Infrastructural Work Behind The Scene: A Study of Formalized Peer-support Practices for Mental Health

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ABSTRACT

Peer-support has long been recognized as valuable for mental health, and has been commonly practiced online over the Internet. However, it is often reported that peer exchange online can have harmful effects, and there has been limited research on how to ensure its effectiveness and safety. Our ethnographic study of formalized mental health peer-support practices in Scotland uncovers the *infrastructural work* involved when setting up and managing conditions upon which peer-support can take place in an effective and safe way. We illustrate that peer-support for mental health is not only about bringing peers together to interact with each other, but also about ensuring availability, timeliness, proactive care, positivity and safety of peer-support as a service, by weaving various social, spatial and technical elements together and managing groups and their boundaries. Our findings illuminate the work behind these peer-support practices, and suggest design implications.

CCS CONCEPTS

• **Human-centered computing → Empirical studies in HCI**.

KEYWORDS

Peer-support, mental health, infrastructural work

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1 INTRODUCTION

Mental health issues are prevalent in all countries, with about one in eight people living with a mental disorder [46]. Only a limited number of people can access the care they need, due to the shortage of qualified professionals, stigma associated with mental health, and the cost of treatment [28]. The Covid-19 pandemic made the situation worse, widening the treatment/condition gap by simultaneously undermining the mental health of millions and severely disrupting mental health services [46, 68], even though services forced to move online increased accessibility and patient satisfaction in some cases [43]. Peer-support is one sustainable way to expand the coverage of care, reducing the resources needed and supporting a recovery approach to mental health [46]. While clinicians provide medical knowledge, peers who share similar experiences can provide experiential knowledge [26], and offer informational, emotional, and social support [67].

ICTs expand the reach of peer-support and Internet delivery has become particularly popular, especially during Covid-19. With their convenience and often anonymity, online communities and social media have become places where people with mental health issues reach out to each other, share their experiences, and provide support [13, 40]. There are also specialized peer-support platforms for mental health, such as 7 Cups of Tea[1] and TalkLife[2]. HCI has given increasing attention to these platforms to understand peer-support behaviors on them [14, 32], and explore design opportunities [33, 44]. More recently, research has explored how to help scaffold [6] or guide peer-support [45, 51], promoting social interactions among peers. However, online support can also produce disappointing, negative, and even harmful outcomes [17, 25, 32, 44], as digitisation removes face-to-face interactions and social cues, and opens support networks to disruptive or hostile actors [40]. It can also leave some participants feeling excluded, or result in poor moods spreading within the community itself in extreme cases [17, 32]. Overall, while we have a good understanding of the advantages and disadvantages of online peer support, research on how to ensure its effectiveness and safety is still limited.

[1] https://www.7cups.com/
[2] https://www.talklife.com/

Although the online element is relatively new, peer-support itself is not. Its history can be traced back to the late 18th century when the value of hiring recovered patients to help other mentally ill people in hospitals was first recognized [11]. Peer-support for mental health grew quickly in the 1970s driven by the consumer movement and the adoption of the recovery model as a more holistic and person-centered approach towards mental health [1]. Today it has become more formalized with trained peers employed as Peer Support Workers (PSWs), to complement traditional institutional care and expand the capacity of health systems in many countries, including the US, New Zealand and the UK since the 1990s [11].

This paper presents an ethnographic study of these more formalized peer-support practices for mental health developed over the past decades, in order to inform the design of digitally mediated peer-support that is not only more convenient, but also safer and more effective. The study is conducted in Scotland, which is recognized as a world leader in putting the principles and values of personal recovery into practice in mental health systems [23], providing an excellent locale for research on formalized peer-support practices for mental health. As of 2016, in a population of 5.46 million there were an estimated 80 people in paid professional roles that were dedicated to facilitating peer-support, together with many more in voluntary roles [8]. In this study, we looked into various programs and organizations that provide peer-support services for mental health, including peer-support centers as part of larger mental health organizations, standalone peer-support clubs, as well as peer-support groups embedded in other social institutions such as a university. We contacted these organizations, and with their permissions, did field visits, participated in their group sessions, interviewed participants, and organized a design session, involving 7 organizations and 22 participants who have lived with mental health issues and now play various roles in these programs, including founder, manager, peer worker, volunteer, counsellor, and service user.

Through this study, we reveal the *infrastructural work* in running these platforms to ensure peer-support istimely, engaging, pro-active, scalable, sustainable, positive, and safe, going far beyond simple peer-to-peer consultations or interactions. The notion of *infrastructure* means the substrate upon which actions, and interactions rely, e.g. railroad lines and the Internet. As the mechanism to support other processes and activities, it is often perceived as part of the background and mundane - we use it without really thinking much about it when it is ready-to-hand, and it only becomes visible when it breaks down [62]. It is also fundamentally relational [63]. One person's infrastructure could be anothers' topic, e.g. the railroad is a topic not an infrastructure for railroad engineers. Here, we draw on the notion of infrastructure to emphasize that peer-support for mental health is not merely about bringing peers together to interact with each other, as is often assumed in online peer-support research, but rather it takes extensive work behind the scene for effective and safe peer-support to take place, referred to as *infrastructural work* in this paper. This paper illustrates how our participants not only act as experienced peers to support others, but also engage in various work to maintain an infrastructure to ensure availability, different modes of engagement, pro-active care, positive and safe group activities, and so much more. By highlighting the range of *infrastructural work* going in establishing and maintaining the substrate for peer-support, we bring to the fore the often ignored or 'invisible' aspects of work involved in peer-support when we only focus on interactions or dynamics among peers. We will discuss the uniqueness of the *infrastructural work* in relation to mental health and implications for design for ICTs.

In this paper, we contribute: an empirical study of formalized peer-support practices for mental health in Scotland with 22 peer support workers in seven different organisations; the findings derived from the study highlighting the *infrastructural work* involved in ensuring the services availability and proactive response to users needs as well as in managing groups and group boundaries for scalability, positivity and safety; and reflections on the nature of *infrastructural work* and it's design implications for digitally mediated peer-support.

2 RELATED WORK AND BACKGROUND

In this section, we review related literature on peer-support for mental health, delivered both with or without ICTs, and peer-support practices for mental health in Scotland to give some background for our own research.

2.1 Peer-support for mental health

The idea of peer-support has a long history [11], and there have always been naturally-occurring informal peer-support between friends and acquaintances taking place in inpatient wards, in the community, and, today, in online spaces. People who share experiences of emotional and psychological pain can relate to and understand each other's situations empathically [38], and can offer informational, emotional, and social support to each other [67].

