Whittaker, & Wilbur, 1993).

More recently, Huang, Olson, and Olson (2003) suggested that communication channels in video-mediated environments differ from those in face-to-face in that physical context, proximity, camera angle and apparent height might affect interaction to the extent that the overall communicative context becomes distorted.

Doherty-Sneddon et al. (1997) compared the structure of dialogues and task performance between groups of participants working on a problem-solving task in face-to-face, audio-mediated and video-mediated environments. The results of this study indicated that dialogue structure between the groups differed significantly. In a similar study, O'Malley, Langton, Anderson, Doherty-Sneddon, and Bruce (1996) argued that although speakers in video-mediated communication employ the same visual cues as in face-to-face communication, they are usually involved in shorter dialogues with more interruptions.

This work has begun to show how technology affects conduct and, in particular, how subtle transformations of images involved in such interaction play a role in this. The unfamiliarity of participants with these features introduced by the technology involves the learning of new skills, and our study supports this literature in producing similar findings.

Central to the effective implementation of telemedicine programmes is the capacity to communicate effectively in this new medium (Miller, 2003). For telemedicine to reach its potential, new normative standards of behavior and interpersonal communication need to be developed, building on those deployed in conventional consultations (Loane & Wootton, 2002). The practice of telemedicine today is based on skills that professionals bring to it from their experience with face-to-face consultations. It is probable that telemedicine-specific skills will develop in the future through a process of trial-and-error. However, skills can be systematically studied and evaluated at present. Miller (2001) argues that in order to achieve a better understanding of the effects of telemedicine in doctor–patient communication, post-encounter surveys must be supplemented by qualitative techniques of the analysis of actual behavior of the participants. To understand communication in telemedicine, a research strategy other than that of participant satisfaction surveys needs to be deployed so that appropriate tools are used in the investigation of interpersonal communication in telemedicine encounters. In this paper, we, therefore, present findings based on the method of conversation analysis, a method that serves as an empirical, descriptive and analytic tool to understand communication in telemedicine as it happens, *in-situ*, rather than as reported in retrospect by patients and professionals.

Method and setting

To identify and analyse communication skills in the opening phases of telemedicine consultations, this study draws on conversation analysis techniques. Conversation analysis is the study of talk and represents a methodological approach of analysing the local organisation of interaction (for a review see Atkinson & Heritage, 1984; Maynard & Heritage, 2005; Silverman, 2001). Our use of it represents a limited application of the sequential analysis often found in conversation analysis work, in the interests of producing a focused, comparative analysis of significant moments in both face-to-face and telemedicine consultations.

The practices of conversation analysis were deployed here with two analytic orientations in mind:

1. to identify the range of skills that participants employ in the opening phases of the encounter in video-mediated telemedicine;
2. to comprehend the newly constructed social and communicative context of telemedical consultations so that an understanding of how skills, perceptions, power and organizational structure might be affected by the introduction of videoconferencing in telemedicine.

Ten (five telecardiology and five televascular) randomly selected teleconsultations were videotaped and analysed. All participants who were scheduled to have a teleconsultation with the main provider between May 2005 and October 2006 were included in the selection process unless they were older than 80 years of age, they did not speak English as a first language or their physicians specifically requested their exclusion. Data were transcribed, using the system developed by Gail Jefferson (in Atkinson & Heritage, 1984). Although an analysis of the visual cues would have been interesting, it was not feasible because the analysts did not always have a view of the proceedings of all participants. Further discussion may be found in the 'limitations and further research' section.

Research was carried out in three NHS settings in the UK. A primary care clinic in the South East of England was the main telemedicine provider. From there, patients were able to confer with consultants in two district hospitals: a cardiology consultant in Hospital A and a vascular surgeon in Hospital B. In the telemedicine consultations which we examined, a video-link was set between the consultant's office in the hospital and the primary care clinic. Patients visited their local general practice clinic to consult with a specialist in their district hospital through the video-link. Some patients were accompanied by a friend or relative (indicated as 'R' in the extracts) but were always accompanied by one or more health care professionals, either doctors or nurses. An ethical approval for recording teleconsultations was acquired by the Oxford A Research Ethics Committee with a reference number: 05/Q1604/15. All participants gave informed consent.

The sequential structure of doctor–patient interaction

Conversation analysis researchers have found that most medical consultations follow a standard sequence. Thus ten Have (2001, p. 4) states that the medical consultation consists of a 'typical sequential structure', or, as he termed it, an 'ideal sequence', which develops in six distinct phases during the encounter:

1 opening;
2 complaint;
3 elaboration, examination and/or test;
4 diagnosis;
5 treatment and/or advice;
6 closing.

