MANAGING NEGATIVE EMOTIONS IN ONLINE MEETINGS: A MULTIMODAL APPROACH TO SOLVING TECHNICAL DIFFICULTIES

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The purpose of this paper is to identify how participants manage technical difficulties during online meetings. We analyze the participation framework in a corpus composed of 30 hours of online meetings between students of an Andean university, their professor, and international experts. The internet-based IT platform used was ZOOM. We present a multimodal interaction of verbal and body language in collaborative activity for the analysis of moment-by-moment evolving social interaction. Also using conversation analysis, we focus on the ways in which participants interact with their words and their non-lexical expression. Thanks to this methodology, we describe the moment-by-moment interactional work performed in collaborative activity. We have observed how technical difficulties generate social unrest and negative emotions shared between participants. In many cases, these difficulties generate conflicts between participants. We describe how negative emotions are shown in mixed contexts, and how users solved these during online meetings. This study contributes to previous knowledge on the importance of multimodal interaction in displaying engagement and organizing courses of action in meeting settings by analyzing the multimodal construction of one specific situation, that is, a conflict caused by technical issues and managed between users.

Introduction

Often Internet connection is not fast enough during online meetings and users experiment critical situations and technical difficulties. The purpose of this paper is to identify how participants manage this situation during online meetings. We analyze the participation framework in a corpus composed of 30 hours of online meetings between students of an Andean university, their professor and international experts. In these online meetings, students present their projects on Innovation and Entrepreneurship to experts in this field based in a UK university. The internet-based IT platform used was ZOOM.

We present a multimodal interaction (Goodwin, 1981; Stivers, Sidnell, 2005; Mondada, 2006; Becvar, Hollan, Hutchins, 2008) of verbal and body language in collaborative activity (Chovil & Bavelas, 1997) for the analysis of moment-by-moment evolving social interaction. Also using conversation analysis (Perakyla, 2004; Rossano, 2012; Tiitinen and Ruusuvuori, 2014), we focus on the ways in which participants interact with their words and their non-lexical expression (gaze, gestures, prosody). Thanks to this methodology, we describe the moment-by-moment interactional work performed in collaborative activity (Perakyla & Ruusuvuori, 2006; Goodwin, 1981, 2007).

The multimodal interactional practice has been widely studied in institutional encounters, for example, in news interviews (Heritage,

1985), meetings talk (Barnes, 2007), and in counseling and therapy encounters (Perakyla, Antaki, Leudar, 2008; Hutchby, 2005; Tiitinen and Ruusuvuori, 2014; Weiste and Peräkylä, 2013).

We have observed in this study how technical difficulties, like a slow internet connection or technical difficulties, generate negative emotions shared between participants. In many cases, these difficulties generate conflicts between participants. We describe how negative emotions are shown in online contexts, and how users solved these during meetings.

Methods

We analyze stress, concern, and unrest in a corpus composed of 30 hours of online meetings between students of an Andean university, with their professors and tutors. In these online meetings, students present their projects on Innovation and Entrepreneurship to experts in this field based in UK universities. The internet-based IT platform used was ZOOM[1]. The meetings were recorded on the same IT platform composed of 32 students, two teachers at the host university and two experts in Innovation from a university in the UK.

We present an analysis of verbal and body language, focusing in moment-by-moment evolving social interaction. Also using conversation analysis (Perakyla, 2004; Stivers and Sidnell, 2005), we focus on the ways in which participants' facial expression interact with their words and their non-lexical expression (gaze, gestures). We analyze the sequences of interaction in which users show negative emotions. Thanks to this methodology, we describe the moment-by-moment interactional role played by facial expression in a particular conversation (Perakyla & Ruusuvuori, 2006). We analyze how participants manage a conflict caused by technical problems and slow internet connection.

In its most straightforward course, the sequence of steps that interests us is: (a) negative emotions are shared among participants, (b) participants identify the problem (i.e. slow connection), (b) participants try to manage this, and finally (d) find a solution to manage the problem. This is our "step-by-step movement into advice giving" following a similar course of action described by Heritage and Sefi (1992, p.377-389).

We recognize the technical problems occurred in online meetings, through the negative emotions expressed by participants. In this range of negative emotion caused by slow internet connection and technical difficulties, we focus on stress, concern and social unrest. These negative emotions are causes of affective conflicts in meetings.

