CORA Cork Open Research Archive
Cartlann Taighde Oscailte Chorcaí

Title	Experience of students in using online mental health interventions: A qualitative study
Authors	Oti, Olugbenga;Pretorius, Claudette;Pitt, Ian
Publication date	2022-12
Original Citation	Oti, O., Pretorius, C., Pitt, I. (2023) 'Experience of Students in Using Online Mental Health Interventions: A Qualitative Study', in: Papadopoulos, G.A., Achilleos, A., Pissaloux, E., Velázquez, R. (eds), ICT for Health, Accessibility and Wellbeing. IHAW 2022, Communications in Computer and Information Science, vol 1799. Springer, Cham pp. 124-144, https://doi.org/10.1007/978-3-031-29548-5_9
Type of publication	Conference item
Link to publisher's version	10.1007/978-3-031-29548-5_9
Rights	© 2023 The Author(s). For the purpose of Open Access, the author has applied a CC BY public copyright licence to any Author Accepted Manuscript version arising from this submission; Published article: © 2023 The Author(s), under exclusive license to Springer Nature Switzerland AG - https://creativecommons.org/licenses/by/4.0/
Download date	2026-11-17 05:08:54
Item downloaded from	https://hdl.handle.net/10468/13958

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

Experience of Students in Using Online Mental Health Interventions: A Qualitative Study

Olugbenga Oti[1][0000−0001−6124−7814], Claudette Pretorius[2][0000−0002−6351−9796], and Ian Pitt[1][0000−0001−5207−2506]

[1] School of Computer Science & IT, University College Cork, Ireland
[2] The Insight Centre for Data Analytics, University College Dublin, Ireland
120220147@umail.ucc.ie

Abstract. Online mental health interventions have been posited as a way to reduce the mental health treatment gap among students in higher education. The effectiveness of these interventions is often limited by low user adherence. A potential solution is to improve user adherence by producing user-centred interventions.
A total of 450 students from University College Cork, Ireland participated in the survey, "Tell us About Your Mental Health Post-COVID-19". The survey examined students' mental health over the past year, their use of technological supports, their use of mental health support services and their ratings of mental health support services used.
This study explores students' experiences with technological support. The thematic analysis of 138 open-ended responses produced seven main themes: 1) Appeal 2) Barriers to Use 3) Discovery 4) Drawbacks 5) Purpose 6) Reasons for Stopping and 7) Usage Patterns. The results of this study revealed students' openness to using online mental health resources. It also revealed the barriers and facilitators to their use of these resources. Finally, based on our findings, we provide recommendations to researchers/designers developing online mental health interventions for university students. Some of these recommendations were to ensure safety in online communities, provide good user interfaces, support students in crises and improve the accessibility of online resources to students with learning disabilities.

Keywords: Online Mental Health Support · Higher Education · Students · User-Centred Design · COVID-19 Pandemic

1 Introduction

A survey conducted by the World Health Organisation revealed that roughly 1 in 3 college students screened positive for an anxiety, mood or substance use disorder [1]. In a similar global sample, only 24.6% of students noted that they would seek help if they experienced an emotional problem in the future [6]. In addition, the Healthy Mind Survey conducted in the United States revealed that only 36% of students with a mental health problem had received mental health support in the previous year [8].
Barriers to receiving mental health treatment include a preference for self-reliance [7,6], preference for informal supports (e.g. friends, family) [6], stigma/embarrassment [7,6], cost of accessing services [6], scheduling problems [6], and time commitment [6].
Online mental health interventions have been posited as a way to circumvent some of the barriers encountered in face-to-face services e.g. stigma and scheduling problems [1,6]. Moreover, recent reviews of online mental health interventions in higher education settings have revealed that they have proven effective in improving symptoms of depression, anxiety and stress [14,9].
However, the effectiveness of these interventions is often limited by low user adherence [23,14]. A recent review [23] on user engagement in mental health apps highlighted possible reasons for low user adherence including 1) poor user experience i.e. apps are difficult to use 2) apps do not target user needs 3) a lack of transparency regarding privacy policies 4) apps are not trustworthy and 5) apps are not useful in emergencies.
Oti et al. [15] conducted a scoping review of online mental health interventions co-designed with students in higher education. Students participating in the design of these interventions expressed the desire for interventions that targeted their needs; had good user interfaces; contained interesting and engaging content; ensured anonymity/privacy/safety; included peer engagement, and included access to professionals. These

findings provide evidence of the importance of understanding the needs of the target population before developing an intervention for them. Gemert-Pijnen et al. [24] developed a holistic framework for the development of eHealth Technologies. In this framework, the authors note that understanding users' habits, needs, and context was essential for developing eHealth technologies that were impactful and relevant to their target population.
There is limited literature exploring students' experiences with using online mental health support. These experiences are vital for understanding how and why students use online mental health interventions. Moreover, they are essential for developing interventions that fit the needs of this population.
To this end, we conduct an in-depth qualitative exploration of students' experiences with using online mental health support. Participants discussed how they found out about the online resource(s), how long/how often they used it, why it was helpful/not helpful, and why they may/may not have stopped using the resource(s). This study contributes to this field of research 1) by providing empirical evidence on the totality of students' use of online mental health support from adoption to attrition and 2) by informing the design of online mental health support for this population.

