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Accessibility, interdisciplinarity and practice: the benefits and challenges of hosting an online, interdisciplinary conference on singing

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Article Info.

Abstract

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In May 2020, the *Spheres of Singing* conference, which was initially intended as an in-person event, was instead hosted online. A key ambition was to make the conference accessible for both practitioners and researchers from various disciplines. The conference exceeded in its aim in several ways. It was free and featured contributions from around the world, including 45 presentations, four workshops, six open discussions and three lecture-recitals. The interdisciplinary array of sessions included: health and wellbeing, practice research, musicology, teaching, conducting, pedagogy, and virtual choirs. In terms of attendee interest, all 450 live attendance tickets sold out in 24 hours, with additional tickets made available to allow asynchronous attendance. Such enthusiasm demonstrates an interdisciplinary event on singing was both timely and necessary.

The organisers developed a survey to gather feedback, measure impact, and help determine future directions. A significant finding is that practitioners were motivated to attend, specifically because it was an online event. However, there were challenges caused by moving the conference online, particularly when it came to relying on technology and integrating live singing activities. By analysing the feedback gathered from delegates, the article will consider three areas: creating an inviting event for practitioners and researchers, technological challenges when hosting an online conference on singing, and integrating live, synchronous singing activities into an online conference.

1. The original idea for the *Spheres of Singing* conference

Before COVID-19, *Spheres of Singing*, an interdisciplinary conference on singing, was intended to be an in-person event at the University of Glasgow in May 2020 (*Spheres of Singing*, 2020a). Organised by postgraduate students and early career researchers at the University of Glasgow, University of Edinburgh and the Royal Conservatoire of Scotland, we aimed to curate a conference on singing that allowed for communication of research and practice across a variety of disciplines, and between researchers and practitioners (choral conductors, community singing leaders, singing teachers, music teachers, music therapists, professional singers) through a wide range of talks, workshops and performances. Indeed, the range of disciplinary backgrounds and topics discussed at the conference included composition, ethnomusicology, geography, historical musicology, linguistics, pedagogy, performance practice, psychology, and other ‘singing for health’-related topics. We, the organisers, also wanted to showcase the potential of singing as an accessible and inclusive activity (see Irons, Kuipers, Wan and Stewart, 2020; Clements-Cortés, 2015; Clift, 2014; Clift, Nicol, Raisbeck, Whitmore and

Morrison, 2012).¹ For the in-person conference, there were plans to invite community groups who practise ‘singing for health’, small vocal ensembles, and choirs to perform at the conference. In doing so, we aimed to fill the event with live music, as well as allowing practitioners the opportunity to share their experience of leading singing for health groups, conducting choirs, solo singing, small ensemble singing, composing for singers, and working as singers and with singers at all stages (from early years to seniors).²

2. Moving online

Once the lockdown was announced in the United Kingdom (UK) in March 2020, the *Spheres of Singing* conference organisers decided to move the conference online. While we had limited funding and experience organising an online event, we were confident we could produce a dynamic online conference that brought together practitioners and researchers during a time when all in-person activities, particularly singing, had been suspended. However, we realised that such a feat would come with its own unique challenges, especially when incorporating synchronous singing activities. Moreover, with the lockdown announced in late March and the conference due to take place between 28-30 May, we had eight weeks to replan the conference. With the replanning underway, we noted two key research questions we wanted to consider and document. The first was ‘what are the challenges of moving a conference on singing online?’ and the second was ‘can we resolve these challenges?’ These questions have inspired this article, but before we consider these questions in more detail, let us explain a little more about the online conference platform.

Our lead institution had a subscription to Zoom.us, which allowed us to organise and live-stream multiple concurrent panels, as well as recording all the sessions, and making them available to delegates for a limited period. At the time of writing, Zoom is one of the most popular videoconferencing applications currently on the market, boasting peak daily meeting participants of over 300 million in April 2020. (Zoom, 2020a). There were approximately 40,000 daily average users on Zoom in December 2019 in the UK and over 770,000 by May 2020 (Statista). Most delegates were familiar with Zoom as a legitimate application for videoconferencing and had some experience of using the App either informally to video call friends and family or formally as a way to continue meeting colleagues, or teaching (see Lee, 2020; Roos et al., 2020). However, few delegates had attended an online conference before and, as such, were anxious about being able to present and participate in panel discussions without technical issues arising. Speakers were also concerned about having their presentations recorded and shared with the conference delegates. Likewise, we, as the organisers, had three key concerns: firstly, ensuring the conference was safe and free from Zoom-bombing; secondly, providing an inviting space where practitioners and researchers felt comfortable to participate and share their work; and thirdly how to incorporate live singing into the synchronous event.

When planning the in-person conference, we were aware we needed to charge a fee to cover many of the conference overheads, such as venue costs, janitorial overtime, AV support, catering, and paying the invited practitioners and keynote speakers. Even so, we aimed to keep the attendee fee as low as possible. Once the conference moved online, the overall cost for putting on the event was much lower. However, we still had some overheads that we needed to pay, for example, paying the invited practitioners who delivered the workshops and the masterclass. We were determined to offer the conference for free, as we were aware many practitioners and researchers had incurred income losses due to the lockdown (Beaumont-Thomas, 2020). We also felt we needed to dedicate funding to maximise security as a way to safeguard against Zoom-bombing. Researchers from The University of Southern California were one of

¹ Frank Russo, Beatriz Ilari, Annabel J. Cohen have recently published a three-volume series on interdisciplinary singing, and one of the volumes is dedicated to health and wellbeing. The conference organisers started planning the event in September 2019 and were unaware this series was due to be released in June 2020. However, it demonstrates the timeliness of the *Spheres of Singing* conference. See (Russo, Ilari & Cohen, 2020).

² Groups we considered inviting to the face-to-face conference included ‘The Cheyne Gang’ and ‘Harmony Choir’

the first to experience and report on such attacks in late March 2020. Their article offered some preliminary advice to help prevent future Zoom-bombing incidents (Pasarow, 2020; Xia, Blume & Money, 2020). However, at this point, the advice did not easily translate to a large-scale online conference, especially since the etiquette surrounding Zoom-link sharing was not, as yet, standard practice. The modest funding we received from our host institution allowed us to pay our overheads and offer the conference for free.

