



STEER: Factors to consider when designing online focus groups using audio-visual technology in health research

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STEER: Factors to Consider When Designing Online Focus Groups Using Audiovisual Technology in Health Research

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Abstract

Technological advancements and ease of Internet accessibility have made using Internet-based audiovisual software a viable option for researchers conducting focus groups. Online platforms overcome any geographical limitations placed on sampling by the location of potential participants and so enhance opportunities for real-time discussions and data collection in groups that otherwise might not be feasible. Although researchers have been adopting Internet-based options for some time, empirical evaluations and published examples of focus groups conducted using audiovisual technology are sparse. It therefore cannot yet be established whether conducting focus groups in this way can truly mirror face-to-face discussions in achieving the authentic interaction to generate data. We use our experiences to add to the developing body of literature by analyzing our critical reflections on how procedural aspects had the potential to influence the data we collected using audiovisual technology to conduct synchronous focus groups. As part of a mixed methods study, we chose to conduct focus groups in this way to access geographically dispersed populations and to enhance sample variation. We conducted eight online focus groups using audiovisual technology with both academic researchers and health-care practitioners across the four regions of the United Kingdom. A reflexive journal was completed throughout the planning, conduct and analysis of the focus groups. Content analysis of journal entries was carried out to identify procedural factors that had the potential to affect the data collected during this study. Five themes were identified (Stability of group numbers, Technology, Environment, Evaluation, and Recruitment), incorporating several categories of issues for consideration. Combined with the reflections of the researcher and published experiences of others, suggested actions to minimize any potential impacts of issues which could affect interactions are presented to assist others who are contemplating this method of data collection.

Keywords

online focus groups, audiovisual technology, researchers, practitioners

Introduction

Focus groups, by their nature, are a collective activity (Kitzinger, 1994), used by researchers to bring together purposefully selected individuals to gather data in a group setting (Gothberg et al., 2013). Their hallmark is the use of interaction between participants to produce data and insights that might not be accessible without this interaction (Morgan, 2019). When using focus groups to conduct research, population sampling of participants is advocated to avoid selection bias and optimize external validity (Krueger, 1994). The ability to convene focus groups composed of participants from a range of locations is, however, an issue often faced by researchers (Flynn, Albrecht, & Scott, 2018), compounded by resource restrictions and the ability or willingness of participants to travel. As a result, researchers may make methodological compromises in relation

to sampling which can result in trade-offs that could affect data richness (Flynn et al., 2018; Krueger, 1993).

Technological advancements now available to researchers can remove restrictions imposed by geographical barriers. This makes it possible for focus groups to be comprised of

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participants deemed most appropriate to address the research question and thereby enhance the rigor of a qualitative study. When geographical restrictions are removed, theoretical and purposive approaches to sampling become more feasible as opposed to convenience sampling based on who is accessible (Morse, 2015). Similarly, the feasibility for phenomena variation may be enhanced through the heterogeneity of the people and contexts included in the sample (Higginbottom, 2004). Access to broader geography can also enable sampling sizes to be increased, potentially giving greater depth and variation to the data collected (Morse, 2015). Therefore, online options which remove geographical limitations could provide more opportunity to recruit an adequate and appropriate sample to add rigor to a study, providing an option to obtain data from the fullest range of participants (Higginbottom, 2004) and enhance validity by enabling a richer data set to be realized (Morse, 2015).

The accessibility of free software, availability of stable and fast Internet connections (Abrams, Wang, Song, & Galindo-Gonzalez, 2015), and the integration of webcams into personal computers and mobile devices, which are now common place, means audiovisual focus groups conducted via the Internet are a very feasible option for qualitative researchers. Although published examples of such an approach in health-care research and wider disciplines are becoming available, the literature base that explores the use of audiovisual technology to conduct synchronous online focus groups is still in its infancy. The first study empirically examining the quality of data produced from focus groups conducted using online audiovisual technology was published just 4 years ago (Abrams et al., 2015). Studies comparing factors such as costs, recruitment, and participant logistics (Rupert, Poehlman, Hayes, Ray, & Moultrie, 2017) or evaluating participant experience (Matthews, Baird, & Duchesne, 2018) are sparse and have only begun to emerge recently. Publications that describe the experiences of those who have used audiovisual software to conduct online synchronous focus groups dominate providing useful guidance from the lessons learnt to assist the novice researcher. It therefore cannot yet be established whether conducting focus groups in this way can truly mirror face-to-face discussions in achieving the authentic interaction necessary to generate the data required.