It is common practice in conversation analysis to focus on just one of these six phases. There are two distinct reasons for this: (a) conversation analysts do not start their analysis with an a priori hypothesis or a specific research design. The success of the method relies greatly on the continual listening to the tapes and the ability to make detailed transcripts. So, focusing analysis on one phase is efficient in identifying and arranging a number of possible phenomena that need to be discussed. (b) Each phase is different from the others, as each one serves a distinct purpose which can be separately analysed.

Before presenting telemedicine data, it is instructive to describe in some detail the findings of studies of openings in other settings, including face-to-face medical consultations, so that the characteristics specific to telemedicine openings may be appreciated.

Conversation analysis and openings in face-to-face consultations

Heath (1981) argues that the opening sequences of the consultation serve as an introductory environment in which the participants move from 'preliminaries', 'to talk on topic' (p. 71). In this respect, in the opening phases participants set the foundations of communication and make their intentions known to each other.

More broadly, Hutchby (1999) proposes that the opening moments of any encounter are rich in manoeuvres that participants use to situate themselves, so that medical communication is but one example of a more general phenomenon that takes place when people meet and talk to each other.

For example, drawing on his analysis of videorecorded, face-to-face encounters in primary care Kendon (1990) argues that the establishment of a common interactional space depends largely on the participants' coordination and alignment of locally relevant situated identities. This is a step-by-step process during which the interactants have the opportunity to negotiate and attune their proposed frames at the beginning of the consultation. Pollner and McDonald-Wikler (1985) used the term 'framing' to indicate those situations in which participants construct locally relevant settings, before or after the action, in which the action is received and interpreted.

Hutchby (1999) claims that openings can also be useful in observing how interactants negotiate change of frame when their frames 'do not fit'. In this process, interactants 'attune and re-attune themselves according to the contingencies of the moment' and that the opening bouts of encounters can provide a great deal of information on how frame attunement is established (p. 42). One would expect frame attunement to occur in the openings of mundane interaction where there is no agenda of possible 'talk-ables' (by which is meant all the possible topics of discussion). In mundane interaction, participants may chose from an infinite number of topics to discuss. Medical interaction participants are expected to follow certain conventions, which are "translated" into more or less expected sets of interactional sequences during the encounter in general and the opening phases of the consultation in particular.

Heath (1981) found that topic-initiating utterances are typically produced by physicians. The fact that face-to-face (FTF) consultations take place in the doctor's office, which is named by ten Have (2001) as a 'territory of the physician', determines the social roles that participants occupy during the medical consultation (p. 5). Doctors act as hosts while patients take on the social role of guest. According to ten Have (2001), access to the communicative floor in FTF consultations is not equally shared between the participants, since doctors control much of the access to this. Heath's work on the 'opening sequence in doctor–patient interaction' (Heath, 1981) and on the 'display of recipiency and beginning of consultations' (Heath, 1986) shows how doctors claim the floor in the opening phases of the consultation and patients act as guests allowing the doctors to direct the opening sequences.

The following extract is indicative of both.

(1 – Heath, 1981, p. 72)
1 Dr: Come in
2   (2.0)
3 Dr: Hello
4 P: Hello
5 Dr: Sit down, your name is mister…?
6 P: Gregson
7 Dr: Gregson, sit down
8   (5.0)
9 Dr: What can I do for you?
10 P: I'm getting some funny pains, um… around er, back passage
11   you know

In line 1, the doctor invites the patient in the office. In line 3, she/he greets the patient who only then greets back although there was an opportunity to greet the doctor during the 2 s that passed in line 2. In line 5, the patient is being instructed to 'sit down' and reveal his name. Following the introductions, it is only after the patient is being instructed by the doctor to disclose his concern that he does

so. Again, there was a window opportunity of 5.0 s in line 8 for the patient to introduce his concern to the doctor. Instead, the patient awaits directions from the doctor/host of the encounter.