More formalized peer-support is a result of new conceptualization of recovery, emerging from mental health consumer narratives [1]. Rather than only focusing on symptom relief or removal as in traditional clinical model, the new recovery oriented approach focuses on living a satisfying and meaningful life with the presence or absence of symptoms. Recovery is often described as a personal journey, or process, of changing one's attitudes, values, feelings, and roles, through meeting multiple residential, vocational, educational, and social needs [1]. The principles that have been developed to guide the recovery oriented approach include fostering hope and optimism, creating holistic and inclusive services, treating people as active participants rather than passive recipients of care or treatment, promoting self-management and so on [3]. Some of the core values and ethos tat are identified as important, include respect, reciprocity, equality, empathy, shared responsibility, and so on [20, 38, 55]

The development of the peer support worker (PSW) role (or peer specialists, peer staff etc.) is a tangible form of adopting the personal recovery principles into practices [3]. PSWs are filled by people who have experienced significant mental health problems and have completed related training. By employing peers within mental health services to assist the recovery and healing process, peer-support practices become more formalized, and the number of such roles has exploded in the last two decades, with more and more recovering persons being hired as PSWs [11, 19]. This is an important

strategy to both scale up the care for some common mental health issues such as depression and anxiety, and to improve the quality for care, ensuring it is people-centred, recovery-oriented and human rights-based [46], complementing traditional mental health services with more kindness and warmth [3]. Research shows that the sharing of lived experience by peer workers facilitated engagement in group discussions, hope for the future, and a sense of belonging and empowerment [9, 30, 54].

Research has focused on the feasibility of and outcomes from having PSWs [16, 60]. For some forms of illness, such as depression, headaches, and sleep disturbances, professionally developed peer-support programs could be as effective as professional treatment [24], and mutual support interventions can be highly cost effective [12]. The mechanisms identified by which the benefits of having PSWs manifest include role modeling and using experiential knowledge to manage everyday life [61]. Research also reveals challenges for PSWs such as role conflict and boundary management [5, 29], raising questions about how to define the role of PSW and the relationship between support providers and recipients [39, 59].

While attempts have been made to create categories for different forms of peer-support [38], many peer-support programs that are created in response to a particular community and context do not fit them [20]. In this paper, we use self-identification as an approach to identify peer-support practices for mental health and offer descriptions of the services rather than try to more systematically labeling them.

2.2 Peer-support for mental health with ICTs

ICTs have been commonly explored as means to deliver mental health interventions such as reminders for medication, mood tracking, and cognitive behavioural therapies, as well as platforms for peer-support [10]. The Covid pandemic became a catalyst, driving the move to Telehealth services for remote healthcare and peer-support over the Internet [36], with mixed results [68], making some services less effective and harder to sustain [47] but increasing user satisfaction with others [43]. Where peer-support is concerned, research on the use of ICTs in offline peer-support practices is still limited. One example is using videos of lived experiences as a means of communicating content in peer sessions [49].

Much attention is drawn to the peer-support practices naturally occurring in online communities and social media platforms [14, 32, 40, 41]. These platforms allow the collection of publicly available data for quantitative and qualitative analysis to understand related behaviors [13, 14, 41]. Studies show anonymity allows individuals' honest expressions of thoughts and experiences [2], the use of online support groups does not evoke self-stigma [34], the process of writing is therapeutic during emotional moments, and online platforms support for asynchronous interactions allows people to read and respond at their convenience [52]. Compared to offline peer-support groups, the digital tools provide many advantages, including 24/7 availability, anonymity for willingness of disclosure, and an extension of reach to people who would otherwise not seek treatment, e.g. among younger generations. At the same time, what is consistently uncovered from this research is that these platforms could also have negative or even harmful effects,such as reinforcing and normalizing negative behaviors or bad feelings [17, 32, 40, 44].

Some digital technologies are specially designed to facilitate peer-support for mental health, such as 7 Cups of Tea, TalkLife and Buddy-Project [3]. These platforms provide online communities, trained volunteer listeners, or pairing services to allow peers to gain support outside their own existing social circles. In addition, in some specialized online therapy platforms, peer-support is used as a component to make them more engaging, to address the high attrition rate issues and enhance online therapy effects [15, 35].

In recent years in HCI, more research attention has turned to design to enhance online peer-support. For example, O'Leary et al. conducted a study of people with mental health issues using digital technologies for peer-support, and identified design opportunities including matching peers based on similarities beyond diagnosis, enhancing accessibility and proactive interventions [44]. Some assistive tools have been explored for online peer-support too, including guided and un-guided chat [45], and using machine learning based tools for rapidly producing high-quality responses to anxiety-related questions [27]. However, overall, research on design to make digitally mediated peer-support more effective and safe is still quite limited, focusing primarily on enhancing service interactions and peer interactions.

2.3 Recovery Approach and Peer Support for Mental Health in Scotland

Supporting recovery oriented approaches was introduced as part of an innovative policy to improve mental health in Scotland, distinctive from UK policy, following devolution from the UK government [4]. The supportive policy, vocal activists and service users voices, and the voluntary sector all played important roles in the development of the recovery approach in Scotland [4]. Informed and supported by international experiences and advice from countries such as US and New Zealand, the Scottish Recovery Network (SRN) was launched in 2004 to promote and support mental health recovery. Government funded and yet independent, SRN works as a 'catalyst' and 'facilitator' to bring different interests together and translate the recovery principles into practices [58].

One of the 'key technologies' to assist the recovery move is the development of PSW roles to complement and enhance existing support and services [4]. SRN published guides recommend best practices for starting and conducting peer-support, helping pave the way and encourage more people to set up services as well as seek them out. As of 2016, in a population of 5.46 million, there are around 80 paid PSWs in mental health services and a far higher number of unpaid staff in Scotland [8]. Support is largely developed based on a 'bottom-up' approach where the local areas decide how they want to incorporate PSWs into their services [23]. SRN works with many service providing organisations and leads research into the effectiveness of peer-support. During Covid-19, they also provided several useful guides and explored how support in Scotland can be adapted to a digital world in response to the pandemic. Today, recovery has moved from the margins to the mainstream of Scotland's mental health system [23].

[3] http://www.buddy-project.org/

3 THE STUDY

After gaining ethical approval from our host institution, we conducted an ethnographic study to gain a better understanding of how Peer Support Organisations (PSO) and their PSWs in Scotland function, with particular attention to the move to working online that was imposed by Covid-19 lockdowns. We hoped that by considering the perspectives of organisations that had experiences in both online and offline settings, we would be able to gain insights into the opportunities online support offered as well as the barriers it created. During the initial stage of our study, using the contact information publicly available on the web, we reached out through email or phone calls to 24 varying types of PSOs self-identified as offering peer-support for mental health. In these initial messages, we introduced ourselves, explained our purpose of research, described the procedure, and asked for collaboration to carry out the study. Six PSOs expressed an interest in working with us and recommend members in their organizations for our interviews. We also obtained permission to do field visits at three locations and joined their group sessions to gain first-hand experience, through which we recruited more participants for interviews. We also recruited a participant within our own social network who we know has been involved in organizing peer-support for mental health. After running the interviews and observations, we organised a design workshop bringing together a subset of interview participants to discuss preliminary findings from the study, and derive some specific, forward looking design insights.

We collected data from interviews, field visits, participating in group sessions, and the design session. We held semi-structured-interviews with 22 participants in total, with ages ranging from 20s to 70s, and covering diverse roles including PSWs (peer workers, trainers and peer counsellors), founders, volunteers and service users. In some cases we found there was no hierarchy to the peer support, and the difference between volunteers and service users was only time spent with the service. In some cases people had only been at the service for a few months and in others co-founders were still participating 17 years on from when they started. Some organisations also had trained counsellors for one-to-one support outside the main peer-support group. See Table 1 for their demographic information - gender, age, role, organisation and location - all the names of participants and PSOs are pseudonyms. For PSWs, their specific roles are also specified. As shown in Table 1, the 7 PSOs involved cover various forms of peer-support, as part of larger organizations or more standalone, primarily offline or online.

