Regular Article

Using Microsoft Teams to Facilitate Asynchronous Online Focus Groups

International Journal of Qualitative Methods
Volume 22: 1–15

DOI: 10.1177/16094069231211251
journals.sagepub.com/home/ijq
Sage

T. Kody Frey[1] **and Beth Strickland Bloch**[1]

Abstract

The COVID-19 pandemic presented unique challenges to researchers engaged in qualitative research. Such methods often require the use of in-person methods of data collection and were greatly interrupted during this time of global emergency. Yet, navigating this altered terrain presented opportunities to reflect on the traditional methodological landscape. In this paper, we reflect on the use of Microsoft Teams to facilitate multiple asynchronous online focus groups. We draw on the findings from a study of researchers focused on translational medicine, who work in disparate locations and often have conflicting schedules, to show how the use of this approach facilitated active communication between individuals who otherwise rarely interact. Specifically, we reflect on five ways that Microsoft Teams both enhanced and challenged traditional focus group practice. We consider how (1) conversational sequence, (2) discussion moderation, (3) nonverbal cues, (4) supporting information, and (5) technical competencies relate to using this approach. This results in several reflections intended to help future researchers prepare to facilitate asynchronous online focus groups using Teams. Specifically, we highlight our experiences in terms of participant interaction, iterative reflections, and data management. Ultimately, we argue that this approach adds an important and powerful tool to the qualitative methodological toolkit.

Keywords

qualitative, COVID-19, focus groups, best practices

Introduction

The COVID-19 pandemic brought unprecedented challenges for scholars interested in qualitative research. Using such methods often involves interpersonal interactions that were put on hold during the pandemic. As such, the provision of qualitative findings has lagged during this time when compared to other types of research designs (Vindrola-Padros et al., 2020). Investigating individual and group experiences in accordance with the high standards of rigorous qualitative analysis is already difficult and laborious, and existing challenges were exacerbated by the macro and micro societal changes that accompanied this period. For example, Tremblay et al. (2021) identified time constraints and physical distancing as two of the primary challenges threatening the traditional standards of qualitative research within the context of an epidemic. These threats have forced scholars and practitioners to quickly adapt their methods of inquiry in uncharted and ambiguous ways (Roberts et al., 2021).

In particular, the difficulties associated with physical distancing uniquely impacted focus groups, where insight is gleaned through in-person, group interactions (Kitzinger, 1994, 1995; Kitzinger & Barbour, 1999; Lindlof & Taylor, 2017) that allow participants to respond to contextual issues as they emerge (Hall et al., 2022). Such interactions were limited or impossible during the pandemic, leading many researchers to conduct their focus groups online (e.g., Dodds & Hess, 2020; Marques et al., 2021). The idea of facilitating focus groups online is not new (Kalbfleisch & Eckley, 2003; Morgan & Lobe, 2011; Williams et al., 2012), and resources are available for facilitating best practices in this context (Chase & Alvarez, 2000; LaForge et al., 2022). This method helps

[1]School of Information Science, University of Kentucky, Lexington, KY, USA

Corresponding Author:
T. Kody Frey, School of Information Science, University of Kentucky, 317 Little Library Building, Lexington, KY 40506, USA.
Email: tkfr222@uky.edu

combat some barriers to traditional face-to-face focus groups such as participant drop-out, difficulty recruiting geographically diverse participants, and personality traits like shyness which limit participation (Stewart & Shamdasani, 2017; Tausch & Menold, 2016; Tuttas, 2015).

Most approaches focus on synchronous online focus groups, where the goal is to adapt the traditional in-person approach to an online environment (Rivaz et al., 2019). Participants interact in real time to mimic the face-to-face environment (e.g., Lobe, 2017), and moderators facilitate discussion as it is happening (Fox et al., 2007; Tuttas, 2015). However, synchronous interactions may not always be feasible, especially when researchers are interested in exploring the lived experiences of diverse or hard to reach groups (Halliday et al., 2021; Wilkerson et al., 2014). Such circumstances often necessitate the use of asynchronous online focus groups (AOFGs; Gordon et al., 2021).

AOFGs "allow participants and researchers to read and reply to each other's posting at times of their own choosing" (Rivaz et al., 2019). That is, participants do not participate in simultaneous conversational succession. Instead, participants break up the flow of discussion by providing responses at their convenience. Sometimes AOFGs are also referred to as bulletin board focus groups where participants post messages to a "board" and can respond to one another at different times (Cook et al., 2014; Krueger & Casey, 2014). However, Rolland and Parmentier (2013) draw a distinction between bulletin boards and AOFGs; primarily, that the former may be open to the public, composed of a larger number of participants (e.g., 25), and participant membership may be highly variable.

AOFGs benefit researchers by providing access to hard to reach or geographically dispersed populations, incorporating social technologies that many individuals regularly use as part of their everyday lives (e.g., WhatsApp; Colom, 2022; Chen & Neo, 2019), and integrating paralinguistic cues (e.g., emojis; Hayes et al., 2016) that make up the lack of nonverbal cues in mediated spaces compared to rich, face-to-face contexts. Yet, AOFGs also pose unique challenges, such as the increased need for constructive and present moderation to continue the flow of discussion (Zwaanswijk & van Dulmen, 2014), the ability to withdraw without explanation, and less clarity surrounding participants' presence and attention (Estrada-Jaramillo et al., 2022).

Accordingly, the purpose of this reflexive study is to chronicle our experiences in using AOFGs as a methodology – amid a global pandemic – to uniquely bring together stakeholders from various areas of biomedical translational research using Microsoft Teams. Our goal is to help other qualitative scholars and practitioners who find themselves in similarly challenging scenarios. We do this by discussing our successes, alongside the challenges and limitations we faced, when adapting and implementing our research procedures using this approach. This is done by first describing the research project that drove us to AOFGs. Second, we offer several methodological reflections illustrating the interaction between existing focus group procedures, and specific features in Microsoft Teams, that both constrained and facilitated interaction in unique ways. Finally, we provide several reflections that create a guide for researchers conducting structured focus groups via the same or similar platforms.

Project Context and Methodological Considerations

The research project discussed here addresses the communication and knowledge transfer gaps that exist between actors located at different points along the continuum of medical translation. This type of translational research focuses on the advancement of biomedical projects from the earliest stages of research and development to the successful application of new treatments and diagnostics within clinical settings (Wehling, 2015). This "bench-to-bedside" approach often depicts activities advancing along a five-stage (T0–T4) continuum of development and implementation (Zerhouni, 2003), where stage T0 is about basic scientific research, and stage T4 is about using results to impact the community. We wanted to better understand how we might improve the efficacy of translational research between various stakeholders; including the faculty, staff, and students who are integral to its success.

The need to consider the efficacy of translational communication and knowledge transfer stems from the fact that a significant number of translational projects never make it to the clinic, and of those that do, it takes an average of 15–20 years to achieve success (Ioannidis et al., 2018). The reasons for this are not totally known, but many speculate there is a critical communicative disconnect happening between the relevant early-stage researchers designing treatments, products, and technologies, and the clinical researchers using these innovations for public good (Anderson et al., 2019). As such, stakeholders need to better understand one another's needs so they can accurately describe, explain, and understand their role in the translational process. Ideally, this knowledge can enhance the efficiency and effectiveness of translational research projects.

As an example, consider the educational training required for a successful career as a biomedical engineer. The scope is broad, spanning content related to engineering, computing, statistics, biology, and chemistry (Taktak et al., 2019). Training happens primarily in laboratory environments that are often physically and epistemologically removed from immediate healthcare contexts (Bloch, 2020). This distance creates a knowledge transfer gap between early-stage designers of biomedical technologies (i.e., stage T0) and the healthcare practitioners who will one-day use these tools to treat patients (i.e., stage T3 and T4). Thus, we formulated research questions with the intent to bring the spectrum of translational stakeholders into the same space

to identify – among other things – where the breakdown of communication often occurs during translation, what kind of shared or competing values might result in projects moving slowly through the translational pipeline, and how we might be able to address these knowledge gaps through applied instructional interventions in the future.