1.1 Related Work

We present literature exploring students' views and perceptions of online mental health interventions.
Chan et. al [3] conducted focus groups with university students. Their goal was to explore the attitudes of students towards seeking help online. Participants expressed concerns about privacy and confidentiality on the internet, the volume and quality of resources on the internet, difficulty establishing an emotional connection with a counsellor/therapist through a screen, and safety on online forums. Conversely, participants noted that online support could be beneficial as it provides anonymity, is easily accessible and could provide a sense of belonging with others experiencing similar difficulties.
Dederichs et. al [5] conducted focus groups to understand how medical students viewed online mental health interventions. Participants viewed online interventions as an easily accessible alternative to using face-to-face services. They also felt that online interventions could be a stepping stone to using face-to-face services. Some participants had a preference for face-to-face services. In addition, participants viewed low quality of resources, fear of misdiagnosis, difficulty communicating online, uncertainty about effectiveness of online support, and limited levels of personalisation to be barriers to their future use of online support.
Further, participants noted that frequent notifications; reminders to rate an app; technical issues; poor visual design; lack of a proof of credibility by an accredited organisation; inability to use an app at their own pace; lack of data safety; difficult to understand terms of use, and a lack of privacy would affect their use of a mental health app.
Holtz et. al [10] conducted focus groups to understand how students perceived a mental health app, MySSP, which they had developed. Some participants noted that they had a preference for face-to-face mental health support. Similarly, participants expressed doubts about the effectiveness of a mental health app in cases of severe mental health difficulties. Conversely, some participants received the app well. They noted that it was easy to use, free of charge and offered in multiple languages.
Karwig et. al [12] conducted a focus group to understand students' perspectives on online support. Students viewed online support as an easily accessible way to receive mental health support. They believed it could be a gateway to seeking face-to-face mental health support. Some participants expressed a preference for online support over face-to-face support. However, participants also expressed concerns about the credibility of online resources, the credibility of online counsellors/therapists and privacy and confidentiality in online counselling sessions.
Kern et. al [13] examined whether university students were open to using mental health apps, how often they used them, and how they viewed them. Some participants noted a preference for mental health apps over face-to-face services citing accessibility, convenience, affordability and anonymity. Conversely, participants mentioned that they would be reluctant to use mental health apps because they felt it would be impersonal, they would like to reduce the amount of time spent on their smartphones, and they would be worried about privacy issues. Finally, participants noted that the design of an app and its reliability were factors that would determine their use of a mental health app in the future.
Horgan et. al [11] conducted a quantitative survey on how students use the internet for mental health support on behalf of themselves or their family/friends. Some participants mentioned that they preferred

online mental health support over face-to-face services because of anonymity, privacy and confidentiality, the extensive information the internet offers, accessibility, affordability, and a sense of community. Conversely, participants who indicated a preference for face-to-face support noted that it was personal and that the credibility of a professional was easily verifiable.
The above studies provide insights into students' perceptions of online support. However, they do not explore students' experiences with online mental health support. These experiences include their discovery of online resources, their motivations for using them, why they may have stopped using them, their usage patterns of online resources, e.tc. Understanding these experiences is essential for designing user-centric online mental health interventions for this population.

2 Methods

2.1 Data

The results presented in this paper are part of a study in which the survey "Tell Us About Your Mental Health Post-COVID-19" was distributed to students in University College Cork, Ireland. This study received ethical approval from the Social Research Ethics Committee of University College Cork (Log 2020-196A1). The survey was distributed via a mailing list in the university. Students were invited to complete the survey via Google Forms from February 10, 2021, to April 30, 2021. This study will present open-ended responses on "Experiences with Technological Supports". The results of the wider study can be found in a separate paper titled "Perceptions of Students in Higher Education about Mental Health Support Services During the COVID-19 Pandemic". That paper provides a quantitative analysis of students' mental health over the past year, their use of technological supports, their use of mental health support services and their ratings of mental health support services used.

2.2 Analysis

Open-ended responses were analysed using the Thematic analysis methodology by Braun and Clarke [2]. According to the authors [2], thematic analysis involves six phases including 1) Familiarisation with the data 2) Generating initial codes 3) Searching for themes 4) Reviewing themes 5) Defining and naming themes and 6) Producing a report. Our analysis was conducted in Nvivo version 1.5.1. The first author (OO) performed the initial analysis of the data. The codes and themes were refined with input from the second author (CP). Our thematic analysis of "Experiences with Technological Supports" led to the development of seven main themes; 1) Appeal 2) Barriers to Use 3) Discovery 4) Drawbacks 5) Purpose 6) Reasons for Stopping and 7) Usage Patterns. Direct quotes are used to illustrate the themes and these quotes are followed by an index identifying the respondent (e.g. P1 = participant at index number 1).

2.3 Participants

A total of 138 respondents gave open-ended responses detailing their experiences in using technological supports to support their mental health. Of these respondents, 19.6% (n = 27/138) identified as male, 76% (n = 105/138) identified as female, 3.6% (n = 5/138) identified as non-binary and 1% (n = 1/138) preferred not to state their gender.
A majority of respondents (60.9%, n = 84/138) were between the ages of 18 and 22, 14.5% (n = 20/138) were between the ages of 23 and 25, 11.6% (n = 16/138) were between the ages of 26 and 30 and 13% (n = 18/138) of respondents were 31 years and above.
A majority of respondents (80.4%, n = 111/138) were nationals of the Republic of Ireland. Following this were nationals of EU countries (11.6%, n = 16/138) and nationals of North American (2.2%, n = 3/138) and Asian countries (2.2%, n = 3/138). Finally, nationals of the United Kingdom and African countries accounted for 1.4% (n = 2/138) of the respondents.
Respondents were studying in a broad range of disciplines including, Arts, Celtic Studies & Social Sciences (40.6%, n = 56/138), Science (15.9%, n = 22/138), Medicine and Health (13.8%, n = 19/138) and Business (8.7%, n = 12/138). In addition, 5% (n = 7/138) of respondents were within the disciplines of Engineering & Architecture and Arts subjects. Finally, (3.6%, n = 5/138) were within the disciplines of Nursing and Midwifery , Law (2.9%, n = 4/138) and Food & Nutritional Sciences (2.2%, n = 3/138).