Although the use of an online audiovisual environment is perceived to closely align with the face-to-face environment (Matthews et al., 2018), some think the virtual nature hampers the ability to capture the essence of a focus group in relation to interactions and group dynamics (Greenbaum, 2008). Matthews, Baird, and Duchesne's (2018) evaluation of audiovisual focus groups with nine health-care professionals found that all felt easily able to express their ideas during the discussion and felt comfortable in the online environment with others previously unknown to them. However, just over half felt conversation was more difficult or flowed less easily than in a face-to-face environment. Studies that made direct comparisons between the quality of data generated face-to-face with that generated online had favorable outcomes in terms of very few

differences in the richness of data collected (Abrams et al., 2015; Flynn et al., 2018; Kite & Phongsavan, 2017).

Although literature in this field is sparse with little data from which to draw practice-informing evidence (Morgan, 2019), the comparisons which have been made by others gave us confidence that using this approach to optimize the diversity of our sample would not impinge the richness of our data. Theoretical perspectives from textbooks (Morgan, 2019; Morgan & Lobe, 2011) and reflexive accounts (Kite & Phongsavan, 2017; Strout, DiFazio, & Vessey, 2017; Collard & Van Teijlingen, 2016; Tuttas, 2015) allowed us to benefit from lessons learned by others in our planning. These examples alerted us to procedural factors unique to conducting focus groups in an online environment which could pose a threat to the generation of rich data (Strout et al., 2017) by limiting interactions, the very hallmark of focus groups, and essential to achieving our research aim. As advocated in qualitative research, we used a journal as a reflexive tool. Doing so enabled us to identify issues that had the potential to impact on methodological and ethical aspects of this study. Although these issues are similar to those encountered in conducting face-to-face focus groups, they require consideration and actions unique to an online context. Due to the fundamental importance of interaction to focus groups, researchers must create an environment that encourages participation and interaction. We noted during our data collection that the nature of an online environment had the potential to produce detached statements from participants as opposed to interactive exchanges and so recognized the importance of strategies to promote interaction. Analysis of our experience presented here highlights procedural aspects that should be considered when planning synchronous focus groups using audiovisual software to optimize the ability of this method to capture data through interactions which can methodologically be aligned as closely as possible to face-to-face alternatives.

Research Design and Method

This article draws on reflections from Phase 1 of a mixed methods study that received ethical approval from the Nursing and Health Science Filter and Ethics committee at Ulster University. The aim of the study was to explore the concept and culture of researcher practitioner engagement in the context of health-care research. This was achieved through a hybrid model of concept development (Schwartz-Barcott & Kim, 2000). During the theoretical phase, we analyzed the attributes, antecedents, and consequences of the concept of "researcher practitioner engagement" from definitions and published incidences of the phenomenon. A subsequent fieldwork stage was carried out to refine the concept through the experiential knowledge of two groups: academic researchers based in Higher Education Institutions (HEIs) in the United Kingdom (UK) who had engaged nurses, midwives, or therapists in their research in a role other than as a study participant and frontline practitioners from these disciplines working in health-care settings in the UK who had been engaged in research by academic researchers in a role other than as a study participant. Focus groups conducted via the

Internet were chosen as the most appropriate method of data collection for this fieldwork phase. This optimized our reach across the UK by enabling us to include a geographical spread of participants while also offering flexibility to practitioners with varying work patterns and clinical workloads.

Selecting the Technology

Several different software options are available to conduct online focus groups, and it is important that these are evaluated according to the practical, methodological, and ethical requirements of the research. In our study, we required software that enabled reliable and secure real-time audio and visual communication in a private online space: a facility to record both audio and visual components, a platform that demanded low levels of user competency, and no financial commitment from participants to purchase or download software. We used Tuttas's (2015) evaluation of the software available at the time of her study, a web-based search for any additional products and consultation with a technology specialist. Two potential options were identified but one was dismissed as during a trial within the research team, its stability and reliability to host a group discussion was questioned. The software chosen to carry out focus groups online was Zoom© (Version 4.5.6). This platform hosts online audiovisual meetings; it has the capacity to show multiple users on screen, record audio and visual communications, and can be used from mobile devices. Features include sharing a screen to display presentations and a whiteboard facility. Software is free to all users up to a maximum of 45 min per meeting. As we anticipated focus groups lasting a minimum of 60 min, we chose to pay a small monthly charge payable only by the meeting host. Usability of the software was evaluated as part of a pilot focus group with five PhD researchers from the Institute of Nursing and Health Research at Ulster University. The lead researcher (N.D.) reflected on facilitating the group online and obtained participants' perspectives via an online questionnaire. Favorable feedback was received from four participants who commented on their experience of the online element of the group, with three specifically highlighting ease of use of the selected software. Another commented that any more than five participants in the group might have restricted the ability to hear everyone's views.