The use of focus groups to study researchers in healthcare has been on the rise in recent years (Hall et al., 2022). Although sometimes advocated as an approach best used to elicit attitudes and beliefs from group members with homogenous characteristics (i.e., similar in age, race, education; Krueger & Casey, 2014), we believe this approach also benefits from having some variety among members (Freeman, 2006). Since our recruitment of participants was focused on a shared topic (i.e., translational medicine), but our research questions were about knowledge gaps among researchers, we felt speaking with diverse members of a shared community would be advantageous. This type of knowledge-exploration focus group helps advance interpretations of what is presented based on various meanings assigned by the participants (Huston & Hobson, 2008; Simpson & Richards, 2018). However, finding a way to bring these individuals into the same space provided two unique challenges: (1) allowing participants to articulate experiences while also keeping them safely distanced in the wake of the COVID-19 pandemic and (2) recruiting clinical stakeholders from a variety of specialties, departments, and locations.[1]

These challenges made it difficult to accommodate participants' schedules in a face-to-face or synchronous focus group setting. We decided that an asynchronous approach would keep participants safe while also allowing clinical stakeholders to participate at their own pace. Microsoft Teams was chosen as the platform for conducting the focus group because participant recruitment targeted members associated with a single university institution which provides each person with access to the platform. This access also suggests some participants already have familiarity with the service. Interaction in Teams takes place via structured messages posted to specific channels that can be customized to reflect different topics. Unless specified, Teams also provides notifications to users when group members post new messages or respond to previously posted messages[2].

To begin recruitment, a call to participate was distributed through university listservs and contacts, which allowed researchers to gain access to a sample of both clinical and nonclinical stakeholders. The call for participation included a one-page overview of the research project[3], and interested participants were able to learn more information by filling out an online expression of interest (EOI) form which was linked in the recruitment emails. This form featured a short video introducing the researchers and explaining the study in more detail, as well as several questions identifying participants' university status, age, race/ethnicity, gender, and if they identified as pre-clinical researcher, a clinical researcher, or someone who is equally both. These demographic questions were used to screen participants so that only those who met study criteria would be included; those not meeting criteria were informed via the survey that they would not hear from the researchers or be added to Teams. Ultimately, a total of 37 people volunteered for the study across four groups and varied by the above listed factors (Table 1).

Each group was also scheduled to take place in sequential months, and participants were allowed to express which groups were most conducive to their schedules. Participants were informed that each asynchronous group would last for a total of four weeks and that participation was expected to last no more than 60 minutes per week. Williams et al. (2012) found that AOFGs, on average, lasted a period of four weeks, and each group had approximately 12 participants. Our examination of recent health related AOFGs, including the study presented here, found similar statistics (Table 2).

Notably, individuals provided their consent to participate in the research after self-selecting to participate. A link to a consent document was provided on the homepage of each AOFG. Since participants were using Microsoft Teams accounts managed directly by their employer (the university), they were informed that all responses would be kept confidential to the extent possible. That is, participants' responses would not be anonymous, and the researchers would refrain from linking responses to individual identities.

In general, research suggests that ethical concerns in online focus group environments closely mimic what one might expect to find in the face-to-face setting (Rodham & Gavin, 2006). Yet, Teams provides an ethical complication because of its direct connection to individual profiles. For the current research, profiles were institutionally derived; accounts were managed by the respective university. Although this helped to enhance authenticity by verifying participants' identities, it necessitated extra measures in the study review process to ensure confidentiality. Participants needed to be informed of the extent of their confidential participation prior to beginning the focus groups. Thus, we encourage others using Teams for focus groups to consider such ethical questions, perhaps in consultation with their internal review boards, prior to beginning AOFGs.

After granting their consent, individuals were then sent specific instructions including the start date of the focus groups and a standard overview of the Teams platform provided by Microsoft. The same materials were also made available as part of a shared file folder accessible by all members of the group within Teams. Settings were adjusted so that members had permission to (1) create and update their own channels, (2) create, update, and remove tabs, (3) create, update, and remove connectors, and (4) edit their messages. As the primary researchers, we also retained permission to delete all messages.

Participants were first presented with a general welcome message reiterating the purpose of the project, providing

Table 1. Demographics for AOFGs Using Teams.

Characteristic	*N* = 37	Percentage of Group, %
University status:		
Physician and/or faculty	8	22
PhD and/or MD student	18	48
Staff	11	30
Type of researcher:		
Clinical	7	19
Both but lean clinical	5	14
Equally both	2	6
Both but lean preclinical	5	13
Preclinical	18	48
Gender:		
Female	22	59
Male	15	41
Ethnicity/Race:		
Caucasian/Non-hispanic	26	69
Asian/Pacific islander	8	22
Hispanic	2	6
African American/Non-Hispanic	1	3
Age (years):		
20–29	14	38
30–39	13	35
40–49	4	11
50–59	4	11
60+	2	5

Table 2. Recent AOFG Projects by Group Size and Length of Study.

	# Of Groups	Time Per Group	People Per Group	Overall Size
Gordon et al., 2021	8	3–4 days	~8	66
LaForge et al., 2022	19	1–3 days	~10	186
MacNamara et al., 2021	5	3–12 days	7–11	35–55
Pavić et al., 2022	4	2 weeks	10	40
[This study]	4	4 weeks	~9	37

contact information for the researchers, directing them to their first task, and thanking them for their time and effort. Then, on Monday mornings at the beginning of each week, one of the primary researchers posted a guiding question as part of a channel named after the response week (i.e., *Week 1*). Initial prompt and probes were pre-planned and designed to elicit experiences and perspectives from the different members taking part in the research (Table 3). They were also based on the research questions guiding the primary study.

However, researchers also probed responses further by asking for clarification or posing new questions for the group to consider as they organically grew from the conversation taking place (e.g., "the response below also has me pondering mentorship as a potential strategy to build important cross-disciplinary connections. Do any of you have experience related to mentoring programs that could expose learners, students, or researchers to translation as a process?"). Given that participants were not asked to spend more than 1 hour per week on the platform, the researchers ranged in the frequency of their moderation, typically completing 1–3 posts per day. Additionally, researchers conjointly served as moderators, responding when convenient to their complementing daily schedules. Towards the end of each week, a pre-planned summary question was posted so the group could highlight the key contributions across the discussion. This process was repeated each week on a new channel, and participants were informed that they were free to contribute to any of the previous weeks' discussions.

Table 3. Questions, Prompts and Probes for AOFGs With Translational Researchers.

Research Questions for Asynchronous Focus Groups		
1. How do Pre-clinical and Clinical Stakeholders Communicate About Their Research With Each Other?		
2. What Knowledge gaps Exist Between Stakeholders Based on Their Views About Translation?		
3. How Might Knowledge Gaps be Bridged Between Translational Stakeholders?		
Week 1	Prompt	Explain a little bit about who you are and what you do. Why do you describe yourself as someone who does pre-clinical, clinical, or both types of research?
	Probe	• Get more details about what defines "pre-clinical" from "clinical" • clarify what makes their research a particular "type" (i.e., implementation vs. dissemination; basic science vs. exploratory)
	Prompt	What surprised you about others' responsibilities, interests, or approaches?
Mid-week	Probe	• Explore their labels; "clinical" or "pre-clinical" or "basic" and so on
		• Synthesize definitions and get feedback; begin to highlight translation
End-week		
Week 2	Prompt	How would you define what translation is?
	Probe	• Where/how did they learn definitions? Class? Practice? Funders?
Mid-week	Prompt	Follow-up on any mentions of translation as "cyclical" or a "2-way" process
	Probe	• Do organizations talk about it this way? How differ from linear view? • Explore answers to understand how think about this term/process • Synthesize and ask for any feedback, if necessary
End-week		
Week 3	Prompt	Can you share some stories of when you have seen, experienced, or heard of research being successfully translated?
	Probe	• Ask about what makes certain projects unsuccessful (if not obvious)
Mid-week	Prompt	Does anyone have examples of research being unsuccessfully translated? Any personal experiences of breakdowns in the process?
	Probe	• Discuss any education-related topics (e.g., training; course work) • Discuss any breakdown between pre-clinical and clinical workers • Synthesize and ask for any feedback, if necessary
End-week		
Week 4	Prompt	As we conclude, we want to gauge your perspectives surrounding potential education approaches to help bridge gaps between researchers. What kinds of strategies would make translation a more efficient process/help solve problems you've faced?
	Probe	• Get as much detail/insight from specific ideas/examples mentioned
	Prompt	Summarize trends of what is suggested. Ask for feedback/clarification
	Probe	• Ask if think educational interventions might help; specify mentorship
Mid-week	Prompt	Ask for feedback about how this study was conducted. Thank participants for their time
		Inform participants that follow-up email will come in the next 1–2 days about participant payments
End-week		

Results and Methodological Observations

In this next section, we reflect on this methodological process to compare the ways in which the specific features and affordances of Microsoft Teams both bolstered best practices and presented unique challenges. We highlight 5 key considerations for researchers interested in using Microsoft Teams for qualitative data collection.