A similar patient behavior is demonstrated in the following extract:

(2 – Heath, 1986, p. 26)
1   Dr: Hello
2   P: Hello
3   Dr: Come in Missus Lebling
4   (3.3)
5   Dr: Sit down please
6   (9.0)
7   Dr: Yes (.) what can I do for you?
8   P: °hhh well (.) since urm (.5) last Friday I've not been very
9   well Doctor Jarousa

The effect of the setting on the opening sequences appears even more prominent when one considers the discrepancy between ownership of the talkables and ownership of the communicative floor. Although the patient is the one who "owns" the topic to be discussed, during the opening sequences of the interaction, she does not produce any talkables. Instead, the doctor takes ownership of the floor in order to direct the sequence and the timing according to which the talkables of the consultation are being discussed. In both extracts 2 and 3, although the situational opportunity appears between doctor-initiated turns, the patients do not produce any talkables. Although talk-in interaction is seen as a mutually ratified accomplishment, the sequence of medical consultations is largely determined by health care professionals (ten Have, 1991; Heath, 1984).

(3 – Heath, 1981, pp. 72–74)
1 Dr: Your name is mister…?
2 P: Green
3 Dr: Green, sit down
4   (12.0) (reads records)
5 Dr: Right what can I do for you today
6 P: Uh uh mmm when I was working in Keswick I had two or three
7   pains here and they used to work they way up…

In extract 3, there is a window opportunity of 12.0 s for the patient to initiate a discussion about his concerns in the opening phase of the consultation while the doctor was reading records. The opportunity is not taken as the doctor's silence along with his/her engagement with consulting the patient's records was perceived by the patient as the most *credible* action of the particular sequence. Therefore, the floor was *reserved* by the doctor and *proffered* by the patient so the doctor takes responsibility of the talkables of the consultation.

In all three previous extracts, there is a succession of doctor-initiated turns separated by pauses in interaction along with characteristic patient inactivity which instates the consulting doctor as the sole owner of the floor of the interaction and conductor of the thematic sequence of face-to-face consultations. In accordance to what is expected in institutional settings, FTF consultation openings follow a sequential pattern. During the opening sequence of FTF consultations, the physician maintains ownership of the communicative floor and through this she/he directs possible talkables and consultation frames.

The effect of the setting on opening sequences appears even more prominent when one considers the discrepancy between ownership of the talkables and ownership of the communicative floor. There is evidence (ten Have, 2001; Heath, 1981, 1984) that although the patient is the one who "owns" the topic to be discussed, during the opening sequences of the interaction, she or he

does not produce any talkables. Instead, the doctor takes ownership of the floor in order to direct the sequence and the timing according to which the talkables of the consultation are being discussed.

The opening sequences of face-to-face consultations resemble those in most agent–client meetings, including greetings, invitations to come in or sit down, and appropriate introductions if needed. For example, when a patient is invited in the consultation room for a face-to-face session and offered a seat she/he may use previous knowledge as an inferential framework to place herself or himself where the doctor 'meant' to. This is evident in the first five lines of extract 2 that are shown below.

1 Dr: Hello
2 P: Hello
3 Dr: Come in Missus Lebling
4   (3.3)
5 Dr: Sit down please

Other times, the inferential framework is so strong which prompts the patient to take a seat without having been offered one.

(4 – Heath, 1981, p73)
1   Dr: Hullo
2   P: Hullo
3   (3.0)
4   Dr: Is it Jill?
5   P: Yes
6   (5.0)
7   Dr: Ah, it's your foot isn't it?

Conversation analysis follows a long tradition in the investigation of the social and communicative context of conventional medical consultations. Conversation analysis can primarily be an effective instrument to investigate, analyse and interpret the communicative context and the social dynamics of teleconsultation and secondarily, to inform a range of interventional studies that will develop a framework according to which skills can be taught and learnt.

Perakyla and Vehvilainen (2003) comment on the relationship between texts of professional knowledge, which they call Stocks of Interactional Knowledge (SIKs) and conversation analysis. They propose that findings from Conversation analysis research may:

(i) *falsify or correct* assumptions that are part of an SIK. (ii) *provide a more detailed picture* of practices that are described in an SIK. (iii) Conversation analysis may also add *a new dimension* to the understanding of practices described by an SIK, or (iv) *provide* the description of practices, not provided by a very abstract or general SIK (p. 727).

Tapsell, Brenninger, and Barnard's (2000) work is indicative of how findings of ethnomethodological studies can be used to train professionals. In particular, conversation analysis allowed them to describe 'consistent ways of reporting diet histories and to identify conversational features of problematic reporting'. The authors argue that applied conversation analysis can be used to teach dieticians history-taking skills.