Study Participants

Using a purposeful sampling framework, a range of recruitment strategies were adopted to bring our study to the attention of potential participants including targeted e-mails to health-care researchers in all HEIs in the UK, advertisements in professional publications available to members of professional bodies to access health-care professionals, and a strategic social media campaign to reach both groups. A participant information sheet (PIS) included detail on the purpose of the study, what participation involved and outlined how all ethical considerations had been addressed. Volunteers were asked to complete a brief online recruitment questionnaire via Qualtrics® (Version Sept.

2018) that indicated their willingness and eligibility to take part. Recruitment was ongoing; each focus group was arranged when an adequate number of eligible volunteers were available, and a Doodle poll circulated to identify availability over a range of identified dates and times. Focus groups were planned based on availability of the majority in each round; those who were not available were included in the next Doodle poll. An e-mail was sent to participants one week prior to the focus group which included an informed consent form (to be signed and returned prior to the focus group), a weblink to join the online group, and an offer to take part in a test call for those unfamiliar with the software or who wished to test their hardware.

In total, 40 academic researchers and 20 frontline practitioners completed the online recruitment questionnaire. Of those academic researchers who met the study criteria, 10 did not indicate their availability via the Doodle poll. Five were "lost"; two were not available on any of the suggested dates, two registered to take part in a focus group but did not log in to the online meeting during the allocated timeslot, and one cancelled due to sickness shortly before the focus group commenced. Of six eligible practitioners who were invited to take part in a focus group but did not participate, five did not respond to invitations to complete a Doodle poll, and one was not available on allocated dates. Over a 4-month period, 17 academic researchers took part in five focus groups (Table 1), and 8 practitioners took part in three focus groups. Each focus group lasted on average 83 min. This included time for introductions, setting ground rules and a prerecorded PowerPoint presentation that lasted four min to outline the background and methodological approach of the study. Zoom© software enabled PowerPoint slides to be visible to all participants throughout the focus group using the "share my screen" facility to provide a visual display of each discussion point.

To provide transparency and contribute to the credibility of our overall study (Shenton, 2004), the lead researcher (N.D.) documented reflective commentary in a journal from the outset. This facilitated reflexive evaluation of the effectiveness of the chosen method and was used to record researcher observations, opinions, critical reflections, and notes on theoretical reading. Journal entries included:

- recommendations made by authors who reported lessons learnt when conducting focus groups online;
- factual information about each focus group including timings and any occurrences during the group (e.g., technical issues);
- observations on factors which facilitated the group conduct;
- reflexive evaluation of the effectiveness of the method in collecting the data necessary to achieve study objectives; and
- improvements to enhance subsequent groups and reflections on any changes made.

Additional reflexive entries were made to the journal during transcription of each focus group and data analysis as were

Table 1. Characteristics of Focus Groups and Participants.

Focus Group	N	Length (min)	UK Region		Role
Academic researchers (<i>n</i> = 17)					
R1	4	75	England (<i>n</i> = 2) Scotland (<i>n</i> = 1) N. Ireland (<i>n</i> = 1)	Academic role	Professor (<i>n</i> = 2) Lecturer (<i>n</i> = 1) Research fellow (<i>n</i> = 1)
				Clinical area	Nursing (<i>n</i> = 2) Physiotherapy (<i>n</i> = 1) Occupational therapy (<i>n</i> = 1)
R2	4	93	England (<i>n</i> = 4)	Academic role	Professor (<i>n</i> = 4)
				Clinical area	Podiatry (<i>n</i> = 1) Speech and language therapy (<i>n</i> = 1) Occupational therapy (<i>n</i> = 1) Nursing (<i>n</i> = 1)
R3	3	89	England (<i>n</i> = 3)	Academic role	Professor (<i>n</i> = 1) Associate professor (<i>n</i> = 1) Lecturer (<i>n</i> = 1)
				Clinical area	Nursing (<i>n</i> = 2) Unknown (<i>n</i> = 1)
R4	2	86	England (<i>n</i> = 2)	Academic role	Professor (<i>n</i> = 1) Doctoral researcher (<i>n</i> = 1)
				Clinical area	Nursing (<i>n</i> = 1) Speech and language therapy (<i>n</i> = 1)
R5	4	59	England (<i>n</i> = 1) Scotland (<i>n</i> = 2) N. Ireland (<i>n</i> = 1)	Academic role	Professor (<i>n</i> = 1) Reader (<i>n</i> = 2) Lecturer (<i>n</i> = 1)
				Clinical area	Midwifery (<i>n</i> = 1) Physiotherapy (<i>n</i> = 1) Occupational therapy (<i>n</i> = 1) Nursing (<i>n</i> = 1)
Frontline practitioners (<i>n</i> = 8)					
P1	3	87	England (<i>n</i> = 3)	Physiotherapist (<i>n</i> = 1) Occupational therapist (<i>n</i> = 1) Speech and language therapist (<i>n</i> = 1)	
P2	2	86	England (<i>n</i> = 1) Wales (<i>n</i> = 1)	Occupational therapist (<i>n</i> = 2)	
P3	3	90	Scotland (<i>n</i> = 1) England (<i>n</i> = 2)	Physiotherapist (<i>n</i> = 1) Occupational therapist (<i>n</i> = 1) Speech and language therapist (<i>n</i> = 1)	

