

Digital Innovations for Mental Health Support



Julie Prescott

Digital Innovations for Mental Health Support

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University of Bolton, UK

A volume in the Advances in Psychology, Mental
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To Phoebe and Jacob,

Love Mummy x

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In response to the COVID-19 pandemic, there has been a need to adapt and develop psychological interventions that address the mental health of those in need. As a result, Arts for the Blues (A4B), an evidence-based creative group psychotherapy model, originally developed for in-person delivery to address the needs of clients with depression, was transformed into a remote therapy option. This chapter presents an overview of plans and steps so far and offers activities used online during a public workshop with 24 participants and training sessions with 70 psychotherapists (qualified and trainee). Concerns around safety, group sizes, time, and guidance/support are discussed, while the value of online work for clients with depression (adults and children) are explored. It is concluded that even when in-person delivery is possible, online versions will be useful since they encourage a wider reach and make interventions more accessible.

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Many individuals struggling with debt will experience associated psychological stress that negatively impacts both their physical and psychological health. People in debt may be too ashamed to participate in support groups or to seek face-to-face therapy but may welcome the more anonymous help that can be made available through an internet-based therapeutic intervention. The Ostrich community internet-cognitive behavioural therapy program was specifically designed to assist individuals with distress related to carrying debt, facilitating them to move out of denial of their financial problems to managing stress symptoms and mobilizing them to be able to cope more effectively with the financial problems. Preliminary outcome studies have demonstrated the feasibility of this approach and its effectiveness.

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Oliver Robinson, University of Greenwich, UK

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The Resilience Enhancement Programme for Students (REP-S) is an intervention that has been designed to boost resilience in students. The current study involved the remote delivery of the REP-S via an online platform to students, and an empirical evaluation of the intervention via a pre-post one-group quantitative design over one month and a post-intervention qualitative element. Fifty-six students from the University of Greenwich qualified for inclusion in the study. Results indicated that perceived stress and trait neuroticism decreased over the month of the study, while resilience increased. Engagement with the intervention also predicted a reduction in neuroticism. Students reported experiencing a complex range of difficulties over the duration of the pandemic and that 80% of participants found the workshop to be effective in addressing these problems. Overall, participants found more positives than negatives in the online delivery of the workshop. If rolled out on a wider basis, the REP-S has the potential to improve wellbeing and mental health across the higher education sector.

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Digital Interventions for Dual Diagnosis 56

Stephanie L. Dugdale, Liverpool John Moores University, UK

Heather M. Semper, Sheffield Hallam University, UK

Dual diagnosis is a leading contributor of disease burden worldwide. Whilst integrated treatment is recommended, there are considerable barriers that may inhibit access to integrated care, including a lack of training and resources. Digital interventions may enable access to support, providing a space for people to engage in treatment when they need it most. This chapter reviews the current literature on the efficacy of digital interventions for dual diagnosis. Computer-based interventions were effective at improving dual diagnosis outcomes; however, the combined effect of computer-based interventions and therapist support was found to be more effective than the effects of computer-based interventions alone. The evidence-base around smartphone applications is lacking, and there are perceived difficulties with this technology in addressing the complexity of issues faced by people with dual diagnosis. Future research should include standardised terminology to describe techniques used within interventions and consider a variety of research methods to understand implementation.

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Amy L. Rathbone, University of Manchester, UK

Duncan Cross, University of Bolton, UK

Julie Prescott, University of Bolton, UK

At the start of 2020, the World Health Organisation (WHO) declared COVID-19 as a global pandemic. Pregnant women were deemed a vulnerable group globally and advised to shield. Due to social distancing and the changes in maternity services, it was a reasonable assumption that pregnant women would turn to the online platform for advice and guidance. Using reflexive thematic analysis, this chapter explored the effect of social media, support groups, and app usage on pregnant women during the outbreak. Results evidenced that pregnant women utilised social media, support groups, and apps for information and support. Positive aspects were maintaining social connections whilst adhering to social distancing guidelines, access to support groups and people in similar situations, and ease of access to information. Negative aspects were excessive amounts of and overwhelming information, misinformation, judgement from others, and increased anxiety. Apps were deemed positive for general pregnancy but lacked COVID-19-related information.

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Skilful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy: Application Development . 102

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The development of the Skilful surfing Online For Anxiety Reduction (SO-FAR) in pregnancy (SO-FAR) mental health (mHealth) application (app) was supported by previous research which modelled the theory of Skilful Surfing. The model informed the app development, with each facet of the model corresponding to a different intervention included in the app. The aim of this chapter was to report the development of an mHealth app to relieve pregnancy-specific health anxiety. App content inclusion was based on previous literature and recommendations for mHealth app inclusions. Overall, the chapter provides the reader with a comprehensive account of the development of the SO-FAR app which may reduce levels of pregnancy-specific HA by encouraging women to become more adept when navigating through online health information, self-aware, and educated and promoting the ability to identify triggers and understand when and why they are experiencing maladaptive cognition and rumination in a self-guided manner.

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Rita Henriques da Costa Pinto, ESCS - School of Communication and Media Studies,

Portugal

Obsessive-compulsive disorder (OCD) is characterized by the presence of persistent and unwanted obsessions, which take the form of intrusive thoughts. These lead to widespread anxiety and/or compulsions

which take the form of repetitive acts to relieve anxiety. In 2020, for the author’s master’s degree final project, she decided to propose the creation of a mobile application for people with OCD, whose main purpose was to reduce the anxiety caused by it. Although mobile applications already exist for the treatment of OCD, it was necessary to fill some gaps and improve them. This chapter will examine the techniques that were applied on the investigation of the author’s project—a competitor analysis and an exploratory qualitative research—and understand how they can help to retain some information that is beyond the literature review, and what needs to be retained from them to know which features and functionalities are most useful in an app that aims to support therapeutic intervention in individuals with OCD, as well as possible gaps that could be improved.

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“Piece of Mind” and “Wellbeing Town”: Engaging Service Users in the Development of a Wellbeing Game..... 151

Steven Barnes, University of Bolton, UK

Melvin Bradley, Mental Health Independent Support Team, UK

Andrew Williams, University of Bolton, UK

The long-term implications of COVID-19 for wellbeing are predicted to be both significant and enduring. Data from previous epidemics indicates long-term detrimental effects are more pronounced among particular demographics, including individuals with pre-existing mental health conditions. The Mental Health Independent Support Team (MhIST) is a charitable organisation offering a range of free-at-the-point-of-contact services via self-referral for a range of mental health and wellbeing concerns, both with and without diagnosis. Since March 2020, the organisation noted significant rises in demand for services. Serious games and their active involvement in eliciting rapid positive behavioural change is associated with their emergence as a key learning tool, with effects transferable to the real world. While a growing number of gamified interventions exist for a range of mental health diagnoses, their presence in the domain of positive psychology is more limited. The chapter reports two studies conducted to enhance the development of an educational game for adult wellbeing.

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Therapeutic Gaming for Adolescent Anxiety: Development and Evaluation of a Mobile Intervention 187

Steven Barnes, University of Bolton, UK

Julie Prescott, University of Bolton, UK

Anxiety disorders (AD) are the most prevalent of the mental health conditions and are associated with significant and long-lasting burden of disease both for affected individuals and healthcare systems designed to support them. Despite this, barriers to traditional interventions mean less than half of adolescents experiencing ADs seek-treatment, with less than 20% of treatment-seekers ultimately receiving a scientifically validated intervention. Therapeutic games show significant potential to help reduce AD in adolescents, with some concerns remaining over their abilities to engage users, particularly over time. The chapter presents two studies relating to the development of a new mobile gamified intervention for adolescents with AD. This includes a user-feedback study on currently available games for anxiety and depression, followed by a user-feedback, acceptability, and intention-to-use study of a development version of the new intervention.

Chapter 10

Understanding the Effect of Social Media Use on Psychological Stress During the COVID-19
Pandemic..... 228

Niall Murphy, Trinity College Dublin, Ireland

Deepak Saxena, Birla Institute of Technology and Science, Pilani, India

This study examines the effect of the modern technology of social media on psychological stress during Irish COVID-19 quarantine restrictions. Literature indicates mixed findings regarding social media usage and psychological stress. Acknowledging its multifaceted nature, social media use in this study is examined through the category usage motivators of consuming, participating, and producing. Usage motivators significantly indicate variations in terms of impact on stress. Social media use for the purpose of consuming is moderately correlated with increased levels of psychological stress. Social media use for the purpose of participating exhibits a weak correlation with decreasing levels of psychological stress. Social media use for the purpose of producing exhibits no significant relationship with psychological stress during quarantine. Findings of this study are valuable for government and corporate policy makers and mental health and marketing professionals, with implications in psychological wellbeing practices and mindful social media use during quarantine.

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Georgios Agathokleous, University of Wolverhampton, UK

Abigail Olubola Taiwo, University of Wolverhampton, UK

This chapter covers the broad range of online counselling work, using the COVID-19 era as a point of reference. It provides an overview of online applications of counselling and psychotherapy at pre-COVID-19 time and informs the reader of how online counselling provision has been accelerated during the pandemic. A theoretical overview of the key counselling and therapeutic processes as conceptualised in the cyberspace which considers six distinct modes of online communication are provided. An evaluation and the review of the latest efficacy and effectiveness research evidence of online counselling is also provided. The key benefits and challenges of digitalised therapeutic interventions from the clients' and therapists' perspectives covering pre and during COVID-19 are identified. Attention is drawn to existing studies on counselling engagement, adherence, outreach, non-stigmatising counselling practices, power imbalances in the counselling process, and therapy outcomes.

Chapter 12

Digital Mental Health Support for Students in Higher Institutions in Nigeria During Pandemics 278

Abel Ebiega Enokela, Ambrose Alli University, Nigeria

This chapter examined the challenges associated with students' mental health in a pandemic period like the COVID-19 era and the expected coordinated response measures that should be in place to mitigate such challenges with focus on the mental health of students in institutions of higher learning in Nigeria, the most populous nation on the continent of Africa. Specifically, the review strengthened the need for school counselors' going back to the drawing board to come up with modalities that could keep students psychologically and emotionally healthy. Students normally enjoy school community life but

would have to adjust their patterns of social interactions during an outbreak of an infectious disease. The review explored and applied the assumptions of social support theory which laid emphasis on supportive relationships within social contexts. School counselors were charged in this chapter to engage their students' community with digital mental health support to help them remain mentally healthy in spite of the adverse events usually provoked by the presence of a pandemic.

Chapter 13

Artificial Intelligence in Mental Health: The Novel Use of Chatbots to Support Trainee
Counsellors and Recovering Addicts 296
Lisa Ogilvie, University of Bolton, UK
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Terry Hanley, University of Manchester, UK
Jerome Carson, University of Bolton, UK

Chatbots are programmed conversational agents that emulate communication systematically using natural language processing. They can be programmed to assume a range of roles where regular human interaction occurs. Within mental health services, they are not as well represented as in other areas of healthcare, with research suggesting that uptake has been hindered by concerns over the accuracy of the information they provide, undeveloped technology, lack of adherence to an ethical framework, and the unconvincing portrayal of human authenticity. Technological improvements have addressed some of these concerns, and as the resultant solution choice increases, the potential for chatbots within mental health is receiving greater attention. In this chapter, two novel uses for chatbots are showcased. Foxbot, a recovery friend, accessible at the point of need to help mitigate some of the common risk factors to sustaining addiction recovery; and ERIC, a counselling client who allows trainee counsellors to practise their counselling skills without having to enlist an actual client.

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Telepsychology: Does it Bridge the Social Justice Theory and Action Gap? 320
Siddhi Jain, University of Manchester, UK

Telepsychology, until recently, was slow-moving and half-heartedly acknowledged in the mental health profession. There is increasing scholarly discourse on the digital therapeutic space. This shift to a digital paradigm means re-evaluating the profession's identity. This chapter considers telepsychology in relation to social justice. It highlights access for underserved groups and the digital divide that limits a substantial population from accessing online services. It identifies the need to integrate telepsychology in community psychology interventions, a significant framework to challenge systemic inequalities in mental health. It outlines the inadequacy of the profession to support needs of diversity in the field and considers if telehealth is one way to bring a shift in the homogenous identity of the profession. Telepsychology has the potential to amplify adherence to social justice principles; however, this requires evolved responses on individual, institutional, and systemic levels to bring unconventional but substantial changes in training, research, and regulatory guidelines.

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Foreword

This book comes at a pivotal moment in the development of digital mental health support. Covid-19 has forced the issue, demanding remoteness where either all that was on offer, or what was preferred had been ‘in-person’, face-to-face, or in its crudest term, ‘meat space’.

Of course, all of the approaches and interventions described in this book existed before Covid-19 struck. My own organisation, Kooth Plc has been running digital mental health services since 2004, and we have led the way in defining how online counselling, and text-based therapeutic support as a whole can be delivered safely and effectively, with hugely successful take up.

In this time the definition of what can be delivered digitally has broadened almost beyond view to cover the spectrum described so comprehensively in this book. From art spaces to i-CBT, from gaming through to digital communities, virtual reality and the emergence of AI, the scope of what technology can enable to support mental health continues to expand exponentially. In this way technology itself is performing its own ‘task-shifting’ revolution in mental health, moving us away from the singular focus on the ‘expert’, the diagnosis, medication and the therapist’s office. In all its technicolour of opportunities it enables, I am reminded of something a colleague said to me over ten years ago - that soon this distinction we draw between ‘in-person’ and ‘virtual’ will become meaningless, a quaint perspective of the past. We may not be there yet, but the content here certainly helps illustrate how these definitions are blurring.

As eloquently encapsulated in this book, the impact of this technology revolution in mental health is apparent: widening reach of support to the hesitant, the ‘hardly-reached’ wary of this traditional singular focus and all it implied. The break down in stigma, the offer of choice and autonomy in a person’s mental health journey, has been its own revolution, that Covid-19 has simply accelerated, demanding that what was once niche, seen as an alternative, is part of the mainstream of mental health support.

This book also highlights the international scope of this work, the breaking down of barriers and stigma that technology can enable across the world, the democratisation of access to support afforded by the internet. It is inspiring to see initiatives in mental health that are being led outside the west, and how definitions of mental health can be rewritten by this broader social discourse.

If you are one of the technology hesitant, I hope this book gives you a new perspective on what is possible. If you are already ‘turned on’ to what is enabled by technology in mental health, this book should help widen your horizon to the art of the possible.