Non-Linear Conversational Sequence

The most notable difference between conducting the focus groups via Microsoft Teams, versus traditional in-person focus groups, was the overall conversation sequence. Specifically, Teams allowed participants to freely move back and forth between channels, threads, and questions. This reflects the general flexibility that comes with a virtual environment

(Marques et al., 2021) and contributes to lower drop-out rate (Halliday et al., 2021). Our study experienced a 5% drop-out rate, which is significantly lower than traditional face-to-face focus groups that experience a drop-out rate up to 50% (Tausch & Menold, 2016). The permanence of the asynchronous written medium as a facilitator for interaction meant that conversation did not flow linearly (Estrada-Jaramillo et al., 2022).

Non-linear discussion provides many benefits for participants. It provides time for individuals to reflect on their responses and to compose and edit their thoughts (Jones et al., 2022; Reisner et al., 2018; Skelton et al., 2018). For example, as noted, several participants took opportunities to revisit questions from previous channels as the conversation moved forward into new weeks. Participants also often found themselves navigating multiple nuanced ideas at once within the same channel. Non-linearity gives participants the chance to engage in overlapping discussions in a multi-layered manner (Colom, 2022; MacNamara et al., 2021). This sequencing also helps combat the traditional challenge of navigating overly dominating focus group participants (Smithson, 2000) and encourages greater self-disclosure among more reserved participants (Williams et al., 2012). Although non-linear conversational sequencing is beneficial in that it allows participants additional time to compose their thoughts and articulate their experiences, generating a plurality of rich insights, it also produced three distinct challenges when using the Teams platform.

First, the shift away from the linear flow of discussion likely made it difficult for participants to follow multiple lines of questioning or thinking at once in Teams. Even though the Teams interface does provide each post with a specific marker including both the time and date, responses are threaded into specific groupings; new conversational threads and the posted replies would then be grouped chronologically by Teams. This means that a question originally posted by one of the researchers early in the week might look like it has been presented *after* a question from a later date. Figure 1 provides an illustration of this discrepancy.

Although the original question was posed on January 30th, Teams chronologically ordered this post to appear under the heading February 7th because the most recent participant post within the thread occurred on that date. In contrast, the post above, which one would logically expect to have occurred earlier in the week, was presented to participants on February 5th.

Second, conversation was interrupted due to spatial constraints occurring as a result of the position of an individual's Teams interface. Specifically, depending on how a participant constructed the size of their Teams platform (i.e., full screen, half screen, etc.), longer messages were not completely presented when reading through responses. Participants were forced to click a specific button to gain access to an entire response, adding a required, actionable step to simply read a whole response. It stands to reason that many individuals did not access (or subsequently respond) to an individual's entire logic or reasoning because they did not take the extra step to visualize the entire response. This process is illustrated through the *Collapse all* and *See more* buttons in Figure 2.

Third, apart from constraining the flow of the discussion, this format also made it increasingly difficult to export data for analysis. On one hand, Teams as a written medium saved time by negating the need to transcribe qualitative data (Reisner et al., 2018). On the other hand, it was difficult to organize the data in its original, sequential format. Since participant interaction and our subsequent probes stemmed from previous responses, we felt it was important that the data be analyzed in accordance with the linear flow of conversation to each question, as this would allow us to determine how responses connected or contrasted with one another. We were forced to cut, copy, and paste responses across all four weeks of each focus group in order to reorganize the data chronologically from start to finish. Comparatively, an in-person focus group is typically audio or video-recorded, with responses and transcriptions clearly following a linear pattern of discussion without overlap (in terms of questions, not voices).

Reflexive Discussion Moderation

The method that Teams uses to organize individual discussions also contrasted with traditional, in-person focus groups by allowing us to moderate the discussion with more precision, flexibility, and coordination. Well moderated discussion is a critical factor in fostering higher engagement among participants (Tuttas, 2015). Although some argue that in-person focus groups allow for more spontaneous question asking (LaForge et al., 2022), we believe AOFGs present the best of both approaches; fixed prompts to begin, but careful reflection for probe development along the way. Yet, redirecting participants going off topic was a challenge (LaForge et al., 2022) and took more time to navigate in an asynchronous environment. Ultimately, we worked collaboratively to synthesize responses throughout the week and to ask follow-up questions encouraging participants to elaborate further.

Scholars focused on AOFGs often comment on the reflexive benefits of adopting an asynchronous approach to focus groups (Hall et al., 2022; MacNamara et al., 2021; Pavić et al., 2022). Very few, however, comment on how this modality benefits the moderators. Like participants, we were able to take time to reflect on our responses and questions, to engage with outside information that informed our responses in ways we may not have known before, and to summarize connected ideas across multiple posts. This provided us time to reflect on participant responses and to formulate follow-up posts which sought to clarify participant meanings and decrease the chance of misinterpretation (Williams et al., 2012).

On the surface, this may not seem entirely different from the probing that takes place in a face-to-face focus group. However, much of the planning and management of the

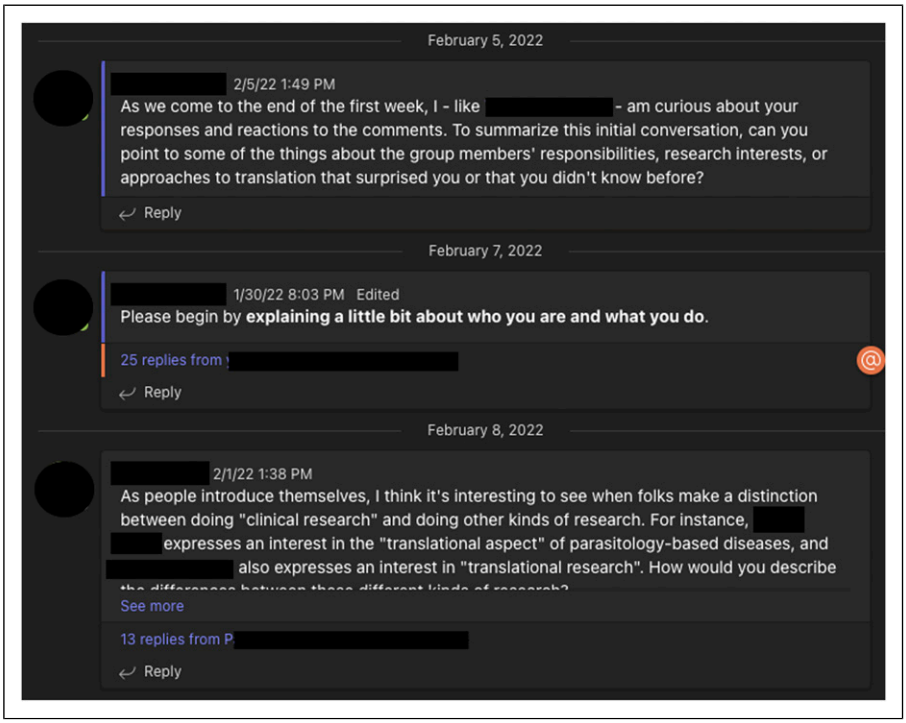

Figure 1. Illustration of non-linear conversational sequence.

