What does the 'chat' tell us about participation and engagement in online video conferencing?

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Abstract

The paper investigates participation and engagement during an online medical education conference by examining delegate interactions in the parallel chat function of the video platform. Although much is known about the experiential nature of online conferencing, we know far less about what actually happens in the live unfolding chat itself. We collected 813 unique messages from the parallel chat of an online conference. Speakers presented from a 'digital backstage' to the 'Main Stage' while delegates watched and chatted. We used descriptive statistics to summarize message/chat content in terms of participant categories (conference team member, speaker, or delegate, gender) and topic. We also developed a coding scheme based on the conversation analysis to understand the interactional function of messages and their connectedness to other messages. Overall, 23% of delegates participated in the chat, mostly commonly posting positive assessments ("Wonderful talk!") and appreciations ("Thank you!"). Other actions included questions and answers, agreement, information-giving, statements, and suggestions. Qualitative analysis provided insights into how participants engaged directly with Main Stage presentations. We suggest that to better understand engagement in video conferencing, analysis should focus on actual participation and its content, rather than (or at least supplementary to) post-hoc reports and surveys. Data are in British and Australian English.

Keywords: *Online, video-conferencing, remote work, participation, parallel chat, engagement*

1.0 Introduction

It has been over three years since the world of academic and practitioner conferencing, events, and education, moved online, then hybrid, in response to the Covid-19 pandemic. Early in the arc of the pandemic, remote and video-mediated participation, while not technologically novel, was not standard practice for most large conference events, meetings, or seminars, but rapidly became so. Relatedly, online learning and education at all levels also accelerated during the pandemic, from pedagogically-informed online platforms, flipped classrooms, MOOCs, and so on (see, e.g., Kuhn & Halpern, 2023) to what Barbour et al (2020) called 'emergency remote teaching.' Since then, thousands of online meeting, learning, and conferencing events have taken place; technology has continued to improve, and there has been much discussion and evaluation of the experience of online and hybrid environments and their impact on everything from the quality of engagement and accessibility to the equity of participation and climate change (e.g., Kuzminykh & Rintel, 2020; Leporini et al, 2021; Rissman & Jacobs, 2020; Stokoe et al, 2021). These discussions have included the experiential aspects of online versus in-person events and their benefits and

limitation although, as Johnston et al (2023) point out, the heterogeneity of the many studies that evaluate the online modality reduces the consistency of the overall picture.

The shift to online and virtual events has enabled researchers to examine the impact of modality on participation and the availability of things such as parallel chat. Research already shows an historic and persistent inequity of participation in conference events, not just in terms of attendance but who participants publicly when there. Most of this work focuses on gender, finding that women participate less in live question-and-answer sessions in academic conferences (e.g., Rezaee et al, 2022). According to Jarvis et al (2022), despite high hopes for increased inclusion in online events, they also found that "men engage more than women in Q&A sessions", and thus "continue to have more influence over the direction of science." Others have shown that such "disparities were attenuated in smaller, discussion-based and virtual classes" (Cromer et al, 2022). Some studies have analysed the parallel chat content itself. For example, Zhang et al (2022) examined the relationship between gender and question-asking behaviour at an online bioinformatics conference. Their quantitative analysis showed that participation was diverse: it reached parity for gender, as well as nearly 10% self-identifying as a member of the LGBTQIA+ community. However, despite being 50% of the audience, "women asked half as many questions as men" (p. 3), and "[n]o question was asked by a person from a gender minority (agender, nonbinary, or transgender)." However, they also noted that only 13% of conference attendees asked questions at all. This compares to 23% participation in the "chat" in the data we will present below.

In addition to participation balance, researchers have also described the benefits of chat for facilitating collegiality and social talk (e.g., Bleakley et al, 2022), which echoes findings from research on chat in the context of computer-mediated collaborative learning among children and young people (e.g., Kumpulainen & Mikkola, 2014). Sarkar et al (2021) found that, when asked to describe their experience of parallel chat, participants reported benefits (e.g., inclusive, good for sharing resources and for collaboration, social connection) as well as problems (e.g., distraction, asymmetries regarding who can engage with or follow the chat, misaligned expectations about how to use it). Such parallel chat is 'public' when all participants (are able to) access, read, and respond to it. Of course, in any given online encounter, it is possible to 'whisper' in the invisible backstage or backchannel (Dennis et al, 2010) either by sending direct messages within the same video conferencing tool, or by using another device/software to conduct separate conversations. These are hard though not impossible to access for research purposes (e.g., Cogdill et al, 2001).

One thing lacking in the discussion of video conferencing and parallel chat, however, is analysis of 'what actually happens' when people participate in them, beyond simple counts of questions and answers. 'What actually happens' is the question we address in this paper. While counting questions (and answers) gives a gross indication of participation, it provides only superficial insights into the kinds of interactions that are occurring and we learn little about the action (i.e., the pragmatic function) that they are doing. For instance, counting questions ignores the fact that they can be vehicles for other actions (e.g., "Do I look weird in this outfit?" may be designed to elicit a compliment, rather than a yes or a no).

In August 2020, Don't Forget the Bubbles, a paediatric education organization, hosted its annual conference online using a platform that enabled participants to chat while watching the 'main stage' speakers. Rather than ask people to self-report their feelings about and

memory of participation, we analysed the actual participation that occurred in the parallel chat. This paper reports the findings of our analysis the chat to examine its content, quantity, distribution, and pragmatic function. This way, we were able to identify not only who participated and what proportion of delegates participated, but also what kind of functions the chat contributions had. In so doing, we aim not just to shed light on 'what actually happens' but begin to develop a framework for developing deeper insights into participation in video conferencing events.

2.0 Data and Method

2.1 Data collection

Don't Forget The Bubbles ran their annual conference titled "Live+Connected" online on 26th August 2020, with event organizers "The Business Narrative". The ten-hour event used a virtual interactive platform which comprised a "green room" backstage digital studio for speakers and organizers and a "main stage" with an interactive chat function[1]. It is important to note that, while speaking, speakers (who presented from the digital backstage) could not access the chat and any questions for them were not fed into the conversation directly. Rather, speakers could join the chat back in the Main Stage and respond later, if they wanted to, and if they remained at the event. We collected and anonymized 813 unique messages that were written into the 'chat' throughout the conference. Each contribution was time-stamped and could be associated with whatever was currently being performed on the 'main stage' (via time-stamps).

2.2 Ethics and consent

Our decision to explore what happened in the conference chat came about during post-event discussion between the authors. This meant that the consent of participants was sought post-hoc. The authors sent an email to all delegates to make them aware that we were researching the written content of parallel chat messages. We agreed to delete from the dataset any records of those preferring to opt out, and not use them for analysis. In the event, no delegates opted out. According to standard codes of ethical conduct (e.g., British Psychological Society, 2021) we ensured that no chat authors could be identified. All names and other potentially identifying information were pseudonymized. Furthermore, as participants were healthcare professionals rather than patients, and in receipt of healthcare, this research did not require ethical approval as per the United Kingdom's Health Research Authority.

[1] A report about the event with screen shots can be found online: https://thebusinessnarrative.com/work/organising-dftb-live-connected-virtual-conference-2020/ as well as video on YouTube: https://www.youtube.com/watch?v=dj3al9GnaPk

2.3 Data analysis

We analysed the parallel chat data firstly using descriptive statistics. The data were coded in terms of numbers of messages and type of participant (delegate, speaker, conference organizer/event team member). Second, we analysed each contribution to the chat drawing on concepts in conversation analysis. Conversation analysis is method for analysing social interaction (talk, embodied conduct), usually using video or audio recordings and technical transcripts thereof as the primary data. A key principle of conversation analysis is to work with 'naturally occurring' social interaction, rather than interactions in simulation, role-play, experimental settings, or via post-hoc reports of the experience of social interaction. While most conversation analysts focus on spoken talk and embodied conduct, increasing numbers also examine written interaction online including how participants manage coherence and understanding in the different modalities (e.g., SMS messages, Twitter interaction, messaging apps, for an overview, see Meredith, 2020).