Aaron Sefi
Kooth, UK

Preface

This preface describes both the need for, and purpose of this book. Mental health is a global problem (Rehm & Shield, 2019) with depression the leading cause of disability globally (WHO, 2021). It is therefore not feasible to address the global mental health demand via an in-person care model alone, hence the growing interest in digital technologies, to extend care and mental health support (Insel, 2018; Torous, Bucci, Bell, Keesing, Faurholt-Jepson, Whelan, Carvalho, Keshavan, Linardon & Firth, 2021). This book intends to provide readers with chapters detailing innovative approaches to mental health care and support. The book also aims to add to the narrative valuing the important part technology and digital innovations can play in supporting individuals with mental health and emotional needs.

Since the Covid-19 pandemic, we have witnessed a need to shift more of our lives online and relied on digital technology and innovations to support and connect people (Carson, Prescott, Allen, & McHugh, 2020). Indeed, the Covid-19 global pandemic has witnessed a rapid growth in the utilization of digital mental health technologies. Throughout the pandemic, digital technology for mental health support, has provided many people globally with connection and accessible mental health care (Torous, Andersson, Bertagnoli, Christensen, Cuijpers, Firth, Haim, Hsin, Hollis, Lewis, Mohr, Pratap, Roux, Sherrill & Arean, 2019). A number of the chapters included in this book do indeed have a Covid focus. For instance, Chapter 5 explores how pregnant women utilized digital innovations during the pandemic. Chapter 8 looks at a therapeutic game designed as a result of the pandemic and Chapter 10 investigates social media use on stress levels during quarantine. Other chapters acknowledge the changing landscape of digital mental health and therapeutic delivery such as online counselling, driven by the pandemic, whilst other chapters evaluate previously face to face (in-person) delivered interventions, which are now, as a result of the pandemic, delivered online/remotely.

Technology can provide alternative avenues of support for people, either professional or peer support. Digital mental health technologies can support people who for instance, may not feel the need for professional support, and technological platforms can also provide a support network and/ or a way for people to connect (Hogan, McCarthy & Sweeney, 2013). Digital mental health technologies afford a number of features the offline world does not. Digital innovations can be attractive for a number of reasons, predominantly due to accessibility, in terms of both ease of access and broadening the reach of access and anonymity, providing users safe environments to seek support. For instance, research has found that the anonymity technology affords, can be an attractive feature for higher education students (Hanley & Wyatt, 2020) and young people (Prescott, Hanley & Ujhelyi, 2017; Hanley, Ujhelyi, & Prescott, 2019; Prescott, Hanley, & Ujhelyi Gomez, 2019). Anonymity that online and digital technologies can afford, have been found to increase self-disclosure (Kummervold, Gammon, Johnsen, Hasvold & Rosenvinge, 2002) and they can encourage a disinhibition effect, whereby people will disclose more

about themselves online than they would offline (Suler, 2004). Disinhibition has been found to be particularly beneficial with online mental health communities possibly due to the self-disclosure required from such communities (Richards, 2009). Digital mental health technologies can also help reduce the stigma associated with mental health and enable people to access services and professionals which they may not otherwise have been able to, or wanted to, access. In general, online support and support offered via digital technology, can offer help through professional and peer support, provide referral to appropriate services, provide interventions as well as engage and create connections and communities to support mental health and wellbeing.

This book encompasses chapters based on current empirical studies as well as chapters considering the latest literature in relevant areas, providing the reader with comprehensive scoping reviews on topics, including online counselling and telepsychology. Due to the nature of the book, exploring current digital innovations, the book showcases a number of technological innovations and interventions to support mental health. Digital (mental) health technologies include smartphone (mobile) apps, virtual reality, social media and chatbots (Torous et al., 2021). This publication has chapters on novel innovations involving smartphone/mobile apps (Chapters 5, 6, and 7), therapeutic games (Chapters 8 and 9) and chatbots (Chapter 13). Several chapters include digital interventions (Chapters 1, 2 and 3), and the use of social media (Chapter 10).

The book has a predominately UK focus, with the chapters included mainly contributions from authors across the UK. A wider, more international perspective has been gained from the literature content within each of the chapters, with authors acknowledging the UK focus, whilst also widening up the research literature to an international audience. The book's guiding message comes from an interdisciplinary perspective that technology can be utilized in a number of ways, to support people suffering from a variety of mental health and emotional issues. Although an interdisciplinary approach to the book has been adopted, due to the nature of the book, the chapters tend to come from a psychological or therapeutic perspective. In essence, the book advocates the use of technology for mental health support through an understanding of the needs of people and differing demographics.

INTRODUCTION.

One of the contributing authors in this publication, Dr Terry Hanley recently took a look at the history of online counselling and psychotherapy research suggesting researchers need to keep '*one foot in the present and one foot in the future to stay abreast of technological developments*' (Hanley, 2020, p. 1). This book aims to keep readers abreast with some recent technological developments on the topic of mental health support. It is hoped that these chapters will not only evidence the efficacy of digital mental health technologies, but also encourage and engage readers to become involved in further technological developments for mental health support in their practise, research and through application.

The growth in interest of this topic and the timely nature of the book bears witness to the changing landscape of mental health support. I have myself been interested in this topic for a number of years and myself and colleagues have conducted research on several digital innovations including virtual reality (VR), therapeutic games, smartphone applications, chatbots, social media, online communities, and online counselling. All the above listed technologies are included within the chapters of this book, all except VR. I would like to take this opportunity to share with you some of the research and findings I have been involved in to briefly introduce the topic to readers. For instance, a systematic literature review

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has found value in the use of virtual reality (VR) technology for anxiety disorders, especially due to the advances in VR technology and the now more affordable VR headsets available for computer gaming (Oing & Prescott, 2018). Therapeutic games are increasingly also being used to support mental health and a recent review found them to have potential in helping to engage adolescents with anxiety and lead to clinically measurable reductions in symptoms of anxiety (Barnes & Prescott, 2018).

There is an abundance of smartphone apps to support people with mental health issues however there is a dearth of research in the evaluation of these apps and the efficacy of the apps. An insight paper representing leaders in mHealth research, industry, and health care systems globally (Torous et al., 2019), argue for the need for consensus on standards, principles and practices in research and evaluation of smartphone apps (p. 97). Two systematic reviews considering the efficiency of smartphone applications to support mental health suggests that in general, smartphone applications are efficient in their support for mental health (Rathbone, & Prescott, 2017; Rathbone, Clarry, & Prescott, 2017). However, these reviews acknowledge that many apps are not researched and evaluated and there is a wide variation in efficiency. A recent meta-review found that apps for anxiety and depression hold more clinical advantages than apps developed for other mental health issues and that more research is needed in order to recommend apps (Lecomte, Potvin, Corbière, Guay, Samson, Cloutier, Francoeur, Pennou, & Khazaal, 2020). More research based on the guidelines and recommendations presented by Torous et al. (2019) would help to standardize mental health apps, for amongst other things, quality and effectiveness.

More recently colleagues and I have investigated the use of Facebook open mental health groups to consider the importance of this support for people. The research also looked at the kind of support people gained from engaging in mental health groups via social media (Brown, Rathbone, & Prescott, 2021; Prescott, Rathbone, & Brown, 2020). Findings suggest there is a place for unmoderated mental health support via social media groups, as they provide a place for people to share experiences, connect with others, find reassurance, and support each other. Members of these groups appreciated the sense of community and valued the support received on the groups. Another online resource for potential mental health support, is online mental health communities (OMHC). OMHCs are often user-led platforms that allow interaction between users in an informal but informative community, they are freely accessible and offer a safe space to find others (Gray, McDonagh, Prescott, Smith, Harvey, Shaw, & Terry, 2014; Park, Conway, & Chen, 2018; Yang, Kraut, Smith, Mayfield, & Jurafsky, 2019). Research on the OMHC 18 percent, based in America, revealed that not only do OMHC offer a community of support, but they can also increase people's self-efficacy and can help people transition to more professional support on and offline (Prescott, Rathbone, & Hanley, 2020). There is, however, a need for caution when seeking support online as highlighted through the example of health information seeking during pregnancy (Prescott, & Mackie, 2017; Rathbone, & Prescott, 2019), with information often increasing worry rather than providing reassurance.

Moving onto online therapy, young people's attitudes of using online therapies in an Australian study, found overall a positive attitude and willingness to access online therapy if needed. The benefits of online therapy being the alleviation of stigma and increased accessibility (Sweeney, Donovan, March & Forbes, 2019). Indeed, research has found online counselling can expand the reach of localized services and provide a place for invaluable peer and community level support (Prescott, Hanley & Ujhelyi, 2017; Prescott, Hanley, & Ujhelyi Gomez, 2019). Through a moderated online counselling service based in the UK (Kooth.com), research has found that young people provided peer support via a directional (providing information and facts) and non-directional (through sharing personal experiences and stories) way (Prescott et al., 2017). These findings all support the value of online therapeutic support.

AIMS OF THIS BOOK

My interest in editing this book is from my own belief that we need to utilize technology and create new, and diverse means of supporting people with their mental health and emotional needs. I am not advocating a replacement for face to face, professional support (indeed, professional support can be both digital and in-person), I am merely suggesting that digital innovations and technologies have a valid contribution. Supporting the premise that technology can offer people support, sometimes in conjunction with other services and as a stand-alone method. The needs of people are diverse; therefore, the way people engage with support, and services, varies greatly. For instance, research suggests a lack of uptake for in-person mental health support by young people despite the increasing need of support and services (Turner, Hammond, Gilchrist & Barlow, 2007). Findings from young people who engage with online therapy, highlight the attractiveness of online services, such as ease of access, anonymity and a level of control (Prescott et al., 2018; Hanley et al., 2019)

As an active researcher in this area I want to showcase novel and innovative ways of engaging and supporting people. Supporting the sentiment by Torous et al. (2021), that advances in technology and the technological capabilities of smartphones, social media, AI and VR are changing the landscape in mental health support, providing exciting ways to engage and support people with positive outcomes (Torous et al., 2021, p320).

In editing this book, I had a broad mix of audiences in mind. In particular, I feel the book is of relevance to academics and students interested in mental health, counselling and psychology. This book is a necessary read for researchers, scholars and students of all levels interested in the topic of digital support for mental health. The book is Western-international in scope, in the sense that the chapters included tend to predominantly utilize literature and examples from the UK and USA.

Mental health covers a wide scope of conditions and support requirements. The chapters in this publication focus on a wide range of conditions including anxiety, depression, pregnancy specific health anxiety, dual diagnosis, obsessive-compulsive disorder, depression, and alcohol addiction.

ORGANISATION OF THE BOOK

There is an increasing interest in utilizing technology to support people's mental health, whether that is through online interventions, the use of technology platforms to deliver therapy and counselling, or specifically designed technology for particular conditions and/or demographics in mind. In editing this book, I aimed to cover a number of issues deemed important and timely in regard to how people are currently utilizing technology to support differing conditions, different demographics and utilizing different therapeutic approaches. Throughout the chapters, the authors have provided details of innovations, literature and interventions I hope the reader will find engaging and thought provoking in helping to move forward the premise, that technology has its place in the support and engagement of people with mental health needs.

The book is organized into three sections. Section 1, 'Online Interventions for Mental Health Support', comprises of four chapters (Chapters 1-4) that focus on supporting people with mental health and emotional issues through interventions designed or re-designed to be delivered online. Section 2, 'Support via Smartphone Applications, Therapeutic Games, and Social Media' (Chapters 5-10), explores how digital innovations are being developed and applied with chapters showcasing novel smartphone apps,

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and therapeutic games. Section 3, 'Digital Support, Counselling, and Therapy Online' (Chapters 11-14), explores the changing landscape of online counselling as well as the use of more current technology in the form of chatbots and artificial intelligence (AI), as well as the importance technology can play in diversifying practice and enhancing social justice in mental health support.

The conclusion draws together the book, refocuses the message and points to future possibilities and potential solutions. A brief description of each of the chapters follows.

Section 1: Online Interventions for Mental Health Support

The aim of Section 1 is to consider some novel and current online interventions. Section 1 has four chapters (Chapters 1-4). The chapters in this section are all very different, utilizing different therapeutic approaches, addressing very different conditions (depression, psychological stress, resilience, and dual diagnosis) and they are all aimed at different client groups. However, what they do have in common is that they are all considering the delivery of an intervention via an online medium. Chapters 1, 2 and 3 have been influenced by the Covid-19 pandemic, and inform the reader of projects adapted and developed for online access during the pandemic. Whereas Chapter 4 considers literature on online interventions and smartphone applications for the treatment and support of dual diagnosis.

Chapter 1: Digitising Creative Psychological Therapy – Arts for the Blues

In the opening chapter, Fleur Farish-Edwards and colleagues inform the reader about a collaborative UK based initiative, 'Arts for the Blues' which is a creative psychological intervention to tackle depression and improve wellbeing in adults and children. Due to the Covid-19 pandemic this therapeutic intervention was moved to online delivery. The chapter details the new online developments and the online community that has developed through remote delivery. The authors acknowledge that the pandemic allowed them to revisit their professional practice and investigate how they can be creative and provide a safe environment online. The chapter provides readers with examples of the exercises used online and considers some of the lessons the team have learnt through remote delivery, as well as future directions for this creative therapeutic intervention.

Chapter 2: The Ostrich Community Internet-Cognitive Behavioural Therapy Program for Distress Related to Carrying Debt – A Digital Hand to Help People to Face up to and Cope With Debt

Chapter 2 by Linda Dubrow-Marshall and Dawn Smail describes the impact and outcomes of a novel Internet based Cognitive Behavioral Therapy (ICBT) programme designed to help those struggling with financial debt and associated stress and anxiety. The chapter is based on the Ostrich Community ICBT programme which was developed to help people with mental health and psychological issues arising from being in financial debt. Acknowledging the impact of the Covid-19 pandemic on debt level in the UK, the chapter looks at the latest findings from mixed methods research undertaken by the authors, to understand the difficulties people with debt experience and how this online program can support them. The chapter also provides readers with background information on the creation of this program, explains how it was designed, and describes the impact and outcomes of this digital intervention, which has been

piloted in a range of settings including health care centres, unemployment services, and a university. The chapter concludes with a consideration of future research and applications of the intervention.

Chapter 3: The Resilience Enhancement Programme for Students (Online) – Developing an Online Course for Boosting Resilience in Students

In this chapter, authors Oliver Robinson, Ilham Sebah and Ana Avram take a look at student resilience. The chapter provides readers with an overview of past resilience interventions aimed at higher education (HE) students, considering both online and offline interventions. The chapter then presents an online version of the Resilience Enhancement Programme for Students (REP-S). Followed by an evaluation of the online intervention aimed to help students in higher education develop their resilience skills. Amongst the findings, the authors found that stress decreased and resilience increased. Suggesting the online resilience intervention can have reach and have positive outcomes for HE students. The research was carried out during the Covid-19 pandemic, with findings also highlighting the importance of such an online intervention during this time.