Before the interview, we asked participants to read an information sheet and sign a consent form. Semi-structured interviews were conducted online over Zoom or Microsoft Teams, over the phone, or face-to-face, based on participants' preference. During the interviews, we asked them to describe their PSO (size, nature, vision, history etc.), their daily routines within it, their personal experiences of getting involved with it, their particular peer-support work experiences, as well as their use of digital technologies for peer-support. Additionally, when some interesting information came up, we followed up with questions for more details and more specific examples. Interviews often lasted for half to one hour and our participants were provided with compensation for their contribution to our study. We recorded our interviews with their permission. For online interviews, the transcripts were automatically created with Zoom or Microsoft Teams, and then manually corrected. For phone or face-to-face interviews, they were digitally recorded and later transcribed.

With their permission, we also paid field visits to 3 locations, joined some group activities, and attended group sessions, 1 online and 4 offline. During the online group session, when we found they encountered difficulties, we also used the opportunity to ask more questions about them. Towards the end of the study, we conducted an online design session with 8 participants, recruited from the the existing pool of interviewees from the last stage, mainly for two purposes: 1) to present our preliminary findings to the participants to get their feedback on our interpretations; and 2) to present fictional but concrete design concepts that acted as a provocation for discussion of some general design concepts based on the findings. During the design session, we found that our participants not only strongly agreed with our findings and supported our general design concepts, but also shared additional experiences. We took notes during the field visits, group sessions, and the design session, and recorded the design session as well, which has all been incorporated into our data set for later analysis.

Inductive coding is employed for the data analysis, which started while we collected the data. The data includes the notes, as well as interview and design session transcripts. The first author did the first pass in going through some transcripts and notes for open coding, compiled a list of codes and curated these codes into several themes and sub-themes using a Miro board. Based on the codes and themes identified, the whole team then went through all the data set, adding and modifying the original codes and themes through this process. After several iterations, we arrived at the final themes, which are described in finding section shown below.

4 FINDINGS

Most of the PSOs involved were traditionally offline peer-support programs, although some are now hybrid or online after Covid-19. Previously, they relied on face-to-face meetings or phone calls to provide support and Facebook and other digital media were used for event advertisement. They were forced to move online during lockdown, using Zoom or Microsoft Teams for group sessions, which posed more challenges for senior members but made it easier for those with disabilities or living far away to join. They emphasized the importance of face-to-face interaction for building up rapport and trust, seeing it as the foundation for peer-support to be effective. Nora said: *"It's hard to build rapport on the phone...human beings need physical contact."* Beyond listening and conversation, physical gestures such as touches or hugs were helpful, as described by Clare: "*everybody just gives them the time and listens and...maybe a cuddle.*" After the lockdown some stayed online or used hybrid forms for groups sessions (e.g. Peer Support Group, Peer Welfare and Let's Talk), while others got back to the more traditional face-to-face meetings, though still using online videoconferencing for some staff meetings.

As pointed it out in previous literature [38], the main advantages of peer-support come from the understanding people have of

Table 1: Participants and PSOs. The names of participants and PSOs are all pseudonyms.

Participant	Gender	Age	Role	PSO	Location
Mary	F	50s	Support Worker/PSW	Ladies' Group[1]	Levenmouth
Kim	F	20s	Volunteer	Ladies' Group	Levenmouth
Natalie	F	40s	Service User	Ladies' Group	Levenmouth
Freya	F	70s	Service User	Ladies' Group	Levenmouth
Laura	F	30s	Support Worker/PSW	Ladies' Group	Levenmouth
Kevin	M	30s	Service User & Volunteer	Sandbank Centre[2]	Edinburgh
Aaron	M	50s	Service User	Sandbank Centre	Edinburgh
Zack	M	30s	Service User & Volunteer	Sandbank Centre	Edinburgh
Margaret	F	30s	Support Worker/PSW	Sandbank Centre	Edinburgh
Hamish	M	40s	Support Worker/PSW	Sandbank Centre	Edinburgh
Joseph	M	70s	Service Manager/PSW	Sandbank Centre	Edinburgh
Piper	F	20s	Organizer/PSW	Peer Support Group[3]	Glasgow
Declan	M	40s	Support Worker/PSW	Men Against Suicide[4]	Glasgow
Caroline	F	30s	Trainer/PSW	Peer Welfare[5]	Glasgow
Daniel	M	20s	Volunteer	Peer Welfare	Glasgow
Francesca	F	20s	Volunteer	Peer Welfare	Glasgow
Clare	F	50s	Co-Founder	GAMS[6]	Motherwell
Trevor	M	60s	Support Worker/PSW & User	GAMS	Motherwell
Amanda	F	40s	Service User	GAMS	Motherwell
Nora	F	40s	Peer Counsellor/PSW	GAMS	Motherwell
Jeremy	M	50s	Service User	GAMS	Motherwell
Theo	M	60s	Support Worker/PSW	Let's Talk[7]	South Ayrshire

[1] Ladies' Group belongs to the Fife branch of Support in Mind - a national mental health organisation, aiming to reduce isolation.
[2] Edinburgh Sandbank Centre, also part of Support in Mind, is to help people with more serious mental health illnesses.
[3] Peer Support Group targets PhD students, starting with offline peer-support drop-in sessions in a university but having moved online for all PhD students throughout Scotland.
[4] Men Against Suicide is a peer-support club for male suicide prevention and mental well-being.
[5] Peer Welfare is to assist students who are experiencing mild mental health issues by trained student volunteers. Student could use the booking system developed by the university to book a session with peer supporters.
[6] GAMS (Group Against Murder and Suicide) is a registered charity to raise awareness about the serious issues of murder, suicide and mental health, and deliver a wide range of services including one-to-one and group counselling, and Befriender peer support.
[7] Let's Talk is an online group for people with mental health problems that was created as a response to the Covid-19 lockdown. It has started off as a men's group but is now not limited to men.

each other from sharing similar experiences. During the study, it was common to hear people expressing their appreciation, e.g. "*it's nice just being around people that completely understand*"(Natalie), "*it's just because we all know every single person in that room exactly how they feel as they felt like that themselves*"(Clare), etc. They commented that sharing and listening to each others' experiences helped relieve pain,e.g "*as horrible as it seems to you that somebody else is going through something similar, it kind of eases your pain*"(Nora), the normalizing effects as described in previous work [21].

What was more striking to us during our analysis, was how much work people with different roles undertook to make peer-support happen in a way that is timely, proactive, scalable, positive and safe. We found peer-support practices go far beyond building relationships and interacting with service users by PSWs as assumed in research on formalized peer-support programs [5, 11], or bringing peers together for mutual support as in most online peer-support platforms [40]. Rather, these PSWs, volunteers and service users collectively work to create a platform with social, physical, and technical elements woven together to provide peer-support as a service that is available, proactive, scalable, positive and safe. Below, we illustrate the phenomenon which we collectively call *infrastructural work*, the behind the scenes, critical, and yet often ignored, aspect of peer-support for mental health.

4.1 The work to ensure availability and proactive care

In first section, we focus on attributes of the service that are particularly important for mental health, including broad availability and timeliness, offering different modes of engagement, and providing proactive care, and illustrate the challenges faced, the work required, and strategies employed for these attributes.