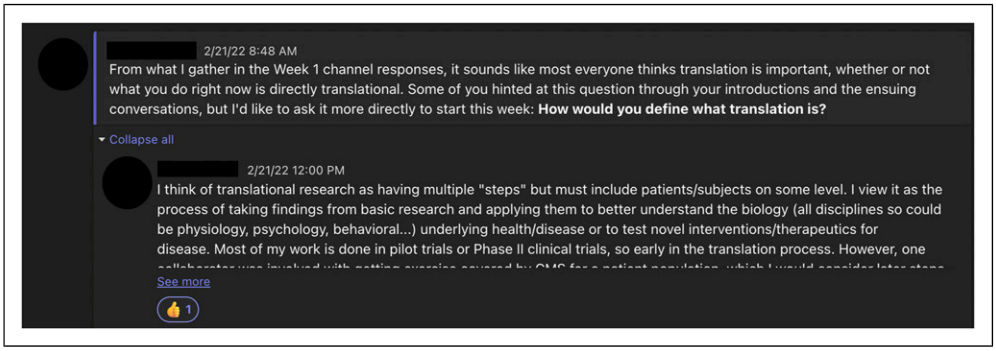

Figure 2. Example of disruption to the conversational sequence in the form of restricted content.

questions posed to participants took place *outside* of the Teams platform. That is, we met once or twice a week to discuss responses and collaboratively decide which direction we wanted to steer the conversation. In some way, this allowed us to analyze responses in real time in relation to our research questions and interests; we used the flexibility of the focus group to derive meaning and insight from the participants' responses that then drove future questions. Reflecting before actively moderating also felt like we were more active members in the "co-creation of knowledge" (Rolland & Parmentier, 2013). This supports the finding that AOFGs allow for a greater "co-research" process than other traditional focus group methods. Talking about different participant responses also helped us conjointly make sense of the data in a way that would not be possible during an in-person focus group, without a break or rest period, where researchers could talk freely without the presence of the participants. For us, this process felt like an integral part of the research process, functioning much like an ongoing analytic journal or series of memos that impacted the research in a more direct and granular manner.

Nonverbal Cues and Immediacy

Third, we wanted to create emotional connections with the participants and the content given the lack of nonverbal physical cues when using the Teams platform. Given the nature of this modality, the richness of data gained from

observing physical interactions removes a key strength of using in-person focus groups (Short et al., 1976) and when conducting online focus groups using video (Seitz, 2016). Nonverbal components like participants' facial expressions, tone of voice, gestures, and body language, to name a few, were no longer present to complement participants' verbal communication behavior. These elements are important in traditional focus groups to help participants become comfortable with one another, ideally leading them to share more honest responses and build rapport (Archibald et al., 2019). Walther's (1992) social information processing (SIP) framework supports this perspective, positing that individuals adjust their communication behavior in online spaces by using a variety of cues (like emojis) in place of the traditional nonverbal cues often present in face-to-face interactions. In this case, everyone in the focus group – including us – used a variety of other platform affordances to fill this void (Estrada-Jaramillo et al., 2022). Such affordances help make up for the absences of physical expressions (Rolland & Parmentier, 2013) and demonstrate how this unique qualitative method has its own advantages (Graffigna & Bosio, 2006). There are four specific features that we found particularly important: emojis, tagging, chronemics, and profiles.

To start, Teams allowed participants to express their reactions to different responses in the form of *emojis*. These paralinguistic cues reinforced – in a virtual setting – how participants might have reacted in a face-to-face setting (see Figure 3).

Moreover, responses that garnered more emojis may have led participants to believe that these posts were particularly insightful or impactful. Another feature that uniquely functioned to help us conduct the focus group was *tagging*. Like directly asking a person a question, we were able to tag specific individuals in questions or replies to get their attention and demonstrate that we wanted their input. Teams would then send a notification to this individual letting them know that someone had explicitly mentioned them in a post. For example, Figure 4 demonstrates a single post by one of the researchers that directly tagged 4 different individuals. Questions were tailored based on their individual responses and they were simultaneously prompted to contribute to the conversation. We also had the ability to tag the group in general in order to get everyone's attention and ensure that an important question was not overlooked.

Third, *chronemics* functioned as a nonverbal cue illustrating interest and affect for particular responses. We were able to concretely decipher when individuals posted their responses (throughout the week or concentrated at a specific time) to give us a sense of their total contributions; and given that contributions were expected to take up to 60 minutes total per week, individuals who responded quickly to others potentially signaled their interest or connection to a specific topic. We used these as opportunities to quickly probe an individual who may be more willing to discuss their perspectives or offer information. Finally, Teams automatically provided links to *profiles* of each participant, allowing others access to vital personal information not typically shared during traditional focus groups. These profiles potentially included pictures, job titles and descriptions, office locations, email address, phone numbers, and supervisor names. This presented an important trade-off between utilizing this information to create more immediacy between participants and protecting their identifying information.

Supporting Information

The fourth consideration was related to the variety of supporting material and insight that participants were able to provide as part of their ongoing interactions. As noted, we were able to take additional time to discuss participants' responses. The asynchronous nature of the group also allowed us to research, decipher, or learn about insights provided by participants that may have initially been unfamiliar to us. Likewise, compared to traditional focus groups, participants had opportunities to enhance their responses by providing links to outside information, source material from their respective departments, clarifying materials, updates, or personal connections (see Figure 5).

In general, research concerning the use of online focus groups contends that the *content* generated in both in-person and online spaces is relatively similar (Jones et al., 2022; Reisner et al., 2018). However, the format in which this

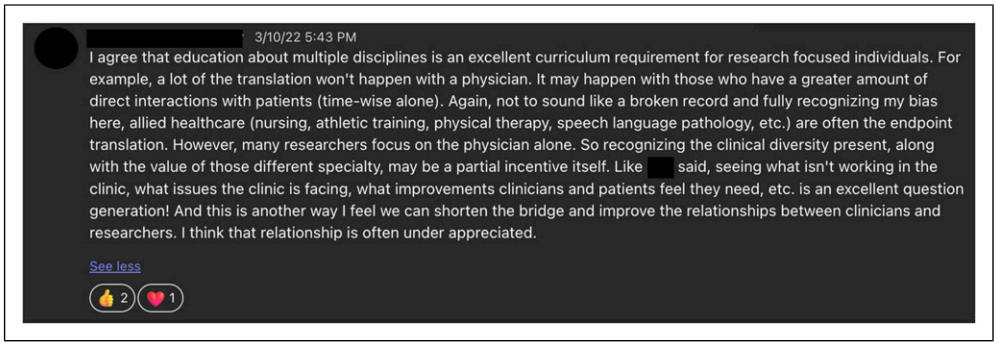

Figure 3. Demonstration of the paralinguistic affordances present with the platform.

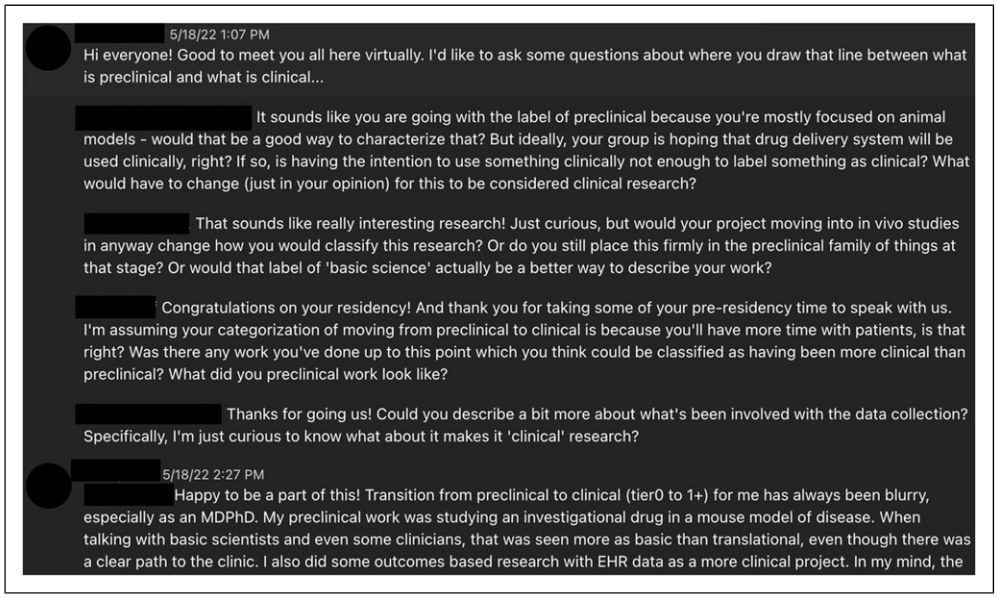

Figure 4. Demonstration of conversational probes.