Chapter 4: Digital Interventions for Dual Diagnosis

The final chapter of Section 1, by authors Stephanie Dugdale and Heather Semper, considers the digital resources available for dual diagnosis support. The chapter provides readers with an overview of what dual diagnosis is, as well as an overview of traditional treatment and support available. The chapter then moves on to take a comprehensive look at computer-based interventions and smartphone applications available and considering the efficacy of digital interventions for dual diagnosis. Overall, the chapter argues that digital interventions provide support and a space for engagement, and treatment of dual diagnosis. The authors posit that computer-based interventions were effective at improving dual diagnosis outcomes however the combined effect of computer-based interventions and therapist support was found to be more effective than the effects of computer-based interventions alone. The authors also found from the literature reviewed that there is a need for more evidence on the efficacy of smartphone applications for dual-diagnosis treatment and support.

Section 2: Support via Smartphone Applications, Therapeutic Games, and Social Media

Section 2, the largest section, has six chapters (Chapters 5-10). The chapters in this section provide readers with some current innovative digital technologies designed specifically to support mental health. The first three chapters in the section discuss the value of smartphone applications, with Chapter 6 informing readers of a freely available therapeutic application designed and developed to reduce health anxiety during pregnancy. Chapters 8 and 9 showcase two therapeutic games, one developed to support mental wellbeing in adults and the other to reduce anxiety in adolescents. Both games are new and developed to support mental health. The final chapter of the section takes a look at social media and how social media usage during quarantine as a result of Covid-19 impacts psychological stress.

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Chapter 5: The Use of Social Media, Online Support Groups, and Apps for Pregnant Women During COVID-19

The first chapter in section two by Amy Rathbone, Duncan Cross and Julie Prescott, considers how pregnant women utilized digital innovations including social media, smartphone applications and online support groups during the Covid-19 pandemic. Pregnancy is a particularly worrying time and this worry would have been exacerbated during the pandemic, due to added health worries as well as a lack of access to medical and social support networks. This chapter discusses the findings from qualitative data obtained from an online questionnaire with over 600 pregnant women. Findings suggest that during the Covid-19 pandemic, these digital innovations provided women with social connections, an invaluable support at a time when offline support was restricted. The chapter recognizes that the abundance of information available online can be overwhelming especially for women with health anxiety, but overall the benefits of utilizing apps, social media and online groups outweighed any negative aspects.

Chapter 6: Skillful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy – Application Development

Chapter 6 by Amy Rathbone, Duncan Cross and Julie Prescott, discusses the development of the SO-FAR mobile app. Linked to the previous chapter (Chapter 5) this chapter introduces the reader to a smartphone application, ‘Skilful Surfing Online for Anxiety Reduction (SO-FAR)’, developed to support women’s health anxiety during pregnancy. The chapter provides the reader with information on what the app contains in terms of the interventions and counselling approaches and techniques involved in the app as well as proving the reader with an understanding of the rationale behind the app’s development. The chapter showcases an mhealth app developed to support mental health through a theoretically sound and evidence-based approach to smartphone app development.

Chapter 7: Obsessive-Compulsive Disorder and Mobile Technology – A Research for Establishing the Main Features of an App Intervention for OCD Anxiety

In Chapter 7, Rita Henriques da Pinto considers the role of smartphone applications for the support of people with obsessive compulsive disorder (OCD). The chapter suggests that although smartphone applications exist, there is more research needed to improve them and fill in gaps. The chapter then details research conducted from the authors master’s degree project, that considered what could be done to help fill the gaps highlighted. The chapter details what features and functionalities are viewed from the research to be the most useful in an application that aims to support individuals with OCD. Future areas of development and recommendations are also considered.

Chapter 8: ‘Piece of Mind’ and ‘Wellbeing Town’ – Engaging Service Users in the Development of a Wellbeing Game

In Chapter 8, authors Steven Barnes, Melvin Bradley and Andrew Williams introduce the reader to a wellbeing game. The wellbeing game was developed in consultation with a UK based mental health support service (MhIST). MhIST offer a range of free-at-the-point-of-contact services via self-referral for a range of mental health and wellbeing concerns, both with and without a diagnosis. During the

Covid-19 pandemic the organisation noted a significant rise in demand for their services. The chapter reports two studies conducted to enhance the development of an educational game for adult wellbeing.

Chapter 9: Therapeutic Gaming for Adolescent Anxiety – Development and Evaluation of a Mobile Intervention

In this chapter by Steven Barnes and Julie Prescott, the authors present two studies relating to the development of a new mobile gamified intervention for adolescents with anxiety disorder. The first study discussed in the chapter primarily aims to understand preferences to existing game mechanics, as well as predictive intention to use. The second study in the chapter considers the findings from a user-evaluation pre-release version of the therapeutic game developed with, and, for adolescents with anxiety disorders. The chapter provides reader with current literature in the area and overall, argues that therapeutic games have the potential to help reduce anxiety in adolescents.

Chapter 10: Understanding the Effect of Social Media Use on Psychological Stress During the COVID-19 Pandemic

Chapter 10 by authors Niall Murphy and Deepak Saxena informs the reader about a study conducted that examines the effect of social media on psychological stress during Irish Covid-19 quarantine restrictions. The chapter aims to add to the body of research on the psychological effects of quarantine. Previous literature on quarantine stress is considered and informs the study of quarantine in a time of social media access. The chapter acknowledges the multifaceted nature of social media and considers the usage motivators of consuming, participating and producing on stress levels. Data gained through a quantitative online survey revealed that use of social media for the purpose of consuming, moderately correlated with increased stress. Whereas use for participating purposes, showed a weak correlation with decreasing levels of stress and use for producing showed no significant relationship with stress. The results highlighted the need for social connection during quarantine, which social media can help to fill the void when social contact is forbidden.

Section 3: Digital Support, Counselling, and Therapy Online

The chapters for the final section, Section 3, include 11-15. The focus of the first two chapters in this section take a look at online counselling and digital therapy, both considering the change for the online therapeutic landscape due to the recent Covid-19 pandemic. The first chapter is from a UK and general population perspective, whereas the second is focused on students in a Nigerian context. Chapter 13 considers the therapeutic application of chatbots and artificial intelligence (AI) technology. This is a relatively new area of digital innovations and the chapter showcases two recent bots designed to support and educate. The final contributed chapter considers social justice and the role telepsychology can play in providing diverse and inclusive mental health support.

The final chapter is by myself as editor. Within this chapter I aim to bring the research from all the contributors to this publication together, providing a guiding message and reflect on what we know in order to move the work forward.

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Chapter 11: How Counselling Online Is Utilized, Evaluated, and Received

Chapter 11 authored by Agathokleous Georgio and Abigail Olubola Taiwo takes a look at counselling and therapy delivered online. This literature-based chapter considers online counselling pre Covid-19 and considers how the pandemic has changed attitudes and perceptions and how the pandemic has basically driven online counselling provision forward, forever changing the landscape of online therapy. The chapter provides the reader with a theoretical overview as well as an evaluation of the efficacy of online counselling provision research. Benefits and challenges of online therapeutic interventions are considered, as well as recommendations for mental health professionals on how to maximize the potential of delivering their practice online.

Chapter 12: Digital Mental Health Support for Students in Higher Institutions in Nigeria During Pandemics

Following on the theme from the previous chapter, Chapter 12 authored by Abel Ebiega Enokela takes a look at the mental health of Higher Education students in Nigeria during the Covid-19 pandemic. This review chapter aims to evaluate digital mental health and online counselling in supporting HE students during the pandemic. Overall, the chapter supports the digitalization of counselling and mental health support for students with a focus on social support which was a challenge due to the pandemic. The author argues that social media provides a great opportunity for student communities in Nigeria to have robust interactive sessions that could keep students psychologically stable and should be deployed as counselling platforms for effective individual or group interventions. The chapter also identifies some of the challenges of digital therapy and possible gaps in service provision, with recommendations to address these challenges and gaps considered.

Chapter 13: Artificial Intelligence in Mental Health – The Novel Use of Chatbots to Support Trainee Counsellors and Recovering Addicts

This chapter by Lisa Ogilvie, Julie Prescott, Terry Hanley and Jerome Carson, takes a look at chatbot and AI technology in mental health support. providing a current literature review on chatbot and AI technology. The chapter showcases two novel chatbots developed by the authors. The first chatbot showcased is Foxbot. Foxbot is a recovery friend for those in addiction recovery. The second bot is ERIC. ERIC (Emotionally Responsive, Interactive Client) is a counselling client designed to allow trainee counsellors to practice their counselling skills with the support of a bot tutor. The chapter showcases both bots and advocates the potential of chatbots and AI for therapeutic and support purposes.

Chapter 14: Telepsychology – Does It Bridge the Social Justice Theory and Action Gap?

In the final chapter, author Siddhi Jain takes a look at telepsychology and the increased interest in telehealth due to the Covid-19 pandemic. As a trainee counselling psychologist, Siddhi Jain considers the evolving identity of counselling psychology in terms of establishing an actionable social justice identity and how telepsychology adheres to the fundamental tenets of social justice? The chapter considers telepsychology in relation to social justice, through consideration of the access telepsychology can

provide as well as the digital divide that often gets overlooked when considering digital innovations. The chapter identifies the need to integrate telepsychology in community psychology approaches and interventions, providing a therapeutic framework that not only identifies but also challenges systemic and institutionalised inequalities that lead to mental health difficulties. The chapter posits that telepsychology may help the mental health profession support diversity and provide a socially just identity to the counselling psychology profession.

A COMMON GROUND

In writing this book, I want to offer a current, albeit, snapshot of research and literature around digital innovations for mental health support from authors active in the area. I hope this book encourages more empirical research in the area and more technological innovations designed specifically to support people's mental health and emotional needs. I hope you enjoy reading the very different approaches taken within the book and I hope this publication stimulates both reflection and action for future work in the area.

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Section 1

Online Interventions for Mental Health Support

Chapter 1

Digitising Creative Psychological Therapy: Arts for the Blues (A4B)


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ABSTRACT

In response to the COVID-19 pandemic, there has been a need to adapt and develop psychological interventions that address the mental health of those in need. As a result, Arts for the Blues (A4B), an evidence-based creative group psychotherapy model, originally developed for in-person delivery to address the needs of clients with depression, was transformed into a remote therapy option. This chapter presents an overview of plans and steps so far and offers activities used online during a public workshop with 24 participants and training sessions with 70 psychotherapists (qualified and trainee). Concerns around safety, group sizes, time, and guidance/support are discussed, while the value of online work for clients with depression (adults and children) are explored. It is concluded that even when in-person delivery is possible, online versions will be useful since they encourage a wider reach and make interventions more accessible.

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INTRODUCTION

The pandemic encouraged us to revisit our professional practice and consider ways in which we can engage with digital platforms. As creative psychotherapists, we were challenged by the need to create safe relationships with our clients and to do this whilst continuing to use artmaking, movement, drama, music and creative writing. We needed to learn fast and respond quickly, often inventing and re-inventing the wheel in parallel with one another. The results of our learning process, however, have not been shared yet, making our discoveries unavailable to our colleagues and the wider professional community.

In this chapter we will explore ways in which the Arts for the Blues (A4B) team has adapted in-person psychotherapy work to suit remote delivery. A4B is an evidence-based group creative psychotherapy intervention that aims to tackle depression and improve wellbeing amongst adults and children. We believe that this model might be applied more broadly with other client populations and can be used by a range of different mental health workers.

This chapter aims to describe the work in transforming A4B from an in-person model into an online therapeutic offering in response to the COVID-19 pandemic including:

1. overview of plans and steps so far
2. examples of exercises used online
3. exploration of lessons learned and future directions

The work completed during an online public workshop as well as online workshops and training sessions with mental health practitioners will be used as our main reference point.

BACKGROUND

The Development of Arts for the Blues (A4B)

Arts for the Blues (A4B) is a structured psychotherapy model that uses different creative modalities such as movement, artmaking, music, drama and creative writing, as a means to tackle depression and improve wellbeing. As an evidence-based intervention, it grew out of a thematic synthesis of research findings around helpful factors in therapy for depression (Parsons et al 2019), evaluations from public workshops (Haslam et al 2019) and studio-based experimentations (Thurston et al under review). Pilot interventions began in primary care in the UK National Health Service (NHS) in Improving Access to Psychological Therapies (IAPT) services, and since then, has been used with adults and children in mental health charities (Karkou et al in preparation) and in schools (Moula et al 2020; Aithal et al 2021), yielding promising results. It is a multidisciplinary project involving collaborations from across a range of disciplines including performing and visual arts, literature, arts psychotherapies, psychology, counselling and psychotherapy (see <https://artsfortheblues.com/> for further information about the project).

The A4B model consists of eight key ingredients which participants are invited to engage with through the use of creative methods within a flexible structure (Omylinska-Thurston et al 2020). These ingredients include: (i) encouraging active engagement, (ii) learning skills, (iii) developing relationships, (iv) expressing emotions, (v) processing at a deeper level, (vi) gaining understanding, (vii) experimenting with different ways of being, and (viii) integrating useful material.

Digitising Creative Psychological Therapy

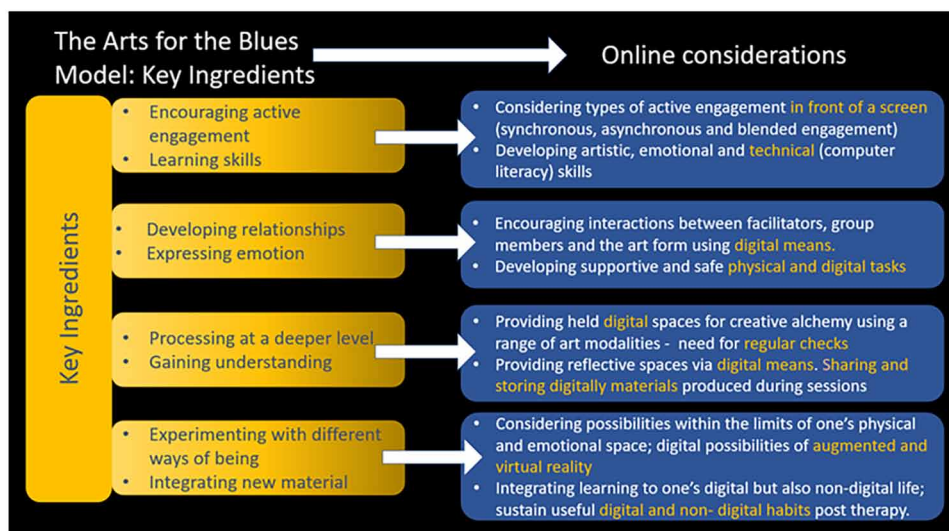
More recently, work has been undertaken to understand how these key ingredients can be offered online and utilising digital tools as described below (see also the project website: <https://artsforth-ebluespractice.co.uk/>).