reflexive discussions among the research team and advice sought from an academic colleague highly experienced in focus group planning and conduct. This was an iterative process; where an issue had been identified, reflexive notes were made following subsequent groups on the effect of any action taken to address this issue and literature returned to in order to identify potential solutions where others had noted similar issues. Once data analysis was completed, all journal entries relating to the focus groups were collated. Content analysis was used to identify the unpredicted issues experienced during the conduct of the focus groups, which the researcher, using intuition and tacit knowledge, reasoned had the potential to affect the data generated during this study. Reflective notes were coded by highlighting each section of text that indicated issues that had been identified as having a potential impact on the study, actions taken to address any issues that arose and reflections on action that could have been taken. Once all codes were developed, these were grouped into those that addressed similar

issues and a representative name given to each category. As shown in Table 2, categories were grouped into five themes (Stability of group numbers, Technology, Environment, Evaluation, and Recruitment). For each category, the actions that the researcher took, or identified through reflections or consultation of theoretical readings that could have addressed these issues, were noted (Table 2). To ensure further credibility, themes, categories, and suggested actions were reviewed by an academic colleague outside of the research team who is highly experienced in focus group methods. Presented below is a summary of these reflections including key points to consider when preparing to use online focus groups in research.

Theme 1: Stability of Group Numbers

Events that occurred during some focus groups impacted on the stability and consistency of participant numbers. In group R2, one participant joined after discussions began; having initially

Table 2. Summary of Issues and Potential Actions.

Themes	Actions for Consideration
I. Stability of group numbers	
(a) Late arrival of participants	
<p>Issues to consider</p> <ul style="list-style-type: none"> • changes to group interactions • richness of data collected when group membership changes • participant retention in the study if late arrival results in group expulsion • feasibility of group if minimum participant numbers not achieved 	<ul style="list-style-type: none"> • analyze any potential impact of late arrivals in relation to the study topic and participant characteristics • assess appropriateness and necessity of software features such as locking a meeting to prevent late arrivals or disruptions • devise a strategy to manage late arrivals • manage participant expectation by communicating late arrival management strategy prior to focus group
(b) Early leavers	
<p>Issues to consider</p> <ul style="list-style-type: none"> • changes to group interactions • richness of data collected when group membership changes 	<ul style="list-style-type: none"> • adequate time allocated to focus group • clear communication to participants on minimum expected time commitment • additional data collection methods to extend focus group (e.g., asynchronous chat room)
(c) Unexpected “no-shows” and/or late cancellations	
<p>Issues to consider</p> <ul style="list-style-type: none"> • alienation of those in attendance if group must be rescheduled due to inadequate numbers • challenges of rescheduling potentiality leading to lost participants 	<ul style="list-style-type: none"> • direction via pre-focus group communication to manage expectations should this situation arise • identify strategies to prevent “no-shows” such as reminders • establish minimum participant requirements with overrecruitment to allow for no-shows or dropouts
2. Technology	
(a) Participants joining with audio only	
<p>Issues to consider</p> <ul style="list-style-type: none"> • lost participant if decision taken to discontinue participant when no video available • potential changes to group interactions and richness of data • unable to observe nonverbal communications 	<ul style="list-style-type: none"> • add statement to informed consent form and/or recruitment questionnaire to establish equipment available to participants • maintain consistency by allocating participants to specific focus groups based on technology available to them
(b) Technical support for participants	
<p>Issues to consider</p> <ul style="list-style-type: none"> • effect on recruitment if environment in which participant joins focus group is limited to where technical support can be provided • participant’s ability and/or willingness to take part if they perceive themselves to have low self-efficacy with equipment • researcher’s familiarity with software and ability to trouble shoot 	<ul style="list-style-type: none"> • pilot testing to identify potential technical issues • develop ability to trouble shoot by acquiring self-efficacy in using selected software prior to formal data collection • availability of more than one researcher during focus groups (one facilitator, one trouble shooter) • offer test calls for those who are inexperienced or lack confidence using the selected technology
(c) Optimizing use of software features	
<p>Issues to consider</p> <ul style="list-style-type: none"> • optimize interactions amongst participants • enhance participant experience 	<ul style="list-style-type: none"> • ensure familiarity with all software features that can enhance interaction such as screen displays, raise hand, and accessibility features • pilot testing • take part in a group as a member to experience participation and reflect on areas for consideration for study participants