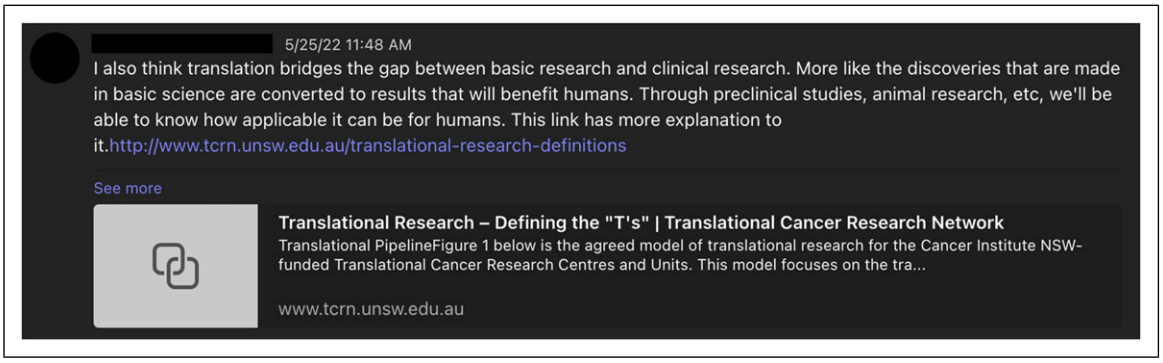

Figure 5. Example of supplementary link sharing.

information is presented may indeed differ depending on the medium and context (Woodyatt et al., 2016). For example, after being asked to expand upon their definition of the stages of clinical and preclinical research, one participant provided a direct citation to the journal article that influenced her perspective (i.e., Khoury et al., 2010). In another instance, a discussion of how funding agencies view the process of translation resulted in one participant sharing examples of successful grant submissions with another researcher (see Figure 6).

Other cases involved faculty members sharing hyperlinks to the homepage of their respective research labs, allowing other participants to further explore their research interests and expertise. Ultimately, it is the asynchronous nature which enables this richness and depth of the knowledge to be shared.

Although sharing information is feasible within traditional focus groups (e.g., sharing contact information, emailing relevant links), we found that the nature of the platform allowed for resources to be shared with more efficiency (Woodyatt et al., 2016). Instead of making a personal note to share examples of successful grant submissions with another participant at the conclusion of the focus group (which could easily be overlooked, forgotten, or delivered after long stretches of time), participants were able to provide these resources quickly and easily during conversations in ways that potentially shaped future interactions. The resources were available to all members of the focus group to access, and participants were likely able to build interpersonal connections more quickly than in a physical space (Rolland & Parmentier, 2013), and for some, gain a greater source of empowerment (Hall et al., 2022). Sharing outside information has also been found to provide a richer data set for later analysis (Gordon et al., 2021; Halliday et al., 2021; Roberts et al., 2021). The platform's ability to support efficient sharing

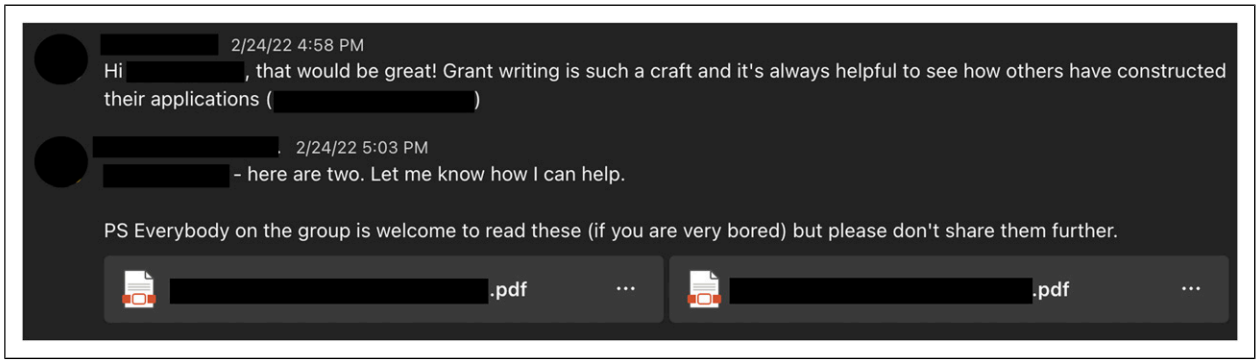

Figure 6. Secondary example of resource sharing.

of resources, combined with participants' ability to look up additional information and post it for others to see, shifted how conversation ensued and provided greater depth to the data analysis process.

Technical Competence

The final consideration was related to both the researchers' and the participants' technical competence working with Teams. Navigating the technical difficulties associated with any type of virtual research modality is well documented (Halliday et al., 2021; LaForge et al., 2022; Marques et al., 2021). Using technological interventions for synchronous or asynchronous focus groups may limit the access of some participants (LaForge et al., 2022), prove difficult for older individuals to learn new functionality (Gordon et al., 2021), and pose a challenge for those with poorer typing efficacy. One way we attempted to manage these challenges was by choosing to use Teams.

Specifically, faculty, students, and staff at the university where the research was conducted have access to the Microsoft 365 suite of products, which includes the Teams platform. As such, we felt it would be more appropriate to conduct the focus groups here, rather than asking all parties to potentially learn and utilize an entirely new virtual space. For us, this involved strategizing over the most effective ways to recruit, assign, and interact with participants over the specified time period. It also raised important questions about how the virtual space should be organized in order to maximize the potential for discussion. Although we were both familiar with Teams, we still experienced a learning curve in our efforts to use it in this new capacity and for this specific purpose (Bolin et al., 2023).

As far as participants, we experienced varying levels of familiarity and usability when it came to the platform. It is likely that some individuals used Teams regularly and felt comfortable navigating through the interface. At the same time, some individuals expressed interest in the study but also frustration at their inability to participate. We highlight two specific examples. At the beginning of a focus group, one 59 year-old individual contacted us directly through email to ask for guidance, stating: "I am not super familiar with Teams so may be unfamiliar so if you want my participation I need more direction and clarity." We extended several accommodations to this individual, including the opportunity to converse directly with us via email instead of participating in the group. However, participation was ultimately sparse. In another instance, at the end of the focus group, one 62 year-old participant remarked in an email to the researchers:

> The reason that my participation was so light was due to my lack of familiarity with Microsoft Teams. In addition, I cannot see how virtual meetings are effective. It would have been ideal if just one time the group could have met in person. I have much experience related to translational studies but did not find Teams to be an appropriate application in which to communicate my experiences and conclusions.

Clearly, different experiences and expectations from the participants regarding their comfort level with Teams, as well as with the general usability of the platform (Im & Chee, 2012), influenced participants' relative abilities to contribute to the discussion.

Discussion and Reflection

The project in question sought to create a shared space for translational stakeholders to discuss their knowledge of related processes. These individuals – while often physically, socially, and organizationally peripheral to one another – have intertwined roles that conjointly influence the public-facing success of biomedical research projects. Our questions were designed to assess the knowledge transfer gaps that occur between these researchers as projects are moving across translational stages, including where communication breaks down, how opposing beliefs inhibit projects from developing quickly, and how educational interventions might prepare both groups to navigate this process more efficiently in the future.

The major challenges associated with the project involved (1) ensuring participant safety during the ongoing COVID-19

pandemic and (2) respecting the time and availability of difficult to reach populations. Thus, the success of the project depended on how well Teams allowed translational stakeholders to interact, tell stories, and create shared meaning regarding their differing experiences and perspectives. In lieu of our observations about how Teams facilitated these interactions, we reflect on our practices and offer implications for researchers considering the use of Teams (or similar platforms) for asynchronous online focus group discussions. Namely, our perspective offers a rich description of the way Teams exerted a unique influence on how interaction occurred between participants, how those interactions could be interpreted during discussions, and how the data could be exported for future analysis.