MAIN FOCUS OF THE CHAPTER

Exploring and Developing Digital Possibilities

In response to the COVID-19 pandemic, the A4B team began transforming the model into a digitally-enabled therapy that aligns with NICE guidelines and NHS policy. We began by considering theoretical issues that would have to be addressed before we could move the programme/intervention online, and after group discussion, we identified the key considerations that would be necessary in adapting the model (See Figure 1).

Figure 1. Turning the A4B model into a digital version



We then piloted the digital intervention in an online public experiential workshop titled E-Arts for Covid Blues, followed by a focus group as part of the Manchester ESRC Festival of Social Sciences in November 2020. This was attended by 24 members of the public. In addition, more than 70 psychotherapists (qualified and trainee), counsellors, psychologists and psychiatrists took part in online training days over two weekends in January 2021 and April 2021; this involved both online workshops and development sessions to explore the creative digital possibilities for online delivery of the A4B model.

Safety First

Online workshops began with ground rules, creating a safe containing environment for participants' creative explorations. This is particularly important when working online as the facilitators have only limited access to participants and they may miss when/ if they are distressed or uncomfortable. Using creative methods can be very emotionally powerful for participants and may even stir up uncomfortable feelings, and this can be underestimated. It is therefore essential to prepare the participants for this and invite them to create space during and after the session. When working with clinical populations, issues around emotion regulation and risk of self-harm needs to be considered very carefully here.

Another important consideration is confidentiality as participants may express or share issues that normally they would not share which may lead to embarrassment or feelings of shame, known as the online disinhibition effect (Suler, 2004). Highlighting that confidentiality, and also that participants do not have to share what they do not want to share, is important, especially for reflective activity in pair work.

There are also clear guidelines for pair work where participants are invited to share with each other about their creative work but are asked to listen and witness each other and not interpret what they see or hear.

Finally, prior to the online creative workshop, participants are also asked to bring basic arts materials and create a safe physical space paying attention to any sharp edges or uneven floor for movement work.

Below are some examples of the creative activities, with therapeutic underpinning, that explored the A4B **key ingredients** in the online workshops and development sessions.

Key Ingredient 1: 'Encouraging Active Engagement'

This first ingredient refers to actively involving participants in creative group activities and is influenced by Cognitive Behavioural Therapy (CBT) and behavioural activation. It is regarded as an important way of supporting vitality that is perceived as missing when one suffers with depression (Omylinksa-Thurston et al 2020). Examples of activities may involve physical warm up, visual warm up, body scan, mindful movement and breathing exercises.

When this first ingredient is considered for online delivery, it is important to consider the type of active engagement suited to working in front of the screen as Figure 1 shows. Remote therapy takes different forms when it is synchronous, asynchronous or blended and clear decisions need to be made in advance of the commencement of the work.

Delivery of this ingredient during one workshop included an exercise where participants stood up, took time to relax their body, and touched and held their upper body at different points where they felt they needed to release tension. Participants then did some breathing exercises and on their out-breath, hummed. Together, with forty in the group, it worked beautifully as participants all hummed at different frequencies.

'Word clouds' were also used (see Figure 2)

Finally, a whiteboard was used in response to 'Who are you? How do you feel right now?', offering additional opportunities for active engagement (see Figure 3):

Through these group activities, individuals could offer their own contributions to the group work, and view these in the context of other's contributions, thus enhancing the sense of being actively and meaningfully engaged in the group activities.

Figure 2. What's the weather like inside you?



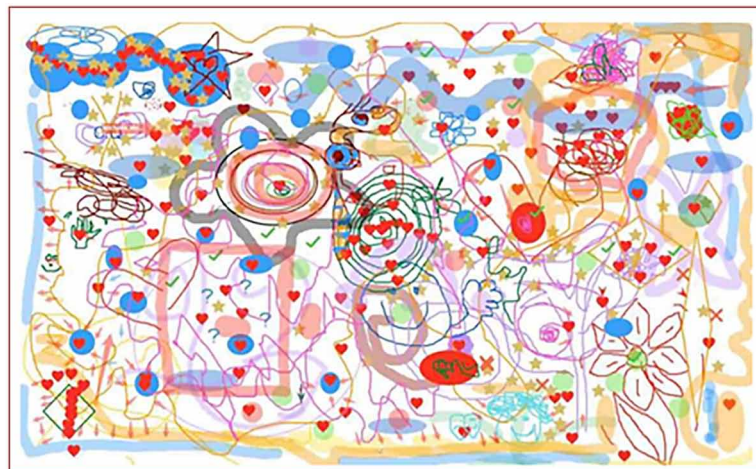
Key Ingredient 2: 'Learning New Skills'

This second ingredient involves learning skills that may help participants with their confidence, challenge negative thoughts and improve mood. It also involves learning how to use certain techniques and artmaking processes as a way of managing emotions and facilitating wellbeing. It is underpinned by CBT, Dialectical Behaviour Therapy (DBT) and Mindfulness (Martell et al 2001; Omylinska-Thurston et al 2020).

When we considered adapting the A4B model to digital interventions, it became important that we also considered learning basic technical skills (see Figure 1) such as the various ways in which one could use a computer, tablet or smart phone to connect with the sessions, how to use online platforms such as Zoom and its functionalities, along with tools such as the whiteboard and 'word cloud', many of which were new digital skills for some of the participants.

One example of this ingredient delivered online during a training day, involved inviting participants to unmute themselves and sing together a well-known song 'Swing low sweet chariot' led by one of the practitioners. Although synchronicity can be problematic on online platforms, the pleasure gained

Figure 3. Who are you? How do you feel right now?



from learning to sing this song together overrode any technical difficulties faced by the limitations of the digital environment. At the same time, the exercise helped participants to become comfortable with muting and unmuting themselves at will.

Key Ingredient 3: 'Developing Relationships'

Forming relationships is seen as a core component of the model as a whole, closely linked with humanistic thinking, as well as a key ingredient. It is particularly relevant for people with depression who may tend to withdraw from social interaction, thus perpetuating further isolation and loneliness (Omylinska-Thurston et al 2020).

Creating relationships through digital means becomes an important component of the translation of in-person delivery to a remote version (Figure 1). During a workshop, we explored movement interactions that could facilitate relationship-building. For example, someone in the group began making a gesture, movement or sound. The group mirrored this and then someone else from the group changed the gesture/movement/sound, which was then mirrored in turn, thus creating a repeating pattern in the group for a set period of time. In this exercise, everyone was able to be seen and acknowledged as well as to see and acknowledge others' contributions. Mirroring in this way unconsciously builds empathy and connection with others.

Key Ingredient 4: 'Expressing Emotions'

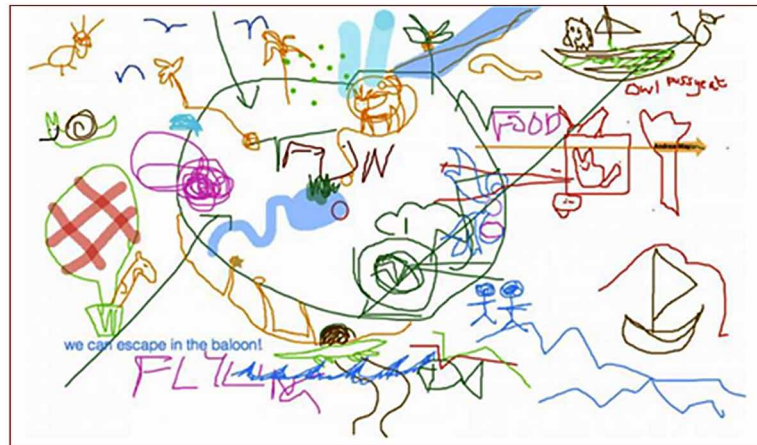
Feeling able to express emotions through spontaneous action precluding or assisting verbal sharing was another important ingredient closely associated with humanistic psychotherapy (Omylinska-Thurston et al 2020). According to humanistic thinking, depression can be the result of distorted or denied feelings and needs, therefore change can come from finding ways of expressing these feelings.

Offering safe opportunities to express emotions physically in one's own space, but also digitally in a private or shared way, was one of the considerations of how to translate this key ingredient to an online version as suggested in Figure 1.

For online delivery, this was explored in different ways that reduced pressure to disclose, by allowing individuals to choose what, how and how much to express. For example, in one task, we invited the group to use colours and shapes to express on paper how they felt. They were invited to use their non-dominant hand to access 'right brain' connecting with feelings. This was followed by a storytelling activity whereby the group was asked to take what was stirred up in art making to create a story starting with 'Once upon a time...' Each person wrote a personal story using their own metaphors and reflections, often connecting with humour and playfulness.

Following these tasks, participants went into pairs using online breakout groups and they were invited to share with each other their own reflecting and processing of their creations and to take turns in their sharing. They were encouraged to witness and support rather than interpret what they see or hear. This process of verbal sharing helped the participants to reflect and make sense of what they created in a held safe space.

Figure 4. Whiteboard - The island



Key Ingredient 5: 'Processing at a Deeper Level'

Identifying the roots of emotional distress and depression is another important ingredient. It is closely associated with the psychoanalytic/psychodynamic tradition and assumes that these deeply rooted issues may be responsible for depression and therefore need to be processed to achieve long-standing change (Lovgren et al., 2019; Omylinska-Thurston et al 2020).

Whenever people are diving into their own history and current struggles, the need for safety is paramount, and it was important to consider how to specifically address this in a digital environment. Our strategy was to discuss safety ground rules at the beginning of the session, and then make sure to have regular 'check ins' to assure safety, as a way of managing being in different geographical locations (Figure 1). This could involve asking participants to write a word in the chat or on the whiteboard of how they are feeling in any particular moment. Also asking people directly how they feel or asking them to show it in a form of a gesture could be helpful.

For online delivery of this ingredient, we invited in-depth processing through the creation of a group story. The whiteboard was used to create a metaphorical island, exploring opportunities and challenges in building relationships using imagery, symbolism and metaphor (see Figure 4). Participants were asked to position themselves in the island while creating a community. The invitation was also to consider what is needed when building a community, which served as a prompt in creating the group's story.

Following the exercise, the participants were invited to reflect in pairs how this activity resonated with their lives. They were asked to notice similarities and also challenges that emerged and consider these in the context of being in other groups and relationships. Again, the invitation for the pair work was to listen in a supportive manner rather than interpret the information.

Key Ingredient 6: 'Gaining Understanding'

Creating links between any in-depth work and past experiences is another important key ingredient which refers closely to psychoanalytic/psychodynamic work (Lovgren et al., 2019; Omylinska-Thurston et al 2020).

When the work moves to an online environment, it is important to provide digital spaces for reflection (Figure 1) through talking, writing or showing participants' creations. Remote work also offers opportunities for digital and physical artwork to be stored digitally in a way that can be easily accessed by all participants in between sessions and/or after therapy completes, offering enhanced opportunities for gaining understanding of the therapeutic process.

The 'Tree of Life' (or, as someone named it, the 'Tree of Self'), was one activity utilised for this ingredient. Participants were invited to stand up and imagine themselves as this tree, rooting ourselves, feeling the movement and thinking about how this tree might represent the self in terms of our past (roots); present (trunk) and future (branches). The exploration of our 'roots' could also be developed further, for example, the roots of our distress, or our ancestral or heritage roots. Similarly, the trunk might involve our strengths and resources and the branches may also link with leaves and fruits looking at our hopes and dreams. Following this people were invited to draw the tree with all the different elements, which was also reflected on in pairs.

Key Ingredient 7: 'Experimenting With Different Ways of Being'

Experimentation with different ways of being offers opportunities for participants in the groups to find different ways out of depression (Omylinska-Thurston et al 2020). This approach is linked with social constructionism (Galbin, 2014); inviting people to consider whether what one tends to do is still useful.

Experimentation within a digital environment needs to consider one's physical and emotional space, especially since the possibilities are limitless when augmented and virtual reality are incorporated (Figure 1).

As part of this ingredient, we explored 'who' or 'how' we wanted to be with a word and gesture. One person started by sharing their word e.g., brave, kind etc and then the group would mirror the associated gesture. They would then nominate the next person to share their word and gesture, to again be mirrored by the group, and so on. This offered opportunities to all participants to try different ways of being, not only verbally, but also in an embodied way, with the support of the group.

Key Ingredient 8: 'Integrating Useful Material'

The last ingredient of the model includes the integration of useful learning from the therapeutic process. Integration can take the shape of a final piece that enables the participants to summarise and integrate important aspects of therapy (Omylinska-Thurston et al 2020). This links with narrative therapy and 're-telling' one's story with greater understanding and compassion.

In a remote therapy context, integrating useful material can take the shape of integration within one's digital as well as non-digital life. Sustaining digital and non-digital good habits post therapy is an important outcome of this therapeutic process.

In one online workshop, we used another interactive whiteboard sharing as a way of closing the session (Figure 5). Participants were asked to respond to the question: 'How do you feel now?'. Having this digital image of their shared experience, in the context of this one-off workshop, offered a concrete reference back to the workshop, steeped in personal meaning.

Another way of integrating this particular experience came from one of the A4B facilitators and founders of the model, Scott Thurston, who, as an accomplished poet, was able to weave together Zoom chat contributions from participants in the workshops and training sessions as follows:

Digitising Creative Psychological Therapy

Figure 5. Whiteboard - How do you feel now?

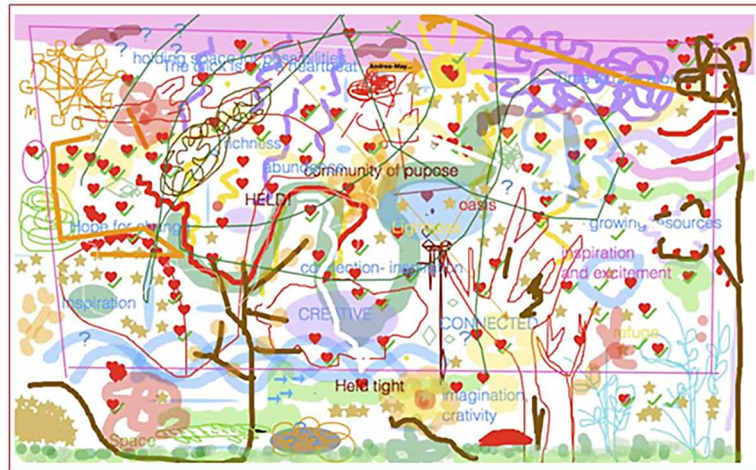


Figure 6.