3 Results

In this paper, we focus on the respondents' experiences with using technological support for their mental health. Thematic analysis of open-ended responses led to the development of seven themes: 1) Appeal 2) Barriers to Use 3) Discovery 4) Drawbacks 5) Purpose 6) Reasons for Stopping and 7) Usage Patterns. Table 1 presents an overview of the themes along with their descriptions and illustrative quotes from participants. Technological supports mentioned by participants include online counselling (e.g. Turn2Me), CBT programs, discussion forums (e.g. Reddit), mobile apps (e.g. Calm, Dailio, Headspace), websites and blogs (e.g. National Health Service England Cognitive Behavioural Therapy (CBT) website, Health Service Executive (HSE) website), e-books, videos (e.g. on YouTube), breathing exercises, online workbooks, SilverCloud Health, chatrooms, Instagram, etc.

Table 1: Coding framework - Experiences with Technological Support

Theme	Description of theme	Illustrative quotes
Appeal	Aspects of online supports that were engaging to respondents	*"Reading about other people's experiences with similar issues online was validating and really helpful, especially when considering the input of people who started to recover from such issues. It was a relief to know that even though sometimes this feels like things will never change, they do get better with enough time, effort and support. [P237]"*
		"The counsellor from UCC [University College Cork] can link in with me on it, it has been helpful to share difficult things I don't want to talk to her about this way so she knows but I don't have to tell her she can read it [P217]"
Barriers to use	Factors limiting or preventing the use of online mental health supports	*"They're not much help, a lot of the time its harder to discuss your problems from home where people can hear or sometimes you just don't want to pull more negativity into your room [P207]"*
		"Didn't work as over time kept forgetting to keep logging moods/episodes [P84]"
Discovery	Respondents describe how they found online resources	*"My gym suggested an app for everyone, just to keep people going through lockdown. [P109] "*
		"The counsellor and GP in student health recommended them to me [P126] "
Drawbacks	Disadvantages of using online supports	*"Discussion forums can be helpful to vent but can be risky by way of offering advice. [P11] "*
		"It was interesting and helpful to think about. But I couldn't apply those tools mentioned in the book when I actually needed to [P392] "
Motivations for use	Respondents describe their reasons for using online supports	*"I built it into my evening routine and found that it gave structure to my day, especially during COVID. Had used some apps before on and off but really was only during COVID that I properly made a routine of it and used them consistently.[P229] "*
		"as my mother had used them and other self-help practices for a long time and I found that I was ready to start using them. [P313] "

Table 1 – continued from previous page

Theme	Description of theme	Illustrative quotes
Purpose	Respondents describe what they hoped to get out of using online support	*" I find that to really get the most out of counselling/therapy, you really need to back it up with some form of daily practice or self-directed care. [P410] "*
		" I usually look up articles on specific issues I might be having at the time to gain greater understanding [P435] "
Reasons for stopping	Respondents describe the reasons why they stopped using online supports	*"I stopped because I had felt better. [P315] "*
		"eventually stopped using it as I felt it wasn't helping and because I thought this my mental health got worse [sic] [P235] "
Usage patterns	Respondents describe their usage patterns of online supports	*"I used these resources when I was going through a bad patch, and I only use them now if I feel that I need to. [P192] "*
		"I have watched the school of life videos several times over the last 3 years and I know I can come back and watch them when I need to. [P21] "

3.1 Appeal

The "Appeal" theme indicated that participants had diverse needs when accessing online mental health support. Participants sought online counselling, visited discussion forums/chat rooms to share what was on their minds, used mental health apps to receive support, and visited online forums to read about the experiences of others.

Participants highlighted the importance of belonging to a community like a discussion forum. They appreciated connecting with those who were going through a similar difficulty to them or recovering from it. They noted that this gave them hope and made them feel less alone.

> *Reading about other people's experiences with similar issues online was validating and really helpful, especially when considering the input of people who started to recover from such issues. It was a relief to know that even though sometimes this feels like things will never change, they do get better with enough time, effort and support. [P237]*

Participants who had used online counselling for the first time felt it was as effective as face-to-face services. Some participants were enrolled in a hybrid mode of counselling, that is, a mixture of face-to-face services and CBT programs with the same mental health professional. These participants noted that CBT programs allowed them to discuss sensitive issues with their counsellors.

> *The counsellor from UCC [University College Cork] can link in with me on it, it has been helpful to share difficult things I don't want to talk to her about this way so she knows but I don't have to tell her she can read it [P217]*

Participants indicated that online support were easily accessible. Accessibility was described in terms of the ability to use an online resource on their mobile phones, the ease of use of an online resource, and easily understandable language for an online resource. In addition, accessibility could also be understood in terms of affordability as participants indicated that they were grateful to access a resource free of charge.

> *I like using apps on my phone for mindfulness because its easy to access, I usually have my phone on me. I built it into my evening routine and found that it gave structure to my day, especially during COVID. Had used some apps before on and off but really was only during COVID that I properly*

made a routine of it and used them consistently. Ease of use is a big factor in encouraging constant use [P229]

Participants indicated that appreciated online resources that were tailored to students.

I enrolled with UCC [University College Cork] Participate. It is a really great resource for students [P236]

In discussing their experiences with mobile apps and other forms of online support, participants indicated that simplicity, a few daily reminders and flexibility in scheduling were factors that encouraged their use of these supports.

I also use a gratitude app my sister told me about. I love it cause it's simple - you literally just list things you felt grateful for that day. It only gives you a reminder once a day if you have forgotten to fill it in. I've been using it all year and definitely find it helpful. [P323]

Finally, participants indicated that it was important for information to be reliable and presented in a clear, concise and approachable manner.