The aim of conversation analysis (CA) is to examine the organization of social interaction in terms of constituent *actions* – the things we do with words (e.g., questions, answers, offers, requests, greetings, assessments, etc.) and *sequence* – "a course of action implemented through talk" (Schegloff, 2007, p. 9). CA examines the design and impact of an action (e.g., how the design of a question affords or constrains particular next actions) and their position with regards to any other action as well as in the overall interaction (e.g., whether an answer immediately follows a question, whether a question appears at the start of an interaction or elsewhere).

Conversation analysts work with single cases or with larger datasets and CA is largely regarded as a qualitative method. However, data coded using CA enables the "to combine with quantitative methods" and address "a wider range of research questions and to speak to a broader audience than would otherwise be possible" (Stivers, 2015, p. 2). CA-coded data have been core to RCTs (e.g., Heritage et al, 2007) and other large-scale research, particularly in medicine (e.g., Stivers & Timmermans, 2020) or as the basis for computational modelling (e.g., Duran et al, 2022), and coding schemes have also been developed to systematically analyse dialogue in related pedagogical environments (e.g., Hennessy et al, 2016). We augmented our descriptive statistics, therefore, with a conversation analytic coding scheme to provide a richer insight into 'what actually happens' in the chat.

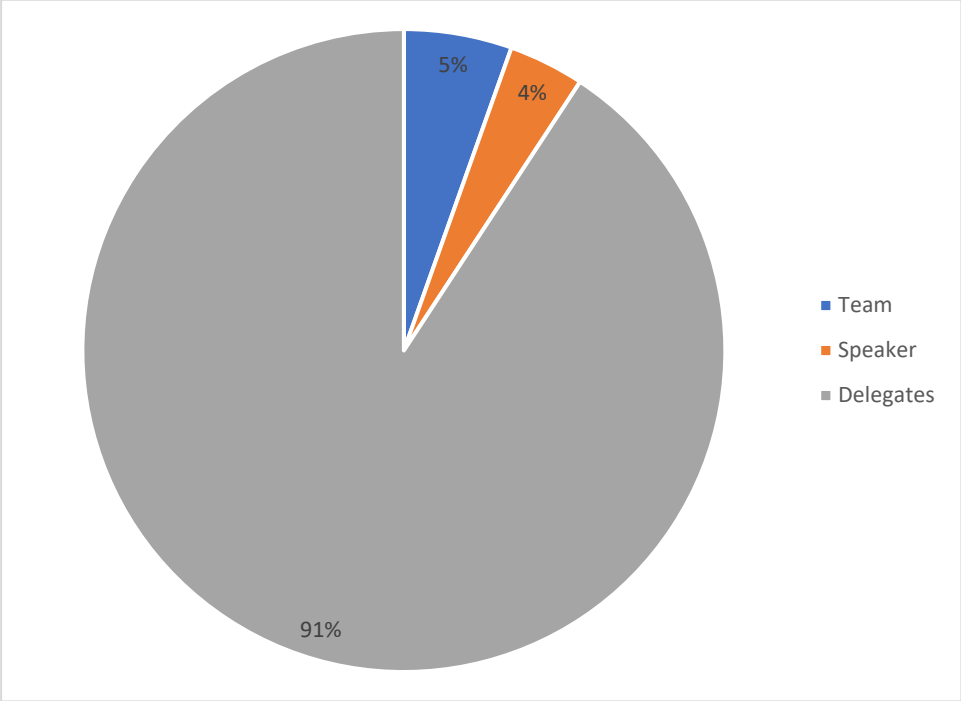
3.0 Results and analysis

We report the findings of our analysis in four sections, with commentary. The first two sections report the descriptive statistics summarizing chat participation (*Section 3.1*) and the topics discussed (*Section 3.2*). We then move on to provide brief examples of the qualitative conversation analysis (*Section 3.3*), to give readers access to the kinds of chat that occurred as well as brief examples of the correspondence between the chat and what was 'on stage' at the time the message occurred. Finally, we explain the conversation analysis-derived coding scheme and present results thereof (*Section 3.4*).

3.1 Descriptive statistics – who participated?

In total, 786 attendees from 32 countries participated in the conference. Of these, 184 attendees joined the chat and posted 813 unique contributions in total. 23% of all attendees produced a message that formed part of our dataset. 77% made no written contribution. Although we do not have details of gender or other characteristics of those attending, of the 813 messages, women wrote 619 (76%) and men 194 (24%). Of the 184 contributors who joined the chat, 10 (5%) were conference team members, 7 (4%) were speakers, and the remaining 167 (91%) were delegates. Chart 1 summarizes this data:

Chart 1: Proportion of participation for delegates, conference team, and speakers



Of the 813 chat messages, 613 (75%) contributions were made by delegates and 200 (25%) contributions were made by conference organizer/event team members and speakers. One event organizer accounted for the most contributions in the chat, totalling 58 posts. Charts 2 and 3 below each represent the participation by individuals and whether they wrote single or multiple messages.

Chart 2: The number of contributions made by team members and speakers

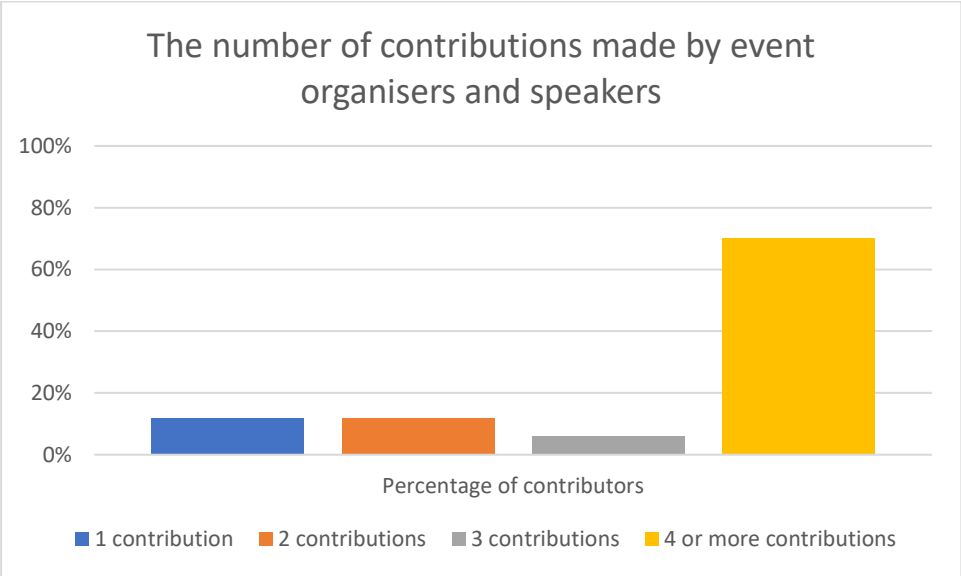
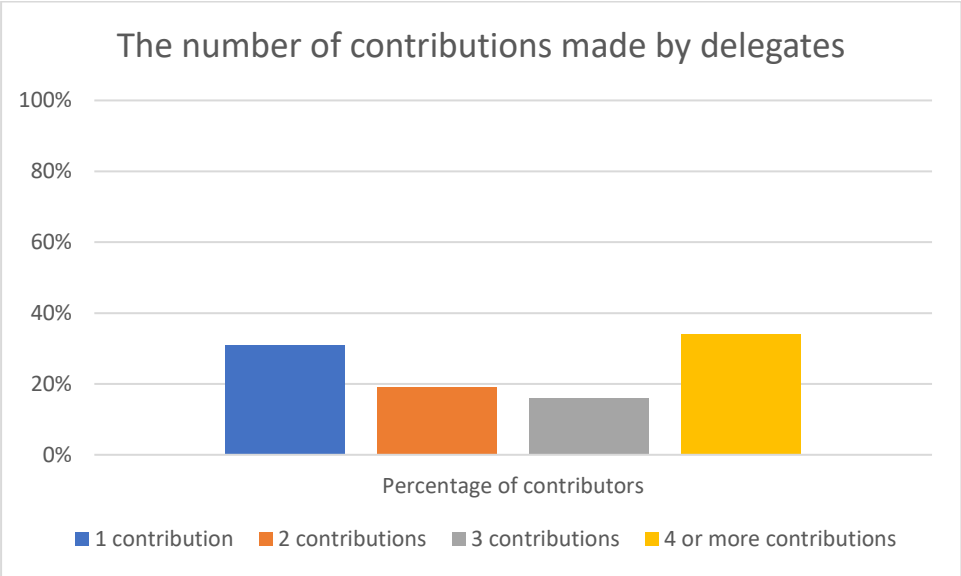