BRIGHT PRESENT CURIOUS TIMING
I
Others forward a bit today learn appreciative with new
but have this different bit sharing with the milkman.

Positive, excited, but technological that feeling —
I am connecting, open, standalone and positive.

Looking I from therapist to calm, nice to curious,
how the tired limitations present.

Energised, bring me open wish STUFF anticipation:
learn and dance life about my forward students.

Eager past thankful: it's buzzing, relaxed apart,
today feeling nervous, intrigued, overwhelmed.

Person in this morning colleagues grateful to see an artist
energies included, learning what being fun looking to LOVE.

Will THIS course be creative and is or but creative?
Never too inspired fatigued love; stifled, excited, curious.

So mind Mam don't be nervous! Lovely to meet fresh thinking.

The first part uses the words and comments from the beginning of each day/workshop (Figure 6 and Figure 7)

Figure 7.

I. Beginnings

Stretched out we float, flow expansively:
A blooming ripple, roots open, spinning
Round and spiralling here, a dizzy star.

The whole centre is full. Slowly it's pulled,
Swirling, bubbling, here! Wide dozy dizzy
Butterflies landed, moulding fire symbolism.

We are rotating, within without, fluid
Drifting: absorbing slow, open sprinkles.
Let's go changemakers!

We are fragments in a bubbling bucket:
warm, hopeful, bright, emerging smiles
absorbed in playful flourish.

The second part uses the words and comments from the end of each day/workshop (Figure 8 and figure 9)

Figure 8.

II

Eat inspired connection streamers —
the best food unfurling.

Celebration, collaboration:
my energy in spirit connected.

Restorative, safe, whole connection: flow,
trust the inner awareness vibrant with touch.

Free flowing rebirth moved, creative; peace
gives to the heart of compassion full freedom.

Movement, self-play: free wisdom nurture
to connected flow of uncurling.]

Figure 9.

II. Closings

**My confidence grew as the day progressed.
Just what I would hope would happen over
the course of creativity and connection.**

**All that you need you have already, it might just be
in disguise. Bring the creative and the therapeutic
closer together, outside the box.**

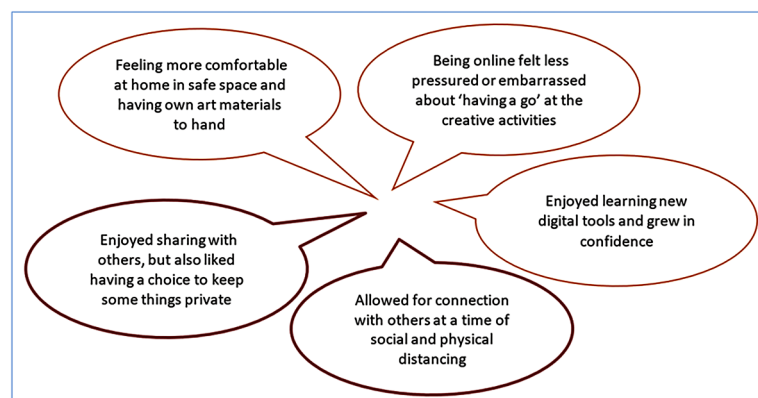
**Fun and connection, re-resource and re-connect
with how I can use our creative skills on the line.
A community is taking shape, fertile.**

**Nourished and resourced by deeper understanding
of process and components, how to integrate into
who I am.**

**Re-connection
Real connection
to the value of
creativity**

Summarizing the online experiences in a poetic form allowed for some of the metaphorical experiences to be shared, in line with the creative nature of the intervention.

Figure 10. Participants' responses to A4B online workshops



Digital possibilities within each one of the key ingredients of the model have also been further developed in the practitioner training days and presented in the project's interactive website (<https://artsforthebluespractice.co.uk/>).

Evaluation of data from the ESRC and practitioner online workshops, shows some early indications of the potential for the online delivery of A4B (see figure 10) that include the value of feeling more comfortable with trying creative activities online and from the safety of one's home, striking a balance between sharing and holding back and developing confidence in the use of new tools. The value of connecting with others was a sentiment often repeated, on a smaller scale with participants reflecting that small breakout groups were meaningful and insightful, to the larger scale with the recognition that online delivery offered opportunities to connect with others across different regions and countries.

The participants' engagement in online workshops and feedback following the workshops gave us confidence that this is a helpful approach to working creatively with groups, something that perhaps would have not been imagined prior to the Covid-19 pandemic.

Issues, Controversies, Problems

The main themes identified in the feedback from the online A4B workshops and training sessions were group size, time and guidance/support. The groups involved were far greater in number (up to 40 in each workshop and training sessions) than is advised for most group therapy scenarios (commonly cited recommendations include 7-8 (Yalom & Leszcz, 2020) and 7-10 (Bernard et al., 2008)). This may at times have felt overwhelming and indeed this seemed to be the case with some participants feeling reluctant to speak in the main 'Zoom room'. In alignment with Weinberg's (2020) findings around the challenges of online group therapy (establishing of cohesion and therapeutic presence online, differences in the working alliance and cohesion compared to in-person groups), we had already considered the need to promote greater connectedness between participants, by using 'breakout' rooms in smaller groups in order to increase trust, before feeding back into the main room. However, these small group activities did not always feel securely contained, as there was not always enough time for the smaller group to properly form (the initial and most rudimentary stage of effective group development; Tuckman, 2013) and carry out the activities before being pulled back into the main room for each subgroup's spokesperson to feedback to the whole group. In this sense, managing large numbers in this way may prevent breakout groups from confidently 'investing' in activities if they are so large as to require such an arrangement.

It may be the case that the greater the whole group, the longer the time needed for each subgroup to build familiarity and trust to be able to engage with exercises. Thus, pacing can become more problematic, and extra time is needed for explicit group process when transitioning from one body of work to the next i.e., in-between exercises (Yalom & Leszcz, 2020). Hence, therapists may face a trade-off between allowing time for group process and completing the intended activities that are the main focus of this form of therapy.

Participant feedback also highlighted the centrality of guidance and support and the differences in how this can be accessed in an online setting versus in-person. Guidelines for the practice of online psychotherapy tend to focus on preparing contingency plans in the case of clients needing urgent support, for example where safety is a concern (e.g. BACP, 2019), while other authors note the challenges of technology and reduced interpersonal cues (McBeath et al., 2020), but there is scant guidance for what online group arts therapists can do to attend to individuals within the session, as one might during in-person artistic exploration. If a participant becomes upset or overwhelmed in the online group setting,

especially with larger numbers, this may not be detected and supported in the same way as it would be in-person, where one can potentially find a quieter area in which to support/be supported during difficult moments. Hence, the technical barrier posed by lack of physical space/safe space must be considered further. Additional technical issues such as variable functionality between participants' devices or lack of connectivity may further constrain one's sense of safe and self-determined connection to the group. Similarly, in online settings (especially in large numbers or during breakout groups), it is not always possible to catch the attention of the facilitator, or desirable to speak up to request additional instruction/guidance for creative tasks, and facilitators cannot usually see what participants are doing at the level of their desk, so cannot always recognise if participants have misunderstood the task.

Additional well-documented issues with online work, include 'Zoom fatigue', eye strain and distraction (Fauville et al. 2021). In addition, online work may involve and certainly allows a way of being, being seen and seeing others that falls short of the fullness of face-to-face (or, more broadly, body-to-body) work. However, just as creative activities within A4B are gradually scaffolded to titrate the level of difficulty or intensity, thus allowing clients to acclimatise, so too may online work act as a steppingstone between two seemingly distant worlds. The depressed individual's private, withdrawn world may feel too far of a reach to the world of vivid, physically proximal encounter, therefore participating more partially/obliquely/'from the shoulders up' through online A4B may offer a more accessible option for those whose reluctance to step out may otherwise preclude their attendance to in-person creative/therapeutic groups.

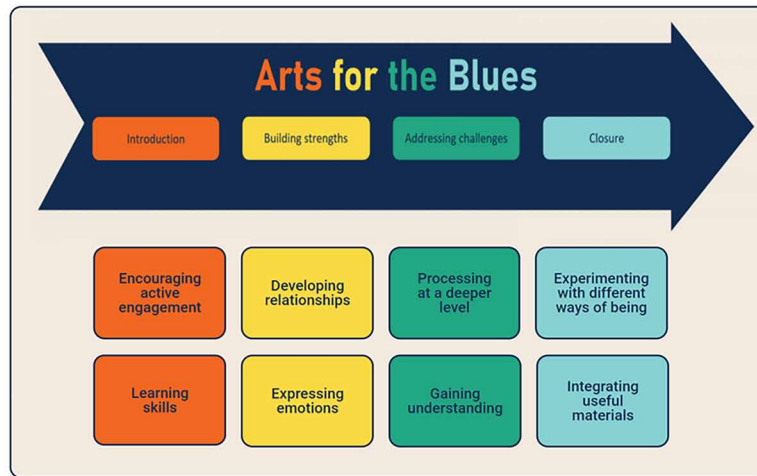
Solutions and Recommendations

Some key considerations and solutions to the above issues have been identified. Clear expectations in the form of a therapeutic and practical contract are essential to overcoming problems relating to boundaries both within the digital application (e.g., breakout groups, modes of communication, ways of managing time boundaries) and within the clients' physical space (i.e., privacy, limiting distractions, good time keeping) in order to be able to fully engage and feel predictability within the online environment. Clients should also be able to predict the number of participants in online creative therapy groups and have a variety of options and extra time to make themselves heard should they feel lost or overwhelmed in a larger group. Checking in after each activity such as a simple 'thumbs up' and the importance of at having at least two facilitators was important for participants to ensure that everyone felt held and ready to progress to the next activity. Facilitators may wish to build in plenty of flexibility with regards to time; the greater the group the more flexibility of pacing is to be expected. Additionally, to address the issue of time, one possibility would be to consider offering briefer adaptations of the model which would use fewer modalities within a single session. To address the issue of not always knowing when people need support, we could consider adding an observer facilitator whose task would be to monitor the chat function where participants could signal that they wanted to be supported individually, which could then be accomplished in a breakout room.

Indeed, smaller groups are likely preferable and less daunting for clients. Especially when using creative methods, which the 'uninitiated' may find challenging or evoke various self-schema around "not being any good at art", building in extensive space for small group connection to enhance trust may be more effective from the beginning, for example through lengthier icebreakers and time for unstructured group process and sharing between participants.

Also, to build clients' sense of creative self-efficacy and well as a sense of containment and clarity, creative instructions should be more specific and simplified where possible, especially when used with

Figure 11. Visual of the A4B process, taken from the A4B practice website



a new/unfamiliar group, or with clients who are new to the therapist and/or approach. Again, this relates to the scaffolding of activities and titration of challenge level mentioned earlier.

As mentioned previously, online work in which group members tend to connect from the shoulders up, at least visually, can lead to a sense of disembodiment as individuals rely heavily on their cognitive and technological resources through which to communicate and relate, although, as previously noted, this can also be a gentle way for some people to be initiated into creative arts therapies. However, the limited visual view heightens the importance of grounding and refocusing on the full embodied experience in-between the periods of screen-based focus and in between exercises involving deeper exploration. Group members may not be fully connecting in the same way that they might do in-person, therefore each group member’s connection to here-and-now self becomes more crucial, and this return to the present self may take the form of encouraging regular noticing and attention to the breath and body, the individual’s environment as well as the online environment.

Facilitators also need to actively show they are open to receiving and striving to incorporate the whole client, including all the nonverbal signals that are easily obscured online, and of course to have a ‘Plan B’ for what to do if the connection fails – both metaphorically/psychologically (i.e. client does not/cannot engage to the extent that is ideal online) and literally (i.e. how to cope with shortcomings in internet connection). In both of these instances it will be most helpful to draw upon congruence and name the difficulty with connection, while allowing time and space to process and perhaps remedy the issue.

FUTURE RESEARCH DIRECTIONS

The research team are currently working on offering digital resources for both practitioners and clients to access asynchronously and build towards a more extensive interactive digital therapy package (<https://artsforthebluespractice.co.uk/>).

This includes the development of interactive webpages and resources such as content ratings, feedback/comments, quizzes, polls. There will also be a facility to post user-generated content (photographs of

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artworks, videos of dances etc) and in the future it is hoped there will be a forum space for practitioners to connect, ask questions and share. This creative mode of public engagement will enable an exciting dialogue between academic research and the public. This will support the building of an online community who can share research-informed creative work together in a supportive environment and complement the existing website <https://artsfortheblues.com/>. The new webpages will feature therapeutic creative resources founded on research-based knowledge promoting social benefit by providing practical and focused solutions for emerging psychological needs for a wide population. The creative digital resources will include videos, audio, animations and downloadable materials, created by the A4B team of psychotherapists, counsellors and psychologists. It is intended that users will be able to interact with them.

Additionally, an Arts for the Blues twelve session therapy intervention has recently been delivered online with clients from a mental health charity, which further developed work in this field. Analysis of these results are still underway and will inform development of future digital offerings, which we intend to extend to children and young people with mental health or physical difficulties.

We are currently also engaged in systematic review of digital psychotherapies for depression to underpin theoretically this development (PROSPERO CRD42021238462) Ultimately, the aim is to expand the evidence base for creative psychological interventions, including digitised versions, develop an RCT study and influence policy to increase access to creative therapies, regardless of location.

In the future, we hope to be able to offer hybrid versions of our A4B intervention, including face-to-face delivery, but by keeping a digital version, we will be able to reach a broader number of participants and make our intervention more accessible.

CONCLUSION

Creative therapies and arts psychotherapies traditionally have been delivered in face-to-face physical environments. The Covid-19 pandemic provided an opportunity to deliver and test creative therapy workshops online. Although there were some difficulties including technical and clinical challenges, online delivery provides a new possibility that has a potential to reach clients who traditionally would not have been able to attend such workshops (e.g., clients with physical disabilities or chronic illness). This provides an exciting opportunity in terms of reducing health inequalities and reaching communities who would have not been able to access such offerings. Although online creative therapy format needs further investigation and research, it is a promising new mode of delivery which has a great potential for the future.