We decided to pay for the event management app Whova, which already had a system designed to host large-scale online conferences. Zoom-links, the programme, and pre-recorded presentations can be uploaded into the App in advance. It also has an in-built messaging service that allows delegates to interact with one another in real-time, without needing to share their contact information. The main appeal of Whova was that attendees needed to create a profile and sign in to the desktop version of Whova or download the mobile App to access the Zoom meeting without having access to the links, meeting ID or password. As such, the Whova App added an extra layer of protection for the conference, which had attracted 450 registered synchronous attendees and 270 registered asynchronous attendees. Throughout the event, we did not experience any Zoom-bombing.

As will be discussed, we invited delegates and speakers to contribute to the post-conference survey to measure the impact of the conference. The survey also aimed to determine if we had managed to overcome some of the challenges we identified early on, such as providing an inviting space that welcomed practitioners and researchers, mitigating some of the concerns we anticipated and those voiced by delegates about speaking and participating in synchronous sessions without needing to worry about technical issues arising, and if we had incorporated enough live singing activities. The feedback was overwhelmingly positive, though the conference was not without its challenges. This article offers insights into some of the challenges we faced in organising an online conference on singing and what we have learned from the experience that may help future music conference organisers.

3. ‘Moving an event online is not an insurmountable challenge’, but there are challenges none-the-less!

In July 2020, Goedele Roos, Julianna Oláh, Rebecca Ingle, Rika Kobayashi, and Milica Feldt published an article in response to Giuliana Viglione’s comment that in light of the COVID-19 pandemic, 2020 would be ‘A year without conferences’ (Viglione, 2020). Roos et al., who had experience running an annual online computational chemistry conference before the pandemic, countered Viglione’s opinion piece, noting that an online conference was both possible and most conference organisers would opt to move conferences online due to the pandemic. Indeed, though some conferences were cancelled, others, including the annual Royal Musical Association conference, moved online.

Roos et al. (2020: 4) listed several benefits of holding a conference online. Such benefits include adopting different formats from a webinar series to an entire, synchronous conference, which aimed to replicate the in-person experience. They also highlighted the ease of recording the keynotes and sessions, which could be placed in an online repository for conference delegates to watch at their convenience. Roos et al. noted that they had built an archive of recordings, helpful to those interested in past conference presentations. They argued that one of the most significant benefits was the reduced running costs for an online conference compared to one held in-person. The main costs identified were the Zoom subscription and a professional website. Of course, this conference team organised their events before the mass migration to the online space and did not identify Zoom-bombing, or indeed, costs to prevent Zoom-bombing attacks as a necessary expenditure.

Chen Ling, Utkucan Balci, Jeremy Blackburn, and Gianluca Stringhini carried out the ‘first measurement study of calls for zoombombing attacks on social media’, noting that:

Unfortunately, the mass adoption of these services [such as Skype, Zoom and Google Meet] has also enabled a new kind of attack where perpetrators join and deliberately disrupt virtual meetings. This phenomenon has been dubbed zoombombing, after one of the most used online meeting platforms (2020: 1).

In September 2020, the results of this study were published, with the researchers identifying that most Zoom-bombing attacks came from a person who had legitimate access to the meeting. They highlighted a threat model where the person with access was co-ordinating the attack by posting information about the meeting to a public online forum, including the meeting code and password so the attackers could enter. The attackers often disguise their identity by changing their name, so it is difficult for the host to identify them as an intruder. Once in the meeting, the attackers post offensive messages, images, and shout profanity. Referencing the FBI, Ion-Alexandru Secara (2020: 13) notes that since the beginning of the COVID-19 pandemic, several conferences have been disturbed by severe Zoom-bombing attacks, where pornographic images and/or hate images are shown. Lisa Nakamura, Hanah Stiverson, Kyle Lindsey (2021) have similarly identified that such attacks are often racist or sexist in tone and can cause lasting trauma for the victims. Zoom and other online videoconferencing platforms have now tightened security and provide specific advice to meeting hosts to help prevent Zoom-bombing, but this is in light of many troubling attacks that have taken place during the pandemic (Zoom, 2020c). Even so, while organisers can ask participants to register for the event, there is no stopping a potential Zoom-bomber signing up to attend and co-ordinating an attack from the inside. Ling et al. (2020) suggested sending a unique link for each participant, a method that is exclusive to Zoom and Webex. Indeed, when the *Spheres of Singing* conference took place, we were unaware that this was an option.

While Zoom-bombing has become a well-known and increasingly feared issue during the pandemic, another new phenomenon caused by the increased use of videoconference software is Zoom fatigue. In discussing why those engaging in regular video calls experienced Zoom fatigue, Jeremy N. Bailenson posted an opinion piece in April 2020, arguing that video calls require focussed attention, with more time spent 'looking directly into the eyes of one another'. Media outlets cited Bailenson's initial findings throughout 2020, including Manyu Jiang (2020), who similarly noted that engaging in video calls required more energy to process non-verbal cues such as 'facial expressions, the tone and pitch of the voice, and body language.' Bailenson published a follow-up article in February 2021 that discussed the reasons for cognitive overload when engaging in regular video calls, citing 'increased self-evaluation from staring at video of oneself, and constraints on physical mobility' can lead to an increased feeling of tiredness or 'Zoom fatigue' (2021: 1). While Bailenson suggested several methods for reducing Zoom fatigue, such as changing the size of the video call display, hiding self-view, using an external webcam and an external keyboard, with the aim of enabling a more comfortable seating arrangement, many of these options were not widely known in May 2020 (2021: 5).