Students use English, their second language, to communicate with the professors and experts in the meeting, but when they experiment problems, they switch to Spanish, their first language, to manage the conflict between them. Data were transcribed according to a system for capturing the auditory details of conversation designed by Gail Jefferson (Sacks et al., 1974) and a system for recording gestures devised by Goodwin (1981). Not everything visible in the video needs to be transcribed, but just what is analytically relevant.

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[1] https://zoom.us/

Negative emotions in online contexts

In this section, we show a meeting composed of five students connected from their university library, the Innovation and Entrepreneurship professor from his office, and two experts from their houses in the United Kingdom. This type of meetings is organized by professors and experts every Friday morning at 16 (GMT) during the semester. Each Friday, two groups of students have a half hour each to present their Innovation and Entrepreneurship projects and receive valued feedback by the experts.

During the first meeting at 16h, a student from the second group (programmed at 16:30) tries to connect, and a new user appears in the IT platform window (Figure 1).

Figure 1 Top-left First group of students; Top-middle Teacher; Top-right Expert 1; Bottom-left Expert 2; Bottom-right Student from Second Group.

In the bottom-right window, a student from the second group from his classroom tries to connect to the IT platform to know if the digital infrastructure works correctly. Meanwhile, participants experiment some problems with the connection, the conversation is not fluent, and negative emotions begin to be manifested by the participants.

The local professor in a private chat tries to communicate with the uninvited student for this session. The follow extract comes from the chat room of this IT platform, for this reason, it is not codified using Jeffersonian transcription.

Chat Extract 8:1
10:40:21   From Professor to Student from Second Group(privately): Hola
 Hi
10:40:29 vosotros no estáis citados a esta reunión
 you are not invited to this meeting
10:40:43 por favor, dejad el espacio libre
 please, leave the room place
10:40:47 estamos en una reunión
 we are in a meeting

The local professor experiments concern to not have a successful meeting between students and experts due to a slow connection. Finally, the uninvited student understands the situation and disconnects from the IT platform, but problems in the meeting persist.

At the same time while the local professor writes to the uninvited student, the rest of the participants experiment negative emotions and

slow internet connection, which causes a shared and social unrest between them.

Extract 7:9 - 1
((During this extract, there is a strong echo, with a delay of 0.7))
Expert 1: Yeah (0.4) environmental (hhh) processes ha:ve: (1.0)
First Group (Angel): Environmental (.) processes? (1.0)
E1: ((Puts his right hand close to his right ear and move in front. Fig.2-
 3)) (0.2) >↑Funny noise<
Teacher: =There is a
 lot of echoes (0.8)
During this first part of the meeting an annoying echo makes the conversation difficult. Expert 1 tries to give feedback to the students with a scarce result. In lines 2 and 3, we observe how the delay in communication causes words repetition. Participants are experimenting a situation of stress caused by echoes.

To express this first negative emotion, E1 makes a movement with his hand to show the scarce audio that he experiments from his place (Fig. 2 - 3).

Figure 2 Expert 1 puts his right hand close to his right ear and moves in front (first part).

Figure 3 Expert 1 puts his right hand close to his right ear and moves in front (second part).

In lines 6 and 7 the professor immediately accompanies the expert's gesture and speech, identifying the technical problem that they are experimenting: the echo. The sequential organization of talk-in-interaction which constitutes what the teacher says in line 6 as a conditionally relevant description of the gesture by the expert in line 4

(Schegloff, 1968; Sacks, 1992; Goodwin, 2007). The participation framework (Goodwin, 2003b, 2007; Goodwin and Goodwin, 2004) constituted through the mutual alignment of the participants' bodies creates a dynamic frame that indexically grounds the talk and embodies action occurring within it (Kendon, 1985). For Goodwin (2007), the basis for the framework of joint attention, in which multiple actors are attending at the same object in the environment, is the solution of the technical problem. What Tomasello (1999) locates as central to the organization of human language and intersubjectivity.

Professor's action in lines 6 and 7 contains a range of forms of organization and of regulation (Goodwin, 2007) for the meeting. Thanks to his action, he can manage the conversation to solve a problem showed through hand movement by the expert. Stress and social unrest are shared among participants; they are carrying out courses of joint action in meeting each other. To manage the meeting is necessary to manage these negative emotions to continue the collaborative activity. In order to construct a successful meeting, participants attend to the details of emerging talk (lines 6-7). Following Goodwin (2007), the talk and gestures are framed by arrangements of the participants that create a shared focus for the activity and action.