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Chapter 2

The Ostrich Community Internet–Cognitive Behavioural Therapy Program for Distress Related to Carrying Debt: A Digital Hand to Help People to Face up to and Cope With Debt

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ABSTRACT

Many individuals struggling with debt will experience associated psychological stress that negatively impacts both their physical and psychological health. People in debt may be too ashamed to participate in support groups or to seek face-to-face therapy but may welcome the more anonymous help that can be made available through an internet-based therapeutic intervention. The Ostrich community internet-cognitive behavioural therapy program was specifically designed to assist individuals with distress related to carrying debt, facilitating them to move out of denial of their financial problems to managing stress symptoms and mobilizing them to be able to cope more effectively with the financial problems. Preliminary outcome studies have demonstrated the feasibility of this approach and its effectiveness.

INTRODUCTION

People who carry financial debt can easily become overwhelmed and not be able to see their way out of it, thereby leading to denial as a defence mechanism against debilitating anxiety, but this pattern only

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leads to a spiral of intensifying the problems because strategies for coming out of excessive debt require direct confrontation and planning and calm, clear thinking. During the COVID pandemic, many people lost their jobs and therefore even more people have incurred debt.

The second author created an internet based cognitive behaviour program, called The Ostrich Community Internet-Cognitive Behaviour Therapy program which was designed specifically to aid individuals to manage their distress and to facilitate them to move away from denial of their financial problems. The goal was to help people to manage their stress symptoms and mobilize to be able to cope more effectively with their financial problems. In effect, the program offers a digital hand to help people to face up to and cope with debt.

This chapter will provide the background for the creation of this program, explain how it was designed, and describe the impact and outcomes of this digital intervention, which has been piloted in a range of settings including health care centres, unemployment services, and a university. Evidence from research conducted by the authors including a mixed methods study of feasibility and a qualitative research study which examined the range of difficulties experienced by individuals with debt related stress and depression based on the CBT Five Factor Model will be presented. The chapter will conclude with a consideration of future research and applications of the intervention, especially in light of the effects of the pandemic in exacerbating problem debt levels.

BACKGROUND

1. Issues Related to Growing Psychological Distress Among People Due to Debt

People have always dealt with underlying financial stress, mainly caused by multiple debts and diminishing financial credibility. However, the spread of the COVID-19 pandemic has brought this to light (Jones, Palumbo, & Brown, 2021). The inadequate finances have a significant impact on mental health, leading to an increase in anxiety. People have experienced emotional stress by envisioning how debts will affect their credit scores and amenities.

It has been evidenced that people having lower income profiles tend to have higher chances of facing poorer mental health (Elliott, 2016). However, the occurrence also depends on the seriousness and presence of debts. Multiple social policy studies have evidenced that based on the situation and experience, debt brings high depression, stress, and anxiety levels to people. According to Drentea (2000), the ratio of lower-income and higher credit card debts increases anxiety. Furthermore, psychological distress kept growing monthly with payment default (Cannuscio et al., 2012; Drentea & Lavrakas, 2000).

Most debtors can fill the gap between income and consumption, but people with lower income have a more significant gap and who have suffered the worst repercussions of the overall financial downturn (Step Change, 2015). They also do not have any savings for emergencies or have already utilised them, propelling them to rely on credit to manage their overall consumption. The Consumer Credit Counselling Service, a debt advice charity, reported that there were high debt-income ratios in families that earned £13,550 where the total unsecured debt ratio to their net income was 120%, meaning that they owed 20% more than their yearly income (Financial Inclusion Centre, 2011; Thompson, 2015).

Individuals trying to get through debts have suffered adverse effects on their mental well-being (Dooley, Catalano and Wilson, 1994; McKee-Ryan, Song, Wanberg and Kinicki, 2005). Individuals

struggling with financial problems, primarily because of impoverishment and redundancy, also have to fight health-related issues like anxiety, alcohol consumption, and depression (Compton, Gfroerer, Conway and Finger, 2014; Murphy, Zemore and Mulia, 2013). Governmental austerity measures have increased the acuteness of the psychological problems (Marmot, 2010; Wahlbeck and McDavid, 2012).

The COVID pandemic intensified anxiety in general, with The Office for National Statistics noting that around 50% of the British population experienced increased anxiety levels, and this anxiety can be intensified by the experience of financial stress with a survey reporting that 8.6 million people, whose earnings had been reduced, displayed inflated anxiety levels (16% increase). Over 25 million people registered their anxiety as “high”, which was higher than double the numbers back in 2019. Finance became one of the top priorities and problems for almost 5.3 million people, while another 8.5 million were concerned about their health, and another 6.2 million were worried about their professional life (Opinium Research, 2020).

Reduced income had a catastrophic effect on households and their expenses significantly increased. Additionally, many landlords issued notices to tenants that they should prepare for eviction notices when these would be allowed again following the pandemic moratorium, adding to overall pressure and stress. Other people complained that their employers planned to make them redundant after the furlough (temporary leave) subsidised by the UK government would end (BBC, 2020 and Opinium Research, 2020).

Another negative outcome of the employed austerity practices was the ongoing decrease in access to appropriate mental health services (Rethink Mental Illness, 2014; Royal College of Nursing, 2014). The Money Advice Liaison Group (n.d.) have opined that the Citizens Advice Bureau and various other institutions fail to provide adequate support to people facing economic and mental issues (Money Advice Liaison Group, n.d). Restricted access to proper assistance and support has made it difficult for individuals to face their financial problems and has increased the chances of them falling into more considerable debts than they were in before. Furthermore, debt can negatively impact well-being especially when combined with a lack of proper guidance for people on their mental and economic state, which has led to an acknowledgement by various financial institutions and the Government to understand they need to put more efforts to bridge the gap between these services (Financial Conduct Authority, 2014; Department of Health, UK, 2011b).

Internet-Cognitive Behavioural Therapy (ICBT) offers an appealing opportunity to lower the individual’s concerns about seeking help for mental health or debt in person (Department of Health, UK, 2011b). This is because people in debt experience self-contempt and shame, leading them to keep their financial struggles a secret (Fitch, Hamilton, Bassett, and Davey, 2011). It means that a person having economic problems may prefer to endure the strain in silence, as the support services lack anonymity (Zetterqvist et al., 2003; Smail et al., 2017). Cognitive Behavioural Therapy (CBT), Supportive Clinical Care, Interpersonal Therapy (IPT), and Antidepressants are recommended treatment alternatives to treat different types of depression (Ellis, 2004), whereas Individual/ Group Psychoeducational Interventions, Self-help Strategies, and Pharmacological tools are used to treat complex anxiety (NICE Guidelines, 2011; Vallury, Jones and Oosterbroek, 2015). The Ostrich Community Internet-Cognitive Behavioural Therapy program was specifically designed to address the unique needs of people facing stress associated with being in debt including depression and anxiety.

2. CBT Theory and Its Application

Motivational Interviewing and Cognitive Behavioural Therapy (CBT) are regarded as effective psychological treatments for many psychological problems, especially addiction related issues and in particular problem gambling (Carlbring, Jonsson, Josephson, and Forsberg (2010). Generally offered face to face, only a small number of individuals who face gambling problems seek gambling treatment services, limiting the availability of access to evidence-based therapy procedures. Numerous barriers to this treatment have included resource limitations, personal factors, time constraints, and demographic limitations. Resource limitations included treatment expenses, special requirements for childcare, and a lack of adequately trained clinicians, and personal factors included denial, stigma, discomfort, and an impulse to manage everything solo. However, many individuals were using self-directed interventions which helped in extending assistance for health behavioural changes that surpassed the conventional treatment approaches. Self-help services were also accessible to underserved and distant populations, including people who were reluctant to participate in interventions (Dowling et al., 2021).

Although CBT has been evidenced as a highly effective treatment option for numerous emotional disorders and addictive behaviours, it is important to consider its limitations as in some circumstances it is unsuccessful in bringing any improvements or people drop out of treatment, and it has not succeeded in safeguarding people who have experienced vulnerability, relapse, and recurrence of symptoms (Robinson, Berman, & Neimeyer, 1990; Roth & Fonagy, 2005; Scher, Ingram, & Segal, 2005). Additionally, Cognitive Behavioural Therapy is not a universally applicable treatment for mental health disorders (Marzillier & Hall, 2009). CBT requires the client's compliance in engaging with psychotherapeutic tasks, including 'homework' tasks (Westra et al., 2007). Moreover, the client needs to keep an open mind and willingness to undergo experiments for changing behaviours and thoughts and overcoming initial barriers. CBT has been found to be most effective for people with higher self-assurance and self-control (Malin, 2002).

3. Research on ICBT Interventions for Psychological Issues and Controversies

There is evidence that ICBT interventions are helpful for patients suffering from major depressive disorders (Andersson and Cuijpers, 2009; Spek et al., 2007). ICBT programs are better than Care As Usual (CAU), especially in lowering moderate to mild symptoms of depression (Klein et al., 2016). Moreover, interventions performed under the guidance of a therapist displays higher efficiency over programs implemented without any support (Andersson and Cuijpers, 2009; Richards and Richardson, 2012), demonstrating an argument for assisted computerised CBT programs. Provisional evidence highlights that ICBT interventions, when proffered with therapist guidance, deliver equally effective or even better inclusive effects on depression than in-person CBT (Andersson et al., 2014; Andersson et al., 2015).

It should be noted that numerous randomised controlled trials to assess the success rates of ICBT programs in decreasing symptoms of subthreshold depression in people gave inconsistent results (Choi et al., 2012; Donker et al., 2013; Phillips, 2014). There is a need for more systematised reviews that provide a thorough analysis of ICBT effectiveness in treating people with symptoms of subthreshold depression (Zhou et al., 2016).

There has been evidence of the effectiveness of internet-based cognitive behavioural therapy for the treatment of pathological gambling. A study of 284 participants in an 8-week ICBT program (Carlbring, Degerman, Jonsson and Andersson, 2012) with limited therapist contact through emails and 15-minute telephone conversations, demonstrated efficacy in reducing pathological gambling, depression and anxiety

and in improving overall quality of life from pre- to post-intervention measurement. These gains were maintained at follow-up measurements at 6-, 18-, and 36-months post-intervention. These studies may hold relevance to interventions for debt-related stress because some people with debt have perceived acquiring debt to be compulsive and therefore an addiction, as reflected in the 12 step self-help group Debtors Anonymous (<https://debtorsanonymous.org.uk/>), although this would not apply to people who accumulated debt because of unexpected job loss or sudden additional critical expenses such as for medical treatment.

Amit et al., (2020) conducted a systematic review of studies from the previous five years that aimed at assessing the impact of debt on mental health issues like stress, depression, anxiety, or suicidal ideation in Asian nations. Using PRISMA guidelines for searching on the data bases PubMed, Science Direct, Medline, Web of Science, and Scopus, 9 manuscripts were identified that complied with the inclusion guidelines. These studies were conducted in China, India, Thailand, Cambodia, Singapore, Korea, and Pakistan. The outcome of this research implied that indebtedness was closely linked to participants facing stress, suicide ideation, depression, and anxiety. Amit et al. (2020) noted that future studies should further clarify the relationship between psychological health and debt possibly by including qualitative and mixed methods studies. They also noted that the proper definition of ‘debt’ was not stated clearly in most of their manuscripts.

A systematic review and meta-analysis of studies examining the relationship between unsecured debt, mental and physical health (Richardson, Elliott, and Roberts, 2013) documented the presence of emotional eating, smoking, drug dependence, and drinking as unhealthy habits that people developed in an attempt to seek relief from their symptoms of anxiety, depression and stress related to being in debt.

The limitation in the research to date in not having a universally agreed upon definition of ‘debt’ is problematic, although it is often restricted to unsecured debt. This definition misses out on people who unrealistically overreach their financial resources when purchasing property. There are also controversies about whether acquiring debt can be compulsive and if this would affect the choice of treatment.

An under researched area in the literature would appear to be the emotional impact upon family members when one person is incurring debt and suffering ill effects related to this which has been reported in clinical cases but not studied more widely.

THE OSTRICH COMMUNITY INTERNET-BASED COGNITIVE BEHAVIOURAL THERAPY (OC-ICBT) PROGRAM

The ICBT program by Ostrich Community was designed to help individuals who face difficulties managing their psychological stress related to debt (Smail, Elison, Dubrow-Marshall, & Thompson, 2017) based on the evidence base for the effectiveness of CBT generally, ICBT, and the use of trained therapists and debt counsellors to support people while they work through the internet program. It offers practical guidance on finance management and promotes the maintenance of an individual’s psychological wellness. It uses evidence-based psychosocial intervention strategies that are founded on theoretical justifications from the CBT Model (Williams & Garland, 2002). Each module utilises psychoeducation, money management stories/ quotes, and cognitive-behavioural techniques or worksheets to keep the individual engaged (Smail et al., 2017).

The Ostrich Community’s program was aimed for individuals suffering from moderate to mild depression, anxiety, and stress symptoms. It is also a good option for individuals who need guidance in

money management and is best suited for those with moderate amounts of debt. Individuals with severe mental health and debt issues are provided with basic information on the home page and signposted to various organisations that offer support. They may also use the toolbox to get tailored content based on their needs, along with extensive debt and psychological health support (Smail et al., 2017).

1. The Structure of the Ostrich Community ICBT (OC ICBT) Intervention

The Ostrich Community ICBT (OC ICBT) program begins with an introductory video of two minutes, followed by eight web-based modules provided weekly; these sessions are expected to take 30-60 minutes each. The modules offer practical guidance on finance management, decision making, and life skills through motivational stories/ quotes and cognitive behavioural worksheets. Each module is offered in either video, audio, or textual form designed to be convenient and to improve interaction and motivation. ‘Homework’ is used to help the person practise skills that are being taught, and includes maintaining a problem diary, completing behavioural experiments, and keeping thought records, all standard CBT interventions.