Returning to Roos et al. (2020: 5), their study identified specific challenges that we also experienced. For example, 'technical issues and unfamiliarity with software or platforms for speakers and attendees was a source of frustration', and some speakers were reluctant to have their presentation recorded. Roos et al.'s solution was to offer technical support and engage in open communication. They did not discuss the kind of technical support or guidance provided in the article. We found that clear and specific guidance was essential, especially since most participants, practitioners, and researchers alike had never participated in an online conference before. While Roos et al. (2020: 2) stated that 'moving an event online is not an insurmountable challenge, particularly once the organisation of an in-person conference is finished', there are aspects of an in-person conference on singing that are not easily replicated online.

When it comes to organising an in-person conference on music, these are typically dynamic events, often including opportunities to share practice through live musical demonstrations, participatory workshops, concerts, audio-visual installations, and recordings (Ku, 2013; Palmer, 1984: 63). Even *Spheres of Singing* planned to incorporate performances from vocal ensembles and host practice-based

workshops where practitioners could share their singing insights. The difficulty of moving musical activities that generally take place in-person online was a recurring issue discussed at the conference with teachers, choir, ensemble, and singing for health group leaders keen to describe the challenges they had experienced in trying to teach or run rehearsals over videoconferencing platforms. As noted by Ben Redman (2020: 2), videoconferencing software introduces the ‘distracting phenomenon of latency’, which is ‘the natural delay in sound emanating from a source and reaching an auditor’. He further stated that inconsistent internet connection limits the possibility of live, interactive performance between delegates (2020: 2). While it is possible to mitigate these issues by selecting music that is not metrically structured, the singers and leaders in attendance at *Spheres of Singing* typically perform metrically structured music and were frustrated there was no apparent solution allowing them to continue their practice online.

According to Redman, to date, there is limited published research examining music teaching via videoconferencing and what research is available suggests latency was a barrier to performing synchronously online. His article addressed two key questions: ‘the benefits experienced by those using videoconferencing and the challenges teachers experienced using videoconferencing, including technical, pedagogical, social, and interpersonal factors’ (2020: 4). Unfortunately, Redman confined his study to one-to-one instrumental lessons, where performing in-time together is not as essential as it would be for a choir, ensemble or singing for health group. The key challenges observed were managing different hardware and software, frustrations at not being able to play together, and the amount of preparation required ahead of a session. However, Redman highlighted certain advantages for instrumental teachers and students if they worked together on a live videoconferencing call, such as the ability to connect from almost anywhere in the world without the need to travel and the ability to record lessons and play them back at a later date.

At *Spheres of Singing*, we experienced similar challenges noted by Redman and Roos et al., particularly regarding experience levels using software, for example the Whova and Zoom apps. Despite some of these challenges, we were still able to host synchronous panels, workshops and masterclasses that incorporated live and recorded singing. Modes of working online have evolved since May 2020 and continue to evolve; this article is a snapshot of our experience moving a conference online at the beginning of the pandemic and what we have learned through that experience. In the discussion section, we include some suggestions for organising a similar conference in future, based on the responses we received from our delegates.

4. Methodology

This qualitative study was part of a larger survey on delegate experiences of the *Spheres of Singing* conference. The University of Glasgow Ethics Committee granted ethical approval. The survey was hosted by Whova, an all-in-one event management app used to correspond with participants throughout the conference, and also Online Surveys.

4.1 Online Surveys

Participants were asked to report demographic information on age, gender, ethnicity and country of origin, occupation, and days and ways of attending. Qualitative survey questions invited participants to share what they enjoyed about the conference and what else they would like to see included if the conference were repeated, but there were also specific questions related to the online conference experience, accessibility, and how their living situation influenced this experience. The qualitative questions used in this survey can be found in table 1.

Table 1. Questions asked in the Whova questionnaire

Key words for how I experienced the Spheres of Singing conference, are:
I especially enjoyed...
Because...
I would have liked the conference to have less of...
I would have liked the conference to have included more...
Compared to face-to-face conference, I missed...
Compared to face-to-face conference, the advantages of an online conference were
How do you think your current living situation has affected your experience of the conference?
Please add any comments to clarify:

4.2 Procedure

The survey was first launched on Whova on day 1 (28 May) of the conference and remained open until the conference closed (30 May). The survey then moved to Online Surveys to maximise engagement using a multi-modal method. At this point, the Whova survey was closed. Delegates were informed by email to fill in the survey once, and an additional question was added to Online Surveys prompting delegates not to fill in the survey again if they had already done so on Whova. The surveys in both platforms mainly were similar, but the Online Surveys version also had additional questions about what days of the conference the participant attended and their method of attending (such as synchronous or asynchronous attendance), and the experience of the quality of technical support offered by the conference organisers. An overview of these quantitative questions (rated on a five-point Likert-scale) can be found in table 2.

Table 2. Survey questionnaires added to the Online Surveys form

I could hear the speakers well
I could hear the singing performances well
The sound quality bothered me
I felt connected to other audience members
It was easy for me to join in with others during the conference
It was easy for me to join in with others during singing/directing workshops
It was easy for me to join in with others during panel conversations
It was easy for me to ask questions or comment when there was space in the talk or after a performance
I learned new facts about singing
I learned new techniques on singing
The information will help with my research on singing
I made new connections for my research work
The information will help improve my singing
The information will help improve my professional practice using singing (e.g. music therapy)
The conference has given me new ideas that are relevant to my work
The conference has given me new ideas that are relevant to my singing

The Online Surveys form was open from the last day of the conference (30 May 2020), and participants filled in the surveys between 2 June and 8 July 2020

4.3 Sample

450 delegates registered to attend the synchronous event, and 270 delegates registered for asynchronous attendance. 22.2% of the survey respondents only attended the conference asynchronously. All delegates who registered to attend were invited to participate in the survey. 72 delegates completed

the post-conference survey (n=20 using the Whova App; n=52 using Online Surveys), resulting in a response rate of 10%.

Participants were required to be over 18 years of age, and age range varied widely across the categories 18-25(n=9; 12.5%), 26-35 (n=11; 15.3%), 36-45 (n=16, 22.2%), 46-55 (n=17, 23.6%), 56-65 (n=11; 15.3%), and 66 and older (n=8, 11.1%). The majority of participants were female (72.22%). Most participants (n=59) reported the UK as the country that they were attending from, followed by Ireland (n=4) and Canada (n=3), and the remainder being individual participants from outside of Europe. Participants' ethnicity was predominantly white (n=46), and there were some missing values (n=8).