(continued)

Table 2. (continued)

Themes	Actions for Consideration
3. Environment from which participants take part	
(a) Distractions within the participant's environment	
Issues to consider <ul style="list-style-type: none"> • can disrupt group dynamics and hence data collected • distractions caused to group members on hearing others speak in the background • quality of audio recording 	<ul style="list-style-type: none"> • alert participants to specific unacceptable distractions via ground rules, e.g., avoid use of mobile phones and checking emails • request participants use mute function on microphone should background noise occur within their environment
(b) Contravening ethical processes	
Issues to consider <ul style="list-style-type: none"> • participant taking part from a space which threatens anonymity and/or confidentiality beyond focus group members 	<ul style="list-style-type: none"> • devise strategy for addressing a situation when it becomes evident that participant is in an environment which contravenes ethical procedures (both at the beginning of the group and during the group) • clear communication in pre-focus group information on process that will be employed should participant contravene ethical processes • encourage participants to use strategies such as marking a space with a "do not disturb" sign
(c) Participant comfort	
Issues to consider <ul style="list-style-type: none"> • allows participation in a comfortable environment • rapport with researcher 	<ul style="list-style-type: none"> • offer a range of flexible times to allow for environment of choice • test call to develop rapport prior to focus group
4. Evaluation	
(a) Limited evidence of effect on data of audiovisual online as opposed to face to face data collection	
Issues to consider <ul style="list-style-type: none"> • credibility of data collected if factors which could facilitate or hinder interaction when using audiovisual technology to conduct focus groups are unknown or not planned for • unknown effect on data by conducting focus groups online as opposed to face-to-face 	<ul style="list-style-type: none"> • reflexive evaluation of the method by research team during planning, conduct and analysis of focus groups • pilot testing • adopt an iterative approach to focus group conduct using feedback from participants and researcher reflexivity • build into the study design evaluation of participant experience to identify strengths and limitations to assist with design of future studies • comparisons of data collection using face-to-face groups versus audiovisual focus groups (methodological triangulation)
5. Recruitment	
(a) Participant alienation	
Issues to consider <ul style="list-style-type: none"> • exclusion of potential participants who do not have access to suitable equipment • exclusion of those unable to secure a private environment to adhere to ethical requirements of confidentiality and anonymity • exclusion of those who are inexperienced or lack confidence in the use of the required software and/or hardware • selection bias 	<ul style="list-style-type: none"> • within recruitment questionnaire, ask potential participants to identify any factors which may restrict participation • identify if and how research team can address any factors which might limit participation, e.g., training • consider offering alternative formats to prevent participant alienation

decided not to proceed with the group due to technical difficulties, the participant later established connection and joined the discussion 20 min in. As this situation could change the group dynamic, it has been suggested by others that a participant who joins online more than 10 min after discussions

commence should be reallocated to a future group (Wilkerson, Iantaffi, Grey, Bocking, & Rosser, 2014). However, it is difficult to establish whether and how this issue could change the data (Gothberg et al., 2013). At that time, it was reasoned that the dynamic was more likely to be affected by pausing

discussions to remove the participant. There was also concern that this participant could be “lost” should they not be able to join a future group. Although expulsion based on technical issues feels punitive, it clarified to us that the consequences of “late arrival” should be clearly outlined to participants in pre-focus group communications to avoid this situation occurring. We subsequently identified a software feature to lock a meeting at a point determined by the facilitator and so by communicating a time limit prior to the group can prevent any difficulties this situation could raise.

Similarly, one participant left focus group R1 early. The timing of this group had been underestimated at 60 min and so changes were made when communicating the time expectation to future groups. Despite requesting a diary slot of 90 min, a participant left early in each of the two subsequent groups (focus groups R2 and R3). Diary demands of professionals are understandable, but it may be that the nature of the Internet makes leaving a group easier than in a face-to-face space. The result is reduced contribution from these participants during the latter stages of the discussion and potentially lost data. In recognition of the challenges faced in freeing up time to take part in such studies, others have set up asynchronous chat rooms to enable ongoing contributions post-focus group (Matthews et al., 2018); this strategy can overcome time limitations, the issue of early leavers and accommodate reflective thinkers. To facilitate the additional benefit of an anonymous contribution that may have been prohibited by the audiovisual environment, all participants were initially offered the option to provide further comment on any element of the discussion via follow-up e-mail. On realization of the impact and likelihood of early leavers and the limitation of emails in allowing further interactive discussions, we subsequently set up an online chat room via Chatzy©. Others who adopted this strategy had minimal uptake (Matthews et al., 2018); similarly, we received no follow-up e-mails or contributions to the chat room discussion. As Matthews et al. (2018) surmise, this could suggest that all discussion took place during the focus group with participants feeling they have no more to add or it could be reflective of professionals’ busy schedules and, therefore, limited time to offer further contributions. However, this strategy should be used cautiously; although offering opportunity for additional participant input, it should perhaps be considered separate to focus group data if not exposed to interactive dialogue if low numbers partake or no interaction between members is noted.