4.1.1 Availability and timeliness of support. For mental health support, availability in terms of 'always there' and 'with no time limit'

is of critical importance, as it is hard to predict when or how much support someone needs. Relying on close friends might not work, as Piper found: *"A lot of times I just unburdened on my closest friend. So he's the person I call all the time... But he doesn't have a lot of time himself. So sometimes it's just no one there."* Scheduled calls may not work well either. Nora, a peer counsellor, illustrated with one extreme experience: *"[when I call them,] obviously people wouldn't answer because alongside your loved one being murdered or death by suicide comes depression and the depression causes lack of sleep. So you could have arranged them at 2pm, and because they had a really rough night, they were asleep [then]."* Piper showed the difficulty of fixed scheduling as they provided office hours for people who want to have one-on-one sessions, but it was never used, although people would just come to talk to her when needed: *"Office hours were not used. But I was the person sending the email, so people knew they could come to me to talk about mental health issues and they did."*

Many participants commented that being always available meant these services plays a special role in their recovery process. Kevin shared his experience of how always on support had helped him get through his toughest time:

> *Yeah, because my mental health was getting worse. And I needed a place where I could just come and chat away to people and staff. I was self harming myself and a suicidal and I've still got suicidal thoughts, but this place is when I come here, I feel safe...And I feel I could just talk to any of the staff, whenever I want and just basically chill and enjoy my day.*

Many reporting similar experiences said that they called for support when they were in really bad states and needed someone to talk to. Besides always on availability, many reported that the good part of these formalized peer-support programs is 'no time limit' which, as Natalie commented, made the programs distinct from counseling services:

> *I would say the only difference is the time. Like Penumbra (N.b. an alternative, local counseling support service) will say: 'Right okay, we can give you 6 weeks or we can give you 12 weeks and then you're on your own'....There is always a cut off point with the other services like the hospital, Penumbra and Tenancy support. They always have a time limited on them and Support in Mind they don't have that so that is a really good thing. Support in Mind has been there for me the whole time and I had all these other things in between. That's why I think it's so great, you know that you just keep running and no 'ohh, you're only getting six weeks therapy and then you have to go because we're so busy'.*

In the new recovery model, recovery is about a journey or process, rather than only looking at symptom 'removal' [1], and long-term participation leads to better outcomes [53], so it makes sense to provide services with 'no time limit'. Our participants described that such programs provide a safety-net for them, and that even just the awareness that some support is always there is very helpful.

It takes work and resources to maintain such availability though. Joseph described to us how the staff members are arranged in a way that will ensure availability whenever people come to the center: *"We have a team of eight...Only two of us are full time...The rest are part time, so 21 hours a week or maybe 16 hours...At least four staff members on during the day...So you can just turn up at the door and you will be seen by a staff member."* Availability could pose great challenges for purely volunteer-run peer-support programs, as they do not have enough staff members or resources. Piper, who ran a peer-support group for Ph.D. students, found it challenging to get volunteers to run weekly peer sessions, as Ph.D. life is very busy and stressful already and they lose trained volunteers when they graduate. Moreover, it needs volunteers with *good energy*, but workload and stress undermine this. What is more, sometimes, volunteers made themselves available but no one came to the session which demotivates them. As a result, Piper often ran the session herself. Piper described it as:"*depressing if you sit there by yourself and nobody's coming.*" Theo, who also runs a voluntary peer-support group which became online, reported similar experiences:

> *I've sometimes sat there for two or three weeks on the trot for that hour and there's nobody that comes in but I'll keep broadcasting just on the off chance somebody will come in. Sometimes it's frustrating sitting there for that hour because you could use it for something else.*

Theo still broadcast sessions on time and made themselves available, even if nobody showed, just to keep the safety-net. Piper found that moving things online made it easier for her to manage as she could do her work when nobody came and switch mode when someone turned up.

One way to ensure broad availability and sustainability of the service is to find more members to join. After all, more members mean that it is more likely to find someone available to provide timely help. In our study, we found it was mainly through word-of-mouth, or 'snowballing' new members were found, although web and social media such as Facebook were commonly used. Kevin shared his own experience to help 'snowball it':"*Well, I would recommend this place to anyone who don't know about us. I would advise them to look online and find out a wee bit about us and just come here or come with their support worker and just join us.*" Over time, with more service users knowing and joining, they could go on to become support providers, volunteers, or PSWs as part of their recovery, which then allows more people to get timely help. Zach described his movement within his organisation to us: "*Eight years on and I'm now a volunteer in the cafe, and I'm running my own gaming group that starts next week, like using the Xbox and whatnot. And I also host the karaoke here on a Friday. So it's changed days how things have come from what I was like 8 years ago. It's just unbelievable.*" Natalie reported they need to build up the group to ensure the availability as they lost people during Covid-19. Ensuring availability of the service is complex, requiring a range of *infrastructural work* such as making more members trained and available, broadcasting availability, turning members who feel good enough to play a more active role, etc.

4.1.2 Multiple-levels of engagement. Our study shows that allowing different modes or levels of participation based on the mental states of service users, in the ways and to the extents they feel comfortable, is important for engagement. Nora described how people would transition to different modes of engagement through their

recovery journey:"*That's how it works with [anonymous name]... we usually start with a phone call because they don't want to show their faces. And then once you've got rapport and you've had a bit of a chat and they realize you're no monster then they agreed to do a video call... then they'll agree to come into the center.*"

Many of these programs have dedicated physical spaces for peer-support, and we found the space is often designed in a way to afford different modes of engagement. For instance, the Sandbank Centre we visited serves as a drop-in facility, running a cafe where people can enjoy a relaxed atmosphere, chat to other members or get drinks and food, and also offers weekly activity groups such as Arts, Tai Chi, Music, Walking and more for people to join based on their needs. Aaron shared his experiences:"*Yeah, that's a good thing about the place. It is because you can come and eat, you can come in and just sit and observe, and you can come and sit down and talk with people. Depends on your frame of mind or what you're in on any particular day. So yeah, it's helped me a great deal over the years having somewhere to come.*" Joseph, the manager of the center, confirmed such arrangement of the space:

> *And for the certain time they're in the building, they can choose to attend different groups. They can socialize with other people. We have our Cafe as well, so [people] can get something to eat and basically we're here to just support the person in whatever way that's good for them, that benefits their mental health.*

We joined the art group there as part of our participatory observation, and found while some focused on their own paintings as a kind of mindful activity, others engaged in a quiet conversation.

For online group sessions, the group size could impact on people's engagement. Daniel, a student support volunteer, described online sessions, which were usually composed of two volunteers and one service user:"*A majority of the people who do come to us are willing to have their cameras on. And it's not a problem. Because there's just the three of us. That's the thing. There's just three of us, it's calm, it's quiet... If it's a bigger group for example if it's like 30 people, no one's gonna have their cameras on. They would be shy.*" Piper, on the other hand, found sometimes, more people could mean less pressure on one person to speak:

> *On the one hand, it's easier if it's just one because then you can concentrate on them and they can concentrate on themselves. But then on the other hand, also there's a lot of probably pressure as such... I feel like if you come in as one person you're like, okay, I'm here now, I have to talk. But if you come in [group] because one of the things that they can also join and not talk, I mean, they could come and be like hey, I'm here, but I actually don't want to talk, I just want to listen because that is already helpful for a lot of people.*

We also found the use of ICTs provided more choices of participation. Natalie described how she would choose to participate in the group session based on her energy level:"*Because I've got the choice now. Sometimes if I'm like really tired and I'm like ohh no motivation, I'll just go on the Zoom the day.*" Kim also described how online is a halfway step for people to participate, and they have the freedom to determine when and how long they participate. Amanda also described a very low-level participation using an online platform:"*Because sometimes, even though I might not feel like participating in a chat, I still read it and sometimes just give a lot of thumbs up so they know I'm still alive.*" As found in [44], people have different needs for accessibility with changes in their mental illness experience, and the use of digital technologies could provide more choices.