Findings

Negotiation of space in telemedicine openings

As telemedicine is a somewhat unfamiliar terrain for all participants, sequences have not been negotiated in the past and, therefore, have not yet been embedded into an institutional mode of talk according to which participants coordinate their actions. The

novelty of the setting and the difficulty of applying existing institutional formats can be seen in the opening phases of a tele-consultation during which participants experience discrepancies in their knowledge. The novelty of telemedicine may even produce difficulties for participants in-situating themselves physically. Extract 5 exemplifies such difficulties.

(5 – Telecardiology)
1 GP: come and sit down over here (0.3) I'm filming it
2 P: okay (0.5) where do I sit (.) sorry
3 GP: come and sit next to me
4 P: okay (0.4) this here

In line 1, the doctor informs the patient about novelty number one, the use of the video-link: 'come and sit down over here (0.3) I'm filming it', but wrongly assumes that the patient holds situation-specific knowledge about novelty number two, the re-arrangement of space in the teleconsultation room, and is, therefore, able to place himself in it. When the patient reveals a lack of such specific knowledge in line 2: 'okay (0.5) where do I sit (.) sorry', remedial action is taken by the GP who indicates where the patient should be placed in line 3: 'come and sit next to me'. In line 4, the patient's turn suggests acceptance: 'okay' and verification: this here of the GP's direction, which resolved the issue of the re-arrangement of space.

Further difficulties in attuning to the spatial layout are shown in extract 6 in which the patient is not certain as to whether he has been positioned in a place that makes himself visible to the consultant.

(6 – Televascular)
1 C: hello Mr J how are you
2 P: I'm okay thank you (0.3) can you see me alright
3 C: [good]
4 P: [am I] in the right place?

Here the patient is not sure about where he should place himself in the teleconsultation room. Since he misses important information about the setting, he asks in line 2 'can you see me alright' and continues in line 4, '[am I] in the right place?'. The patient is aware of whether he can be seen by the consultant and whether he is in the right place.

While negotiation of space in telemedicine may be seen as an issue which will resolve itself following a process of trial-and-error, until all participants familiarise themselves with the setting and procedures, it may also be seen as a subject that requires investigation at present because the spatial and organizational context of telemedicine may have implications to the establishment of a practical consultation setting.

Floor negotiation and frame attunement in mundane telemedicine openings

Although there is no uniformity about the way openings in telemedicine consultations are accomplished by participants, it is common that floor ownership and consultation frames are-negotiated between the two professionals during the opening phase of the encounter before talkables are introduced. Thus patients are frequently first introduced to the consultants, or consultants are introduced to the patients, by the primary care professional during initial interaction.

In agreement with ten Have (2001), Maynard and Heritage (2005) argue that practices through which interactants conduct themselves in medical encounters have often been transferred from our experience of everyday informal talk to the doctor's office. This is particularly true in telemedicine openings where GPs and nurses

initiate the consultation as if it were everyday conversation, sometimes appearing to be like a friend introducing two persons in a social setting. This practice moves the communicative floor away from the professional at the other end of the video-link and toward the professional who accompanies the patient and may then lead to a discrepancy of frames between the two professionals.

This is shown in extract 7 where the GP first introduces the patient and his wife to the consultant. Humour is sometimes used by physicians as a relational communication device to "break the ice".

(7 – Telecardiology)
1 GP: >let me introduce< (.) this is dr W at Watford
2 P: °hello°
3 W: °hello°
4 GP: he is one of our local cardiologists (.) Mr and Mrs F (.) you
5   can't see Mrs F she is a bit shy she's over there I – I will try
6   to get into the wall and we'll get her across ((laughs))
7 W: ((laughs))
8 P: ((laughs))
9 GP: cause we need to make sure that we do things right (0.7) and
10   we need to get used to the fact that there is always a bit of a
11   delay
12 P: okay
13 GP: okay fire away M
14 C: right (.) hi Mr F'
15 P: good afternoon
16 C: uhm: dr J told me that the last month or so you've been
17   developing some breathlessness (.) is that right
18 P: yes only when I exercise

Humour is common in medical consultations (Cegala, 1997). It is employed here by the GP to minimize the distance which exists in physical terms and make the patient feel more at ease with the medium. Upon production of a humorous comment in lines 4–6 by the GP: 'you can't see Mrs F she is a bit shy she's over there I – I will try to get into the wall and we'll get her across', all participants in the primary care site engage in laughter. However, the consultant's receipt token 'right' at line 14 declares a discrepancy between the frame suggested by the GP and the talkables that he is oriented to. Thus in line 14 the consultant moves away from non-professional, preliminary talk by proposing a new frame. He re-orientates the consultation by projecting the beginning of a new activity: 'right (.) hi Mr F' uhm: dr J told me that the last month or so you've been developing some breathlessness (.) is that right.