4.4 Data analysis

As there were no preconceptions about what type of themes would come up, an inductive approach was taken towards data analysis and interpretation. A Thematic Analysis of the results was carried out using NVIVO software (NA, 2020b). This analysis method is an iterative step-wise process, where patterns are identified in the data (Braun and Clarke, 2019; Yin, 2016). The researchers then scrutinise and further regroup the themes.

A combination of a descriptive, evaluative, and process way of coding was chosen to understand better the participant's subjective experiences of the conference (Saldaña, 2013). The researchers, who were all members of the conference committee, read through the answers of the open questions, and identified and ordered phrases and sentences according to the themes these seemed to be reflecting. The cycle of screening and identifying themes took place in cycles, where the researchers stayed close to the data while finding overarching themes that best reflected them. The researchers found that certain quotes could be ordered under more than one theme, allowing for categorisation under several themes. This iterative process stopped once all participants' quotes that related to the research questions had been categorised.

4.5 Limitations of the study

Though the researchers aimed to prevent biased results, the low response rates may reflect a selection of the sample, though there is no clear way of knowing what the bias could be. The researchers were all part of the larger conference committee, which may have influenced the interpretation of results. However, since organising an online conference on singing was a new phenomenon, there were no preconceived ideas about the accessibility of the conference either positively or negatively.

5. Findings

The conference successfully attracted a wide variety of practitioners and researchers, including students, music professionals, music therapists, music practitioners, conductors, and researchers on singing, as represented in the table 3.

Though the interests and expertise of attendees were varied, most reported the sessions they attended were informative, engaging and relevant to their work. One respondent commented 'for my first visit, I thought it was good, easy enough to navigate and not overly long sessions'. Another respondent stated 'I thought the balance was good, and although not ever[y] talk was of interest, the online platform allowed participants to be selective'. The respondents were particularly pleased the conference programming was flexible, with one respondent noting they liked being able to 'dip in and out of sessions'.

The conference team also gave presenters the option of pre-recording their talks, and these recordings were broadcast live using the screen share function in Zoom. Doing so allowed us to run the panel just like all the other panels taking place, which included live presentations followed by a live Q&A session. A few speakers opted to deliver their presentation in this manner because they were concerned about their internet connection, other unexpected technical challenges affecting their presentation, or were anxious to speak publicly. A few presenters creatively integrated speech, music, and video, similar to an

audio-visual installation, an option that the conference organisers had not explicitly outlined in the initial call for papers.

Table 2. Range of professions indicated by respondents.

Occupation	Number of participants
Amateur enthusiast	7
Music therapist	3
Other	1
Researcher on singing	5
Project Manager for singing for wellbeing groups	1
Music professional	26
Researcher on singing, Music professional	2
Academic phonetician	1
Choir conductor, Music professional	1
Lecturer in music education	1
Music professional, Amateur enthusiast	3
Music student	1
PhD researcher in a non-musical discipline	1
Researcher on singing, Amateur enthusiast	3
Researcher on singing, Music professional	11
Researcher on singing, Other	1
Student	1
Amateur enthusiast, Researcher	1
Music professional, Student in singing	1
Retired Music Teacher; Conductor of amateur choirs	1
Total	<u>72</u>

The conference team also gave presenters the option of pre-recording their talks, and these recordings were broadcast live using the screen share function in Zoom. Doing so allowed us to run the panel just like all the other panels taking place, which included live presentations followed by a live Q&A session. A few speakers opted to deliver their presentation in this manner because they were concerned about their internet connection, other unexpected technical challenges affecting their presentation, or were anxious to speak publicly. A few presenters creatively integrated speech, music and video, similar to an audio-visual installation, an option that the conference organisers had not explicitly outlined in the initial call for papers.

Non-presenting delegates also stated the online experience reduced their anxiety and increased their ability to focus, in part because they could switch off their video camera. Comments from the respondents who highlighted this as a benefit are included below:

- 1) Ability to attend more sessions than I think I would have managed. Option to switch off camera so could simultaneously listen and deal with anything at home at the time. Anxiety can sometimes mean dealing with large numbers of people, or talking to new people, difficult. Online makes this much easier to deal with.
- 2) Being able to move around off camera, whilst still actively listening, - this would feel rude in the real world, but sometimes I have to remove myself for mental health reasons.

I could sit comfortably, switch off my camera, and really focus on the presentations. I found my mind didn't wander or get distracted like it does at real world conferences.

For these delegates, giving them the option to choose when they wanted to appear on or off camera not only reduced their risk of Zoom fatigue but was an added benefit of the online format since they felt more at ease to move around while listening in on the discussions and performances.

Ahead of the conference, we asked all delegates for permission to record their presentation, noting the recordings would only be shared with those registered to attend the conference and for a limited amount of time. All, except one delegate, agreed to have their presentations recorded so long as the recordings were destroyed within 72-hours. All the sessions were recorded and made available for 48-hours so that the conference was accessible for delegates who felt unable to sit in front of a screen for multiple hours and provided delegates with caring responsibilities more flexibility to engage with the conference. 20.8% of respondents highlighted being able to watch the recordings back and catch up on the presentations they had missed was a positive aspect of the conference experience. Two respondents specifically noted being able to stop and start the recordings and 're-watch at my own pace' were particularly advantageous.

Some delegates were less satisfied with the event, with 12.5% of respondents highlighting technical issues had negatively affected their experience. Indeed, 78.5% reported having some technical difficulties throughout the conference, though 59.6% admitted to not seeking support to resolve these issues. As discussed by Jiang (2020), difficulties with video conferencing software are a known stress trigger, and for the *Spheres of Singing*, it was the biggest challenge the organisers faced. Unfortunately, it is difficult for conference organisers to anticipate the technological issues in advance of the event since all attendees were accessing the conference on their own devices. In the survey, one participant reported:

my laptop wasn't up to the constant streaming so I missed several talks including a plenary, because it crashed. That was a shame, and I doubt I'll have time to catch up.