In the peer session, factors such as gender and age could also matter for engagement. Nora described how her young voice mislead people about her age over the phone: "*Also, although I'm 50, I've been told I've got a young voice. So there's people were thinking that I was only like 18 to 23 and didn't want to talk to someone young, so I was always kind of dropping in there that I'm older.*" Clare described to us the process they take to help with pairing people with each other:"*I would take all the referrals, fill in the sheets...and then try to speak to maybe somebody that say, you came here, god forbid, you lost your best friend to suicide... would you like to speak to a man, a woman, and try to get as much information, like an interrogation and trying to pair you up with somebody?*" Based on their particular situations, factors such as gender and age were taken into account when deciding who they want to share feelings and experiences with. Taken together, there are various factors to account for, meaning all kinds of choices for engagement, including spatial arrangement, the use of technology, group size, gender and age of supporter, and so on.

4.1.3 Proactive care. Proactive care allowed people with a low level or no participation to receive appropriate care. Instead of waiting for people to seek help, we learned that PSWs, volunteers and other peers checked in on people to determine how they are doing. Natalie told us how they did the checkup through phone calls during the Covid-19 lockdown:"*They gave us a weekly phone call and so we had somebody to talk to every week and then they would also be like on standby. You know, if any of us needed extra support. We just had to phone up, which I had to do quite a few times.*" Amanda reported how WhatsApp was adopted to do check-ins: "*WhatsApp is the main thing. But it's mostly just to check in. Hi, how's everybody doing? Everybody okay today?*" Previous work talks about the uniqueness of close friends in providing proactive care for mental health [48], and we found that it is also an integral part of these formalized peer-support practices.

In the offline space, when people can see each other face-to-face, expressions were used to provide proactive care. Our participants reported many cases of staff, volunteers and other service users spotting signs, and offering care by asking and listening. Aaron said:

> *I know later on last year, I was feeling a bit on edge. I came in, and they came to me...They spotted there was something wrong and came to me before I got to them and because they could see on my face there was something wrong. [They] came straight over to me and asked what was wrong and that makes life so much easier, the fact that the staff know me well enough to know when I'm that down.*

Based on his experience, Aaron knows that most people feel happy to have someone coming across and speaking to them even though they may not be able to resolve their problem, so he checks up on

others when he sees something. He said:*"Just talking to someone can help."* Declan reported a very illustrative case even before he joined the club as a facilitator:

> *So I worked as a worker in the job centre, and one of our customers came in and I saw he wasn't in a great place and I just started chatting with him... just after being in the safe talk...we're taught to ask the question. Are you thinking of committing suicide? ... I asked him if he was thinking of committing suicide, and he said, no, not now that you've spoken with me. So just by the simple act of somebody speaking with them they change. It changes the man...*

What we can see here is how a simple act of checking and asking can make a difference. The check-up is not only done by PSWs, but also by volunteers, or peers who just feel they are well enough to do that for others, as reported by Zach: "*You know, you don't want to see people going away upset. That's what what we try and do... I'll go over to them and say are you OK?*" As shown here, PSWs initiate check-ins which spread the practice as members who experienced that care practice it on others, making proactive care an integral component of these peer-support organizations.

4.2 The work to manage groups and boundaries

In our study, we found group and boundary management is an important mechanism to support scalability, effectiveness and safety in peer-support, forming an important part of *'infrastructural work*. It's common to organize peers into smaller groups, such as women's group, men's group, carers' groups and so on, for people who share similar issues or interests to come together and talk to each other. In this section, we will describe the challenge, the work involved and tricks used for managing group composition, group activities and boundaries.

4.2.1 Managing group composition. Grouping is a way for service users to not only meet and interact with PSWs, but also meet and interact with other peers who share similar experiences or interests, and the role of PSWs or volunteers is mainly to facilitate such a process. Group sessions are a common way for service users to meet and interact each other, which used to be in-person offline, and after Covid-19, went hybrid sometimes to accommodate people with different kinds of health and travel needs, where online volunteers are often involved to ensure those joining online aren't ignored. Kim, an online volunteer, made clear her role as a facilitator for such a process: "*I try and step back that let everyone else go first and yeah I'll jump in if I need to.*" Piper agreed that it was good for peers to select who they talk with: "*not just to us, but to each other.*"

At the same time, grouping is also a means to reduce the demand on staff's time and make peer-support more scalable. Mary told us the rationale behind grouping:

> *So for example, you're maybe spending an hour with each individual. So that if you've got three individuals, there's three hours...if you're meeting in a group for an hour, you're actually seeing three people. Through discussion you find out that one person's got the same issue as the other, so they're able to support each other then.*

Through group activities, several participants reported that they gained a sense of belonging, and some developed more personal relationships with other service users, as Mary said:"*So outside of this group they both have a good relationship between each other.*"

However, our study shows that group composition could be tricky, and should strike a balance between diversity and similarity. While some shared experience is important, diversity is also important so participants can learn from each other and hear about different perspectives. We found many programs are proud of their diversity. Declan emphasized that: "*We don't stop anybody from coming hmm...it is so great it's like a multicultural group.*" Joseph sees diversity as an opportunity to gain more skills to organize group activities: "*What we do is try and utilize the skills that the staff team has so you know if one staff is a musician we use that to have a music group.*" Other work has also stressed the educational benefits of diversity in peer support [7]. At the same time, people also want a group that is related to their situation. A student peer support program ran for the whole university, with volunteers coming from various colleges, found there was dissatisfaction with not being in groups with people from the same college or level of study, since often the cause of mental health problems for students can be study related. Daniel, a student support volunteer, shared his experience: "*When they're talking about their Ph.Ds, and all this quantum technology, it's very confusing and we're just in awe.*" However, as Caroline describes, people also didn't want to disclose something to someone they are likely to run into on an everyday basis:"*If you're like, for instance, and that is a very small campus and most people sort of know each other, so if your event and you want to be kind with someone from arts, because you don't really want to speak to someone you might bump into the next day.*" While grouping could be highly valuable, composing a group with the right mix of participants is a non-trivial issue.

Overall, from the study, we found group composition needs to be bottom-up to work in an appropriate way. Joseph described how different interest-based groups emerged over time in their program:

> *So it's it's really up to the people that use the service what they want to do. There wouldn't be any point in us starting a group and saying this is what's going to happen...Then people might not like it, you know...We've just started a stained glass workshop because people wanted to try that and also a jewelry design group.*

Many peer-support programs also emerged through bottom-up processes after gaps were identified in the current landscape of organisations. For instance, Clare started GAMS because she found there was no support there to meet the needs of such a particular group of people: "*when [her nephew] was murdered, there was support for his mom and his dad, but there wasn't any support for all his hundreds of friends...and there was nobody to support us, the aunties, the cousins, and he was so loved and there was no support for them.*" Piper also described how she started a new peer-support program particularly targeting Ph.D. students, due to a gap identified in the

university's peer-support, which were mostly for and done by undergrads. Our study suggests that it is through such a bottom-up emerging process, a balance between similarity and diversity could be achieved to meet the needs of people.