Virtual groups have been shown to have higher cancellation, no-show, and attrition rates than face-to-face groups (Matthews et al., 2018; Rupert et al., 2017) with studies providing examples where online participants were more likely to withdraw, both prior to the start and during the group (Kite & Phongsavan, 2017; Tuttas, 2015). This too was our experience; three participants were confirmed to take part in focus group R4, and following the advice of others (Matthews et al., 2018; Strout et al., 2017; Tuttas, 2015; Wilkerson et al., 2014), attempts were made to identify at least one further participant to allow for potential dropout; however, due to limited availability of volunteers, this was not possible. One of these three

participants failed to log into the discussion and was not able to contact the research team until hours later to advise of their change of circumstance. We made an “on the spot” decision to continue with the discussion as opposed to cancelling or rearranging the group as we were unaware whether the third participant would join in in due course. The resulting discussion would be considered a dyadic interview as opposed to a focus group (Morgan, Ataie, Carder, & Hoffman, 2013); this highlights the need to consider the minimum number required to form a focus group, the importance of adequate numbers to accommodate for at least one dropout and transparency in pre-focus group information on the action that will be taken should the minimum number not attend. If a focus group does not happen because not enough people turn up, this is more of an issue than if one person does not turn up for an individual interview (Morgan, 2019). The risks are alienation of those participants who were available and the challenges of rescheduling future groups, both of which could result in further withdrawal. However, the advantage of the online environment is that although inconvenient, it is surmised that rescheduling is logistically easier than face-to-face groups. Although there are notable differences between dyadic interviews and focus groups, there are also similarities (Morgan, 2019). Our motivation for using focus groups to meet the objectives of this study was to allow interaction that would facilitate sharing and comparisons based on potentially differing experiences from a range of contexts. This dyadic interview enabled us to achieve this and possibly obtaining greater depth of dialogue from these two participants during a discussion as it lasted longer than two groups with four members. Based on this, the decision was taken that should this situation arise again, a discussion with two participants could proceed as the advantages for retaining participants and the resulting data would not compromise the study. This decision also helped us to overcome the challenges we faced in convening small numbers of frontline practitioners and so prevented us from losing potential data. Focus group P2 therefore proceeded as a dyad when only two participants could be convened together. This however will not be an appropriate course of action for all studies, dependent on their nature. Researchers should be clear on the differences between dyadic interviews and focus groups and the influence of these different types of interactions to inform reasoning (Morgan et al., 2013).

Like others, we found small group sizes easier to manage online (Kite & Phongsavan, 2017). Even with low numbers we were required to extend the time allocated to each group from 60 to 90 min; small groups allowed for courteous turn taking and had larger numbers been present, we believe in-depth discussion would not have been possible in the time available to cover the focus group schedule. Features of audiovisual software such as a hand raising facility can be used in larger groups to facilitate turn taking, however, we found we did not need to avail of this tool and so are unable to offer insight into whether and how it potentially could facilitate or hinder interactions. Although more groups increased transcription time and costs, like Kite and Phongsavan (2017), we advocate for planning more online focus groups with fewer participants than when

conducting face-to-face groups. The flexibility of the virtual nature of our focus groups allowed for this. Although smaller numbers were appropriate in this context, others may find it inhibitive (Matthews et al., 2018) depending on the nature of their study.

Theme 2: Technology

We took the decision to use online meeting software using audiovisual technology to closely mirror a face-to-face environment. Pre-focus group communication with participants clearly indicated that hardware with a microphone, camera, and Internet connection was required to take part. Despite this, two participants (one in focus group R3 and one in focus group P1) joined using a computer with no camera. The decision was taken to continue so as not to lose a group member from already small groups. Both participants could see the facilitator and other group members but were not visible to others; lack of a camera did not appear to have any negative influence on interactions as both were engaged with the discussion and engaged by others. However, depending on the participants, this could affect the dynamics within a group and prevents observation of nonverbal communications so is a further factor to consider in study design and assertions in pre-focus group communication. Researchers who feel such inconsistency could negatively impact group interactions could include a clear statement on consent forms for participants to confirm their access to the necessary equipment and understanding that they cannot take part in the group should they not have the correct technology to engage both audio and visually. Equally, decisions should be made to account for those with cameras but who perhaps experience technical issues during discussions that cause interruption to visual communication, as can happen with varying Internet connections. This leads to our second potential challenge that stems from the likelihood that unforeseen technical interferences can occur in the conduct of online focus groups (Gothberg et al., 2013). In Chong, Alayli-Goebbels, Webel-Edgar, Muir, and Manson's (2015) study using webinar technology, for example, there was one participant with technical difficulties in each group. Other research teams have secured IT personnel to be available at both the facilitator and participants' venues to rectify any issues which might arise (Chong, Alayli-Goebbels, Webel-Edgar, Muir, & Manson, 2015; Flynn et al., 2018). Resource limitations prevented us from being able to offer such support; however, we experienced minimal technical issues that prevented participation. This could be attributed to our selection of software that we had established as requiring low levels of competency. We considered participants' self-efficacy in using the software an important factor as it could potentially impact on the quality of data collected (Abrams et al., 2015; Flynn et al., 2018). A further consideration is the infancy of this technology; although participants may have previous experience of participating in focus groups, doing so online may be a new experience and so may take time initially to familiarize with the process of interacting in this environment. This encouraged us to offer test calls to ensure