I found the HSE website very useful as all the information is clear and concise. It is reliable information. [P403]

3.2 Barriers to use

Under the theme "Barriers to use", participants highlighted the barriers they faced while using online mental health support.
Participants indicated that there were overwhelmed by the vast amount of resources on the internet. They also noted that it was difficult to find resources that were useful to them.

but can be hard to find good ones, a lot are kinda the same. [P323]

The presence of paywalls and the cost of accessing a resource were barriers to participants' use of online resources.

but for most of the apps there was only a free trial so didn't use it for a long time [P336]

Participants indicated that online resources required regular commitment. They noted that this level of commitment was difficult to attain when they felt unmotivated or depressed. Participants also mentioned that despite their interest in using an online resource, they often forgot to use it.

Didn't work as over time kept forgetting to keep logging moods/episodes [P84]

Some participants mentioned that although they found online counselling helpful and necessary during the COVID-19 lockdowns, they preferred face-to-face services. Participants noted that it was difficult to use online counselling. They indicated that they found it uncomfortable, describing it as "uneasy and strange" or "tough and unsustainable". Lack of privacy at home and loss of separation from negative feelings were other factors that limited participants' use of online counselling.

They're not much help, a lot of the time its harder to discuss your problems from home where people can hear or sometimes you just don't want to pull more negativity into your room [P207]

Participants indicated that it was difficult to establish an emotional connection through a screen. In addition, participants who enrolled in text counselling mentioned experiencing delays in communication with their counsellors. Further, participants felt that their online counsellor was not well-trained in their profession.

I tried Turn2Me online counselling. It was absolutely useless. It seemed like my counsellor had absolutely zero training, knowledge, understanding or empathy and I found the experience incredibly invalidating and off putting and it made me sceptical of counselling for quite a while and prevented me from getting the help I needed [P465]

Some participants found it difficult to use online resources because of their learning disabilities. One participant noted that reading and phone/video calls were difficult. Another participant noted that although they enjoyed using a particular app, they found the update in the user interface upsetting.

> *I did not find them useful as reading is hard for me and so is talking over the phone/video calls. [P126]*

Participants felt that although online resources provided mental health information, they did not teach them how to manage their mental health difficulties.

> *Other than educating me on different mental health issues it didn't help me in any way. [P123]*

Participants felt that their use of online resources had led to a decline in their mental health.

> *Before I was diagnosed with a mental health disorder, I had my suspicions I was suffering from one and so I would research them a lot and tips on how to cope with them. This kind of just led to a spiral of overthinking my own mental state, and ultimately didn't help me much as I didn't seek help for a long time either way. [P406]*

Participants felt that the online resources were impersonal. In some cases, these resources did not provide the support needed.

> *I think they're all very cliche like telling you to drink water and stretch when that doesn't really help [P376]*

Participants felt that online resources were unsuitable for use in severe cases of mental health difficulty.

> *Dependent on circumstances and severity of the issue; it was helpful [P382]*

Participants indicated that poor visual design was a barrier to their use of an online resource.

> *The NHS CBT site is helpful but I didn't complete the whole course, it was so ugly to look at lol [P302]*

3.3 Discovery

Under the theme "Discovery", participants mentioned how they found out about the online resource(s) they used. Participants mentioned that they discovered online resources through their research, for instance, via a Google search. Some participants noted that they came across these resources through a YouTube ad, a social media influencer or their Gym.

> *My gym suggested an app for everyone, just to keep people going through lockdown. [P109]*

Participants discovered an online resource through friends, family members or partners.

> *I found out about therapy from my parents a long while back.[P394]*

Participants discovered an online resource through a health professional, for example, a counsellor or GP. These included professionals within and outside the university.

> *The counsellor and GP in student health recommended them to me [P126]*

Participants discovered an online resource through university forums like their orientation day or an online meeting. Participants also found a resource through the university counselling website.

> *I only found out about it from a teams meeting for postgrad students, it was highlighted by a speaker on that talk [P20]*

3.4 Drawbacks

Under the "Drawbacks", participants highlighted the shortcomings of the online resource(s) they had used to support their mental health.
Participants felt that their participation in discussion forums could pose a risk to others.

> *Discussion forums can be helpful to vent but can be risky by way of offering advice. [P11]*

Participants indicated that the online resource they used did not provide adequate support for the difficulty they were experiencing.

> *I used the Samaritans by emailing back and forth. it was a way to write my feelings down and vent but the correspondence was more empathetic than problem solving. it did help to unload to a perfect stranger but i think maybe i should have been in therapy to get me through the tough time i was having. [P196]*

Participants felt the online resource was unsuitable for their current diagnosis.

> *During my counselling session it was suggested for me. I used it for perhaps two weeks maybe a month and I didn't think it did anything as I felt it didn't fit what I had (it was suggested I had social anxiety). [P429]*

Participants indicated that although the online resource improved their knowledge of mental health/mental health difficulties, they did not feel equipped to manage their mental health.

> *It was interesting and helpful to think about. But I couldn't apply those tools mentioned in the book when I actually needed to [P392]*

Participants indicated that they relied on the use of a resource when they felt overwhelmed. However, they felt that the resource could not be used at any time.

> *My counsellor recommended a few guided meditation videos on YouTube for me to try. I found them very helpful and I use one in particular whenever I start to feel overwhelmed. The only downside was the fact that I couldn't just start meditating wherever I was, especially out in public. [P443]*

3.5 Motivation for use

Under the theme "Motivation for use", participants highlighted factors that encouraged their use of online mental health support.
Participants indicated that the COVID-19 pandemic had motivated their use of online support. Participants mentioned that they attended online counselling when face-to-face services were unavailable. In addition, participants indicated that the COVID-19 pandemic increased their commitment to using mental health apps.