4.2.2 Managing group activities. While grouping and group activities could save staff time for peer-to-peer conversations, work was needed to organize and coordinate them. Usually PSWs or volunteers help facilitate group activities, introducing new members to the group, organizing workshops, inviting guest speakers, and so on. Mary talked about the challenges of simply bringing people together, especially offline:

> *I'm actually trying to set up a new group at Dunfermline for young ladies that I'm working with... I've got the place I've made the time, but bringing them together seems to be challenging at the moment. I mean, they've all got young children..They're supposed to meet while the children were at school. But a number of them have been unwell or not being able to manage... You need to account for travelling time because this is a face-to-face group, not at an online group...*

Natalie commented that it was a bit tricky to plan things, due to limits for some people:"*We did meet up at a cafe a few times and for the ones that can make it.. obviously a lot of us are limited with disabilities, social anxiety, Covid... so you know it's still a wee bit tricky planning.*" Piper was thinking of setting up a coffee group but realized it was not easy as it seemed: "*I was like, okay, having coffee sounds good, but someone would have to send something out to invite people for that. And that would automatically be a kind of the organizer.*" What we can see here is that although ideas sounds simple, organising offline was not so simple. Digital media such as Zoom and Microsoft Teams, while allowing a set of people to join more easily, make others, especially older adults, drop out.

Ensuring the effectiveness of group activities such as a group session is challenging too, especially due to the uncertainty involved. Amanda described the unpredictability:

> *Today is not a good example, there's a lot of people in today, but sometimes if it's only a small amount of people that come to group. It can be they just end up talking about other stuff. And the reason I come to the group is to talk about what has happened in your life. Other days I think that was a really good session. We talked about it in depth. And other times I can go away thinking, we talked about EastEnders, that was a waste of my time. You know, it just depends on the day and sometimes it depends on the people who are there too.*

Natalie also talked about how it took a while for her to get used to the uncertainty: "*You never know when you can talk because sometimes it be like 10 people or 15 people, you know, because we're all sitting in a house. And then some weeks it just be like 6 people, every week was different but it eventually got easier.*" As Piper mentioned as well, the different sizes of the group changed the dynamics of the conversations, and it took some time for facilitators to adapt. For the group session, first of all, they want to make sure that the conversations are more balanced. Theo put it this way:"*Because if you get someone that maybe comes in and it's all about them then it takes away from everybody else and I don't want that happening.*" Especially for new members, they want to make sure that their voices are heard. Kim described it:

> *But because everybody's talking then if you're new and a bit quiet then trying to to get your voice heard can be quite hard. So it is just kind of asking the person and bringing them into the conversation every now and again without putting focus on them too much.*

Clare described a trick they used to ensure everyone can talk and listen (i.e. that nobody else is talking when one is speaking) in the group session: someone bangs the table with a hard object when people are talking over each other, which is taken as a sort of joke but it's also serious and people know to stop talking. Interestingly, it seems, online group sessions limit the channels available for private conversations when one is talking.

While some organisations and workers would make the group sessions structured, others have no structures at all and just *'roll with it'*. Declan provided an example preparing 6 questions for each participant to answer, such as your name and how you're feeling today, with a Rugby ball passing on. However, he found:"*Probably more important than the questions is there is the coffee break when the guys start talking to each other.*" Theo describes how they decided not use any structure:

> *It used to be structured for the first two or three months, we had a topic to discuss but when I took over, I thought folks talk, if they're struggling and they want to talk about what's happening with their life at that moment and time, then why not just have folk fully chat and bounce off one another and that's what's been working really well.*

For unstructured sessions, we found it still takes work to ensure smooth, natural and meaningful conversations. Kim described a technique she used:"*If conversation does dry up, then Netflix is endlessly useful, you know, catching up what everyone's been watching and things like that.*" If offline, it is also common to plan activities for people to do. Natalie said:"*There's always always something there if you want to do something, there's always something to do. We have got crates and crates of craft stuff.*" For some of these activities, some pushes might be needed to get them to participate. Kim described her experience participating in gardening activities: although at the beginning, she thought she was not the gardening type, after participating, she realized: "*It's just giving you kind of a thing to do while you start chatting with people and connecting with people*". These activities provide excuses and let the the conversation flow naturally, otherwise "*if you stick people around the table and tell them to talk, it can be a bit awkward...*".

In addition, ensuring positive directions in sessions mattered a lot. Some programs relied on having members at different stages of recovery or in different mental states come together, so some could work as helpers or provide *good energy*. For instance, Declan encourages members to come no matter how they feel: "*We encourage the men to come whether the feeling good or bad. If feeling good they should still come because they can pass on some good energy onto the other men, and if they're feeling bad they can get the support off the other men.*" Nora talked about the importance to maintain the energy level of the group while allow members to

share their experiences: "*It really depends on the individual week and what they bring to the table...to allow them enough space to be able to talk but not to change the energy of the group, to try and keep it as upbeat as you can and at least leave on a good positive note.*" Clare views it is a fine line to manage: allowing people to speak their mind, sometimes with strong emotions, while they also need to keep people calm. Sometimes, if they are not able to keep the session atmosphere calm and positive, more professional help is called in, which leads into the issues around boundary management

4.2.3 Managing boundaries. An important concern within peer-support is safety, and we found it was mainly achieved through boundary management by PSWs and volunteers in these offline program, reacting to challenges within sessions, but also more importantly pre-empting problems wherever possible by matching participants with support.

Some ensure the effectiveness and safety by having a clear scope of what services they provide as a peer-support group, and manage the boundary accordingly. For instance, some are more specifically oriented to particular issues, so will be selective in terms of who can join. For example, Clare, the founder of a program specifically supporting people who lost their friends or family members due to suicide and murder, reported they are careful who can join: "*because it's such a unique group of people, you know, not everybody could come in to that.*" Even for their professional counsellors, having the shared experience of being impacted by murder or suicide is also sought, as Nora, who became a counsellor, said:

> *And the kind of ethos of the charity is that they would prefer that you had experience so that you could have empathy. My aunt committed suicide. She hung herself and my father was stabbed to death. So I was asked while I was in training.*

Theo, who runs an online peer-support program, explicitly said that they are not open to issues caused by alcohol abuse or drug abuse: "*we didn't want that kinda clientele coming through because they've got their own addiction services for them.*" He elaborated that the issues drug and alcohol abuse raised could be very challenging for his group members, especially in case someone becomes aggressive, it will make people feel uncomfortable or even unsafe. Some of the programs are clear that they only provide listening services for milder issues. By defining a clear scope and managing the boundary, it provides a safer place for people to share their experience, and avoid harmful consequences that they are not able to handle.