During the meeting, participants continue to experiment the technical problem, talk is continuously interrupted and gesture, mixed with echoes, becomes chaotic. Joint action between participants falls, and the conversation is disorderly.

Extract 7:9 - 2
FG (A): ((Puts his left-hand fingers in the middle of his lips. Fig. 4))
 (0.2) It is all, well, it is-
E1: Yeah? OK
FG (A): >later later< the word::
E1: =I say an example (.) example of (.) of ((inaudible))
Expert 2: ((touches her hair. Figure 7)) I think ((inaudible)) Simon
FG (A): [((inaudible))] ((inaudible)) (1.2)
FG (Sara): ((Touches her chin for 40 seconds))
E2: ((Puts her right hand in her neck and remains in this position
 throughout the extract. Fig. 8))
E1: ((Inaudible)) OK (0.7) the microphone (1.5)
FG: ((Students speak Spanish between them)) (1.0)

The problem is identified (*the microphone,* line 18), but participants enter in a chaotic situation. It becomes too hard to listen to each other, the mainly dialogue is lost, inaudible words are the huge portion of the talk. We observe how the teacher, who managed the meeting before, now disappears and doesn't try to enter into the dialogue.

Figure 4 Top-left Angel puts his left-hand fingers in the middle of his lips.

More examples of gestures to express stress during the meeting.
The gesture of touching the head with the hand has been observed during this and other meetings (Fig.4) where the situation provoked stress. Gestures embodied the social unrest shared by users and cannot help to manage the situation. The multimodal action is not efficacious in this part of the meeting because it occurs without an embodied participation framework that creates a visible attention and action. Contextual configurations of a standard online meeting are modified.
For Goodwin (2000a), a contextual configuration is a set of different kinds of phenomena that participants treat as relevant to the organization of the action. An online meeting (like a traditional meeting) needs participants, language and gestures, and a shared environment. They represent the multimodal details (Mondada, 2006) to analyze the social interaction between participants (Fig.5). In this part of the meeting, technical problems are caused by the shared environment, a technical infrastructure (laptop, webcams, ICT-platform, internet connection, etc.) that makes the activity possible. When something of this infrastructure doesn't work properly, the entire environment falls, and the activity falls. Participants try to repair this fall with talk and gestures –the other three components of the multimodal details– to offer a solution.
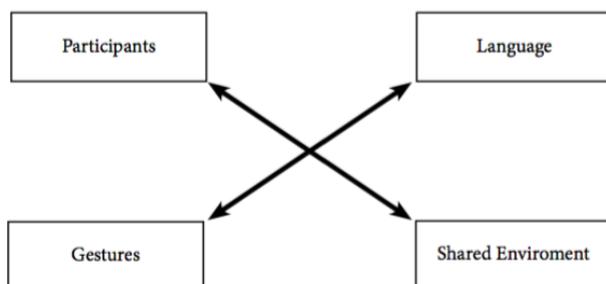

Figure 5 Multimodal details for an online meeting.
The group of students has an advantage respect to the shared environment of the rest of participants: they can talk between them in the same physical and offline environment. They start getting feedback through face-to-face modality, managing the technical problem in an offline social action. When expert 1 offers a possible cause of the problem (ex. 7-9 2, l.18), they begin to talk to each other in their first language, Spanish (l.19). Language, another multimodal detail, is another extra tool for the students group to manage the problem. They switch from their second language to their first language.

This interactive organization of embodied participation constructed by talk and gestures is the basis of the collaborative activity. It represents a demonstration of the work of participants and environment to show the cooperation in the joint accomplishment of the activity in progress (Goodwin, 2007). A collaborative and cooperative approach between participants is necessary to solve the problem in this meeting. In an online meeting, as in an offline meeting, cooperation, or noncooperation in the participation invoked by a particular activity provides a shared environment for the visible emergence of emotions. Emotions and abilities to cooperate are harder to show when technical difficulties appear. Stress is expressed with talk and gestures to share these feelings with the rest of participants.