Chart 3: The number of contributions made by delegates



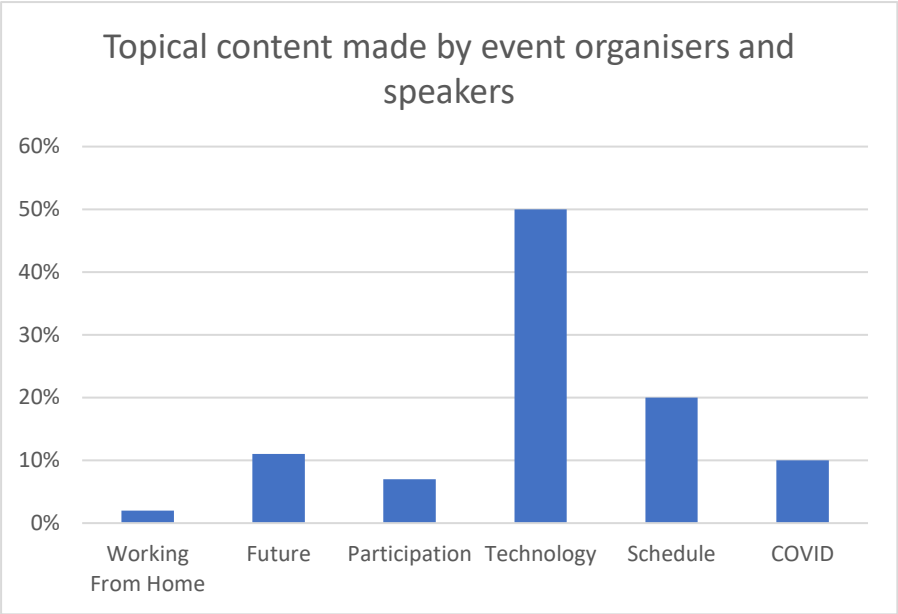
It is clear from Charts 2 and 3 that some delegates were more active than others, and the most common form of participation was multiple messages from a relatively small proportion of the total audience – and this in the context of only 23% of all participants writing in the chat at all. However, this is a higher proportion than the 13% reported above in Zhang et al (2022).

3.2 Descriptive statistics – what did people chat about?

Next, we asked what those participating in the chat were discussing. We took cues from the chat messages to attribute an overall topical content to one of the following categories, as explained earlier: the conference schedule, tech/IT issues, childcare, working from home, Covid-19, future conference events, and participation in the event itself. Unsurprisingly, the

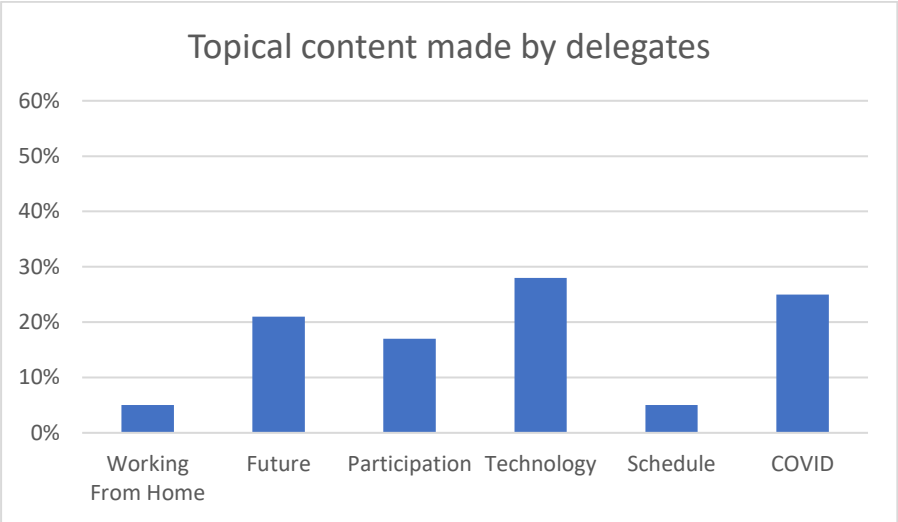
most common topic for conference organizer/event team members and speakers was technology, followed by the schedule. Chart 4 breaks down the topics for this participant group.

Chart 4: Topical content (outside paediatric medicine) of the event



By contrast, delegates discussed the schedule far less, and generally less about technology. Chart 5 summarizes the topical content of their messages.

Chart 5: Topical content (outside paediatric medicine) of the event



Delegates discussed other topics, such as working from home, covid, future events and participation itself, approximately twice as much as conference organizer/event team members and speakers, which is unsurprising if the latter group focused more on technology and the schedule.

3.3 Qualitative analysis

In order to understand what kinds of messages were written in the chat, and what the purpose of the messages were, we next provide two extracts from the start and nearer to the end of the conference. Each participant is categorized as either a conference organizer/event team member ("T"), speaker ("S"), both team member and speaker ("ST") or delegate ("D"). All names are pseudonyms. We have added a number to each row of the chat transcript so as to refer to it in subsequent analytic commentary. Spelling, punctuation, and so on, are as per the original messages.

Extract 1: Conference opening (04:42:54 - 05:13:54 UTC)

01	T Jen:	Welcome to the DFTB main stage!
02	T Jen:	This is where all our talks will be
03		running
04	T Jen:	We kick off at T-17 minutes
05	D Clare:	yes i have this open
06	T Jen:	The whole DFTB team is so excited to see
07		you here :) Feel free to have a roam of
08		the session areas, networking and expo
09		before the main program starts
10	D Clare:	thanks! excited to be part of dftb!
11		my first!
12		though i will have to go off soon to
13		pick up bub from childcare as hubby is
14		also working
15	D Clare:	and then hand bub over to hub, while i hide
16		in the room with my computer
17	D Clare:	when hub is back
18	D Scott:	my iPad is roaming the house and backyard
19		with me
20	D Jackie:	Have left all the dinner prep and washing up
21		to the others... hiding away in the home
22		office and will have room service! lol
23	D Elspeth:	Good mornng from the UK, 6am here
24	ST Zak:	bleeeeeeeeeerghhh. what time of day is THIS??
25	D Robert:	just after midnight ZAK
26	D Olivia:	Such a fabulous initiative. Well done on the
27		Skin Deep Project!
28	ST Zak:	Hey Robert!
29	T Jen:	dftbskindeep.com is the new home for the
30		Skin Deep Project!
31	ST Jil:	So happy to be involved with Skin Deep.
32		It's really fantastic. Please get in touch

33		if you'd like to get involved
34	S Beth:	Well done DFTB Skin Deep team - amazing
35		initiative!
36	D Zara:	I'm in! Hello everyone!
37	D Catie:	Hello DFTB World :) sad not to be seeing
38		you all in Brisbane but love this!! And
39		WOW love Skin Deep
40	D Jack:	Such a great project - well done to all
41		involved & I look forward to seeing it in
42		the next RCPCH Milestones
43	D Ben:	How lovely to see friends and familiar
44		faces coming together. Good luck team.
45		Wake up Zak. Skin deep project brilliant
46	D Zara:	Hi Ben!! eeek so excited to be here!
47	D Clara:	I laughed way too hard at that classic dad
48		joke
49	ST Gem:	I'll be keeping an eye on the chat here so
50		please let me know any questions you'd
51		like me to put to Jim, Oliver, and Harriet

We want to point out six things about this extract, which contains the parallel chat messages that appear before the event started formally, as people joined the digital space. First, it is not surprising that a conference organizer/event team member, Jen, writes the first chat message, and the next two, collectively accomplishing multiple actions: welcoming delegates (line 01), informing them that they are in the right place to hear talks and participate (lines 02-03), and announcing when the event will start ("We kick off at T-17 minutes", line 04). As the incumbent of a setting-based category (i.e., 'organizer/host'), Jen is both entitled and obliged to initiate such actions and encourage the participation of others.