The Ostrich Community brings CBT and self-help methods together in a unique way to assist the user in comprehending their emotions and their reason for these emotions. Throughout the ICBT program, participants also acquire strategies to modify how they feel, act, and think. Through the utilisation of video, textual, and audio mediums to present exercises that will help the individual focus on their abilities and general knowledge, information is made accessible to people with different preferred ways of learning. The program assists the person to apply these skills in their real life while focusing on solving their economic constraints. It also provides information and exercises to encourage the user to recognise and challenge negative thoughts while finding a practical and realistic way of solving financial issues. ICBT employs cognitive restructuring and other similar techniques to motivate precise evaluation of financial challenges. The cognitive approach offered in the third session inspires the individual to use their novel, pragmatic insights into their financial issues to resolve the determined difficulty, while the goal-setting strategy supports problem-solving techniques to form and achieve realistic goals. Mind-mapping exercises are used to provide resolution of any barriers faced while working towards goal attainment. Help-seeking behaviours, like taking advice or sharing thoughts, are encouraged. The OC program helps people to recognise unhealthy and irregular behaviours, particularly those related to finances, and offers guidance to modify these. The sessions also introduce new techniques for improving the person’s communication skills and coping abilities, making it easier for the person to share their debt issues with other agencies. They further focus on completing an activity scheduling and monitoring planner; this enables them to organise their time more effectively while working on problem-solving activities to manage the debt. Practical information and resources that are connected to financial problems, like budgeting exercises, are supplied. The OC-ICBT program also guides stepwise activities to make the person more financially competent. Lastly, the OC ICBT program has generalised exercises, videos, and information on other stress or anxiety management techniques, including progressive muscle relaxation, gentle exercises, relaxation training, and visualisation. All the elements of this program are directed towards ensuring improved finance management, coping more effectively with stress, and simulating relaxation, and participants were aided by therapists and trained debt counsellors as they worked through the program (Smail et al., 2017).

2. The Impact of the OC ICBT Program

A mixed-methods feasibility study (Smail et al., 2017) of 15 participants who were not suffering from severe financial distress who were assisted in completing the 8-week OC ICBT Program was conducted. Participants rated the accessibility and feasibility of the program, and satisfaction and outcome measures of wellbeing, depression, anxiety, and stress were given pre and post intervention. The program was perceived to be accessible and feasible with high levels of satisfaction. Significant improvements were identified on the measures of wellbeing, stress, and anxiety. Seven participants were interviewed following completion of the program and themes were identified that the program had the potential to promote effective coping skills with financial stress and to improve overall wellbeing.

A qualitative study (OC Paper, n.d.) was conducted with a sample group of 9 male and 10 female participants, who belonged to varying ethnic backgrounds and were 18 to 75 years old. A total of 13 participants were single (8 female and 5 male), 1 was divorced, 1 married, 1 widowed, and 3 respondents were living with their partners. Furthermore, 2 participants from this group were retired, while 7 stated they worked in either full or part-time jobs, 1 was on sick leave from their work, and the remaining 8 participants were unemployed. The occupation of these respondents ranged from health care, education, and food departments to administration, retail, and sales. Additionally, the ethnic diversity of this sample included White British, White Irish, Asian British, Chinese, Mixed Asian & White, Black Caribbean, and Mixed White & Black Caribbean. Participants were requested to provide certain information about their income, expenses, and finances although this was optional. The data revealed that 14 out of 19 total participants lived in a mortgaged or rented residence. The remaining 5 participants reported that they lived with their parents. There were no formal reports of significant mental health problems or psychiatric diagnoses, but significant social phobia, anxiety, depression, and stress were reported. Participants were given the opportunity to participate in the ICBT program by the Ostrich Community.

Participants were interviewed post-intervention for approximately 30 minutes, and themes were identified that were closely linked with their experiences related to mental health and economic hardships. The participants reported that they had self-limitation thoughts along with feelings of anger, depression, sadness, and even guilt. These altered thinking patterns and emotions caused by debt-related stress resulted in self-isolation by the individual, reducing their social interaction and leading to adoption of unhealthy coping approaches. Some of these methods included heavy consumption of unwholesome food, excessive TV watching, alcohol intake, and other behavioural alterations. It was also seen that the individuals were suffering from physical symptoms such as headaches, hyperventilation, diarrhoea, and obesity (OC Paper, n.d).

A thematic analysis of the interviews yielded six themes: self-limiting thoughts, physical health impact of debt, psychological health impact of debt, financial avoidance, triggers and drivers, and results from taking action. The first five themes were further analysed in consideration of the theoretical framework of the Five Areas CBT Formulation Model (Williams & Garland, 2002) with some details below.

1. **Self-Restrictive Thoughts:** Based on the interviews, self-restrictive thoughts were recognised in most of the subjects, which makes them a constant factor in the study. These limiting notions were described as feelings that fostered low self-efficacy and self-confidence in the individual that demotivated them from overcoming complex economic problems
2. **Debt-related Mental Health Problems:** All participants who had experienced serious mental and emotional difficulties perceived that debt had a significant influence on their everyday lives.

3. **Debt-related Physical Health Problems:** After experiencing a challenging financial situation and enduring the psychological pressures that follow, indebtedness was also found to have impacted the physical well-being of the participants. In some cases, the subjects reported having severe headaches and increased heart rate which are often reported as psychological symptoms of anxiety and stress.
4. **Fiscal Refrainment (Financial avoidance):** For a few respondents, ignoring or avoiding their financial problems gave them a means of getting away from the real world and their situation. They also reported that financial avoidance became their coping mechanism instead of using more effective and healthy alternatives for receiving financial guidance and health care
5. **Drivers/ Triggers and Consequences:** The participants of the study also reflected on the numerous consequences and causes of stress generated by being in debt. Some also stated that managing and planning finances in such situations becomes challenging for them. This was mainly because all individuals continue to follow their initial spending habits, which was a major reason why they were trapped in the debt cycle.

Overall, the most salient finding was that staying in debt can deteriorate both physical and psychological health. Furthermore, debt also weakens the ability to face and combat challenging circumstances related to any fiscal problem (Meltzer et al., 2010). The participants displayed low self-esteem and stated that they felt embarrassed in freely sharing their financial history and issues with the other respondents. This was due to the social stigma that comes with facing debt-related matters, which also makes the individual feel guilty and isolated (Jenkins et al., 2008). This barrier alone can take a toll on the psychological health of the person experiencing debt and relevant stressors, whose effects intensify when combined with limited availability of supportive services that provide proper assistance in financial crises and medical guidance (Hick & Bien, 2010).

COVID AND USE OF ICBT TO REDUCE MENTAL DISTRESS IN A TIME OF EMOTIONAL AND FINANCIAL CRISIS

The sudden emergence of the COVID-19 pandemic is being regarded as one of the most significant global emergencies in the last few decades, having significant impact on physical health, educational, economic, mental, and familial aspects of life (Bareket-Bojmel, Shahar and Margalit, 2020). The spread of the COVID-19 virus level took a significant toll on the well-being and health of people all over the world (Holmes et al., 2020). To lower the spread of this virus, most countries adopted stringent measures like lockdown to enforce proper social distancing (Parmet and Sinha, 2020). While imposing these strict steps has undoubtedly helped reduce the number of cases, the economic costs of following these have been enormous (Bureau of Labor Statistics, 2020; World Bank, 2020).

The World Bank estimated that the international GDP experienced around a 5.2% decline in 2020, which is the worst economic decline faced by the world in the last eight decades (World Bank, 2020b). A downturn in GDP directly affects employment rates, which also affects the general mental well-being of the individuals (Zimmerman and Katon, 2005). Unemployment has been shown to have increased psychological strain on the individuals while they faced the loss of income along with reduced social interaction, sense of competence, and status (Goldman-Mellor, Saxton and Catalano, 2010). Hence, the financial conditions posed an impending risk to the mental well-being and were accompanied by the physical wellness-related stress implored by the pandemic (Van Hal, 2015). Evidence obtained from the

earlier economic depression of 2007 clearly stated that financial stress is linked to facing depression and seeking mental health support (Gili et al., 2012; Hertz-Palmor et al., 2020).

An extensive nationally representative research was conducted in the United Kingdom during this period indicating that people who had no income or were unemployed in the pandemic were more stressed when compared to people who were employed. Moreover, the people who became unemployed during this crisis displayed higher distress than participants who were unemployed before COVID-19 started (Pierce et al., 2020; Hertz-Palmor et al., 2020).

In view of the ongoing COVID-19 pandemic in mind and restrictions to face to face services, internet-based interventions are especially attractive, and offer higher flexibility for people to gain adequate support for both psychological and physical health. Online CBT programs have essentially displayed efficiency in providing treatment and avoiding numerous stress-related disorders in individuals.

In order to particularly address the needs of healthcare workers during the pandemic, “My Health Too” CBT program, another ICBT program, was designed to help individuals to analyse and quickly treat discernible stress and stave off other psychiatric disorders. Three and six month follow up assessments were done in a randomized controlled trial comparing the treatment group with the intervention with an active control group who received (Weiner et al., 2020) and the intervention was found to be effective.

Five ICBT specialist clinics from Australia and Scandinavia performed a large-scale study on the successful deployment of the program (Titov et al., 2018) and identified a few key factors that play a role in successfully implementing ICBT in a regular care routine: organisations or management should systematise their implementation process; specially trained practitioners should be present at all times to assist; and digital programs should be evidence based. Additionally, treatment results and patient satisfaction rates should be supported at all times, along with clear assessment routines and other care measures (Titov et al., 2018; Weineland et al., 2020).

Mahoney et al. (2021) analysed the uptake and efficacy of ICBT for depression and anxiety symptoms observed in the Australian population during the first eight months (March- October 2020) of the COVID crisis. These findings were compared to the outcomes of the research done 12 months before the pandemic began. During this study, 6,132 adults started using ICBT; this sample was divided into two parts- 5,074 participants started the program during the pandemic, while 1,058 others began their program the year before. They underwent and completed the program, and pre- and post- depression and anxiety symptoms were measured. During the pandemic period, the monthly program registrations for ICBT increased to 504% as compared to the previous year. The highest increase for the enrolments was seen between April and June 2020, which was recorded as 1,138%. The initial severity of symptoms of both depression and anxiety was similar for both groups. Before and during the COVID-19 crisis, the ICBT program was shown to provide a significant decrease in symptom severity of depression ($g = 0.92-1.12$) and anxiety ($g = 0.94-1.18$) and also showed positive outcomes for psychological distress ($g = 1.08-1.35$). The findings of these studies showcase that there is a substantial increase in the requirement of psychological support through the pandemic situation in Australia. They also demonstrated the effectiveness and versatility of ICBT programs in treating symptoms of depression and anxiety (Mahoney et al., 2021).

The global impact of the pandemic related financial stresses upon mental health was further noted in the Chinese population where higher depression and anxiety levels caused by worries related to study, job, income, and debts were displayed. (Li et al., 2020). The mental well-being of the Canadian population also gained significant attention after the pandemic struck where it was observed that people had high levels of anxiety about returning to work and were fearful of not being able to interact with others

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with the prospects of a second wave of the coronavirus. Ontario residents received support from their Government for getting free online access to mental health resources, including internet-based Cognitive Behavioural Therapy programs including Beacon Digital Therapy by MindBeacon and AbilitiCBT by Morneau Shepell. Both these programs provided comprehensive guidance and support by professional therapists directed towards helping the people to develop strategies and skills required for successfully addressing symptoms caused by depression and anxiety (AFHTO, 2020).

Research studies and surveys have demonstrated CBT's growing importance in the psychological treatment of a variety of disorders (Norcross, Karpiak & Santoro, 2005). The factors that support CBT's increasing adoption include well-articulated principles along with self-help books that accurately define the approaches of CBT. Furthermore, the structured manualised approach and short-term nature of CBT treatments facilitate empirical investigation and has led to an impressive number of studies with evidence based results demonstrating its effectiveness. Butler, Chapman, Forman, & Beck (2005) examined 16 meta-analyses of 325 clinical trials of CBT applied to diverse clinical populations to determine its effectiveness for treating anxiety disorders, mood disorders, anger, marital distress, chronic pain and childhood disorders. They reported that CBT treatment generated extensive improvements compared to control groups for depression, anxiety, panic disorder, social phobia, and posttraumatic stress disorder, conditions which would have expected relevance for people experiencing financial stress. CBT was more efficacious than antidepressants in adults. In more recent years, CBT has even achieved recognition in the field of treatments related to schizophrenia and bulimia. Considering these outcomes, various researchers and clinicians have started to propose altered approaches concerning CBT in the field of psychopathology and psychotherapy, and Linehan (2018) developed Dialectical Behavior Therapy to help people with borderline personality disorders.

Studies have also confirmed the utility of CBT in addressing substance abuse concerns. In the United Kingdom, a computerised treatment and recovery program known as Breaking Free Online (BFO) was developed to help substance abusers use computerised CBT as a form of self-help therapy that they could access in the privacy of their own homes, and without having to feel embarrassed about being seen at a drug clinic. Elison, Davies and Ward (2015) highlighted psychometric outcomes through data collected from 393 services using online support concerning misuse of substances through the BFO platform and found significant advancements in quality of life and psychological functioning, and a reduction of intense dependence on drugs and alcohol, anxiety, and depression.

Gambling disorder or problem gambling which involves excessive gambling is perhaps psychologically related to the accumulation of debt in terms of the financial stress that is experienced. Schaffer and Martin (2011) observed that in problem gambling, individuals maintain the hope that they will gain money despite the realistic probability that they will lose. It has been noted that problem gambling triggers negative consequences for the gambler and/or people in their social circle along with the community (Blaszczynski and Nower, 2002; Molander et al, 2020) which again could be parallel to the experiences of people in debt. Behavioural, cognitive, and integrated CBT are currently leading the therapy trends following extensive outcome research related to gambling issues with positive results for treatment groups compared to control groups. (Grant & Potenza, 2007). CBT and behavioural therapies have several additional benefits in cost-effectiveness, long term impact and availability of booster sessions to help prevent relapse. A considerable portion of the treatment aims at offering assistance to the client to deal with issues related to and resulting from their gambling addiction. CBT helps gamblers to develop coping skills, including life and social skills and in reducing problem behaviours, thereby ensuring long-term benefits.

CONCLUSION

Internet-based Cognitive Behavioural Therapy covers a range of topics including Cognitive Restructuring, Behaviour Activation, Psycho-Education, Behaviour Monitoring, and more. All these programs are formed on self-help interventions, delivered through audio files, video clips, and textual content. Few ICBT programs are complete self-help-based courses that do not require any human support, contact, or guidance, while several others also include expert guidance from a therapist to increase the overall efficacy. Another benefit of these programs is their easy to access setup, where they can be used anytime and anywhere they have access to a stable Internet connection. Its scalability and aptness make it a befitting treatment option for a large number of individuals who tend to avoid seeking help for their mental well-being, particularly due to issues around shame. Thus, following an ICBT program will be a valuable addition to the conventional face to face psychotherapy and primary healthcare facilities (Zhou et al, 2016).