As will be discussed below, we did provide written guidance in advance and shared a dedicated technical support email, with the delegates to help quickly resolve as many technical-related issues as possible.

Whova did not support integration with Zoom meetings at this time, only Zoom Webinar, however the organisers did not discover this until shortly before the conference so we had to proceed with the suboptimal integration as planned. Some of the difficulties were caused by the Whova-Zoom meetings integration, with one delegate noting they expected to be able to see the presentations on gallery view mode, but instead could only see the person speaking:

The [W]hova App was useful, but it's major drawback for me was the inability to access gallery mode on Zoom when using it on a laptop, which made connecting with other audience members very difficult.

Another delegate noted that the same features were not available on the Whova App and the browser version but acknowledged that this was the fault of Whova and not the organisers:

I think Whova had a couple of issues (slow/difficult to message people/some features only available on the App not on PC) but that wasn't your fault[.]

Throughout the conference, we felt that Whova contributed to most of the issues, yet 69% of our respondents found the Whova App useful and easy to navigate. Most of the issues were quickly resolved and were mainly due to user error in using an unfamiliar App. Based on questions received through the

technical support email, much of the confusion was because users expected Whova to have the same appearance and functionality as Zoom.

93.1% of respondents were happy with the number of singing activities available at the conference, though 6.9% noted they were disappointed there were few opportunities to sing together synchronously. Latency ultimately limited such opportunities, though we offered a conference-wide singing activity during the closing ceremony. The conference organisers taught a group song and invited all attendees to sing together. Unfortunately, the delegates had to switch off their microphones, ultimately limiting the experience of singing together.

6. Discussion

Just as Roos et al. (2020) reported, we found that in moving the conference online, we attracted a larger and more diverse audience than anticipated, particularly because it enabled delegates to participate who would have otherwise been prevented from attending the in-person conference. It is also likely that with enforced lockdowns in most countries worldwide, delegates found themselves free from other commitments, thus allowing them to attend.

However, unlike Roos et al's (2020: 2) claim that 'moving an event online is not an insurmountable challenge', specific issues, such as confidence and skillset to use technology, need to be carefully thought through and managed. We found that much more guidance needed to be prepared and provided, even for experienced conference-goers. For example, we prepared guidance for chairs and co-chairs, for speakers, and for delegates, which outlined necessary Zoom etiquette, such as turning off the camera if someone did not want to appear on the recording, staying on mute while a speaker was presenting, inviting delegates to ask questions in the chat box, describing how a session would run, including how the time limit for speakers would be enforced and noting who delegates could contact if they were experiencing technical issues that they could not resolve themselves. Examples of the guidance we provided are available on our website (see *Spheres of Singing*, 2020c). Unlike a traditional in-person conference, where the panels typically run with just one chair, *Spheres of Singing* needed one host—a role that could only be taken by one of the six organisers who could access the Zoom back office—a chair, and, in some cases, a co-chair. By providing two or three people to run the panel, we maximised the chances of a panel running smoothly even if the host or chair/co-chair experienced technical issues that forced them to leave the meeting, such as internet lag or a computer malfunction. Our guidance suggested a protocol that hosts, chairs/co-chairs and speakers could follow if an issue did arise.

Also, providing guidance for chairs/co-chairs, speakers, and delegates helped the organisers as we tried to anticipate some of the difficulties others may experience. By sharing such guidance, we hoped to create a welcoming conference that was of interest to practitioners and researchers from various disciplines and professional backgrounds.

6.1 Creating an inviting conference

At *Spheres of Singing*, we wanted to curate a varied programme where practitioners and researchers gave fair opportunity to share their work. We also took care to recruit keynote speakers who were both practitioners and researchers and various workshops leaders whose work was grounded in both practice and research. When it came to programming the panels, these were organised by theme, such as 'health and wellbeing', 'pedagogy', and 'musicology' so delegates could make faster and more informed decisions about the panels they wished to attend (see *Spheres of Singing*, 2020b). We were aware that with such a full programme that included 45 presentations, four workshops, six open discussions and three lecture-recitals, it might have appeared quite intimidating, especially to those who had not attended an event of this kind before. We did not receive any negative comments from delegates regarding the programme or navigating the various conference activities. We also wanted to ensure that panels did not continue for too long, as this may have increased Zoom fatigue for both the delegates, the hosts and the chairs. We allotted 60-minutes to each panel with a 20-minute break in between, and we encouraged all participants to step away from the screen during this time. Upon reflection, while 20-minutes may have

been enough time for delegates, it was not enough time for the host to close the meeting of one panel and move to the next panel. Indeed, the five organisers responsible for hosting the meetings felt they needed to rush to start the next call just to make sure there were no technical issues. A 30-minute break would have given more breathing space all round and likely would not have detracted from the general momentum.

In terms of the guidance material we offered to presenters ahead of the conference: we produced a video guide and accompanying document that provided advice on Zoom's functionality, such as how to screen and audio share, and we advised the presenters on how to create an accessible presentation (see *Spheres of Singing, 2020c*). Such guidance included adding alt-text to PowerPoint, and presenters were also encouraged to audio describe images on the screen. We sent this guidance one month before the conference took place to give presenters time to watch and/or read and apply the guidance to their presentations. We asked the presenters to upload their presentation slides and/or script to Whova in advance so that delegates could download them and adjust it to suit their individual needs (Lansley, 2019). However, we recognised that some presenters may not have had the time to upload their slides and script in advance, so we ensured file sharing was enabled in the Zoom back-office settings and encouraged presenters to share slides and presentation notes in the chat.

We gave presenters the option of pre-recording their presentations. A stable internet connection was necessary for synchronous presentations, but we did not expect every household to have reliable internet. Technology aside, we wanted to ensure those who may have felt uncomfortable presenting live on camera still had the chance to present their work. A variant of social anxiety, public speaking anxiety (PSA), where a person experiences fear in giving a speech or presentation, has been reported as more prevalent in the general population than the fear of death or fear of heights (see Bodie, 2010). More work needs to be done to examine how PSA affects a person giving a live in-person presentation compares to an online videoconference presentation. However, those presenters who opted to pre-record their presentation were grateful to have this opportunity since it avoided the need to speak live.