Although other programs are more open to different kinds of issues, they usually have an assessment process in place for safety reasons. For instance, Margaret described the process used in the Sandbank Centre:

> *Anyone coming in for the first time, we will sit down with them and ask them to do our sign up so they can become a member [of the centre]... we'll obviously screen what they're presenting with and there might be one or two individuals that we see maybe aren't suitable for the space because of their present needs and we will obviously make sure that the center is risk averse and monitor it on every time it's open. So if there was a situation that arose, then we, you know, we would ask them to leave and then have a meeting with them on one-to-one basis before they were allowed back in because it's about the general safety and wellness of the cafe space as well as the individuals that use it.*

With such a screening process in place, the boundary between openness and safety is maintained, preventing someone who might make members of the space feel uncomfortable or unsafe coming in.

For the group activities mentioned above, they also need to manage the boundary in terms of what condition or behavior is acceptable in them, to avoid any negative effects. As mentioned earlier, most programs will manage some groups and design some activities for the group members to get together and chat with each other. However, not everyone is suited to the group activities. Usually, new members or members who are emotionally unstable go through one-on-one sessions first, and only join groups when they feel ready. Natalie described her own experience: "*I've got a one-to-one, like counseling and and stuff... And then I was ready to go to the Ladies' Group, which at the time was pretty big...I think it's just based on your needs and at that point in time, there's no way I was ready to go in and sit with a big group of people.*" Amanda had a similar experience as a new member: "*When I came here, I got one-on-one face-to-face counselling and then I joined the group.*"

Sometimes, this boundary still needs to be managed during group activities, especially when someone becomes too emotional during the session:

> *So whether it's Agnes or whatever worker that they're associated with, they've got that connection outside. So it's like so you can say to them 'OK well, you can do this thing and we can keep up with you' or maybe just like 'hey, do you want someone to give you a ring now and have a private conversation at the moment rather than with the group?'*

In these cases, they try and refer them to others who could provide more professional help outside the group session and follow up with them later on. Although this was usually seen as the most challenging type of boundary management, it was also least common. Sometimes counsellors, like Nora, are brought in to help in these situations because they have far more training, and not every volunteer is suited to it. Clare said:"*if you want to do counseling, you have to be qualified. But no, I don't have any [experience] but I don't counsel people. I help people.*"

In addition, when some more instrumental or specialized help is needed, beyond merely getting together to chat, corresponding help is also offered beyond the group sessions. For example, Natalie described how she got all kinds of help to address the issues caused by her son's dad leaving them and cutting them off, resulting in her mental problems in the first place: "*[A Support in Mind worker] passed me on to support in money advice team ...and they watch for me for four months and fight to get my son his benefits..they also help me fill in forms and, for my pet and stuff as well...they would come at the house and help me fill out forms and stuff.*" Natalie also pointed out that it is because Support in Mind is such a big organization that it can provide these resources to help with these situations,

which other unofficial or more stand alone support groups struggle to provide.

We found volunteers are often trained to be aware where boundaries are, and when more specialized services were needed, as way to manage and maintain these boundaries. Kevin described how he does that as part of his responsibility:"*I'm supposed to go and help people. Listen to the people, and if I hear anything, just tell the staff because they're more professional than me.*" This way, volunteers, trained to notice what needs more professional or specialized help, can help pass cases on to the corresponding staff.

5 DISCUSSION

Our findings from formalized peer-support programs highlight that PSWs not only provide support as peers to service users, but also lead *infrastructural work* - various activities to ensure availability and timeliness; offer various modes of engagement; foster proactivity, scalability, positivity; and ensure the safety of peer-support as a service by weaving socio-technical resources together and managing groups and boundaries. While providing counseling or other types of support are easily recognized as the work of peer-support and is often the focus of design, the kinds of work uncovered in this paper are more mundane or non-obvious, and are often ignored or invisible. Take teaching as an analogy. While the public can easily imagine the work of standing in front of the class and lecturing as the work of the teacher, the majority of the work behind the scenes - including identifying learning materials, designing courseworks and managing timings, setting up online platforms for sharing information and coursework submissions, dividing students into groups for team work - is relatively invisible. Previous work on social support for general health found that dedicated online communities, compared to one's own social network (e.g. through Facebook), are more available, supportive and sympathetic with a less concerns of self-representation management [42]. Our study suggests that being available and supportive, as well as connecting beyond one's own social circles, are even more important for mental health, as are various modes of engagement, proactive care, and positivity. These qualities are not to be taken for granted, but require infrastructural work to be realised.

5.1 The Infrastructural Work

Our coining of 'Infrastructural Work' is to foreground many of the ignored aspects of work that are of critical importance in conditioning and making peer-support effective. The 'work' has been, arguably, a key notion and a central focus in CSCW, one of the subfields of HCI, although it may cause confusions in terms of exactly what 'work' means [57]. While some associate 'work' with occupations or employment, others use it in a broader sense, referring to all activities as long as they involve some effort and concentration, e.g. gardening at home. Urmson calls the former "*the primary cases of work*" and the latter "*the secondary cases of work*", for its similarity with prototypical primary work activities [66]. In sociology, the 'work' is used in an even broader sense, as long as it involves certain competencies, such as 'face work' [22], and even things members do to 'sustain social order' [37]. Among them, of particular importance to CSCW or HCI is 'articulation work', which means the effort to bring discontinuous elements together into a cooperative work arrangement, described as 'a kind of supra-type of work in any division of labor, done by the various actors' [64]. This type of work is often taken as mundane and invisible, so the 'supporting articulation work' term has been used to make it more visible [65].

By focusing on 'infrastructural work' - how people engage in a continuous process of setting up and managing the conditions for peer-support to take place - we also want to make it more visible. Although there is research examining the mechanisms for peer-support, the focus is often on the social interactions and dynamics between peers who share similar experiences, including the various digital assistant tools explored for peer support which enable efficient and high quality responses [45, 51]. Little is done on the *infrastructural work* behind the platform. The substrate of services needed to fulfill the needs of a group of people with mental health issues, including creating, monitoring, maintaining, and managing the platform in a way that encourages more peers to come and support each other based on their own needs and situations, means that peers can come to meet, share their experiences, and provide mutual care in a timely, proactive, positive, and safe way.

Our findings also speak to the issues of disparities, how Covid-19 impacted on inequality, and how infrastructural work is needed to address it. The study was conducted around the end of a Covid-19 lockdown, which caused many organizations to move online to run their peer group sessions. However, as shown in the study, while moving things online improves accessibility for those who live in rural areas or younger adults, it poses more challenges for older adults who feel unconformable using ICTs. The hybrid form is adopted in response to this in order to ensure that everyone can have equitable access but also introduces a new issue as the remote attendees are often ignored in favour of in-person attendees, as also seen in other literature on hybrid meetings [18, 56]. In our study, we found online volunteers were arranged (e.g. Kim) to ensure that remote peers were heard, engaged with, and supported, forming a new type of infrastructural work needed for equality with this new socio-technical arrangement for peer-support.

As shown in the study, the *infrastructural work* is collectively carried out by PSWs, volunteers and even service users, with PSWs playing the leading role. The study illustrates difficulties solely relying on volunteers to carry out infrastructural work. While PSWs or volunteers take some of these as their official job responsibilities, they are relatively invisible to outsiders, hidden behind the scenes of peers providing direct support for each other. In other words, the 'work' used here denotes the effort and competence required for the service, which could be distributed among different stakeholders involved, not as an occupation or job category. In a transition of care from traditional treatment model to recovery model [1, 38], recovery peers are often viewed as providing the role model for others for their recovery journeys. However, as seen here, the PSWs not only provide a role model for recovery, but also a role model for doing infrastructural work for the effectiveness and safety for peers to support each other, for example, in the ways they identify the need and offer proactive care, facilitate the energy of service users as peer resources for each other, promote the growth and strength of the community, monitor and ensure the positiveness and safety of the group, etc. A recent study

of helpline volunteers for mental health support focuses on the human infrastructure aspects of work that power such support, foregrounding the often invisible labor involved in the management of institutional, interpersonal, and individual boundaries critical for support [50]. We similarly made an attempt to foreground the labor involved in mental health, but focus more on the labor in creating and managing peer-support platforms.