> *I built it into my evening routine and found that it gave structure to my day, especially during COVID. Had used some apps before on and off but really was only during COVID that I properly made a routine of it and used them consistently.[P229]*

Participants mentioned that their family member's use of online resources encouraged them to begin their use of online support:

> *as my mother had used them and other self-help practices for a long time and I found that I was ready to start using them. [P313]*

3.6 Purpose

Under the theme "Purpose", participants highlighted their reasons for using online support.
Participants indicated that they used online support to manage their mental health. Participants mentioned using these resources when feeling stressed, anxious or overwhelmed. Participants also mentioned needing to use online support because of the isolation brought on by the COVID-19 pandemic.

> *I use it weekly and plan to for the foreseeable future to help me get through living abroad, my PhD and the isolation caused by the pandemic [P6]*

Participants indicated they used online support to maximise their attendance at counselling/therapy sessions.

> *I find that to really get the most out of counselling/therapy, you really need to back it up with some form of daily practice or self-directed care. [P410]*

Participants mentioned that they used online support to understand how to support a friend going through a mental health difficulty.

> *Used it to get ideas on how to support someone as they weren't ready to get help. [P9]*

Participants mentioned that they used online support to advance their understanding of mental health and mental health difficulties.

> *I usually look up articles on specific issues I might be having at the time to gain greater understanding [P435]*

Participants indicated that they used online support to gain awareness of their mental health difficulties.

> *They tended to help quite a bit and made me more aware of my problems [P148]*

3.7 Reasons for stopping

Under the theme "Reasons for Stopping", participants described reasons for terminating their use of online support.
Participants indicated that they had stopped using online support because it improved their mental health.

> *I stopped because I had felt better. [P315]*

Participants mentioned that they stopped using an online resource because they got a mental health diagnosis.

> *Used mood tracker apps such as eMoods for about a year while being evaluated for bipolar disorder. Stopped when diagnosed with unipolar depression. [P333]*

Participants indicated that they stopped using an online resource because it did not work for them or led to a decline in their mental health.

> *eventually stopped using it as I felt it wasn't helping and because I thought this my mental health got worse [sic] [P235]*

3.8 Usage Patterns

Under the theme "Usage patterns", participants highlighted how long and how often they used online support.
Participants indicated that they used online resources when they experienced stress, anxiety or other mental health difficulties.

> *I used these resources when I was going through a bad patch, and I only use them now if I feel that I need to. [P192]*

Participants indicated that they used online resources daily, a few times a week, once a month or irregularly.

> *I used it multiple times a day [P451]*

Participants mentioned that they used online support for varying lengths of time. Some participants noted that they had used an online resource once to try it out. Further, participants had used online support for a few days, a couple of weeks, several months, or several years. The maximum duration of use was for three years.

> *I have watched the school of life videos several times over the last 3 years and I know I can come back and watch them when I need to. [P21]*

4 Discussion

In this study, we have explored students' use of online mental health support before and at the start of the pandemic. We explored the factors that encouraged and discouraged students' use of these resources. We also explored what led to their discovery of an online resource, their motivations for using these resources and what they hoped to get out of using online mental health support.
Participants were encouraged to use online resources because of the flexibility and accessibility they offered. They appreciated the sense of community they provided and the ability to write down sensitive issues instead of discussing them face-to-face with their counsellor. Participants enjoyed using resources that targeted their needs. Participants were encouraged to use mental health apps that had a simple design and a few daily reminders.
Conversely, participants noted the barriers they encountered while using online resources. Participants who attended online counselling experienced delays in communication during email/text counselling. Participants also experienced a lack of privacy at home, a lack of separation from negative feelings, difficulty establishing an emotional connection with counsellors and incompetent counsellors.
Participants felt that engaging in online communities could be potentially risky. In addition, poor user interfaces, cost of resources, difficulty staying committed, and lack of personalization; were all barriers to their use of online mental health support. Finally, participants felt that platforms were not tailored to those with learning disabilities and that resources were unsuitable in crises.
Participants discovered online resources through their research and through recommendations from family, friends, partners, health professionals (e.g. counsellor, GP), and university.
Participants indicated that the COVID-19 pandemic and previous use by a family member were motivating factors in their use of online resources. Participants also mentioned that they used online resources to support a friend going through a difficulty, to manage their mental health and to improve their knowledge of mental health and mental health difficulties.
In the following sections, we discuss what we have learned and make recommendations based on our findings for designing online mental health interventions for students in higher education.

4.1 Discovery

It is interesting that participants discovered online resources through YouTube Ads and social media influencers. Social media influencers are becoming popular as a means for brands to advertise their products to young people. Mental health apps like Headspace and Calm use Youtube ads to reach potential users.
The discovery of online resources through social connections (e.g. family, friends or partners) is well-documented [21,22]. Previous research has recognised the impact of stakeholders (e.g. health professionals and universities) in determining students' use of online resources. A survey by Karwig et. al [12] revealed that 25% of students were more likely to attend online counselling if it was offered through their university's counselling service. Further, Gemert-Pijnen et. al[24] recommend the inclusion of stakeholders throughout the development of any eHealth technology. They noted that input from stakeholders would help identify the issues affecting users and help understand their needs. Therefore, it is vital for researchers to include stakeholders during the design of an online intervention. Moreover, stakeholders who participate in the design process of an intervention may be more willing to signpost students to the intervention. Finally, researchers should explore multiple avenues to increase the visibility of an online resource.