Second, at line 05, the first delegate, Clare, message appears: an announcement about the technical aspect of participation ("yes i have this open"). This message, and its sequential location, sheds light on one of the complexities of chat participation, as those participating manage intersubjectivity (mutual understanding between participants), and what conversation analysts call progressivity ("moving from some element to a hearably-next one with nothing intervening", Schegloff, 2007, p. 15). Clare's message is responsive to Jen's: it confirms an ability to participate at an apposite moment just after Jen informs the audience that there are 17 minutes before the event starts formally. However, it also appears while Jen is seemingly typing a fourth message ("The whole DFTB team is so excited to see you here :) Feel free to have a roam of the session areas, networking and expo before the main program starts") which appears sequentially after Clare's, while clearly connected to the same opening sequence of messages. In response, Clare now posts a three-part message, appreciating the welcome and information ("thanks!"), reciprocating Jen's stance towards the event ("excited to be part of dftb!", and then adding a third part that categorises herself as someone previously unknown to the organizers/organization ("my first!").

Third, Jen initiates a new sequence (line 12) to account for her participation in the day ("though i will have to go off soon to pick up bub… when hub is back"). Two more now join the chat, by expanding upon Clare's account with accounts of their own (lines 18-22).

Fourth, another new sequence is initiated at line 23, with a greeting from delegate, Elspeth ("Good mornng [sic] from the UK,"), as well as a piece of information about the time of day ("6am here"). While Elspeth does not convey a stance towards the time, the next new delegate (who is also a speaker) makes an explicitly negative though ironic assessment of the time of day. First, Zak posts "bleeeeeeeeeerghhh.", as well as "what time of day is THIS??". The latter provides a clear example of how a question can be a vehicle for different actions, in this case, an ironic complaint about the time of day. We do not know whether this is responsive to Elspeth's post, though, since we do not know for how long Zak has been writing his message - it might have been before Elspeth posted hers. Since Zak has joined the conference at the right time, they are likely to know what time it is; he is asking a known-answer question to do something else. As such, the question does not require the provision of information-based answer. However, it receives one, from another delegate, Robert ("just after midnight"). By adding "ZAK" at the end of his response, in capital letters, Robert matches Zak's ironic stance (line 25). We might also note that, as a speaker, as well as a delegate, Zak is more entitled to produce ironic assessments (and it is a safe action for him) than a delegate who is new and unknown to the organization and events team.

Fifth, note that Zak, having received a reply to his question from Robert, now greets him ("Hey Robert!", line 28). Robert's reply to Zak is, therefore, also a way of announcing his presence at the event. Their relationship as already-acquainted persons is displayed in this sequence of turns, from Robert's dead-pan/ironic response to Zak, and now Zak's informal greeting. The fact that this greeting occurs after the two have already established intersubjectivity shows the interactional imperative to nevertheless include a greeting token in a new conversation. Interspersed Robert and Zak's chat is a new message from another delegate, Olivia, praising the team for an initiative called "Skin Deep" (lines 26-27). Its placement does not disrupt the sequence between Robert and Zak, which is one of the affordances of chat in online conferences. But note that Zak writes, "Hey Robert!" and not just "hey", in order to ensure there is no ambiguity with regards to who Zak is greeting. This compares to other greeting messages posted by other delegates (e.g., "in! Hello everyone!" at line 36).

Finally, note that Olivia's post about the Skin Deep project is expanded upon across several subsequent posts, embedded in different actions. For instance, team member Jen posts information about the project website (lines 29-30); speaker and team member Jilly expresses her pleasure in participating in it, positively evaluates it, and invites others to "get involved" (line 33); a series of positive evaluations follow from multiple other delegates (lines 34-35; 38-39; 40-41; 45). These evaluations are posted in aggregate with delegates also producing greetings (lines 36, 37), as well as other actions such as connecting back to previous messages ("Wake up Zak", line 45). At the end of the extract, another speaker/team member announces that she will be "keeping an eye on the chat here" and inviting delegates to "please let me know any questions you'd like me to put to Jim, Oliver, and Harriet" (the upcoming speakers).

Thus, in these opening lines of chat, we see examples of how different categories of participant use the function, the range of actions that their messages accomplish, the way participants ensure that their messages are understandable as responsive or otherwise connected to a previous message, and how sequences of actions can emerge in response to an initiating one (e.g., Skin Deep). At a more macro level, we can see how participants co-constitute themselves as an audience.

In contrast, Extract 2 contains the chat from towards the end of the conference, as is evident from the opening assessment from a speaker/team member about the day..

Extract 2: What it means to be an audience together, etc. (14:47:38 - 14:57:24 UTC)

01	ST Jenn:	It's been an emotional day
02	D Fabio:	I am... a lover of the amazing perspectives
03		and insight of this very special person!
04		We need this talk to be played each and
05		every day!
06	ST Jenn:	And yet another emotional talk for the end
07		of the day - I'm welling up again
08	D Sandr:a	https://self-compassion.org/
09	ST Jilly:	I'm in pieces here
10	T Jen:	I needed to hear this
11	D Sandra:	Read Kristin Kneff to explore this more
12	D Bil:	We all did!
13	ST Jilly:	I think we probably all did
14	D Charl:	Jen I think most of us do
15	D Cath:	Brilliant.
16	D Pippa:	Awesome
17	D Ibbie:	how has he managed to look straight into my
18		mind?
19	D Sandra:	Because these are very universal patterns of
20		cognitive and emotional thinking. We are
21		not alone in thinking this way
22	D Lara:	Thank you, not a dry eye in this
23		virtual room
24	D Em:	Possibly even better than
25		last year - tears here!
26	D Cath:	This is way better than that Chris Hemsworth
27		clip that's been going around lately!!
28		Thank you. Legend.
29	D Vic:	You are always fab to listen to.
30	D Caitlin:	Thank goodness we’re not all
31		in one room.
32		So much nose-blowing couldn't be covid-safe
33	D Prisha:	Need to put that talk on repeat on my playlist

34	D Tracy:	Thank you for being you and helping others
35		finding themselves! Big Hug!!
36	ST Jenn:	This one is for the car journey to work each
37		morning. Thank you so much.
38	D Hilda:	Listening and reading the chat, it is so
39		comforting to know I am not alone - so
40		reflective of my thoughts
41	D Bethan:	Absolutely, well said!
42	D Sally:	I need that as a pep talk every day of my life
43	D Prisha:	Thanks. Beautiful words!