participants felt confident and comfortable in using the technology prior to the focus group. Test calls were taken up by three participants; we found this had the additional benefit of enabling the researcher to introduce themselves to the participant and begin to develop a rapport. Equally, the facilitator took multiple opportunities to use this platform in other areas of their work both as a host and as a meeting attendee prior to the focus groups; this developed self-efficacy in using software features to optimize interaction and in supporting other users to troubleshoot. Participants also had the flexibility to join the group from the environment of their choice, which, as we discuss later, may have been a factor that contributed to their ability to participate. As some took part from their home environment, removing choice by restricting their participation to an environment where IT support was available could have contributed to nonparticipation.

Theme 3: Environment From Which Participants Take Part

Unlike face-to-face groups, researchers have limited control of the participant's environment as it is self-selected (Chong et al., 2015). Carrying out focus groups online can, therefore, result in issues that the researcher cannot mitigate against. Examples include distractions caused by disruption by colleagues entering the room or use of the Internet such as checking e-mails (Chong et al., 2015). We experienced similar issues during this study; participants in all academic researcher focus groups (R1, R2, R3, R4, and R5) took part in the focus groups from their desk, either at home or in the workplace. Although creating a comfortable environment for participants (Flynn et al., 2018), some were observed distracted by activities on their desk, computer, and mobile phone while other members of the focus group were speaking. There were examples of participants being interrupted by colleagues or family members entering the room and on occasion, disappearing from the screen to attend to these discussions. This raises additional privacy considerations that are unique to an Internet-based study as opposed to traditional face-to-face spaces (Chong et al., 2015). From a practical perspective, others entering a room can create noise distractions and interfere with audio recording. One participant overcame this by muting their sound to prevent interference from background noise. Other researchers have suggested actively encouraging participants to mute when not speaking (Kite & Phongsavan, 2017; Tuttas, 2015). In the main, we found that this was not necessary and potentially could have resulted in disjointed discussions. Participants could be encouraged to wear a headset with a microphone (Kite & Phongsavan, 2017); however, this equipment may not be available. One participant in focus group R4 wore headphones without a microphone; although this maintained privacy for others in the group should anyone have entered the room, it prevented the headphone wearer from being aware of a background conversation that was picked up by the computer microphone and which distorted the recording.

From an ethical perspective, the environment raises issues around both anonymity and confidentiality. We asked participants to confirm they were able to take part where they could ensure confidentiality would be respected for both themselves and the other members of the group. In instances where this did not occur, it did not become evident until later in the discussions when interruptions were made. Other participants did not express concern to the facilitator during the focus groups in which this occurred, possibly due to the lack of sensitive discussions. Given the nature of the participants involved and the environment from which they join the group, particularly if within working hours, interruptions such as these may be unavoidable. However, these situations have the potential to breach confidentiality. As with focus groups carried out in face-to-face spaces, it is only the researcher who can guarantee that confidentiality will be respected and cannot guarantee the actions of other focus group members. Online spaces, however, allow for others outside of the focus group membership to be in the vicinity of the discussions without the researchers' or other focus group members' knowledge. This is a situation for which researchers should consider a clear plan of action to mitigate. Although the need for a confidential space was reinforced in the PIS, this may need to be restated on the informed consent form and when setting the ground rules at the beginning of the focus groups. Also, practical elements may need to be explicitly addressed in any communications with participants as these may not be issues they have considered prior to taking part. Facilitators must be clear on what action they will take should participants indicate that they are not in a suitable environment at the beginning of the focus group. Consideration should be given to the impact on group numbers should withdrawal be forced at this stage and how to deal with withdrawal mid-group should it become evident during discussions that confidentiality has been compromised.