4.2 Face to Face v Online Counselling

Past research has explored students' perceptions of online counselling. Students expressed concerns about credibility of online counsellors[12], effectiveness of online counselling [10,5], difficulty establishing an emotional connection [5,3,11] and privacy and confidentiality in online sessions [12]. Conversely, students viewed online counselling as easily accessible and as a stepping stone to the use of face to face support [12,10].
The COVID-19 pandemic led to the loss of access to mental health support for many young people [26] but it also led to the increase of online mental health support among young people[27]. Some participants found it difficult to attend online counselling sessions because of a lack of privacy at home. Other participants indicated a clear preference for face-to-face services, noting that online counselling was uncomfortable for them.

On the other hand, some participants mentioned that online counselling was just as good as face to face counselling. Young people who used online resources for the first time because of the COVID-19 lockdowns were pleasantly surprised by its effectiveness [19]. Researchers should improve the visibility of student reviews of online counselling. These reviews might encourage more students to engage in online counselling services.

4.3 Flexibility and Accessibility

Participants enjoyed the flexibility and accessibility offered by online resources. They mention being able to complete the programmes/resources at their own pace and always having the support at hand, for example, on their mobile phone. Past research has shown that young people appreciate the convenience and accessibility that online mental health support offer [15,5,19,13]. This includes availability outside of business hours [3,11,12] and being able to use a resource at their own pace [5]. Flexibility and accessibility are factors that set online interventions apart from face-to-face services. Researchers should endeavour to design online resources that are easily accessible and provide flexibility in scheduling.

4.4 Community

Participants appreciated the sense of community brought about through online mental health support, for example, on discussion forums, in chat rooms, and on YouTube. Participants found that they were able to receive support passively without the need to participate in the community, they were able to receive more than one opinion on an issue they were facing, they had someone to unload their burdens to, and they could read/watch stories of others especially from those who had recovered from similar issues. Past research has shown that peer engagement in online support ranks high in the needs of students when using online support [15]. Young people enjoy reading personal stories of others [20], they enjoy being connected with people in similar situations [11], and they enjoy having the sense of belonging that an online community provides [19]. Prescott et. al [18] surveyed users of an online mental health forum. They found that online mental health forums provided support for users in crises, improved their confidence, encouraged users to share their issues freely and helped them transition into using professional services.
Conversely, in this study, participants also noted that offering advice on discussion forums could be risky. Previous research has revealed that although young people desire peer engagement, they know that it could produce harmful discussions [12] which could lead to emotional contagion or other detrimental effects [3]. One proposed solution is utilising moderators in online forums [4,17,16].

4.5 Content

Participants described the content of an online resource in terms of personalization, presentation, and quality of resources. Participants appreciated when a resource was tailored to their needs, for example, relevant to students. Participants wanted to use resources that were approachable and presented in a clear and concise way. This finding is similar to previous research in which young people have mentioned that information in online resources should be provided in accessible language [19].
Conversely, in this study, participants noted that lack of personalization, the use of condescending language and difficulty locating good resources were barriers to their use of online mental health support.
Stawarz et al. [22] conducted a survey on users of mental health apps in the general population. They found that personalization was a very important factor in encouraging user engagement in mental health apps. Similarly, in [19,11,13], students found the content of online resources to be impersonal. Past research has shown that young people are often overwhelmed by the number of mental health resources available on the internet [3,20]. They often doubt the quality of these resources [3,5,13,11,12]. And they have expressed a need for resources to provide a proof of quality from universities, other institutions, mental health professionals, etc [5,20].
The inclusion of stakeholders (including users) in the development of an online mental health intervention cannot be overstated. Input from stakeholders like mental health professionals will help ensure that researchers develop a clinically valid resource. A stamp of approval from mental health professionals will also improve the credibility and validity of a resource. In addition, the participation of target users in the development process will ensure that a resource is tailored to their needs. It will also ensure that the resource is presented in a way that is suitable for the target population.

4.6 Mobile apps

Participants who mentioned using mental health apps appreciated having a simple app design and a few daily reminders. Past research has shown that ease of use [21] and simple layout [19] are important factors for users of mental health apps. In addition, research has also shown that frequent notifications and reminders are barriers to the use of mental health apps [5]. Further, participants mentioned that mental health apps often involved a significant commitment, with some participants noting that when they were feeling depressed/unmotivated it was even harder to remember to use these resources. There is a need for researchers/designers of mental health apps to strike a balance between encouraging users to engage with mental health apps when they need it the most and burdening them with reminders. One possible solution could be letting users choose if/when they want reminders following the installation of the app.
Although not limited only to mobile apps, participants appreciated being able to access an app free of charge. Affordability of an app has been found to be a facilitator in the use of online support [5,20] while cost has been found to be a barrier in the use of online support [19,21]. One possible solution could be to include free content in a paid app so that users who cannot afford them still have some support available. This is the approach taken by the mental health app "Headspace".

4.7 User Interface

The user interface of online resources was also important to participants, with one participant noting that they stopped using an online resource because it was ugly to look at. Past research has shown that a good user interface design improves the likeability of an app [13] as well as increased its credibility [20,10]. Researchers should not discount the value of good visual design as it may determine if a student will use an online resource.

4.8 Learning Disability

Participants with learning disabilities found it difficult to use online resources; one participant noted that reading/speaking over the phone was difficult for them, and this made the use of online resources challenging. Another participant noted that the sudden update in the user interface in a mobile app, Dailio, was so upsetting for them that they deleted it. Some people with learning disabilities prefer to stick to a routine and find change unsettling. Veljanovska et. al [25] provided guidelines for designing user interfaces for users with learning disabilities. We have not found literature exploring how people with learning disabilities interact with online mental health technologies, this is an area of research worth exploring.