In the following extract a long, apparently informal introduction by the professional on site (N) makes the professional on call (C) generate frame re-attunement utterances.

(8 – Telecardiology)
1 N: well this is Mrs W (.) you've got the letter from
2   dr J haven't you?
3 C: [I have]
4 N: [so you know] all about her ((laughs))
5   (1.7)
6 C: right (0.5) can you (T.P) me alright Mrs W?
7 P: pardon
8 N: can you hear him [well]
9 P: [I –]
10 C: I said can you hear me ok
11 P: that's better yes ((laughs))
12 C: I – I 've got a letter from professor J uhm (0.5)
13   I see you've been having some palpitations (0.3)
14   for sometime is that correct?
15 P: that's right yes

Thus extract 8 shows that the nurse's opening sequences are an attempt to introduce the patient and the consultant, in a manner similar to what she would have done had they met in a social gathering. The nurse not only introduces the patient but tries to present her as someone the consultant is well acquainted with. Knowing that the consultant has only received information related to Mrs W's health, the nurse exaggerates: 'so you know all about her' and laughs. After a gap of 1.7 s, which is indicative of the consultant's negotiation with the newly suggested interactional convention by the nurse, the consultant re-orientates to consultation mode and refuses to engage in laughter. This is a typical example of lack in attunement, which is re-negotiated and established anew: 'right (0.5) can you hear me alright Mrs W?'. Following the technical problem (T.P) in line 6 and the re-establishment of a communicative channel in line 11, in line 12 all participants align with the consultant's suggested frame, 'I – I 've got a letter from professor J uhm (0.5) I see you've been having some palpitations (0.3) for sometime is that correct?'. This utterance marks the end of social introductions and the beginning of the professional interview. This sequence prompts us to two observations. First, that the nurse has deviated from what the consultant had in mind as to what the talkables in the consultation ought to be and second, that re-attunement is initiated by the consultant following a significant pause in talk, 1.7 s on this occasion.

In contrast to the above nurse-led consultation, where floor negotiation and frame attunement were established effortlessly with the immediate attunement of all parties to the frame suggested by the consultant, in the following GP-led consultation floor negotiation between the participants requires more effort. In the following extract, the floor is not only negotiated between the two professionals but also between the GP and the patient.

(9 – Telecardiology)
1   GP: come and sit down over here (0.3) I'm filming it
2   P: okay (0.5) where do I sit (.) sorry
3   GP: come and sit next to me
4   P: okay (0.4) this here
5   GP: °alright okay that's dr V from Watford (.) cardiologist =°
6   C: = HI
7   P: hi there
8   (1.9)
9   C: Mr C?
10 GP: [yeah]
11 P: [yeah]
12   (1.7)
13 GP: so: if you [rememb-
14 C: [so what – (1.1) I'm just getting a quick look
15   (paper shuffling)
16 GP: okay
17   (5.1)
18 C: right so:: what – what's been happening sir

From lines 1–4, the GP owns the floor while inviting the patient in the teleconsultation room. In line 5, the GP introduces the consultant to the patient and the consultant declares presence in line 6. In contrast to the nurse-led consultation examined in extract 6, the consultant's greeting follows the informal everyday frame suggested by the GP, as the consultant greets the patient in a non-formal way by saying 'hi'. The patient engages in the same informal frame suggested by the professionals and greets back, 'hi there'. The consultant's question in line 9, 'Mr C?' triggers a concurrent response by the patient and the GP who both perceive themselves as the possible recipients of the consultant's question. The concurrent response by the GP and the patient demonstrates ambiguity in the ways the next speaker is indicated and perceived

by participants, which is common over a video-link. The professional floor is still being negotiated in line 13 when the GP attempts to fill out silences by trying to introduce the talkables. Following the gap of 1.7 s in line 12 the GP attempts to offer some background information to the consultant (line 13). This attempt seems to conflict with the consultant's agenda who intervenes by producing the topic-initiating device 'so' but without initiating a topic (line 14). Instead, the consultant explains that he needs some time to get a quick look at the patient's file. After the GP's acknowledgement token, 'okay' at line 16 he takes 5.1 s to consult his notes. He then initiates the topic of discussion by re-opening the communicative channel directly with the patient.