At lines 01 and 06, speaker/team member Jenn posts two messages that both initiate the closing of the event while also assessing it ("It's been an emotional day"; "And yet another emotional talk for the end of the day"). The emotional stances of the posts are continued across the sequence initiated by Jenn, with many delegates combining multiple actions of appreciation (of the speaker and the event) and assessment. Within the series of messages are standalone posts (e.g., a recommendation to read another author, line 11) questions (e.g., "how has he managed to look straight into my mind?", line 18) which receive responses ("because...,", line 19); orientation to the emotion being expressed by the audience as a collective (e.g., lines 12, 22, 31) and thus as such constructing the delegates as a group, while at the same time posting about individual impacts (e.g., like 42, "I need that as a pep talk every day of my life"). Note also the way in which individual assessments are responded to and generalized to the collective "we": delegate Bil generalizes from Jen's "I needed to hear this" (line 10) to "We all did!!" (line 11); speaker/team member Jilly also says, "I think we probably all did" (line 13). At line 14, a delegate explicitly ties a further message of agreement to Jen's: "Jen I think most of us do" (line 14). It is clear from Extract 2 that the participants' messages are responsive to what has happened on stage; their engagement is evident.

In the next extract, we examine the connection between the stage and the chat more directly. A key component of remote conferencing is not just participant engagement with each other in the chat, but whether we can identify engagement with, and 'learning' from, what is actually presented 'on stage'. Extract 3, split across a series of segments to increase readability, provides an example of the sorts of parallel chat messages that appear in relation to, or in the context of, what is happening on the Main Stage. For this purpose, we focused on one presentation, which lasted 15 minutes in total. We cannot make a perfect connection between the timings of words uttered on stage and time a chat message appeared, since we do not have screen recordings of the event. We have deleted some of the Main Stage content but preserved its content sufficient to show how what was said is connected to what appeared in the chat. In the extract, we include line numbers, then a verbatim transcript of the on-stage performance, then the participant (T – conference organizer/event team member or D – delegate), and then the content of their chat message. We have also highlighted instances where there is evidence of a direct association between what was said on stage and the chat occurs.

Extract 3: Main stage content and related chat

01	“Good morning, afternoon, evening wherever you are.	T	It wouldn't be a
02	Six years ago in 2014, I had a career shaping		DFTB
03	moment…”		conference
04			without NAME
05	“…So he was transferred to our new "Hospital at	T	What a fantastic
06	Home" services and cared for by our amazing team of		service -
07	nurses. Now, at that time, home for this little baby was		community
08	a local fairground - where he was living with his		nurses
09	community and his family. That's where they were		delivering
10	temporarily living and working…”		hospital at home
11			care in a
12			fairground

The talk opens with the speaker greeting the audience, orienting to the different time zones they are participating from, before launching a narrative (“Six years ago…”). The first chat comment, like Extract 1, comes from a team member, who ascribes the speaker ‘in-group’ membership to the DFTB community (“It wouldn’t be a DFTB conference without NAME”), thus conveying to the audience, and especially those unaware, of the centrality of this particular speaker to it.

An example of how what happens on stage may show its impact on participants, as evidenced in the chat, comes between lines 04-10, in which an event member formulates what the speaker is saying, using some of the same words about “hospital at home” and the example of services at a “fairground” – as well as evaluating the service that the speaker is describing (“What a fantastic service”). This evaluation aligns with the speaker’s own evaluation of the "amazing team of nurses".

As the presentation unfolds, we see further evidence of the way participants formulate what is being delivered on stage, as well as challenge and build upon it.

11	"…Now when I think about this baby and his family,	T	So many lessons
12	there's a lot of things that strike me about that episode		to be learned
13	of care. Here in the United Kingdom, we frequently		from this model
14	refer to the travelling community as "hard to reach" or		- putting the
15	"inaccessible to healthcare". And yet, this baby and		patient and their
16	his family had a diametrically opposed experience. It		family at the
17	caused me to think about what we talk about when we		centre with
18	consider patient-centered care. And usually what we		flexible
19	mean is that we put a patient and their family at the		boundaries
20	heart of our really rigid systems of care, with the		around the limits
21	expectation that they are going to conform. And it		of care.
22	made me think what would it look like if we put the	D	NAME we need
23	patient and their family at the centre, and we put very		to find a way to
24	flexible boundaries around what we deliver in terms of		spread dftb in
25	healthcare. And perhaps bend our rules, when our		South Africa
26	rules aren't serving them…"		(and Africa as a
27			whole)
28		D	Agreed! :)
29		D	^^ Preach.
30		D	i would rather
31	Because surely if we can create that meets the need of		say that our
32	those referred to as "hard to reach", then that's the best		systems are
33	situation for absolutely everybody. When I come to		"hard to
34	think of this situation, I think of it in 3 overarching		penetrate"
35	themes: people, perspective and the place. So I'd like	D	Maybe WE
36	to share with you the framework I've used since then		ARE hard to
37	when considering designing healthcare and pathways		reach, not our
38	for children and young people."		patients

Note the way the conference organizer/event team member again uses the speaker's words to formulate a positive assessment of what is being delivered on stage, and, in so doing, packages 'the essence' of the presentation, all prefaced by and as "lessons to be learned", thus conveying directly that this is 'a learning moment' in the conference. Interestingly, the next comment, from a delegate, is an endorsement of DFTB as an organization. It is impossible to know who the intended recipients are of the next two delegate comments, since they may be agreeing with the speaker, the event organizer, or the previous delegate's comment. These issues tend to be unambiguous in spoken interaction, and, if not, generate 'repair' operations, in which addressee and recipiency matters may temporarily suspend the progress of the sequence until resolved (e.g., Fox et al, 2013). However, here, any ambiguity is not oriented to by other participants.

The next three comments again illustrate the range of ways in which delegates may use the chat.

41	I've recently been reading about this organisation in	D	No conversa-
42	the Netherlands, where they have a really pure form of		tion about me,
43	this patient engagement and involvement. One of their		without
44	underlying tenets is this principle of "no conversation		me....awe-some!
45	about me, without me" so they do not have any		
46	conversations about their clients without their clients	D	I suspect we
47	being present. That really challenged me to think of		would be very
48	what I do in my practice, what would all of our		different if our
49	multidisciplinary team meetings look like if our		patients and
50	patients were present. How would the conversation		their families
51	change? Would we be more compassionate? Would		were in the
52	we be more empathetic? It's really challenged me and		room.
53	it's something that I seek to utilise in clinical treatment		Something to
54	going forwards."		aspire to.

At lines 41-45, another delegate formulates the upshot of what the speaker is saying, and both speaker and delegate apparently reformulate the original expression "Nothing about us without us", which, while having a centuries-old history in European politics, was first used in English in the context of disability rights activism (Charlton, 2000). As the speaker extends the theme of their talk towards medical practice, another delegate responds to the challenge articulated as a question by the speaker (line 49) with their own answer (lines 50-55).

In the final segment, we join the session as it comes to the end.

58	"…Having all of these thoughts and embedding into	D	thanks great
59	our practice, really are going to be the way we shape		insight NAME,
60	and make clinical services which will eventually start		agreed a greater
61	to erode and destroy the marked disparities and		awareness of the
62	inequalities and access to healthcare and healthcare		common
63	outcomes which we see. Lastly, when we consider		cultural
65	"place", the place I consider is home. Throughout my		intricacies of the
65	clinical practice, there's two questions that families		communities
66	constantly ask, the first is "what's wrong with my		present where
67	child?", and once they've established that, the next		we work is
68	question is typically "when can we go home?" I think		imperative to
69	across the board, given the choice between a hospital		help reach all
70	bed and their own bed at home, children and families		
71	will always opt for their own bed at home. So		
72	essentially as healthcare professionals, what we're		
73	doing is accompanying them on this journey to make	D	fantastic talk
74	sure that they get well, so that they can safely get back		NAME, thanks
75	to their place that they call home. And this is		for sharing your
76	something I have thought of deeply in terms of		expertise
77	shaping services and bringing us back to the		