Interaction

Discontinuities in conversational flow (i.e., delays in posts by group members) and the presence of multiple, simultaneous conversations make it challenging for researchers to recreate the flow of AOFG interactions. Questions designed to illuminate participants' experiences relative to a specified topic (i.e., translational research) occur among a variety of side conversations, technical knowledge, and other discordant background features. As such, Estrada-Jaramillo et al. (2022) argued that the nature of the AOFG itself raises the possibility of "rethinking what counts as insightful reading" among participants and for the researchers (p. 14). For example, although the AOFG allowed participants to share resources directly and efficiently, this often occurred through conversations that were tangential to the main topic or probe.

In the case of Teams, this was further complicated by the platform's inherent grouping of conversations by topic rather than sequential date and through limitations on how much of a participant's response was visible to a reader. This functional noise raises the possibility that individual responses were not fully read or seen prior to offering a response (something we deem as akin to dealing with a lack of comprehension due to auditory noise in a face-to-face focus group). The platform may be dictating what counts as insightful for participants and their subsequent responses by reorganizing conversations or forcing them to take additional steps to access information, troubling how interactions may play out among displaced groups attempting to make sense of disparate experiences.

Therefore, to avoid confusion, we encourage researchers to strategically plan their procedures ahead of time based on the anticipated affordances provided to them by their chosen platform. It is important for researchers to take time to get to know their platforms intimately prior to engaging in the research. Doing so will allow them to anticipate and troubleshoot participant problems, as well as recognize how specific features of the platform can be leveraged to generate unique data (e.g., sorting Teams into weekly channels to organize interactions into manageable segments). Likewise, unlike other platforms like WhatsApp that may be far more common, or even ubiquitous to people's daily communicative behaviors (Neo et al., 2022), individuals may be less familiar with Microsoft Teams in general. In our case, despite the platform being managed by the participants' employer, many individuals expressed difficulty navigating the platform's affordances. Given that these affordances subsequently play a role in facilitating individual contributions, as well as potentially influencing content deemed insightful or important, perhaps researchers should have contingency plans for individuals who are not comfortable using the chosen platform or technology. It may be helpful for researchers to get in front of potential problems by providing extra resources or instructions for taking part in the discussion. Moreover, because of the permanence of the asynchronous design, these materials should be kept accessible throughout the entirety of the research. Other efforts to ensure accessibility could include different options to facilitate participation (e.g., allowing participants to email responses, record videos, or submit voice recordings) or conducting screening based on comfort levels prior to enrollment in the study (i.e., perhaps researchers decide not to allow participation if individuals express ambiguity or uneasiness at using the technology).

Ongoing Interpretation

Yet, even though the platform's affordances may directly impact *how* participants interact throughout the focus groups, we also see the non-linearity of the AOFG conversation as an epistemological benefit when it comes to *interpretation*. AOFGs have dramatic implications for reflexivity in that they give researchers time to deliberate upon and make sense of participants' responses while data is being collected. This ultimately resulted in greater critical thinking about responses and the potential directions that future probing prompts needed to generate richer responses (Skelton et al., 2018). As noted, we were able to convene outside of Teams to discuss responses, adjust questions, and decide on new directions *during* data collection. This ability is unique to the AOFG format, and it functions analogously to a qualitative memo that can be used to triangulate data or to account for researcher biases in the interpretation of the results. If engaging in this process of ongoing reflection, we encourage others to track their conversations and keep note of the shifts in the research plan as a form of qualitative data checking which can then be used to promote trustworthiness in the methods section of an article.

Iterative reflection can also be accomplished through specific and strategic opportunities for researchers and participants to summarize and synthesize responses. In promoting increased *quantity* of communication that is simultaneously occurring throughout the group (amongst other technological factors), participants can suffer from a lack of *quality* responses (e.g., Chen & Neo, 2019). To mitigate this threat, researchers can take time to summarize ongoing conversations to ensure they are accurately interpreting participants'

responses. Likewise, researchers can ask participants to discuss their individual takeaways to highlight main ideas and experiences. For example, at the end of the first week, once participants had provided their personal conceptualizations of translation, participants were explicitly asked to reflect on the variety of responses: "I'd also love to know - as a response to this thread - if there were any things that stood out to you this week about definitions of pre-clinical and clinical research that your colleagues have provided." As such, this practice of ongoing reflection lessens the chance that an engaged researcher may misinterpret a participants' experience or meaning (Williams et al., 2012).

As a third type of qualitative check, responses can be complemented through the collection of different types of data (Gordon et al., 2021). Particularly, AOFG research has extensively documented how participants use features like emojis, likes, tagging, chronemics, punctuation, and misspelling to make up for the cues filtered out by the online medium (e.g., Colom, 2022). In the context of the present study, it was unclear whether posts accompanied by greater paralinguistic cues were more popular or influential than other posts. Instead, the cues provide greater context surrounding the group tone, discussion, and rapport. Leveraging the technological affordances to develop a positive climate should lead to new potential sources of data that paint a richer picture of the participants' experiences (Kaufmann et al., 2016).

Data Management

Despite the advantage posed by Teams as a text-based group that removes the need for transcription when managing data (Jones et al., 2022), the platform complicates the extrapolation of participant data into qualitative analysis software (or other relevant programs). Given that conversations across the platform are not aggregated linearly, moving the transcribed data from Teams into a separate program becomes a major task if one waits until the conclusion of the group, especially if the sequence of conversation matters for the chosen data analytic method (e.g., thematic analysis, grounded theory). For the present study, we were forced to sequentially reconstruct the flow of the group interaction by moving around conversational threads like pieces of a puzzle. As such, this process opens the door for researchers to directly influence how the data is analyzed; lived experiences can be misinterpreted due to errors in sequencing that occur when exporting data from Teams. For example, in our case, group composition was central to the questions being posed in the research. Without a mixture of clinical and preclinical researchers, or faculty, staff, and students, the quality of the data would have suffered. Moreover, composition may have direct effects on data quality through the limits it poses on participation; power dynamics may have impacted the nature of responses (e.g., students or staff may not want to question the definition of translation provided by a faculty member). If care is not taken to preserve interactions and reconstruct them in an appropriate manner, these conversational nuances and their importance may be overlooked.

To combat this issue, we suggest that researchers using Teams for AOFGs avoid waiting until the completion of the focus group to export their data. Establishing guidelines early in the research process for when data will be exported and following those guidelines on a regular basis will help to ensure the data to be analyzed matches the data generated during the groups. In our example, exporting data each week – as opposed to waiting until the end of four weeks – would have saved time and energy that could have instead been put towards actual analysis.

Conclusion

Based on our experience, Teams can be used to successfully connect various groups who rarely share the same space in the daily life. Additionally, responses provided through this platform produced rich data and insight (Gordon et al., 2021). The uniqueness of the method for producing such data stems from the asynchronous format and the nuanced features of Microsoft Teams as an AOFG platform. Our mental roadmap for ensuring effectiveness in this space centers on capitalizing on the resources and affordances offered by the service. Researchers who acutely consider both the strengths and weakness of the platform in conjunction with the research questions, sample, and desired data analytic method should be primed for a successful project. The general stages of this reflection include familiarizing oneself with the features of the platform, evaluating the potential impact of group composition relative to the research questions, assessing the need for participant confidentiality or anonymity, using the platform's features to structure a potential discussion (e.g., channels, threads), judging participants' technological competence, constructing an open and supportive atmosphere, practicing ongoing reflection, collecting multiple forms of data where possible, clarifying information for both participants and researchers, and performing timely data management.

We are confident that this form of qualitative data collection can function as an appropriate and valid tool for generating focus group-equivalent insights (Lobe et al., 2020). However, we also recognize the uniqueness of the research questions driving the use of the platform. We want to be clear – we are not discouraging the use of traditional in-person focus group formats; these methods are obviously still extremely valuable for collective discussion, decision making, and deliberation. We believe AOFGs add a viable option to the qualitative methodological toolkit. We hope that this piece (1) provides a guide for researchers conducting similar work and (2) sparks a larger conversation about best practices for asynchronous online focus group data collection when physical interaction is not possible or appropriate.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This paper is a product of a Research and Creative Activities grant provided by the College of Communication and Information at the University of Kentucky.