Theme 4: Evaluation

Use of the Internet to conduct audiovisual focus groups has been evaluated from the participants' perspective (Matthews et al., 2018), but little is published in this regard. We did not incorporate an evaluative element into our study protocol and therefore were reliant on our own reflexivity to appraise this process. Use of a reflective journal throughout helped us to adopt an iterative approach by controlling for the unpredicted issues in subsequent groups. What remains unknown is the experience of the participant as a member of our Internet-based focus groups or what the outcome of the study would have been had it been feasible to convene these same participants in a face-to-face group. Considering the very limited evidence base and sparse reporting relating to this novel method (Morgan, 2019), others planning to carry out Internet-based focus groups using audiovisual software should consider building an evaluative component into the study design to share with others and strengthen the design of future studies. In addition, offering participants the option to take part in an online or face-to-face group provides opportunity to

compare the depth and breadth of interactions between the two formats within one study (Kite & Phongsavan, 2017).

Theme 5: Recruitment

During the recruitment phase, no potential participant contacted us to indicate that they could not take part because they did not have access to the necessary equipment or a private environment. We recognize, however, that specific requirements to enable participation in an online meeting may have negatively impinged on recruitment. Recruiting from two different professional groups, academic researchers and health-care practitioners, gave us the opportunity to reflect on factors that may have caused a difference in the ease by which we were able to recruit from one group over the other. Data collection for academic researchers was completed well in advance of their practitioner counterparts; academic participants took part from their desks during the working day in an office environment or had the opportunity to work from home. Anecdotally, they told us that they had extensive experience of online meetings and student tutorials using audiovisual technology, and the majority had used the Zoom© software package previously. Conversely, health-care professionals work shifts, have busy clinical workloads, and may be restricted by lack of access to the required equipment in a confidential space during their working day. We acknowledged the challenges of practitioner recruitment when designing our study (Hysong et al., 2013) and had reasoned that the flexibility of an Internet-based option could enhance the recruitment process. Accessibility to fit in with working schedule was rated highly in evaluation of one online study (Matthews et al., 2018). Telephone-based focus groups were preferred over face-to-face by 59.4% of participants as an alternative tool to involve health professionals who might otherwise be inaccessible (Ross, Stroud, Rose, & Jorgensen, 2006). In 2018, when our recruitment took place, 95% of adults aged 25–54 years owned a smartphone (Statista, 2018), which offers a personal device that should support participation, both audio and visual. This, however, relied on willingness of practitioner participants to take part outside of working hours if time or a private environment within which to use personal smartphone technology was not feasible during the working day. What is unknown to us is the impact that factors such as the need for a confidential environment, restricted access to the necessary hardware, and self-efficacy in using such technology had on ability or willingness to participate. Offering an alternative method of participation, so as not to alienate those who without the equipment, perceived skills, or confidence to participate could be considered to prevent sampling bias within a study. Researchers also need to be able to teach participants how to use these tools (Wilkerson et al., 2014); we offered test calls but perhaps could have been more forthcoming in identifying the need for and offering training support, as ownership of a mobile device such as a tablet or smartphone does not mean confidence in using the technology we proposed. Although an option would have been to use our recruitment survey to ask potential participants if they required

any support to enable them to participate, funding limitations would have prevented us from being able to meet any resource need indicated, such as provision of a tablet or on-site technical support.

Conclusion

This was our first experience of carrying out synchronous focus groups using the Internet. Our choice of method provided us with the opportunity to include participants from across the UK resulting in a diverse sample that we believe has added richness to the data collected. We also believe the flexibility of the medium offered encouraged participation. As researchers with experience of conducting face-to-face focus groups, we are aware that many of the methodological, practical, and ethical considerations of focus groups carried out using the Internet are similar to those which must be considered in a face-to-face venue. However, as novices of this online method, we have learnt several lessons on important factors that should be considered to overcome the methodological challenges that working in an online context can raise and to enable authentic interactions. Situations arise that are unique to online environments and are as not as easy to handle or plan for as they would be in a face-to-face space as control is given to participants, for example, in respect of their environment. Researchers, therefore, need to have clear plans of action and anticipate every eventuality to optimize participant experience, while ensuring data are collected robustly and in adherence to ethical approvals. Making use of tools such as ground rules, pre-focus group information, and informed consent documents can help to mitigate against potential issues that may arise by ensuring participants are well appraised of the process, expectations, and any action that could be taken in the event of situations arising. Although we do not offer empirical evaluation, our reflexive learning can help others to anticipate challenges specific to their study context to optimize participant experience and opportunities for authentic interaction that generates data in online focus groups as close to that which can be generated in a face-to-face environment. Further methodological evaluations are now required to continue to develop the evidence base for this approach by further exploring the impact of Internet-based focus groups on interactions, willingness to engage, and the richness of the data collected.


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