4.9 Usefulness Depends on Severity

Participants mentioned that although online resources were useful, this usefulness was dependent on the severity of their mental health difficulty. Past research has shown that students doubt the efficacy of online resources in managing severe mental health difficulties [13,10]. In this study, some participants noted that online support was useful to them in urgent situations. Participants mentioned the use of helplines when considering suicide, or using a meditation app when feeling stressed. These situations are widely different and so is the form of online support used. We believe that it is important to provide users with a range of online supports according to the needs of users at any given point. For instance, a mobile app that signposts its users to an emergency helpline.

4.10 Usage Patterns

Similar to previous research, we found that participants used online resources for different reasons: to manage their mental health[13], for daily mental-health maintenance, to gain a self-diagnosis[5], to help a friend/family member[20,11,12], and for mental health education[13]. In addition, participants indicated that they used online resources because of a lack of face-to-face services during the pandemic or because the COVID-19 pandemic improved their commitment to using mental health apps.
We find that participants' reasons for using online resources are closely related to why they terminated their

use of online resources. Participants who used online resources to manage their mental health stopped when they felt better. Also, participants who used online resources while waiting for a mental health diagnosis stopped when they got a diagnosis.
Further, participants' reasons for using online resources are also related to their usage patterns. While some participants used online resources daily, others used the resources when feeling stressed, anxious, or overwhelmed. Participants' usage patterns, reasons for stopping and reasons for use are closely related. These relationships provide valuable context and should not be ignored when examining attrition rates of users in an online intervention. We recommend that researchers/designers seek to understand the entire context of their users. This will ensure that the effectiveness of an intervention and the level of user adherence are measured accurately.

5 Conclusion and Key Lessons

In this study, we have explored students' experiences with online mental health support. We have found that students are open to the use of online support. However, barriers like a lack of personalization, the content of these resources, cost, and poor user interfaces limit their use of these resources. Conversely, we found that students are more likely to use online resources when they were recommended by a family member/friend, flexible and easily accessible, offered community engagement, tailored to their needs, offered free of charge, and user-friendly. It was also vital that the content was understandable, approachable and reliable. Based on the results of this study, we have developed a set of lessons that we believe researchers/designers in this area of research need to keep in mind when designing online mental health support for students.

Key Lessons

1. Researchers should leverage multiple avenues to improve the visibility of an online resource. These could include students' social network, university, social media, YouTube ads, etc.
2. Young people interact with online resources for different reasons, and they face significant challenges in identifying what resource works for them. An online resource should provide a clear description of the kind of support it provides in order to help them make an appropriate choice quickly. In addition, in the case where a resource addresses more than one need, the design should make it easy for a user to navigate the different needs/features.
3. Our study shows that students are open to online counselling, and researchers should leverage this.
4. Students appreciated being able to complete online resources at their own pace. Therefore, online resources should be designed with this preference in mind.
5. While peer engagement is important to students, safety in online communities is just as important and should be ensured.
6. The content of online mental health support should be designed along with students, to ensure that their needs are taken into account. In addition, the design team should also include a mental health professional to ensure the quality and credibility of the resource.
7. In cases where mobile apps require a fee, parts of the app should be made available to users free of charge. Students have expressed frustration attempting to interact with apps that they cannot access.
8. A good user interface in an online resource is very important to students. This includes visual appeal and simplicity of design. In some cases, we found that the user interface ranked higher in importance than the content. This is because participants found it difficult to use a resource with a less than optimal user interface.
9. Online resources should be made accessible to students with learning disabilities
10. An online resource should provide help in a crisis, through signposting.
11. Usage patterns differ among users for varying reasons, it is important to qualitatively explore how users interact with an online resource. This will help interpret attrition rates more accurately.

Declaration of competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding

This publication has emanated from research conducted with the financial support of Science Foundation Ireland under Grant number 12/RC/2289-P2 which is co-funded under the European Regional Development Fund. For the purpose of Open Access, the author has applied a CC BY public copyright licence to any Author Accepted Manuscript version arising from this submission.