Ethical Statement

Ethical Approval

Ethical approval was provided by the Institutional Review Board of the University of Kentucky.

ORCID iD

T. Kody Frey https://orcid.org/0000-0003-1001-8821

Notes

1. Recruitment of physicians for qualitative studies is a known challenge for social science researchers. See: Asch et al., 2000; Krebs et al., 2021
2. For a more in-depth overview of the Microsoft Teams interface, we recommend consulting the official documentation at https://learn.microsoft.com/en-us/microsoftteams/teams-overview
3. For context, the one-page overview sent to participants is available as a supplementary document here: https://osf.io/4zsek/?view_only=4ed72eaf842e4ad2ad827b2d821b534c

References

Anderson, J. R., Chung, T. D., Clark, L., Weis, J. A., Danielsen, A. J., Khosla, S., Gores, G. J., & Badley, A. D. (2019). Translation to practice: Accelerating the cycle of innovation to impact. *Mayo Clinic Proceedings*, *94*(3), 490–499. https://doi.org/10.1016/j.mayocp.2018.08.008

Archibald, M. M., Ambagtsheer, R. C., Casey, M. G., & Lawless, M. (2019). Using zoom videoconferencing for qualitative data collection: Perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods*, *18*, 1–8. https://doi.org/10.1177/1609406919874596

Asch, S., Connor, S. E., Hamilton, E. G., & Fox, S. A. (2000). Problems in recruiting community-based physicians for health services research. *Journal of General Internal Medicine*, *15*(8), 591–599. https://doi.org/10.1046/j.1525-1497.2000.02329.x

Bloch, B. S. (2020). *The values and ethics of biomedical engineering practices in the design of novel biotechnologies*[Doctoral dissertation. University of Illinois at Urbana-Champaign]. Illinois Digital Environment for Access to Learning and Scholarship. http://hdl.handle.net/2142/109519

Bolin, G., Kalmus, V., & Figueiras, R. (2023). Conducting online focus group interviews with two generations: Methodological experiences and reflections from the pandemic context. *International Journal of Qualitative Methods*, *22*, 1–8. https://doi.org/10.1177/16094069231182029

Chase, L., & Alvarez, J. (2000). Internet research: The role of the focus group. *Library and Information Science Research*, *22*(4), 357–369. https://doi.org/10.1016/S0740-8188(00)00050-5

Chen, J., & Neo, P. (2019). Texting the waters: An assessment of focus groups conducted via the WhatsApp smartphone messaging application. *Methodological Innovations*, *12*(3), 2059799119884427. https://doi.org/10.1177/2059799119884276

Colom, A. (2022). Using WhatsApp for focus group discussions: Ecological validity, inclusion and deliberation. *Qualitative Research*, *22*(3), 452–467. https://doi.org/10.1177/1468794120986074

Cook, K., Jack, S., Siden, H., Thabane, L., & Browne, G. (2014). Innovations in research with medically fragile populations: Using bulletin board focus groups. Qualitative Report, *19*(39), 1–12. Retrieved from. https://nsuworks.nova.edu/tqr/vol19/iss39/1

Dodds, S., & Hess, A. C. (2020). Adapting research methodology during COVID-19: Lessons for transformative service research. *Journal of Service Management*, *32*(2), 203–217. https://doi.org/10.1108/JOSM-05-2020-0153

Estrada-Jaramillo, A., Michael, M., & Farrimond, H. (2022). Absence, multiplicity and the boundaries of research? Reflections on online asynchronous focus groups. Qualitative Research. *Advance* online publication. https://doi.org/10.1177/14687941221110169

Fox, F. E., Morris, M., & Rumsey, N. (2007). Doing synchronous online focus groups with young people: Methodological reflections. *Qualitative Health Research*, *17*(4), 539–547. https://doi.org/10.1177/1049732306298754

Freeman, T. (2006). 'Best practice' in focus group research: Making sense of different views. *Journal of Advanced Nursing*, *56*(5), 491–497. https://doi.org/10.1111/j.1365-2648.2006.04043.x

Gordon, A. R., Calzo, J. P., Eiduson, R., Sharp, K., Silverstein, S., Lopez, E., Thomson, K., & Reisner, S. L. (2021). Asynchronous online focus groups for health research: Case study and lessons learned. *International Journal of Qualitative Methods*, *20*, 1–13. https://doi.org/10.1177/1609406921990489

Graffigna, G., & Bosio, A. C. (2006). The influence of setting on findings produced in qualitative health research: A comparison between face-to-face and online discussion groups about HIV/AIDS. *International Journal of Qualitative Methods*, *5*(3), 55–76. https://doi.org/10.1177/160940690600500307

Hall, J. N., Mitchel, N., Halpin, S. N., & Kilanko, G. A. (2022). Using focus groups for empowerment purposes in qualitative health research and evaluation. *International Journal of Social Research Methodology*, *26*(4), 409–423. https://doi.org/10.1080/13645579.2022.2049518

Halliday, M., Mill, D., Johnson, J., & Lee, K. (2021). Let's talk virtual! Online focus group facilitation for the modern

researcher. *Research in Social and Administrative Pharmacy: RSAP*, *17*(12), 2145–2150. https://doi.org/10.1016/j.sapharm.2021.02.003

Hayes, R. A., Carr, C. T., & Wohn, D. Y. (2016). One click, many meanings: Interpreting paralinguistic digital affordances in social media. *Journal of Broadcasting and Electronic Media*, *60*(1), 171–187. https://doi.org/10.1080/08838151.2015.1127248

Huston, S. A., & Hobson, E. H. (2008). Using focus groups to inform pharmacy research. *Research in Social and Administrative Pharmacy: RSAP*, *4*(3), 186–205. https://doi.org/10.1016/j.sapharm.2007.09.001

Im, E. O., & Chee, W. (2012). Practical guidelines for qualitative research using online forums. *Computers, Informatics, Nursing: CIN*, *30*(11), 604–611. https://doi.org/10.1097/NXN.0b013e318266cade

Ioannidis, J. P., Kim, B. Y., & Trounson, A. (2018). How to design preclinical studies in nanomedicine and cell therapy to maximize the prospects of clinical translation. *Nature Biomedical Engineering*, *2*(11), 797–809. https://doi.org/10.1038/s41551-018-0314-y

Kalbfleisch, P., & Eckley, V. (2003). Facilitating mentoring relationships: The case for new technology. *Informing Science*, *6*, 1581–1590. https://doi.org/10.28945/2736

Jones, J. E., Jones, L. L., Calvert, M. J., Damery, S. L., & Mathers, J. M. (2022). A literature review of studies that have compared the use of face-to-face and online focus groups. *International Journal of Qualitative Methods*, *21*, 1–12. https://doi.org/10.1177/16094069221142406

Kaufmann, R., Sellnow, D. D., & Frisby, B. N. (2016). The development and validation of the online learning climate scale (OLCS). *Communication Education*, *65*(3), 307–321. https://doi.org/10.1080/03634523.2015.1101778

Khoury, M. J., Gwinn, M., & Ioannidis, J. P. (2010). The emergence of translational epidemiology: From scientific discovery to population health impact. *American Journal of Epidemiology*, *172*(5), 517–524. https://doi.org/10.1093/aje/kwq211

Kitzinger, J. (1994). The methodology of focus groups: The importance of interaction between research participants. *Sociology of Health and Illness*, *16*(1), 103–121. https://doi.org/10.1111/1467-9566.ep11347023

Kitzinger, J. (1995). Qualitative research. Introducing focus groups. *BMJ*, *311*(7000), 299–302. https://doi.org/10.1136/bmj.311.7000.299

Kitzinger, J., & Barbour, R. (1999). Introduction: The challenge and promise of focus groups. In R. S. Barbour, & J. Kitzinger (Eds.), *Developing focus group research: Politics, theory and practice* (pp. 1–20). Sage.