While online platforms, without spatial and temporal constraints, together with the asynchronous and persistent feature of social chats online, could greatly improve the availability and accessibility of peer-support [44], they currently still miss many other important components to make them more effective and safe. For instance, there is still a lack of culture or social cues for proactive care, trust and rapport to be built with face-to-face meetings, grouping with people of similar interest or concern, and boundary management so that peer-support could be done in a safe and effective means. Previous work investigated ways to bring some of these components to online services, e.g. the work by Lederman et al. explored clinician moderated social networking to ensure trust, positivity and safety, based on principles of positive psychology and supportive accountability [35]. While not based on clinician moderation, our work points to similar directions for positivity and safety, to support members to collectively carry out the range of infrastructural work needed for effective and safe online peer-support.

5.2 Design Implications

Today, digital platforms have increasingly adopted for people to come, meet, and share with each other, allowing peer-support for mental health to emerge naturally. However, as shown in the study, the speciality of mental healthcare in particular and healthcare in general should not be ignored, and it takes careful design considerations to make these platforms truly effective with minimal negative consequences. In HCI, some have started to turn to design to enhance these online platforms for peer support [27, 44, 45]. Yet, based on studies with online platforms, they are still limited to the dynamics of social interactions between peers. This study, by turning attention to the more formalized peer-support practices developed over the past decades in Scotland, uncovers how peer-support is provided as service, facilitated by the various roles in corresponding organizations to do all kinds of 'infrastructural work', and open up new design opportunities and implications to make peer support for mental health more effective, online or offline. By revealing the *infrastructural work* going behind the scenes of more formalized peer-support programs, we shed light on some of the issues of current online peer-support platforms, and suggest opportunities for design to help address some of the issues and enhance related services. Specifically, based on this research, we derive a number of implications for design:

First, providing an engaging space with different methods of participation. So far, online platforms are mainly designed based on 'talk therapy' [44], focusing on talk and chat. Our study suggests creating an engaging space for people to simply 'hang out', and allow different modes or levels of participation based on their energy levels. For instance, besides writing, we can provide a space for easy content sharing, e.g.the photos they take, movies they watch, books they read, and so on. If users feel their energy is low, they could just lurk, view, read, listen, and click to express their 'like' or 'dislike', and if their energy level is high, they could provide more contents for others to view and read. As shown in our study, sometimes, it is just helpful to be part of the group, not necessarily with active chatting or talking. Previous work suggests different modes of engagement, but mainly focusing on issues of accessibility caused by mental illness [44]. We suggest that the choice of different modes of engagement is inherently meaningful for mental health, especially considering the ebbs and flows in symptoms for mental health [31].

Second, providing social cues to facilitate proactive care. While online platforms make it convenient to meet and reach out to other people, they suffer from the lack of social cues which is important for proactive care and spontaneous conversations, and could make a significant difference for some service users, as shown in our study. In relation to the first implication, another aspect of providing engaging spaces for people to hang out is that we can then provide proactive care, especially for those who are experiencing low energy levels, for whom having someone reaching out to them instead of asking them to reach out to others, will be helpful. There are many ways we can provide and enhance social cues, e.g. by reading their online activity. One direction we can consider is to leverage automatic sensing technologies to provide social cues for pro-active care. Of course, an important aspect of it is to give users' control, and it will be users' choices, in terms whom and how they disclose the social cues. Previous work points to the importance of being proactive, but mainly from an individual perspective, e.g. providing warnings before one discloses their writing [44], or focuses on predicting or detecting harmful behavior online using language processing tools [14]. We suggest proactivity could be extended to leverage social care, the key for peer-support.

Third, facilitating grouping and group activities. The previous two design ideas will be more meaningful and safer when used within a group that the service user feels a sense of belonging to. Compared to offline peer-support programs, the group aspect tends to be assumed in these online platforms as they are often public and open for anyone to join, although some are held in private and require an application process [52]. However, what is important is that people need to be part of the group they feel they can relate and connect to, whether it is based on similar illness, cultural backgrounds, interests, help seeking experiences, and so on. In addition, it also takes work to ensure that there are people with sufficient experience as support providers and good energy to keep the overall atmosphere positive, an aspect that PSWs are actively concerned about. Previous work focuses on pairing or matching mechanisms. Based on the study, we suggest more bottom up approaches should be used when forming groups, e.g. some volunteers or recovery members initiate groups based on their own interests, and invite and encourage people with similar interest to join. It is also worth considering providing activities for groups to do together, beyond group sessions, for the online platform, such as gaming, for them to hang out, learn more about each other and build up relationships. Also, based on the study, we believe that cultivating a culture where members will use energy to help others is important for the group mechanism to be available and effective.

Fourth, self-assessment for boundary management. As shown in the study, there are certain boundaries in terms of what a particular peer-support service can provide, and the volunteers are trained to have related awareness to help manage these boundaries to ensure the safety and effectiveness of the service. It is especially important for mental health, as mental health problems are often entangled with other issues and can be too sensitive or emotional for group activities or sessions. On those occasions, participants need to be directed to other resources for support, such as one-on-one counseling or more instrumental or practical help such as applying for social benefits. While it is not always possible to provide instrumental or practical help directly on these platforms to address the root causes for mental problems, it will be good to point them to these resources for help. At the same time, some kinds of self-assessment should be done before they join for online peer-support groups, and they can be directed to more appropriate resources based on the results, one-on-one, or others. This way, through screening and gate keeping, the effectiveness and safety of online peer-support platforms could be ensured.

6 CONCLUSION

The Covid-19 pandemic has led to an increase of people living with mental health issues and the subsequent economic and energy crisis will likely make the situation worse. The traditional clinical model of mental health care will not be able to meet the increasing needs and the existing gap has already become worse. Peer-support, and digitally mediated peer-support hold a way to help scale up care and also increase it's coverage while also opening up new avenues for support because of it's anonymous and asynchronous abilities. We have uncovered some of the lessons that have been learned in the migration of existing support services online. The more formal nature of these peer-support practices, as compared to online only ones, has shown that digitally mediated peer-support should not simply be about creating a platform for peers to meet on and share through but must also involves all kinds of *infrastructural work*, social and technical, to create a space where peers are able to get involved in a meaningful and safe way. Although there is a body of literature that considers online peer-support, and also a body of literature on PSWs, they tend to be in parallel rather than cross-pollinating and augmenting each other. Here, we draw them together and discuss opportunities we learned from these more formalized offline peer-support practices for the design of digitally mediated peer-support. For younger adults in particular, we see a space for the use of ICTs to enhance peer-support, allowing the bottom-up emergence of groups, providing places to 'hang out', assisting proactive care, and facilitating boundary management, while keeping in-person support on the table as well.

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