78	conversation starting in the beginning: the ultimate	D	great talk
79	example of that is get acute clinical care which is		
80	delivered within the home- takes us back to the baby	T	Fabulous NAME, well done
81	who had his care at home. And it's been delightful to		
82	see over the years, a global spread of acute "Hospital		
83	at Home" services, with amazing examples	T	Please post your questions for the speakers panel in the chat here :)
84	everywhere from Malaysia to Melbourne. And		
85	particularly, during this time of a pandemic, where		
86	coming to hospital has been not only a source of stress		
87	for families, but actually a source of deep abiding fear.		
88	It has been great to see families that we can care for		
89	using "Hospital at Home" services and allay that	D	Wonderful!
90	anxiety as they return to health. And overall, it really	D	great talk
91	comes down to that old saying, it truly is "there is no	D	Thanks NAME, fantastic.
92	place like home". Thank you.		
93		T	Thanks - agree.
94			having patients
95			involved so
96			important,
97			Rheumatology
98			has this fabulous
99			research
100			conference
101			called
102			OMERACT
103			where patients
104			are involved at
105			every step.
106			Really changes
107			things for the
108			better.
109		D	great talk and
110			fantastic
111			program

Note that the comments segue into multiple appreciations of the speaker, as well as of the event itself. At lines 93-108, a conference organizer/event team member, having expressed an appreciation of the speaker (line 80), expands the relevance of the Main Stage to another conference. At 109-111, a delegate both positively assesses the talk (“great talk”) and expands and upgrades their assessment to the wider event (“fantastic program”).

Together, the extracts reveal the importance of analysing as much of an event as possible before drawing conclusions about engagement and participation. Format matters: since the event was not structured to permit direct questions from “floor” to “speaker”, there were fewer questions and no expectation that speakers will reply. Some messages that look

standalone or unconnected to other messages are, in fact, directly connected to what the speaker is saying on the stage. In that sense, some turns, when viewed in the context of the chat, but not in the context of the stage content, were not sent into the ether but were responsive to something on the Main Stage. However, it was noticeable that such responsive actions did not always generate further chat between delegates. Similarly, some actions were clearly responsive to the Main Stage activity (e.g., appreciations and assessments) but it was not always clear whether a series of appreciations were all responsive to the speaker, or to other message writers and therefore agreements as well as assessments. The qualitative analysis also shows some examples of the impact of the event (e.g., lessons learned, future-oriented messages), as well as plenty of examples of delegates engaging with and confirming, challenging, or reformulating, or building upon what speakers said.

3.4 Conversation analytic coding

The conversation analytic coding scheme was developed by Stokoe and Wong who together coded all the data. The first two codes were basic: each message was attributed to a *participant category*: speaker; delegate, or conference organizer/event team member, and coded for its *topical content* with one of the following categories: conference schedule, tech/IT issue, childcare, working from home, Covid-19, future conference events, and participation itself. Since our interest was in participation rather than the thematic content of the conference, we did not code more obvious topics (e.g., paediatric medicine). Rather, we wanted to code messages for their participatory and interactional affordances, in conversation analytic terms. Therefore, we coded messages for *action* and *sequence*. We explain the detail of the coding in the tables below.

First, Table 1 shows the coding scheme for *action*, with an explanatory and illustrative example from the data. We coded 1) the core action done in a message such as a 'question' or a 'greeting'; 2) other actions carried by the message; for instance, a question can also seek information (e.g., "can you tell me…?") or check understanding (e.g., "do you mean…?"); a greeting can also convey identification (e.g., "Hello from Australia"), and 3) the writer's stance towards an action; for example, an assessment can be positive (e.g., "wow!") or negative (e.g., "urgh"). For multi-part (e.g., multi-sentence) messages, we coded each component.

Table 1: Action

Core action	**Example from the dataset**	**Other action(s) or stances carried with core action**
Greeting	"Welcome to the DFTB main stage!"	
Question	"What is the best way that junior staff could approach you to be involved in research or projects?"	Information-seeking

	“Do you mean 6:20?”	Query/misunderstanding
Answer	“Will post on YouTube in a few mins...”	
Request	“Can we find mentors on this forum?”	Request for information
	“PPE communication tips greatly appreciated.”	Request for advice
Assessment	“Such a fabulous initiative.”	Positive assessment
	“It is very uncomfortable hearing this…”	Negative assessment
	“The whole team is so excited to see you here :)”	Affiliative assessment
	“bleeeeeeeeeerghhh. what time of day is THIS??”	Ironic assessment
Statement	“This is where all our talks will be running”	Information-giving
Offer	“We'll get that made up on a t-shirt”	
Apology	“Sorry about the technical glitch”	
Suggestion	“Can we play this in every ED waiting room”	
Complaint	“Oh dear...lost signal??”	Complaint about conference organization issue
	“Wouldn't it be great if you could; we need to infiltrate ((*name of organization*)) education committees with ((*name of organization*)) people. OF course, we have ways of doing this... :)”	Complaint about something external to the conference
Correction	“meant NOT allow”	
Agreement	“Completely agree. This is why I can't bear the term "inappropriate attender"”	
Disagreement	*(none identified)*	
Account	“Have left all the dinner prep and washing up to the others... hiding away	

	in the home office and will have room service! Lol"	
Invitation	"Remember that you can leave questions for the speakers panel in the chat box here! :)"	
Appreciation	"Thanks for the talks. Very inspiring especially about collaborative research."	
Closing	"Annnnnnnd that's a wrap!"	

Given that any given message could contain more than one core action (e.g., especially those comprising more than one sentence), we coded for up to three core actions and up to three 'other' actions for any individual message.

We also coded each message for its sequential position and relationship to another message. This was crucial for understanding participation in the chat, since we could analyse the (dis)connectedness of, and (non)development of, sequences of messages, alongside what each contribution was doing individually. As Sidnell (2005) explains:

> At its most basic, 'sequence organization' is embodied in the phenomenon of paired actions or adjacency pairs. For instance, a question creates a 'slot', 'place', or 'context' within which an answer is relevant and expected. This is, of course, not to say that questions are always followed by recognizable answers to them. To say that turns are often organized as adjacency pairs is to make a statement about a rule (or norm) which participants themselves use in the production and recognition of talk-in-interaction, rules which they orient to in various ways so as to find and construct orderly sequences of turns-at-talk… Such paired actions are themselves components of larger sequences. One can often describe larger sequences as consisting of a base pair and various expansion sequences." (p. 217-218).

Table 2 shows the coding scheme for *sequence,* with examples from the dataset and a brief explanation of technical conversation analytic terms.

Table 2: Sequence

Core Sequential Position	**Explanation**	**Example from the dataset**
First pair part (FPP)	The 'first pair part' refers to the first turn component, and action, in what conversation analysts call an 'adjacency pair'. An adjacency pair is the building block of social interaction and provides	"Good morning from the UK, 6am here"

	the foundation for constructing sequences of activity. The FPP initiates action (e.g., question, announcement, request, assessment, offer, invitation, etc.).	
Sequence Initiation (SI) or Expansion (SE)	Any given FPP may be initiating a new sequence or expanding upon, developing, or otherwise continuing an existing sequence.	
Second pair part (SPP)	In any adjacency pair of turns, each turn is produced by different participants and are adjacently placed; that is, one after the other. A 'second pair part' refers to the second turn component. The SPP progresses the action initiated in the FPP (e.g., answer, reject, decline, disagree/agree, etc.).	"I think we probably all did"
Standalone FPP (Standalone)	We coded for turns that received no SPP; that is, messages that received no response or uptake from other conference participants. In some contexts (e.g., online dating) this might be referred to as "interactional desertion" or "ghosting" (Licoppe, 2021).	"Hello"
Sequence-closing third (SCT)	The addition of one turn to a sequence after the SPP has happened. Examples of actions done through SCTs include marking news ('Oh'), confirming ('Right'), the multifunction 'Okay', assessing (e.g., 'Great', 'Excellent', 'Shit', 'Lovely', etc.), appreciating (e.g., 'Thanks').	
Skip connect	'Skip connecting' refers to the way people skip over immediately prior turns to address something that happened earlier in a sequence. Although 'adjacency' and 'nextness' is key to the coherence of an interaction, there are times when participants want or need to address an earlier turn or where turn adjacency is 'disrupted' for particular reasons (Herring, 1999). As Licoppe (2021) notes, "there is a loosening of the	Skip Topic "someone said earlier about registration…?" Skip Person "that's great, Gemma".

	way participants orient towards 'adjacency' and 'nextness'. With chats, a recognizable second pair part is expected in the next contribution, but not necessarily in the next message, or in first position in the next message." In written multiparty chat, where there is no functionality to select and reply to a particular message, maintaining the integrity and progress of a sequence requires at least two types of skip connecting, to a topic and to a person. We were careful to exclude what Garcia and Jacobs (1998) referred to as "phantom adjacency pairs" in which the SPP does not actually belong with the FPP, even though it looks like it does.	
Indexical	We coded as 'indexical' turns those in which the meaning of a word or expression was dependent on the context in which it is used.	Indexical-R refers to a person being referred to (e.g., "*they* are great") and Indexical-T to the object/topic being referred to (e.g., "*that* is great!")