Extract 7:9 - 3
((A chat message from T arrives to FG's laptop and Jordy comes closer to the laptop to read it. Fig.6))
T: Hey Jordy
FG (J): ↑Si (0.3)
 ↑Yes
T: necesitáis mejorar el sonido ((touches his front head with his right hand. Fig.6)) porque escuchamos mucho eco (0.3)
 You need to improve the sound because we hear a lot of echo
FG (J): Vale ((he reads the chat message from E1)) Try muting your OK
 OK
((FG Amalia and Paul touch their heads))
In this extract two chat conversations appear, one from the professor and the other one from expert 1. Shared environment, as we saw in extract 8:1, is a multimodal platform to communicate between participants, through to the webcam and keyboard. Webcam and video meeting requires a strong Internet connection, but textual meeting in a chat room requires a normal connection. Users in a textual conversation use keyboards.

Chat extract 8:4

10:47:53   From T to FG (privately): Hey! Necesitáis mejorar vuestro sonido!!!
 Hey! You need to improve your sound!!!
10:48:08   From E1 (public): try muting your microphone
10:48:29   From FG to T (privately): AHORA
 NOW
10:48:33   ????
10:49:24   From T to FG (privately): mucho mejor
 much better

In this chat extract, the professor messages students in a private chat the same message that he has shared in line 24 of the extract 7:9 (improve the sound), changing the communication channel. Expert 1 adopts the same strategy, repeating the same information in these two environments, chat and webcam (the problem is the microphone).

Participation framework

Participants in online meeting adapt their strategies depending on the technical difficulties. In our case, cooperation starts between participants in a multimodal interaction. Students communicate using four different channels:

The video and voice meeting between each participant (high degree of connection difficulties);
The public chat room between each participant (low degree of connection difficulties);
The private chat room between professor and them (low degree of connection difficulties);
The physical space of the library (not affected by connection difficulties).

Cooperation to manage the conflict in a meeting is a multimodal interaction using different platforms, moving between online and offline environments. This provides some demonstration of both the importance of this framework for the interactive organization of action, and of the active work required to sustain it (Goodwin, 2007). As Goodwin says, cooperation in the construction of relevant embodied stances is in general unproblematic. Indeed, participation frameworks seem designed specifically to focus attention on the events occurring within the frames they create, not on their own organization (Kendon, 1985).

Figure 6 Jordy goes close to the laptop to read the chat messages. Teacher touches his front with the right hand.

In the Fig. 6, Jordy is reading the chat messages and tries to solve the technical problem. The professor touches his fore head with his right hand, worried to solve the problem and sharing information with Jordy through talk (line 24-25), chat message (10:47:53) and gesture (Fig. 6). Jordy is responding to the professor with "Si" (line 19, *Yes*) and "Vale" (line 22, *OK*), to confirm that he understands what the problem is. "Vale" presupposes a version of "yes" as an answer. This co-participation in the contextual frame created by Jordy's immediately prior action is displayed not only in the content of what is said in lines 23 and 25, but also through group mates' embodied behavior (Fig.7).
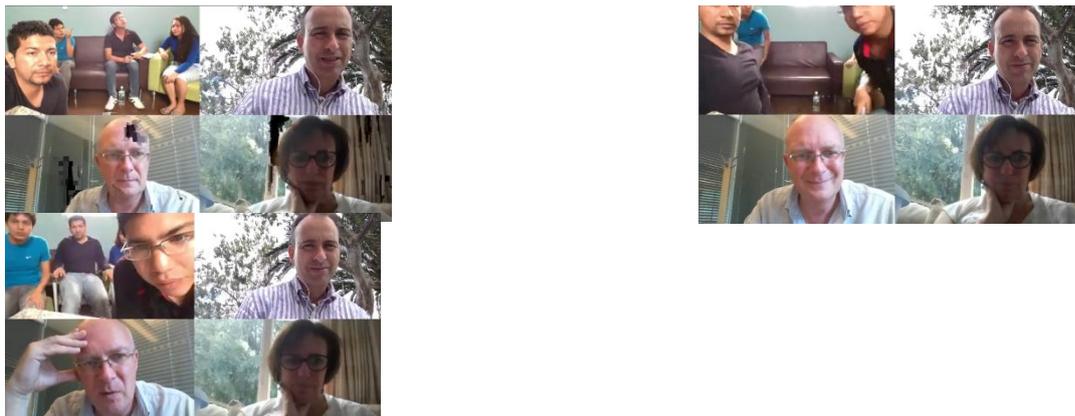
Figure 7 Group mates' embodied behavior

While Jordy tries to solve the technical problem with the microphone, Paul indicates with his left finger where the modem is positioned in the room of the library. Angel follows with the gaze the indication. Later Angel follows Jordy to get closer to the laptop, the same action is repeated by the rest of the classmates, Amalia and Paul. Rossano (2012) has demonstrated that gaze is organized in relation to "participants' understanding of where they are in a course of action. The participants' gaze direction in online, as in offline, meeting is relevant with regard to the association between formulating and constituting the action of dealing with the problems in the shared environment.