Note that in extract 9 the consultant manages to retain floor ownership by employing a topic-initiating device 'so' (line 14) at a moment when he wasn't actually prepared to initiate the topic. On this occasion, 'so' does not serve as a topic-initiating device but as an agenda-defending one. The following silences of (1.1) seconds in line 14 and (5.1) seconds in line 17 allow the consultant to construct his agenda after he had defended it through retaining the communicative floor.

Although the teleconsultations we examined did not produce abundant observations of agenda-defending utterances serving as floor-retaining devices, the above observation indicates that floor negotiation between professionals in telemedicine is possible during the opening phases of the encounter. In extract 9, the communicative floor and ownership of talkables are repeatedly negotiated between the two professionals. The consultant controls the floor by disallowing the GP's interjections.

Although not in the opening phase of the encounter, the following extract demonstrates a series of agenda-defending utterances produced by the consultant in order to retain the communicative floor and the possible talkables in a telecardiology consultation.

(10 – Telecardiology)
1   P: what was – what was the abnormality then may I ask
2   GP: [the:-
3   C: [there is a change on the ECG
4   P: uh: okay
5   C: okay?
6   P: yeah
7   C: uh::m [and the question is really =
8   GP: [when you were working hard
9   C: = you know how – how much do we need to investigate
10   that (.) I see in the exercise test you lasted for a quite
11   good time (.) twelve minutes
12 P   uha
13 C: [uh::
14 GP: [he was – he was I mean he really worked jolly hard I got
15   him] well past twelve maximum
16 C: [uh::
17 GP: [no chest] pain
18 C: [did you]have any – (0.3) any symptoms
19 P: no obviously slightly out of breath and hot but-
20 C: no pain?
21 P: no pain and I wouldn't have stopped for as long
22   Dr J had kept me going on it so

In line 1, the cardiac patient requests an explanation on the consultant's finding of an abnormality, 'what was – what was the abnormality then may I ask'. In line 3, the consultant rejects the GP's attempted attachment in line 2 by interrupting the GP to provide the reason which led him to think that there is an abnormality, 'there is a change on the ECG'. Similarly, following the consultant's token 'uh::' in line 16, the GP volunteers relevant

information in line 17, '[no chest] [pain]'. Following his own agenda, in line 18 the consultant requests information on any symptoms during the exercise test. After the patient's response in line 19, 'no obviously slightly out of breath and hot but-' the consultant wants to hear information on symptoms directly from the patient so he asks again about pain although the GP has already provided the answer in line 17.

Extracts 9 and 10 demonstrate a tendency by the GP to make contributions to the encounter in the form of interjections. Some of these interjections appear to be treated by the consultant as interruptions, which seek to take the communicative floor away while the consultant is trying to establish a communicative channel with the patient. Others are treated as attachments (interjections that propose frames or talkables that are accepted by the consultant), which allow the GPs to contribute to information exchange. Although in the opening phases the consultants tend to perceive and treat GPs' interjections as interruptions, as the consultation progresses GPs' interjections are increasingly treated by the consultants as attachments. However, the disallowing of GPs' interjections by consultants are in contrast with the basic premise of shared schemes of care, which see the patient in the centre of care of a number of professionals, benefiting from possible contributions that each one can make.

An 'ideal' merge of opening-complaint phases

The following televascular extract (11) exemplifies a telemedicine opening which follows as closely as possible the opening sequences of FTF consultations with additional introductory comments from the GP.

(11 – Televascular)
1 GP: I've described as best I can what I have and have not found
2   and uh:: to try to understand where this pain is coming from
3 P: yes
4 GP: so:: it is up to Miss H whether- you know- what we should
5   be doing next (0.4) it is really over to you: to
7   decide what on earth we do now
8 C: okay (1.2) hello Mrs H
9 P: hello
10 C: for how long this uhm: this discomfort has been going now?
11 P: oh: some time (.) about (1.1) three months or so

The above sequence allows the consultant to initiate the topic of discussion in line 10, quite early in the consultation. Here, the GP acts as a knowledgeable agent not only about issues that have to do with the patient's concern but also about the situational and organizational circumstances which surround a teleconsultation. In that sense, he explains to the patient that the consultant has been informed about her concern and after he receives an acknowledgement token from the patient 'yes' he passes the communicative floor to the consultant to start her investigation. The consultant treats the patient's concern as known and establishes effective interaction with the patient in three steps.