We also found that delegates were appreciative of our panel introductions, where chairs informed everyone in attendance that the session was going to be recorded, and delegates could choose to switch off their camera. As noted in the findings, those delegates who did switch off their cameras felt they could engage more in the conference than they might have otherwise. Unfortunately, delegates switching off their camera can potentially heighten a presenter's anxiety levels, possibly instilling a feeling of uncertainty about how the presentation was received. To prevent this from happening, we offered similar advice to Roos et al. (2020: 3) by encouraging active conversations in the chat.

6.2 Technology issues and how to solve (some of) them

Engaging with an online conference can be intimidating, particularly if confidence levels in using technology or interacting with an online community are low. However, there are ways to mitigate these issues. In addition to providing written guidance, we held a technical support drop-in session before the conference took place so that delegates could test or even ask technical-related questions. A dedicated technical support email was managed by one of the organisers and this person was not expected to carry out any other duties, such as hosting, while managing the email, affording them the time to respond to queries quickly. The majority of delegates emailing technical support were appreciative to receive a fast response. We invited the presenters to appear in a meeting 10-minutes before the session was due to begin to test their audio and screen-sharing and ask any other questions they may have had about the session. Such mitigations were essential to help improve the conference experience for those delegates who feared or experienced technical issues. It was also useful for the organisers to see the different queries and assess if common issues were being reported and this is why we are aware the Whova-Zoom meeting integration was creating a problem for some of our delegates.

Within Whova, delegates should have been able to click on the session title and then enter the meeting waiting room, just as they might do by clicking on a Zoom link, but for some delegates, when they entered the meeting through Whova, the quality of the audio was bad or, in some cases, not playing at all while the video was pixilated. The organisers had tested the Whova-Zoom meeting integration before the conference took place, and we had not identified any issues beforehand; however, what we did not realise is that as the number of people in a Zoom meeting increases, the central processing unit (CPU) usage of a device significantly increases, which may have led to bad audio and video quality for some of the delegates. For those experiencing such issues, we resolved it by sending the Zoom links directly to the delegate, but the organisers were aware this heightened our risk of Zoom-bombing. In this instance, we were fortunate that the Zoom links we sent directly to the delegates were not leaked, and we did not experience any Zoom-bombing attacks.

Whova did allow delegates to chat with one another on the App allowing conversations to continue post-presentation, which in some ways did replicate the informal socialising of a traditional in-person conference. However, introducing another element, in this case, an App that most delegates were unfamiliar with, ultimately created unexpected technical issues that affected the conference experience. In hindsight, curating a less ambitious event that did not have concurrent panels or limiting the number of delegates may have been a better solution than investing in an event management App, such as Whova.

There is Zoom webinar, which only allows delegates to see the presenter and ask questions in the chat box and this is advertised as a safer alternative to Zoom meetings. While we did consider using Zoom webinars, it would not have been possible to run concurrent panels unless we purchased multiple webinar packages. Since Zoom webinars did not have the additional functionality that Whova offered, such as allowing delegates to upload their slides and scripts in advance and the ability to message conference delegates through the App, at the time, we felt Whova was better value for money. Even if we had used Zoom webinars, delegates would not have been able to see each other on gallery view, and they would not have had the option of unmuting to ask or elaborate on a question during the Q&A. Whova may not have allowed gallery view, but it did allow delegates to unmute and speak if they were invited to do so by the chair. Zoom and other video conferencing apps are constantly updating the security settings, so for conferences that take place online in the future, it is worth investigating the latest security recommendations and organising the event based on that advice.

6.3 Integrating live synchronous singing into an online conference

The singing activities we incorporated into the conference included four workshops: one from a singing for health practitioner, who shared her expertise in leading a group singing session for those with Parkinson's disease; one from a musicologist who shared her expertise in using historical audio recordings as sources of singing performance practices; one choir conducting workshop; and one small ensemble singing workshop, where the singers shared how they rehearse and perform complex polyphonic pieces. We had hoped that the singers would sing together, but the ensemble joined us from their own homes on separate Zoom accounts, which made it impossible to sing as a group. Their discussion was informative but was not as practice-led as we had hoped. However, Emily Peasgood, presented a talk that provided practical advice on how singers could create their own home-recordings, while Janis Kelly's vocal masterclass incorporated live singing over Zoom. Individual singers were asked to sign up to participate in the masterclass and were given a time slot to sing before Kelly and the audience over Zoom. There were also three lecture-recitals, where the performers shared recordings and sang live over Zoom. While group and ensemble singing opportunities were limited, those leading a workshop, masterclass, and lecture-recital could include either recorded or live singing.

We found that while moving the event online was possible; we were constrained by the amount of time we had in our planning. As such, we had to sacrifice some of the plans we had for additional singing activities. We considered commissioning a composition for voice(s) that could be performed live on a videoconferencing meeting, but we had to eliminate this option due to time constraints. We, the *Spheres of Singing* organisers, did manage to teach a song to those who came to the closing ceremony,

using similar methods as choir and ensemble leaders who are finding creative ways of continuing their practice online. To facilitate group singing sessions, the leader typically has to prepare guide tracks for each voice part, which are sent to individual choir members ahead of the rehearsal. Choir or ensemble members can join in on the rehearsal by singing along with the guide track, but they are typically required to sing while on mute. The routine of weekly singing and being part of a community of practice is maintained, though the experience of singing together is quite different. The song we chose for the closing ceremony was in four-part harmony, and each organiser selected an appropriate voice part to record. At the closing event, we asked everyone to select an appropriate voice part and stay on mute when we started singing as a group. Each part was taught to the delegates live and the recordings were used as a support when we moved to sing the song together. Using the recordings in this manner and delivering it live on a videoconferencing call gave a sense of audibly and visually singing together. The experience may not have exactly replicated singing together in person, but it was a chance to demonstrate the possibility of using videoconferencing technology to facilitate large group synchronous singing. It would have been unthinkable not to share in an experience of singing together at a conference on singing, and the delegates were appreciative of the opportunity.