Krebs, F., Lorenz, L., Nawabi, F., Lück, I., Bau, A. M., Alayli, A., & Stock, S. (2021). Recruitment in health services research—a study on facilitators and barriers for the recruitment of community-based healthcare providers. *International Journal of Environmental Research and Public Health*, *18*(19), 10521. https://doi.org/10.3390/ijerph181910521

Krueger, R. A., & Casey, M. A. (2014). *Focus groups: A practical guide for applied research* (5th ed.). Sage.

LaForge, K., Gray, M., Stack, E., Livingston, C. J., & Hildebran, C. (2022). Using asynchronous online focus groups to capture healthcare professional opinions. *International Journal of Qualitative Methods*, *21*, 1–9. https://doi.org/10.1177/16094069221095658

Lindlof, T. R., & Taylor, B. C. (2017). *Qualitative communication research methods*. Sage.

Lobe, B. (2017). Best practices for synchronous online focus groups. In R. S. Barbour, & D. L. Morgan (Eds.), *A new era in focus group research: Challenges, innovation and practice* (pp. 227–250). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-58614-8_11

Lobe, B., Morgan, D., & Hoffman, K. A. (2020). Qualitative data collection in an era of social distancing. *International Journal of Qualitative Methods*, *19*, 1–8. https://doi.org/10.1177/1609406920937875

MacNamara, N., Mackle, D., Trew, J. D., Pierson, C., & Bloomer, F. (2021). Reflecting on asynchronous internet mediated focus groups for researching culturally sensitive issues. *International Journal of Social Research Methodology*, *24*(5), 553–565. https://doi.org/10.1080/13645579.2020.1857969

Marques, I. C. D. S., Theiss, L. M., Johnson, C. Y., McLin, E., Ruf, B. A., Vickers, S. M., Fouad, M. N., Scarinci, I. C., & Chu, D. I. (2021). Implementation of virtual focus groups for qualitative data collection in a global pandemic. *The American Journal of Surgery*, *221*(5), 918–922. https://doi.org/10.1016/j.amjsurg.2020.10.009

Morgan, D., & Lobe, B. (2011). Online focus groups. In S. N. Hesse-Biber (Ed.), *The handbook of emergent technologies in social research* (pp. 199–230). Oxford University Press.

Neo, P. H., Lim, J. M., Tan, R. K., & Ong, S. E. (2022). Using WhatsApp focus group discussions for qualitative data collection: Exploring knowledge, attitudes, and perceptions of Covid-19 in Singapore. *International Journal of Qualitative Methods*, *21*, 1–12. https://doi.org/10.1177/16094069221090355

Pavić, Ž., Dremel, A., Pintarić, L., Kovačević, E., & Lesinger, G. (2022). Vaccine hesitancy amidst COVID-19 pandemic: Insights from a focus group study in Croatia. *Italian Sociological Review*, *12*(2), 523–523. https://doi.org/10.13136/isr.v12i2.561

Reisner, S. L., Randazzo, R. K., White Hughto, J. M., Peitzmeier, S., DuBois, L. Z., Pardee, D. J., Marrow, E., McLean, S., & Potter, J. (2018). Sensitive health topics with underserved patient populations: Methodological considerations for online focus group discussions. *Qualitative Health Research*, *28*(10), 1658–1673. https://doi.org/10.1177/1049732317705355

Rivaz, M., Shokrollahi, P., & Ebadi, A. (2019). Online focus group discussions: An attractive approach to data collection for qualitative health research. *Nursing Practice Today*, *6*(1), 1–3. https://doi.org/10.18502/npt.v6i1.386

Roberts, J. K., Pavlakis, A. E., & Richards, M. P. (2021). It's more complicated than it seems: Virtual qualitative research in the

COVID-19 era. *International Journal of Qualitative Methods*, *20*, 1–13. https://doi.org/10.1177/16094069211002959

Rodham, K., & Gavin, J. (2006). The ethics of using the internet to collect qualitative research data. *Research Ethics*, *2*(3), 92–97. https://doi.org/10.1177/174701610600200303

Rolland, S. E., & Parmentier, G. (2013). The benefit of social media: Bulletin board focus groups as a tool for co-creation. *International Journal of Market Research*, *55*(6), 809–827. https://doi.org/10.2501/IJMR-2013-068

Seitz, S. (2016). Pixilated partnerships, overcoming obstacles in qualitative interviews via Skype: A research note. *Qualitative Research*, *16*(2), 229–235. https://doi.org/10.1177/1468794115577011

Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. John Wiley and Sons.

Simpson, P., & Richards, M. (2018). Using photovoice with working-class men: Affordances, contradictions and limits to reflexivity. *Qualitative Research in Psychology*, *19*(1), 155–175. https://doi.org/10.1080/14780887.2018.1549298

Skelton, K., Evans, R., LaChenaye, J., Amsbary, J., Wingate, M., & Talbott, L. (2018). Utilization of online focus groups to include mothers: A use-case design, reflection, and recommendations. *Digital Health*, *2018*(4), 2055207618777675. https://doi.org/10.1177/2055207618777675

Smithson, J. (2000). Using and analysing focus groups: Limitations and possibilities. *International Journal of Social Research Methodology*, *3*(2), 103–119. https://doi.org/10.1080/136455700405172

Stewart, D. W., & Shamdasani, P. (2017). Online focus groups. *Journal of Advertising*, *46*(1), 48–60. https://doi.org/10.1080/00913367.2016.1252288

Taktak, A., Ganney, P., Long, D., & Axell, R. (2019). *Clinical engineering: A handbook for clinical and biomedical engineers*. Academic Press.

Tausch, A. P., & Menold, N. (2016). Methodological aspects of focus groups in health research: Results of qualitative interviews with focus group moderators. *Global Qualitative Nursing Research*, *3*, 2333393616630466. https://doi.org/10.1177/2333393616630466

Tremblay, S., Castiglione, S., Audet, L. A., Desmarais, M., Horace, M., & Peláez, S. (2021). Conducting qualitative research to respond to COVID-19 challenges: Reflections for the present and beyond. *International Journal of Qualitative Methods*, *20*, 1–8. https://doi.org/10.1177/16094069211009679

Tuttas, C. A. (2015). Lessons learned using web conference technology for online focus group interviews. *Qualitative Health Research*, *25*(1), 122–133. https://doi.org/10.1177/1049732314549602

Vindrola-Padros, C., Chisnall, G., Cooper, S., Dowrick, A., Djellouli, N., Symmons, S. M., Martin, S., Singleton, G., Vanderslott, S., Vera, N., & Johnson, G. A. (2020). Carrying out rapid qualitative research during a pandemic: Emerging lessons from COVID-19. *Qualitative Health Research*, *30*(14), 2192–2204. https://doi.org/10.1177/1049732320951526

Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research*, *19*(1), 52–90. https://doi.org/10.1177/009365092019001003

Wehling, M. (2015). *Principles of translational science in medicine: From bench to bedside*. Academic Press.

Wilkerson, J. M., Iantaffi, A., Grey, J. A., Bockting, W. O., & Rosser, B. R. S. (2014). Recommendations for internet-based qualitative health research with hard-to-reach populations. *Qualitative Health Research*, *24*(4), 561–574. https://doi.org/10.1177/1049732314524635

Williams, S., Clausen, M. G., Robertson, A., Peacock, S., & McPherson, K. (2012). Methodological reflections on the use of asynchronous online focus groups in health research. *International Journal of Qualitative Methods*, *11*(4), 368–383. https://doi.org/10.1177/160940691201100405

Woodyatt, C. R., Finneran, C. A., & Stephenson, R. (2016). In-person versus online focus group discussions: A comparative analysis of data quality. *Qualitative Health Research*, *26*(6), 741–749. https://doi.org/10.1177/1049732316631510

Zerhouni, E. (2003). Medicine. The NIH roadmap. *Science*, *302*(5642), 63–72. https://doi.org/10.1126/science.1091867

Zwaanswijk, M., & van Dulmen, S. (2014). Advantages of asynchronous online focus groups and face-to-face focus groups as perceived by child, adolescent and adult participants: A survey study. *BMC Research Notes*, *7*(1), 756–757. https://doi.org/10.1186/1756-0500-7-756