References

1. Auerbach, R., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D., Green, J., Hasking, P., Murray, E., Nock, M., Pinder-Amaker, S., Sampson, N., Stein, D., Vilagut, G., Zaslavsky, A., Kessler, R., Collaborators, W.: The who world mental health surveys international college student project: Prevalence and distribution of mental disorders. Journal of Abnormal Psychology **127** (04 2018). https://doi.org/10.1037/abn0000362
2. Braun, V., Clarke, V.: Using thematic analysis in psychology. Qualitative Research in Psychology **3**(2), 77–101 (2006). https://doi.org/10.1191/1478088706qp063oa
3. Chan, J., Farrer, L., Gulliver, A., Bennett, K., Griffiths, K.: University students' views on the perceived benefits and drawbacks of seeking help for mental health problems on the internet: A qualitative study. JMIR Human Factors **3**, e3 (01 2016). https://doi.org/10.2196/humanfactors.4765
4. Cohan, A., Young, S., Yates, A., Goharian, N.: Triaging content severity in online mental health forums. Journal of the Association for Information Science and Technology **68**(11), 2675–2689 (2017). https://doi.org/10.1002/asi.23865
5. Dederichs, M., Weber, J., Pischke, C.R., Angerer, P., Apolinário-Hagen, J.: Exploring medical students' views on digital mental health interventions: A qualitative study. Internet Interventions **25**, 100398 (2021). https://doi.org/10.1016/j.invent.2021.100398
6. Ebert, D.D., Mortier, P., Kaehlke, F., Bruffaerts, R., Baumeister, H., Auerbach, R.P., Alonso, J., Vilagut, G., Martínez, K.U., Lochner, C., Cuijpers, P., Kuechler, A.M., Green, J., Hasking, P., Lapsley, C., Sampson, N.A., Kessler, R.C., behalf of the WHO World Mental Health—International College Student Initiative collaborators, O.: Barriers of Mental Health Treatment Utilization Among First-Year College Students: First Cross-National Results From The WHO World Mental Health International College Student Initiative. International Journal of Methods in Psychiatric Research **28**(2), e1782 (2019), `https://doi.org/10.1002/mpr.1782`
7. Eisenberg, D., Hunt, J., Speer, N.: Help seeking for mental health on college campuses: Review of evidence and next steps for research and practice. Harvard review of psychiatry **20**, 222–32 (07 2012). https://doi.org/10.3109/10673229.2012.712839
8. Eisenberg, D., Hunt, J., Speer, N., Zivin, K.: Mental health service utilization among college students in the united states. The Journal of nervous and mental disease **199**, 301–8 (05 2011). https://doi.org/10.1097/NMD.0b013e3182175123
9. Farrer, L., Gulliver, A., Chan, J., Batterham, P., Reynolds, J., Calear, A., Tait, R., Bennett, K., Griffiths, K.: Technology-based interventions for mental health in tertiary students: Systematic review. Journal of medical Internet research **15**, e101 (05 2013). https://doi.org/10.2196/jmir.2639
10. Holtz, B., McCarroll, A., Mitchell, K.: Perceptions and attitudes toward a mobile phone app for mental health for college students: A qualitative focus group study (preprint). JMIR Formative Research **4** (02 2020). https://doi.org/10.2196/18347
11. Horgan, A., Sweeney, J.: Young students' use of the internet for mental health information and support. Journal of Psychiatric and Mental Health Nursing **17**(2), 117–123 (2010). https://doi.org/10.1111/j.1365-2850.2009.01497.x
12. Karwig, G., Chambers, D., Murphy, F.: Reaching out in college: Help-seeking at third level in ireland. (2015), `https://www.hse.ie/eng/services/list/4/mental-health-services/nosp/research/reports/reachingout-college`, `https://www.hse.ie/eng/services/list/4/mental-health-services/nosp/research/reports/reachingout-college`
13. Kern, A., Hong, V., Song, J., Lipson, S., Eisenberg, D.: Mental health apps in a college setting: openness, usage, and attitudes. mHealth **4**, 20–20 (06 2018). https://doi.org/10.21037/mhealth.2018.06.01
14. Lattie, E.G., Adkins, E.C., Winquist, N., Stiles-Shields, C., Wafford, Q.E., Graham, A.K.: Digital mental health interventions for depression, anxiety, and enhancement of psychological well-being among college students: Systematic review. J Med Internet Res **21**(7), e12869 (Jul 2019). https://doi.org/10.2196/12869
15. Oti, O., Pitt, I.: Online mental health interventions designed for students in higher education: A user-centered perspective. Internet Interventions **26**, 100468 (2021). https://doi.org/10.1016/j.invent.2021.100468
16. Perry, A., Lamont-Mills, A., Preez, J.D., Plessis, C.D.: "i want to be stepping in more" - professional online forum moderators' experiences of supporting individuals in a suicide crisis. Frontiers in Psychiatry **13** (2022). https://doi.org/10.3389/fpsyt.2022.863509

17. Prescott, J., Hanley, T., Ujhelyi, K.: Peer communication in online mental health forums for young people: Directional and nondirectional support. JMIR Ment Health **4**(3), e29 (Aug 2017). https://doi.org/10.2196/mental.6921
18. Prescott, J., Rathbone, A.L., Hanley, T.: Online mental health communities, self-efficacy and transition to further support. Mental Health Review Journal **25**(4), 329–344 (Jan 2020). https://doi.org/10.1108/MHRJ-12-2019-0048
19. Pretorius, C., Coyle, D.: Young people's use of digital tools to support their mental health during covid-19 restrictions. Frontiers in Digital Health **3** (2021). https://doi.org/10.3389/fdgth.2021.763876
20. Pretorius, C., McCashin, D., Kavanagh, N., Coyle, D.: Searching for mental health: A mixed-methods study of young people's online help-seeking. In: Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems. p. 1–13. CHI '20, Association for Computing Machinery, New York, NY, USA (2020). https://doi.org/10.1145/3313831.3376328
21. Schueller, S.M., Neary, M., O'Loughlin, K., Adkins, E.C.: Discovery of and interest in health apps among those with mental health needs: Survey and focus group study. J Med Internet Res **20**(6), e10141 (Jun 2018). https://doi.org/10.2196/10141
22. Stawarz, K., Preist, C., Coyle, D.: Use of smartphone apps, social media and online resources to support mental health and wellbeing: An online survey (preprint). JMIR Mental Health **6** (10 2018). https://doi.org/10.2196/12546
23. Torous, J., Nicholas, J., Larsen, M.E., Firth, J., Christensen, H.: Clinical review of user engagement with mental health smartphone apps: evidence, theory and improvements. Evidence-Based Mental Health **21**(3), 116–119 (2018). https://doi.org/10.1136/eb-2018-102891
24. Van Gemert-Pijnen, J.E., Nijland, N., Van Limburg, M., Ossebaard, H.C., Kelders, S.M., Eysenbach, G., Seydel, E.R.: A Holistic Framework to Improve the Uptake and Impact of eHealth Technologies. J Med Internet Res **13**(4), e111 (Dec 2011), `https://doi.org/10.2196/jmir.1672`
25. Veljanovska, K., Blazeska-Tabakovska, N., Ristevski, B., Savoska, S.: User interface for e-learning platform for users with disability (05 2020)
26. YoungMinds: Coronavirus: Impact on Young People with Mental Health Needs (2020), available at `https://youngminds.org.uk/media/3708/coronavirus-reportmarch2020.pdf`
27. YoungMinds: Coronavirus: Impact on Young People with Mental Health Needs (2021), available at `https://www.youngminds.org.uk/media/esifqn3z/youngminds-coronavirus-report-jan-2021.pdf`