7. Conclusion

The *Spheres of Singing* conference succeeded in bringing together a diverse community with a vested interest in singing. The post-conference feedback demonstrates a demand for more online events of this kind, which tackles the breadth of disciplines and practices related to singing. Hosting an online conference, particularly an online conference on singing, is not an in-person conference replicated in a digital world and requires specific interventions. All of these interventions need to be considered and planned well in advance of the conference. Online conferences may have lower running costs, but they do have some overheads that need to be costed and funded. By sourcing external funding to support the (relatively low) running costs, it is possible to offer the conference as a free event. Offering specific guidance in video and written form on how to navigate the videoconferencing platform as well as how to prepare a presentation can help to put a delegate's mind at ease, particularly if they have never attended or presented at an online conference before. Also, offering regular live technical drop-in sessions that allows delegates to test their equipment, ask any questions they may have, and meet the organisers not only helps to create an inviting event, but maximises the chance of curating a smooth-running event. Building in regular breaks, encouraging delegates to move away from the screen during these breaks, and reminding delegates they can choose to switch off their cameras helps to mitigate Zoom fatigue. Inviting practitioners to share their frustrations and their experience in using videoconferencing to continue teaching or hosting singing activities can provide delegates with new ideas about how to continue their practice online. Indeed, at *Spheres of Singing*, there was a clear desire to overcome challenges created by moving events, rehearsals and teaching online. At the conference, composers, practitioners, pedagogues, and the organisers shared different methods for engaging in live, synchronous singing online, and we are sure that many more solutions have come to light since *Spheres of Singing* conference took place.

References

- NA. (2020a). 'Rethinking Conferences', *Nat Rev Phys* 2, 67. [Available online <<https://doi.org/10.1038/s42254-020-0151-2>>]. Last Accessed: 28 August 2020.
- NA. (2020b). *NVivo Qualitative Data Analysis Software [Software] (Version 12)*. [Available online <<https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>>]. Last Accessed: 28 August 2020.
- Bailenson, J. N. (2021). Nonverbal overload: A theoretical argument for the causes of Zoom fatigue. *Technology, Mind, and Behavior*, 2(1). [<<https://doi.org/10.1037/tmb0000030>>]. Last Accessed: 12 March 2021.
- Bailenson, J. (2020). Why zoom meetings can exhaust us. [<<https://www.wsj.com/articles/why-zoom-meetings-can-exhaust-us-11585953336>>]. Last Accessed: 12 March 2021.

- Beaumont-Thomas, B. (2020). UK musicians lose £13.9m in earnings so far due to coronavirus. [<https://www.theguardian.com/music/2020/mar/23/uk-musicians-lose-139m-earnings-coronavirus>]. Last Accessed: 16 March 2021.
- Bodie, G. D. (2010). 'A racing heart, rattling knees, and ruminative thoughts: Defining, explaining, and treating public speaking anxiety'. *Communication Education*, 59(1), 70-105. [Available online <[doi:10.1080/03634520903443849](https://doi.org/10.1080/03634520903443849)>]. Last Accessed: 28 August 2020.
- Clements-Cortés, A. (2015). 'Clinical Effects of Choral Singing for Older Adults', *Music & Medicine*, 7(4), 7-12. [Available online <<https://iopscience.iop.org/article/10.1088/17489326/ab33e6/pdf>>]. Last Accessed: 28 August 2020.
- Clift, S. M.; Hancox, G. (2001). 'The Perceived Benefits of Singing: Findings from Preliminary Surveys of a University College Choral Society', *Journal of the Royal Society for the Promotion of Health*, 121(4), 248–56. [Available online <<https://doi.org/10.1177/146642400112100409>>]. Last Accessed: 28 August 2020.
- Clift, S. M.; Nicol, J.; Raisbeck, M.; Whitmore, C.; and Morrison, I. (2012). 'Group singing, wellbeing and health: a systematic mapping of research evidence'. *Unesco Observatory Faculty of Architecture Building and Planning*. 2(1). [Available online <https://repository.canterbury.ac.uk/download/2c27609cec96d594e322ab72cb970641b131cf-d08df43c272aba79c496adc01d/657989/8565_2010%20Clift%20Group%20singing%20wellbeing%20and%20health.pdf>]. Last Accessed: 28 August 2020.
- Howell, I. L.; Gautreaux, K. J.; Glasner, J.; Perna, N.; Ballantyne, C.; Nestorova, T. (2020). 'Preliminary Report: Comparing the Audio Quality of Classical Music Lessons Over Zoom, Microsoft Teams, VoiceLessonsApp, and Apple FaceTime', *Special Report of the NEC Voice and Sound Analysis Laboratory*, [Available online <<https://www.ianhowellcountertenor.com/preliminary-report-testing-video-conferencing-platforms>>]. Last Accessed: 28 August 2020.
- Irons, J. Y.; Kuipers, P.; Wan, A.; Stewart, D. E. (2020). 'Group Singing Has Multiple Benefits in the Context of Chronic Pain: An Exploratory Pilot Study'. *Pain Management Nursing* 21(3), 259-264. [Available online <[doi:10.1016/j.pmn.2019.07.008](https://doi.org/10.1016/j.pmn.2019.07.008)>]. Last Accessed: 28 August 2020.
- Jiang, M. (2020). 'Video chat is helping us stay employed and connected. But what makes it so tiring - and how can we reduce 'Zoom fatigue'?', *BBC*, Available from: [Available online <<https://www.bbc.com/worklife/article/20200421-why-zoom-video-chats-are-so-exhausting>>]. Last Accessed: 16 August 2020.
- Ku, Y. (2013). 'Why You Should Attend Music Conferences', *Music Teacher's Helper*, [Available online <<https://blog.musicteachershelper.com/why-you-should-attend-music-conferences/>>]. Last Accessed: 16 August 2020.
- Lansley, A. (2019). 'The Inclusive Classroom: Wellbeing and the HE Musician', *Journal of Music, Health and Wellbeing*, 6, [Available online <<https://www.musichealthandwellbeing.co.uk/publications/andrewlansley-theinclusiveclassroomwellbeingandthehemusician>>]. Last Accessed: 17 August 2020.
- Lee, K. (2020). 'Coronavirus: universities are shifting classes online – but it's not as easy as it sounds', *The Conversation*. [Available online <<https://theconversation.com/coronavirus-universities-are-shifting-classes-online-but-its-not-as-easy-as-it-sounds-133030>>]. Last Accessed: 16 August 2020.
- Ling, C.; Balci, U.; Blackburn, J.; & Stringhini, G. (2020). A First Look at Zoombombing. ArXiv, abs/2009.03822.
- Morris, D. Z. (2020). 'Zoom meetings keep getting hacked. Here's how to prevent 'Zoom bombing' on your video chats. *Fortune*, [Available online <<https://fortune.com/2020/04/02/zoom-bombing-what-is-meeting-hacked-how-to-prevent-vulnerability-is-zoom-safe-video-chats/>>]. Last Accessed: 16 August 2020.
- Nakamura, L.; Stiverson, H.; Lindsey, K. (2021). *Racist Zoombombing*. Abingdon: Routledge.
- Pasarow, A. (2020). 'How To Keep Your Zoom Calls Protected Against "Zoombombing"', *Refinery 29*. [Available online: <<https://www.refinery29.com/en-gb/2020/03/9615230/zoom-bombing-privacy-safety-settings>>]. Last Accessed 14 March 2021.
- Palmer, A. J. (1984). 'Why Attend a Conference?' *Music Educators Journal*, 70(6), 63-64. [Available online <<https://doi.org/10.2307/3400799>>]. Last Accessed: 28 August 2020
- Redman, B. (2020). 'The Potential of Videoconferencing and Low-Latency (Lola) Technology for Instrumental Music Teaching', *Music and Practice*, 1-15. [Available online <[DOI: 10.32063/0610](https://doi.org/10.32063/0610)>]. Last Accessed: 28 August 2020.
- Roos, G.; Oláh, J.; Ingle, R.; Kobayashi, R.; Feldt, M. (2020). 'Online conferences – Towards a new (virtual) reality', *Computational and Theoretical Chemistry*, Volume 1189. [Available online <doi.org/10.1016/j.comptc.2020.112975>]. Accessed 16 August 2020.