3.4.1. Action

Charts 6 and 7 below break down the main actions done through the chat. Chart 5 provides this information for conference organizer/event team member and speakers; Chart 6 does the same for delegates.

Chart 6: Core actions made by conference organizer/event team member and speakers in the conference chat.

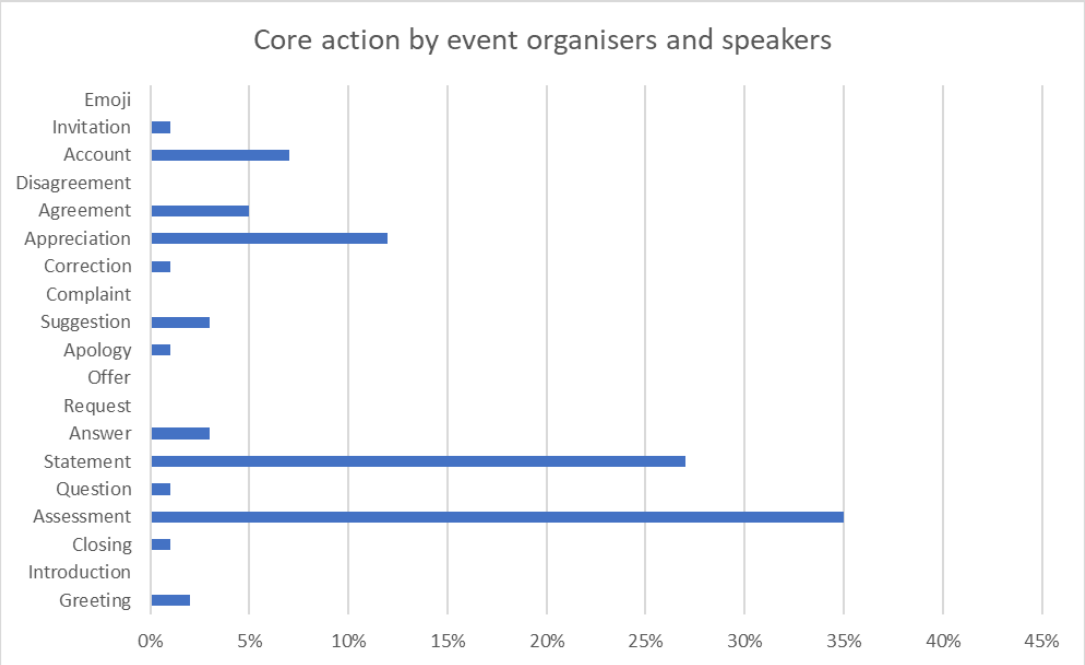
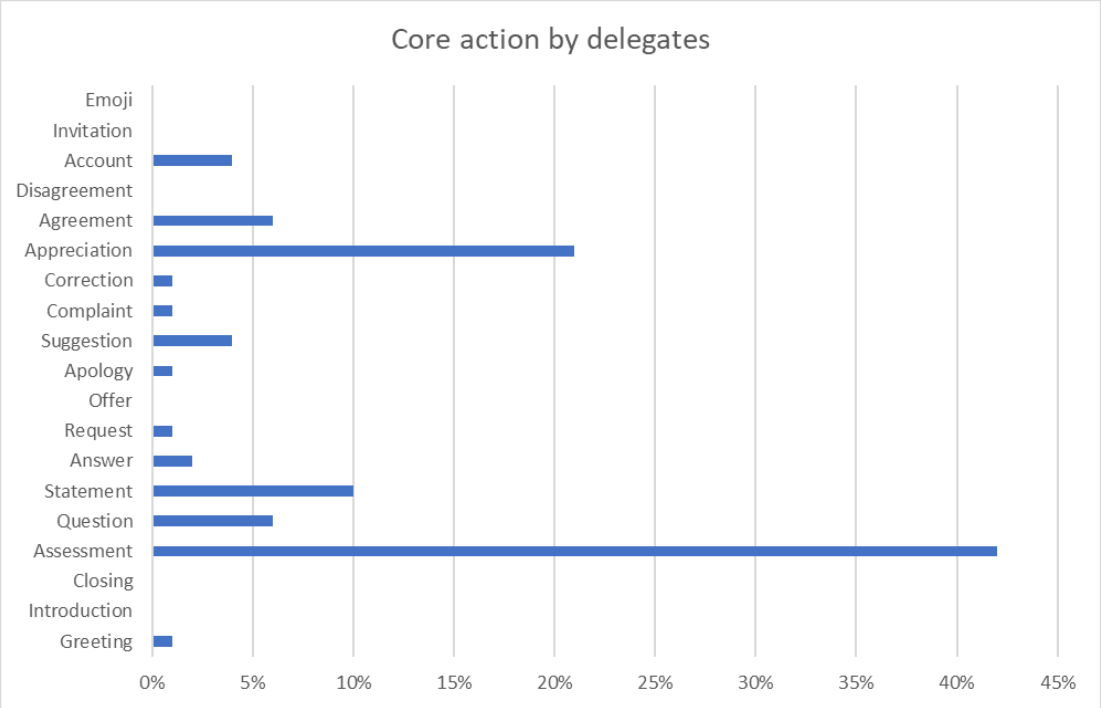


Chart 7: Core actions made by delegates in the conference chat.



Our analysis suggests that, for all participants, most messages written in the chat were of the actions done by participants in the chat were assessments (e.g., “wonderful!”) and appreciations (“Thank you!”). While all participants made statements (e.g., “This is where all our talks will be running””), this action was more common for the event organizers and

speakers, which is unsurprising. Delegates asked more questions than event organizers and speakers, and the latter gave more answers than the former. But, overall, it is clear that questions themselves were far less common than assessments and appreciations in terms of actions done by delegates. Across both groups, of the 456 assessments made, 400 were positive (87.7%).

When broken down further (and noting that, since one message can perform multiple actions, which accounts for numbers not totalling 100%), most other actions were 'positive assessment' and 'information giving'. Charts 8 and 9 show these breakdowns for both participant groups.

Chart 8: Other actions made by event organizers and speakers in the conference chat.