The student's continuous gaze at the classmate displays his orientation to the course of action not being complete and his engagement in receiving more talk about the problem (Goodwin, 1981; Ruusuvuori, 2001; Rossano, 2012). These two specific features, focusing on the problem-relevant aspect of the user's preceding problem-indicative utterance, and orienting to receiving more talk about the problem by leaving space after the formulation and by gazing at the participants at turn transitions, are following the formulation and classmates' confirming response (Tiitinen and Ruusuvuori, 2014). The embodied alignment found at line 29 of the next extract will attend to what teacher and expert 1 were communicating between them.

Extract 7:9 - 4
E1: OK >just listen< (1.1) so ((inaudible))
FG (J): Ahora no (4.0)
 Not now
((FG move to the laptop where Jordy has been until now and begins to speak
 between them))
((The echo disappeared and the technical problem is solved)) (1)
GF (A): OK, OK mister, you
E1: ((touches his fore head with his right hand and remains in this position
until the end of the extract. Fig.7))=I do this, the example of environmental businesses whe:re: the
Collaborative action is notable in line 29, students have marked co-participation in activity by agreeing that they want the professor and experts to help them to solve the technical problem.

In line 27 expert 1 makes further demands upon students just to listen to him, but Jordy does not stop his activity to try to solve the problem and continue the task. In line 28 he confirms that he was continuing the previous action, and he cannot just stop now. It is not a battle between them or a lack of collaborative action, but a help to solve the technical problem, thanks to Angel's collaboration; an embodied activity that occurs through talk and gestures. Jordy and Angel cooperate together to continue a collaborative activity with teacher and experts, organizing their actions in ways that make relevant particular forms of alignment from their addressee.

Students have moved their bodies closer to the laptop where they can appropriately communicate what both, professor and expert are proposing to do between them. They move, stand up and manage the setting of the laptop (Fig. 7), something that Goodwin (2007) classifies as instrumentally. In this case putting their bodies close together and close to the laptop is a success. The body position of expert 2 in Figures 7-8-9 is completely different. Expert 2 aligns her hand close to the head, maintaining this position for several minutes, showing her concern due to technical difficulties.

Following Goffman's analysis (1979) of 'footing' through how participants mutually position their bodies, we can consider how Expert 2 after some words, touches her hair and later puts a hand on her neck (Figure 8). She maintains the same position until the problem is solved. In order to carry out relevant courses of action participants must position themselves to see, feel and perceive the activities in progress (Goodwin, 2007). She arranges her posture precisely to accomplish such work-relevant perception attention to share concern in the meeting, perceiving environment and participants.

Figure 8. Expert 2 touches her hair and puts her right hand around her neck and remains in this position throughout the extract.

Goodwin (2007) argues that parts of the history of science, technology and distributed cognition have consisted in the construction of tools that amplify and systematize human perception of an environment that is the focus of the collaborative activity. So, following this idea, it is possible to describe how Expert 2 feels about the digital and technological shared environment and the problems that it causes to the participants. Participants embody the technical issues that their bodies experiment in the environment.

Extract 7:2
T: Simon, ↑Karen (0.2) questions::
E2: mmhh
FG (A): ((Puts his head in his hands, scratching it))

T: pointing (0.5)
E2: ((She starts to scratch her head with her right hand, and continues for 9 seconds. Fig. 9)) Yeah I ha I have some troubles ↑understanding everything many many because eh:m: the::: acoustics in the room (0.5) the
team in: in: is a ehm little::: little ((The student that wasn't invited appears in the window trying to check if the platform works)) difficult to always unders↑tand but, ehmm I think eehhmm me I th<u>ink</u> you are >trying to
find material<

Figure 9 Expert 2 starts to scratch her head with her right hand and continues for 9 seconds.

This extract appears before the extracts that we have presented previously (7;9-4), but it is useful to us to explain instrumentally. While scratching her head, expert 2 describes the impossibility to follow the meeting for technical difficulties caused by student connection. She put the part of her body (gesture) that appears in the online meeting (shared environment) and explains what has happened (language) to demonstrate to the other participants that the embodied positioning required to understand what the technical difficulties provoke in her, elaborating an appropriate epistemic alignment.