(a) She projects the initiation of a new activity by using 'okay' not only as a mark of shift of topic but also of shift of interactional channel. 'Okay' is also said in line 8 to indicate that the interactional channel between the patient and the GP as well as the interactional channel between the GP and the consultant is now relatively closed.
(b) Following the gap of 1.2 s, by which the enablement of the new communicative channel between the consultant and the

patient is achieved, the patient is greeted with 'hello Mrs H'. The consultant uses the unambiguous greeting 'hello' to receive the same brief greeting from the patient in line 9.
(c) Following the preliminaries, the consultant enters the previously announced medical activity by treating the patient's concern as a known one.

In contrast to previous extracts from telemedicine openings, extract 11 demonstrates a timely and efficient way to open a consultation and an effective way to pass on the communicative floor to the consultant. All participants have assumed situation-relevant roles where no interruptions or lengthy floor and frame negotiations took place. All participants have been equally engaged in the opening phase with the patient active at all points.

Discussion and conclusions

We have shown that participants treat telemedicine encounters as social occasions and seek to transfer communication practices that they have developed for use in other settings. As we saw earlier, Maynard and Heritage (2005) argue that the skills doctors and patients use in medical encounters have been re-assigned from our everyday conduct to the consultation room. In telemedicine, consultations the GP or the nurse introduce the patient and the consultant as they would have done in a social gathering acting as common acquaintance. Moreover, the nurse or the GP engage in preliminary talk with the patient in order to educate the latter in the new type of consultation. The above practices move the communicative floor away from the consultant to the primary care professionals who, at the beginning of the consultation, determine the talkables. For as long as the communicative floor and the talkables are being owned by the primary care professionals, there exists a deviation from the usual communicative frame that consultants use in their FTF clinics, where they own the communicative floor from the start.

Hutchby (1999) claims that in the opening bouts of mundane conversations there is constant attunement of frame in which interactants situate and re-situate themselves in the conversation, when their respective frames do not fit. One would expect that frame attunement is a characteristic of mundane interaction where there is no agenda of possible talkables and that it would be absent during medical consultations where the talkables largely depend on the professional's agenda. Indeed, ten Have (2001) claims that in the opening phases of a (FTF) consultation the physician receives the patient to his or her office in a socially oriented manner in which the patient acts as a guest and the physician as a host. The patient is invited in to the consultation room by the physician. When the patient enters the room the physician offers a seat and initiates the discussion. In FTF clinics, the physician owns the communicative floor and directs the talkables of the opening phases of the consultation as she/he wishes. Heath (1981) found that in FTF consultations both the discussion of preliminaries as well as the transition from preliminaries to talk-on-topic is largely directed by the physician. The aforementioned practice has two contradictory implications: First, it enables the physician to choose the talkables of the consultation and direct the discussion in a time efficient manner. But second, it does not allow the patient to make a contribution to the encounter according to his or her own agenda.

In telemedicine openings, consultants often find themselves being introduced to the patient by the primary care professional who is directing the talkables at the start of the encounter. This has two implications for interaction: First, the consultant does not own the floor and cannot direct the consultation from the outset as he or

she would have done in a face-to-face setting and second, the nurse or the GP may act as host, inviting the consultant to participate in informal interaction. We have shown that while the nurse or the physician is acting in a primary care mode the consultant is expecting a tertiary care mode of interaction. Since the consultant experiences a discrepancy between his or her agenda and that of the primary care staff, she/he employs certain mechanisms to take the floor back and own the talkables of the consultation. Therefore, consultants employ interactional devices to make requests for *frame attunement* between themselves and the primary care professionals. During frame attunement, there is negotiation between the professionals who are trying to defend their own agenda of the talkables. Eventually, the consultant regains control of the talkables and guides the patient toward discussing their specific complaint.

The analysis showed that telemedicine openings vary considerably. Professionals engage in negotiations of floor and frame while trying to communicate in a novel environment via a medium that most of them, as well as the patient, have rarely used before. Telemedicine has a destabilising effect on the prefixed sequences of talk that professionals employ to maintain a degree of asymmetry of roles between themselves and the patient.

Although talk-in interaction is in general seen by conversation analysts as a mutually achieved accomplishment, the sequence of a medical consultation is largely determined by health care professionals rather than patients (ten Have, 1991; Heath, 1984). Heath (1981, 1984) claims that the opening phases of medical encounters are characterised by a succession of doctor-initiated turns separated by gaps in interaction along with a characteristic patient inactivity which instates the consulting doctor as the sole owner of the floor of the interaction and conductor of the sequence of face-to-face consultations. To emphasise the fact that doctors have the skills to maintain the communicative floor and control the talkables of the consultation, ten Have (2001) calls the medical consultation a 'territory of the physician'. The aforementioned capacity produces an interactional asymmetry between the patient and the physician in which the physician assumes the leading role in the consultation and the patient the role of the respondent or the follower.