- Russo, F.; Ilari, B.; Cohen, A. J. (2020). *The Routledge Companion to Interdisciplinary Studies in Singing*, Abingdon: Routledge.
- Saldaña, J. (2013). *The Coding Manual for Qualitative Researchers*. London: SAGE.
- Secara, I. (2020). 'Zoombombing – the end-to-end fallacy', *Network Security*, 2020(8): 13-17. [Available online <[https://doi.org/10.1016/S1353-4858\(20\)30094-5](https://doi.org/10.1016/S1353-4858(20)30094-5)>]. Last Accessed: 18 March 2021.
- Shives, K. (2015). 'Navigating the Academic Conference with Social Anxiety', *Inside Higher Education*, [Available online <<https://www.insidehighered.com/blogs/gradhacker/navigating-academic-conference-social-anxiety>>]. Last Accessed: 17 August 2020.
- Spheres of Singing, (2020a). *Spheres of Singing: An interdisciplinary conference on singing and song, 28–30 May*, [Available online <<https://spheres-of-singing.gla.ac.uk/>>]. Last Accessed: 28 August 2020.
- Spheres of Singing, (2020b). *Spheres of Singing Schedule – DRAFT*, [Available online <<https://spheres-of-singing.gla.ac.uk/guidance/>>]. Last Accessed: 13 March 2021.
- Spheres of Singing, (2020c). *Guidance*, [Available online <<https://spheres-of-singing.gla.ac.uk/wp-content/uploads/2020/05/Spheres-of-Singing-3.pdf>>]. Last Accessed: 28 August 2020.
- Statista, (2020). 'Daily active users (DAU) of the Zoom app on android and iOS devices in the United Kingdom (UK) from November 2019 to May 2020' [Available online <<https://www.statista.com/statistics/1118860/zoom-daily-active-users-uk/>>]. Last Accessed: 17 August 2020.
- Viglione, G. (2020). 'A year without conferences? How the coronavirus pandemic could change research', *Nature* 579, 327-328, [Available online <[doi: 10.1038/d41586-020-00786-y](https://doi.org/10.1038/d41586-020-00786-y)>]. Last Accessed: 17 August 2020.
- Vogler, C.; Tucker, P.; Williams, N. (2013). 'Mixed local and remote participation in teleconferences from a deaf and hard of hearing perspective'. [Available online <doi.org/10.1145/2513383.2517035>]. Last Accessed: 28 August 2020.
- Xia, R.; Blume, H.; Money, L. (2020). 'USC, school districts getting 'Zoom-bombed' with racist taunts, porn as they transition to online meetings'. *LA Times*. 25 March. [Available online <<https://www.latimes.com/california/story/2020-03-25/zoombombing-usc-classes-interrupted-racist-remarks>>]. Last Accessed: 14 March 2021.
- Yin, R. K. (2016). *Qualitative Research from Start to Finish*. New York: The Guilford Press.
- Zoom, (2020a). '90-Day Security Plan Progress Report: April 22', *Zoom Blog*, [Available online <<https://blog.zoom.us/90-day-security-plan-progress-report-april-22/>>]. Last Accessed: 17 August 2020.
- Zoom, (2020b). 'Background Noise Suppression', *Zoom Blog*, [Available online <<https://support.zoom.us/hc/en-us/articles/360046244692-Background-noise-suppression>>]. Last Accessed: 28 August 2020.
- Zoom, (2020c). 'A Message to Our Users', *Zoom Blog*, [Available online <<https://blog.zoom.us/a-message-to-our-users/>>]. Last Accessed: 16 March 2021.