Situations like this occur repetitively during meetings, where participants align to the activity in the way that she proposes, and these are relevant to construct a cooperative stance that we have presented in extracts 7:9–3 and 7:9-4. Goodwin (2007) notes that aligning appropriately toward others to build the participation frameworks that organize collaborative activities is absolutely central to the ongoing constitution in cooperation.

The interesting point in this participation framework is the trust shared between participants. For Garfinkel (1967) the efforts to breach trust in cooperative stances that underlie mundane cognition and action were met with intense anger –one of the negative emotions that we have observed during our meetings and that has accompanied other negative emotions like stress. Goodwin (2007) found that moral stance becomes visible when an actor refuses to assume a cooperative stance toward the actions initiated by others and can thus generate specific forms of affective stance. We have observed how these negative emotions have caused this situation. In Extract 8:1, Extract 7:9 – 1 and Extract 7:2, we have observed how participants have expressed negative emotions that affect the collaborative activity. Professor and expert 2 experiment concern, expert 1 experiments unrest and students experiment stress. All negative emotions together produced a chaos and lack of cooperation in a first stage. When participants examine and understand what is happening (a technical difficulty, a slow internet connection or a problem with the microphone), they try to provide a multiparty and interactive

framework that includes them not only as actors, but also as recipients of the action (see Table 1).

Extract	line	Actor		Addressee	
7:9 – 3	20	You	need to improve the sound because	we	hear a lot of echo
7:9 – 4	24	(you)	just listen	(me)	so
8:1	10:40:29	*you*	*are not invited to this meeting please, leave free place*	*we*	*are in a meeting*

Table 1

Participants use the grammatical organization of the utterances to complain about students from the first group and from the second group located not as isolated individuals, but rather in how they treat others within interaction. The professor's construal of what students from the first group and second group are doing and displaying with their current actions is consistent with the analysis offered before, which investigates the interactive organization of participation frameworks as a primordial locus for the constitution of human action (Goodwin, 2007). Both professor and students are locked in a battle where each is insisting upon the framework for the organization of the activity. But meetings and disputes, can be resolved in multiple ways.

Discussion

For Goodwin (2007), the failure to assume such cooperative stances can lead to stress and attributions of character that use the way a participant treats others within interactions as their point of departure. So we understand how participation frameworks in online meetings are intrinsically multiparty alignments. Participants in the meeting find it useful to help to construct and sustain the activity. Participation frameworks sustain mutual orientation.

In online meetings, participants organize their language and gestures in concert with each other in ways that establish a public, shared focus of visual and emotional attention. Following Goodwin (2007), we can assert that visible structure of such participation frameworks enables separate individuals to build joint action together in ways that take account of both relevant structure in the environment that is the focus of their work and what each other is doing. As seen in Figure 7, such arrangements are crucial for the cooperation in a wide variety of settings.

The multimodal frameworks for the management of these situations create environmental gestures and language and consequential structure in the shared environment that is the focus of the participants' attention: the IT platform.

Students use an innovative formulation not to topicalize the problem, but on the contrary, to close the problem down with classmates. Students, professor and expert use chat conversations to try to solve a problem and continue the meeting through video and audio infrastructure.

Cooperation to manage the conflict in an online meeting is a multimodal interaction. In this paper, we have presented a dynamic in online meetings with slow Internet connection and technical difficulties, to manage conflict and negative emotions caused by them. Two interaction features were demonstrated to be relevant for this dynamic: (a) Conflict caused by technical issues, and (b) conflict managed through interaction between users. We have observed in this study how technical difficulties generate negative emotions amongst participants. In many cases, these difficulties generate conflicts between participants.

In this article, we have also demonstrated the relevance of a fine-grained interplay between conflict managed and multimodal interaction. Our observations are in line with previous studies that have suggested the relevance of gestures and language for displaying orientation toward the ongoing action (Goodwin, 1979, 1980, 1981; Heath, 1984; Mondada, 2006; Rossano, 2012; Ruusuvuori, 2001; Tiitinen and Ruusuvuori, 2014).

This study contributes to this previous knowledge on the importance of multimodal interaction in displaying engagement and organizing courses of action in meeting settings by analyzing the multimodal construction of one specific situation, that is, a conflict caused by technical issues and managed between users.

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