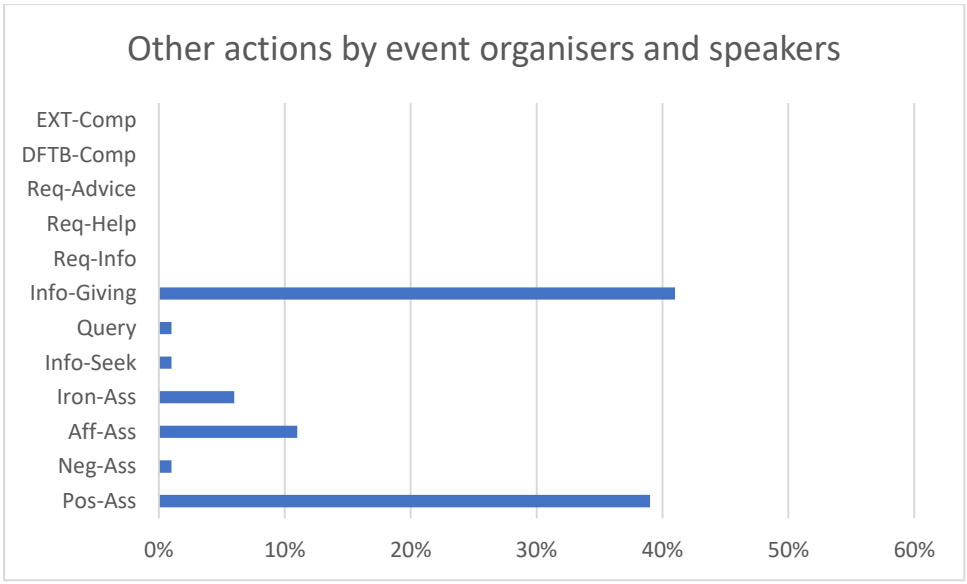
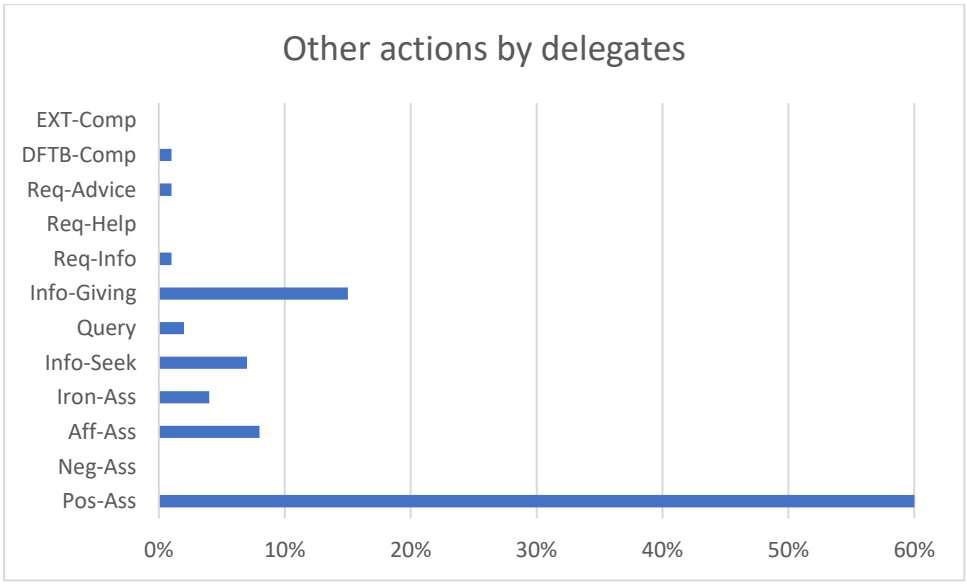


Chart 9: Other actions made by delegates in the conference chat.



3.4.2. Sequence

In addition to the type of actions being accomplished through chat messages, we also analysed each message for its sequential position in order to understand the (dis)connectedness of, and (non)development of, sequences of messages, alongside what each contribution was doing individually. Chart 10 reports the overall proportion of initiating ('first pair parts' and 'SI' sequence initiating) turns as well as turns that expand upon ('second pair parts', 'SE' sequence expansions) another's initiation. 'Indexical' turns (e.g., "they are great") and those that we coded as 'skip connect' turns (e.g., "you said earlier, Jason") that, by definition, refer backwards to a previous turn. In written interaction, authors sometimes do extra work to show that their message is connected to one that might have appeared several messages ago on the chat timeline, and, for our analysis, it was important to preserve this continuity.

Chart 10: Sequential interconnectedness between messages.

Sequence	Percentage of message posts by event organisers and speakers	Percentage of message posts by delegates
FPP	57%	39%
SPP	43%	60%
SI	29%	28%
SE	39%	52%
Indexical-R	3%	3%
Indexical-T	2%	2%
SCT*	*0%	1%
Skip Person	7%	7%
Skip Topic	6%	7%
Standalone	14%	1%

The analysis shows that, in general, more messages were responsive (SPPs or sequence expansions) to initiations than the other way round. This is indicative of engagement, since if the majority of messages were initiating/FPPs, then logically it would mean that there were fewer responsive messages and less engagement overall. Overall, we can see that there were very few 'standalone' messages (which appeared not to be responsive to either something on stage or in the chat). There were also few turns that built off previous messages using indexical terms (e.g., if one message read, "the DFTB conference…", there were few subsequent messages containing indexicals such as, "*it* was"). Like the limited use of skip-connecting messages, it seems as though delegates did not attempt to build long threads of connected messages. Perhaps for this reason, we did not identify examples trouble in understanding and 'miscomminication' in the chat. Indeed, this observation aligns with other research on both dyadic and multi-party chat conversations, which shows that despite that

sequential organization of utterances becoming disrupted, the communication does not necessarily break down (c.f. Herring, 1999; Lapadat, 2007; Berglund, 2009). Finally, it is unsurprising that there was a tiny proportion of sequence-closing *third* turns which, for example, confirm ('Right') or receipt ('Okay'). Instead, such turns (which also can include appreciations and assessments) occurred in 'second' position. We counted ten cases across the data in total, which rounds to 0-1% when summarized as a percentage.

4.0 Discussion

The aim of this paper was to examine 'what actually happens' in the parallel chat in video-conferencing events and develop a method for going beyond simple counts of messages and a unitary focus on just one type of message (questions). We combined descriptive statistics to describe a dataset of messages in the parallel chat with conversation analysis – and a conversation analytic coding scheme – to provide a richer and more nuanced account of the kinds of messages that populate conference chat. As well as reporting headline statistics about the proportion of delegates who wrote chat messages, and who participated (in terms of delegates, speaker, and event organizers) and in what ways, we also coded each message for the sometimes-multiple actions they conveyed. We found that, for all participants, most parallel chat messages were assessments (e.g., "wonderful!") and appreciations ("Thank you!"). While all participants made statements (e.g., "This is where all our talks will be running""), this action was more common for the event organizers and speakers. Delegates asked more questions than event organizers and speakers, and the latter gave more answers than the former. Overall, it was clear that questions were far less common than assessments and appreciations in terms of actions done by delegates.

A key implication of our research is that limiting the analysis of conference chat to questions alone may not come close to describing the kinds of participation that actually occurs in such settings. The fact that (positive) assessments and appreciations were the most common actions is unsurprising, given that these actions occurred on numerous occasions and for each speaker (compared to, say, greetings, which clustered once towards the start of the event). Furthermore, by analysing the connection between the speaker performance and the parallel chat, exemplified in Extract 3, we were able to show how delegates engaged directly with conference content, formulated and built upon its content, and generalized to other settings: actions that perhaps comprise 'learning' (see Sahlström, 2009).

As discussed in the introduction, technologies enable but also constrain interaction (Hutchby, 2014). For instance, some video-conferencing platforms allow participants to engage in private messaging, some only allow public chat, and some do not allow the participants to engage at all. The platform used by the organizers of the conference we studied included particular affordances – participants could all write parallel chat messages, and, for instance, see each other's names – but could not message privately or to speakers directly. Of course, they may have been using other messaging applications at the same time. The affordances of the chat function – whatever the platform – will always be relevant to research of this kind, though not necessarily easy to access.

In sum, the paper provides a possible framework for analysing and evaluating the parallel chat that occurs in video conferencing events and the implications for engagement

and participation. Future research may compare multiple platforms and software types as well as event and conference types (e.g., in which delegates can ask speakers questions, either via un-muting and posing directly or in the chat).

Notes

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