In FTF openings, the first occurrence of asymmetry between the two participants is observed in the very first turns of the encounter. According to the expected roles of the patient and the doctor that are determined by their asymmetrical relationship, the communicative floor is not only *reserved* by the doctor but also *proffered* by the patient. Heath (1981) observes that in the opening phase of FTF consultations there are windows of opportunity for the patient to initiate a discussion about his/her concerns. These opportunities exist during silences when the doctor is consulting previous records. Nevertheless, the patient does not take these opportunities. Any silences along with his/her engagement with consulting the patient's records is perceived by the patient as the most *credible* action of the particular sequence. Therefore, the floor is reserved by the doctor and conceded by the patient.

Since telemedicine is relative new to most participants, the requirements of the setting are unknown to most. The consultation room in telemedicine is rather different to most face-to-face settings. In the room, there is one or more cameras placed next to a personal computer screen that faces the patient. In contrast to most traditional settings, in telemedicine, the patient is situated "behind the desk" sitting next to the GP or the nurse facing the monitor of the computer. In some teleconsultations, the patients needed not only an invitation to sit but also directions on where and how to sit. The analysis showed that in the opening phases of teleconsultations participants may engage in a specific type of behavior in which they negotiate with the novel physical space in

the teleconsultation room. The particular behavior is absent in face-to-face consultations as most patients use their inferential frameworks of previous encounters or other indirect experiences (watching TV, listening to others' conversations etc.) to situate themselves in the office. Telemedicine openings involve a certain degree of reorganization of space and procedures that is evident not only in how participants situate themselves in terms of interactive practices but also in physical terms.

We may conclude that telemedicine openings do not follow a standardised sequence. They are profuse in frame re-attunement between health care professionals in primary care, the patient and the consultant. In addition, there is evidence that during the opening phases of the consultations participants engage in negotiation with regard to the physical space. Although physicians and nurses have become relatively familiar with the telemedicine venues and specific outlay when conferring via the video-link, some patients are experiencing problems physically situating themselves in the new setting. These features can be seen as an indication that none of the participants are adequately experienced in consulting through a video-link. In telemedicine consultations, although the consultant is the professional whose expertise is "on call", she/he does not act as a host in the consultation, at least in the opening phases of the encounter. As a result, teleconsultation openings do not follow the conventions that one would expect from talk-in institutional settings in the sense that interactional sequences vary considerably from consultation to consultation.

Video-mediated consultations are relatively new in health care systems around the world. When patients and professionals participate in a video-mediated telemedicine session, they face a series of organizational, situational and technological novelties. We have shown in this paper that the aforementioned novelties may hinder communication and practices in a variety of ways. Studies of communication in telemedicine may inform training interventions that focus both on patient and professional. Our study constitutes one of the first explorations of interpersonal communication in telemedicine and the primary intention is to call for more studies that will eventually form a framework of empirical knowledge. But on the basis of our current evidence we recommend that training programmes in telemedicine should involve the development of effective skills of introduction by the accompanying professional, the development of a pseudo-protocol that would divide responsibilities between the two professionals and finally information pamphlets (electronic or paper) for the patients to introduce them to the new setting. Ideally, as we saw in the section on 'an ideal merge of opening-complaint phases', the professionals need to make timely introductions and know how to share and pass the communicative floor to each other in a facilitative way. This may be a difficult 'skill' for professionals who are used to managing things in the role of chief consulted person. The patient should be informed about the setting, the medium and the differences in communication between telemedicine and face-to-face consultations.

Limitations and future research

The sample for the study was small so, although the results provide some useful insights for those engaged in tememedicine consultations, the generalisability of these to other telemedicine settings requires careful assessment. Also, the sample was entirely drawn from NHS settings in the United Kingdom. Participant interactional strategies, organizational settings and care pathways are particular to the United Kingdom and, therefore, identified outcomes may not apply to health care systems of other countries. Further research may be needed to illuminate the strategies of

participants in the opening phases of telemedicine consultations in other countries.

Future research studies, given the findings of the present study about the importance of introducing a third person in telemedicine, could usefully control for this in a comparative study of telemedicine and face-to-face consultations involving two health care professionals and a patient, if such events could be found occurring naturally.

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