The National Institute for Clinical Excellence (NICE, 2009) advised generally that CBT played an essential part in effective anxiety and depression disorder management. It also advocated that these should be treated as ‘first line’ therapies of choice, as they are equally beneficial to antidepressants (Hofmann & Smits, 2008; Roy-Byrne & Cowley, 2007). Moreover, CBT is also a highly compatible process when paired with medication (Hollen et al., 2002). However, Hess (2006) emphasised that more studies should be performed to analyse CBT with other therapies before it gets the ‘first line’ title and that numerous other therapies are equally successful and have not received enough financial support or acknowledgement as. CBT has received the most attention and its structure and manualised style make it easier to conduct randomised controlled trials than other therapeutic approaches that might be just as valid. Regardless of these ongoing debates, the evidence base for CBT has been well established, especially for anxiety and depression disorders (Butler et al. 2005, Cuijpers et al. 2008, Hofmann and Smits, 2008).

The rationale behind the Ostrich program is that debt is a significant risk factor for mental health issues such as depression, anxiety and stress (Department of Health, 2011) and interestingly, there appears to a shortage of emotional support that is suitable or targeted towards these individuals. Furthermore, there has been a lack of co-ordinated multidisciplinary treatments available, which are tailored to encompass debt support with emotional support together (Dorling, 2009). Therefore, this program was designed to fill this gap.

The research covered in this chapter clearly highlights the increasing worries about the health and well-being of individuals who are in financial troubles and the correlation between mental health and debt is becoming more evident now since the current economic downturn due to the COVID-19. There is a shortage of co-ordinated activity between health and financial organisations which should be addressed by the UK government and this is an area that Ostrich Community would like to research further.

The recent qualitative research on the Ostrich Community has given some exclusive insights into the lived experiences of indebted individuals in the United Kingdom, and particularly, the ways wherein their financial issues, health problems, life events, and poor financial decisions may be linked. Further research is needed to understand more fully both the impact of being in debt and the interventions that help to relieve the associated emotional issues.

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Chapter 3

The Resilience Enhancement Programme for Students (REP-S): Evaluating an Online Intervention for Boosting Resilience in Students

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ABSTRACT

The Resilience Enhancement Programme for Students (REP-S) is an intervention that has been designed to boost resilience in students. The current study involved the remote delivery of the REP-S via an online platform to students, and an empirical evaluation of the intervention via a pre-post one-group quantitative design over one month and a post-intervention qualitative element. Fifty-six students from the University of Greenwich qualified for inclusion in the study. Results indicated that perceived stress and trait neuroticism decreased over the month of the study, while resilience increased. Engagement with the intervention also predicted a reduction in neuroticism. Students reported experiencing a complex range of difficulties over the duration of the pandemic and that 80% of participants found the workshop to be effective in addressing these problems. Overall, participants found more positives than negatives in the online delivery of the workshop. If rolled out on a wider basis, the REP-S has the potential to improve wellbeing and mental health across the higher education sector.

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INTRODUCTION

Universities are increasingly recognising that they have a central role in supporting students to develop broad transferrable skills that promote positive wellbeing. This task of actively promoting student wellbeing has been strengthened in importance by the COVID-19 pandemic. Over the duration of the pandemic, students have had to overcome the challenges of studying remotely (Chhetri, 2020), while managing the stress and loneliness stemming from social disconnection from friends, family, tutors and lecturers (Varga et al., 2021). A study conducted on student stress and coping during the pandemic found that 70% of university students reported levels of stress that were disrupting their quality of life, academic progression, and degree attainment (Son et al., 2021). The current study was developed in the context of this environment of heightened study stress; it investigated the efficacy and outcomes of an online resilience intervention within a UK university, aimed at helping students cope with the stressors of university life within the context of the COVID-19 pandemic.

Stress, Mental Health Problems and Resilience in Students

Prior to the pandemic and the stressors that it initiated, stress in students was already at a high level, mainly caused by fears surrounding exams, worries about finances, and by concerns about career prospects (Mental Health Foundation, May 2018). Evidence points to a problem with mental health difficulties in students that has been growing for some years. A report by the Institute of Public Policy Research found that in the UK there has been an increase in mental health problems among young adults from 2003 to 2017 (Thorley, 2017). Moreover, the student population is especially prone to experiencing such problems, having lower levels of wellbeing and life satisfaction than the adult population (Stallman, 2010). Between 2010 and 2015 a dramatic increase of 201% has been observed in drop-out rates amongst students due to mental health problems (Thorley, 2017).

With an increase in mental health disorders, and a decrease in the levels of general wellbeing, mental health services at universities are under pressure. In the last ten years, among higher education counselling services, there has been an increase in demand and also in the severity of the students' presenting conditions (Royal College of Psychiatrists, 2021). Ninety-four percent of higher education institutions in the UK claimed there has been an increase in demand for mental health services, with one in 4 students either using such a service or waiting to do so (Thorley, 2017). Due to the heightened demand, time spent on waiting lists has increased and counselling services can now only provide short-term help for issues such as adverse life events, with more complex interventions being unavailable (Royal College of Psychiatrists, 2021).

A solution for lessening the stress and mental health difficulties that undermine student wellbeing and achievement is cultivating resilience among students (DeRosier et al., 2013). Resilience is the ability to effectively adapt to, and recover from, stressful situations (Smith et al., 2008). In students, this ability predicts higher grades over the course of a year (Allan et al., 2014), and also increased the likelihood of completing a degree (Bleasdale & Humphreys, 2018), life satisfaction (Kjeldstadli et al., 2006) and positive mental health (Hartley, 2011). For example, a study with medical students found that those with low levels of resilience were less satisfied with their lives and with the academic environment, had poorer physical health, worse social relationships and had more negative perceptions of their academic performance (Tempski et al., 2015).

RESILIENCE INTERVENTIONS AND THE CHALLENGE OF ONLINE DELIVERY

There is encouraging evidence that resilience can be enhanced within the student population via training programmes that target skills to help students pre-empt stress or manage its effects when it occurs. Several studies on this have been conducted in the USA. The *Resilience and Coping Intervention (RCI)* is a group-based three-week intervention developed at the University of Missouri. It was evaluated in a randomised control trial (Houston et al., 2017) with 124 undergraduates, randomly assigned to a control or intervention group. After three weeks, intervention participants reported significantly more hope and significantly less stress and depression compared to control participants. Another programme, *Transforming Lives Through Resilience Education (TLRE)*, has been developed at the University of Texas. In an evaluation study, the intervention significantly increased self-appraisals of personal growth for the experimental group compared with a control group (Dolbier, Jaggars & Steinhardt, 2009).

These two resilience programmes are based on a cognitive-behavioural approach to resilience-building; however, they do not cover the social and interpersonal skills that are integral to resilience. Workshops that emphasise a purely individualist conception of resilience can promote a socially disconnected approach to coping with stress. This is particularly salient considering that loneliness is an increasing problem for young adults at the current time, and also given that individuals from more collectivist cultures have been shown to place a strong emphasis on the social side of resilience (Buse et al. 2013). We consider social resilience to be essential to resilience training too (Levine, 2003).

The *Resilience Enhancement Programme for Students (REP-S)* was developed by Robinson, Sebah and colleagues following an analysis of what students consider to be their key unmet needs in managing stress (Robinson et al., 2021). It was also influenced by a biopsychosocial theoretical framework for conceiving resilience, which considers three levels of resilience skills: cognitive, social and psychophysiological. Each of these levels contains two workshops:

- *Level 1 Cognitive resilience: (a) Goal-setting and Planning, (b) Positive Reframing*
- *Level 2 Social resilience: (a) Effective Social Support and Help-Seeking, (b) Assertiveness*
- *Level 3 Psychophysiological resilience: (a) Breathing for Relaxation, (b) Mindfulness*

Appendix gives a more detailed overview of the contents of these sessions.

The REP-S project has been shown in previous research to lead to positive change (Robinson et al., 2021). A randomised control trial was conducted with 36 students in the intervention group and 29 in the control group. Over a month, the intervention group significantly decreased in perceived stress and trait neuroticism relative to the control group. Another study looked at the perceived personal significance from 145 different participants. In that evaluation, 88% of participants reported that the intervention had been a positive learning experience, while 85% of participants stated that participating in the workshops would positively benefit their development during university (Robinson et al., 2021).

Such interventions have also been delivered in an online format. One example is a study conducted on college students which found that a self-paced online programme significantly improved participants' resilience and self-esteem while also reducing perceived stress (Roig et al., 2020). Similarly, an online self-guided intervention for nursing students improved resilience, an effect that lasted up to 3 months, along with lessened symptoms of anxiety and depression (Stoliker et al., 2021). However, not all programmes are effective, as a one-hour interactive training for nursing students had no effects on resilience neither online, nor face-to-face (Mayor-Silva et al., 2021). This may have happened because of the brief

nature of the intervention; a systematic review has found that for online delivery, medium-length guided interventions appear to work best (Heber et al., 2017). This suggests that online delivery programmes may work, but only when designed effectively. Moreover, there currently are interventions such as cognitive behavioural therapy for depression (Andersson et al., 2013), or stress management interventions (Wolever et al., 2012) that reach similar levels of effectiveness in both online and traditional formats.

Creating an effective resilience programme for students available online brings a range of benefits. Firstly, heightened resilience not only reduces, but also prevents, the development of mental health problems (Shrivastava & Desousa, 2016), therefore, promoting it could reduce the current strain on mental health services. Online training is in some ways more inclusive and accessible than face-to-face training (Baños et al., 2017). Being made available online means larger numbers of students can easily access the training, while eliminating barriers such as geographical limitations, travel costs or time spent in transit (Ebert et al., 2019). These benefits were supported in a qualitative study where students who participated in an online mental health intervention recognised the flexibility and accessibility of the online programme as useful and important (Irish et al., 2020). Moreover, due to the online nature, such interventions are both suitable and needed for addressing mental health in the context of the COVID-19 pandemic (Rauschenberg et al., 2021).

However, there are also drawbacks of online mental health interventions. Two of the most important ones are high attrition rates, which reached 35% across 70 randomised control trials (Linardon & Fuller-Tyszkiewicz, 2020), and in a naturalistic setting, low intervention uptake rates (e.g. 8.5%; Lillevoll et al., 2014). These may be explained by the negative views that participants have on the effectiveness of online interventions. In the aforementioned qualitative study by Irish et al. (2020), students revealed their preference for a face-to-face intervention due to it being more personalized, and only viewed the online version as useful as a tool while waiting to get face-to-face therapy (Irish et al., 2020). Such doubtful views regarding the effectiveness have been found in other studies as well (Wallin et al., 2018; Musiat et al., 2014). Nevertheless, this lack of a personalised and interactive approach that raises some concern in participants is not necessarily due to the online nature of the intervention. Face-to-face interventions have been found to be interactive in varying degrees, with the more guided and interactive ones being more effective in reducing stress (Heber et al., 2017). With the help of current technology and software such as Zoom and Microsoft Teams, interventions can be guided by real facilitators in online video environment, which includes break-out rooms for smaller group conversations. However, this approach has been scarcely tested.

Aims, Hypotheses and Research Questions

The aim of the current study was to deliver and evaluate an online version of the REP-S. Our hypothesis was that participation in the online version of the REP-S intervention would lessen perceived stress and neuroticism, while boosting resilience, and that level of engagement would correlate negatively with change in stress and neuroticism, while correlating positively with change in resilience. Furthermore, we predicted that the REP-S would be experienced as a personally significant developmental event for 80%+ of participants. Two additional research questions were posed for the qualitative analysis: Firstly, is this kind of resilience workshop considered to be meeting the needs of students in the context of the COVID-19 pandemic and its impact on studying within higher education? Secondly, how is online delivery of this kind of workshop experienced in terms of perceived positives and negatives relative to face-to-face delivery?

METHOD

Evaluation Design

The intervention was evaluated using a mixed-methods design. Quantitative data were gathered in two phases; Phase 1 was 0-24 hours before the intervention and Phase 2 was 30-35 days after the workshop. Engagement with activities between the two phases was measured at Phase 2 as a potential predictor of change in stress, resilience and neuroticism. Qualitative data on the perceived personal significance of participating in the training were also acquired, which is of complementary benefit to pre-post quantitative data, given that finding statistically significant change does not necessarily equate to the change being experienced by participants as meaningful and worthwhile (Bothe & Richardson, 2011). Qualitative brief text data on (a) the relevance of the intervention to the past year of the pandemic and its effects on studying in higher education and (b) the experience of participating in the workshop via an online delivery platform were also captured.

Participants

56 students participated in the workshop and completed the pre-and-post workshop questionnaires, thus meeting the criterion for inclusion in the final sample. The same sample was 81% female and 19% male. 4% were doing a foundation degree, 33% were first year undergraduates, 17% were second year undergraduates, 17% were third year undergraduates and 30% were postgraduates. The mean age of the sample was 26, with a standard deviation of 8.4. Students were studying on a range of degree subjects including psychology, law, history, criminology, graphic design, mathematics, education, business, midwifery, medical entomology, human resource management, nursing, social work and tourism management.

Measures and Assessments

Perceived Stress Scale (PSS). Extent of perceived life stress was measured by the 10-item version of the Perceived Stress Scale (Cohen et al., 1983). For each item, participants report how often they have been stressed during the past month using a 5-point Likert scale ranging from 0 (never) to 4 (very often). Cronbach's alpha was .88 for the Phase 1 and .86 for Phase 2.

Brief Resilience Scale (BRS). Resilience was measured via the Brief Resilience Scale (Smith et al., 2008). This comprises 6 items, for example "It does not take me long to recover from a stressful event". Items are measured on a 5-point Likert Scale of Strongly Disagree to Strongly Agree. Cronbach's alpha was .87 for Phase 1 and .87 for Phase 2.

The Big Five Inventory (BFI) Neuroticism Scale. The BFI scale for Neuroticism was used to assess the degree to which a person is prone to neuroticism. Items are scored on a 5-point Likert-scale (1-5) from Strongly Disagree to Strongly Agree (John & Srivastava, 1999). The scale ranges from 8 to 40, with higher values indicating more Neuroticism. Cronbach's alpha was .84 for Phase 1 and .83 for Phase 2.

- **Engagement with Intervention:** To assess engagement with the intervention, in the post-intervention phase, participants were asked to rate how much they have practiced the skills from each of the six workshops via a six-item scale. The exact instructions were as follows: "Please provide information below on how much you have engaged with the resilience techniques that we covered

in the workshop. Please be assured that you will receive your incentive voucher however much or little you engaged with the resilience techniques.” The six items were rated on a 3-point scale: “3. I have practised these regularly over the past month / 2. I have practised these occasionally over the past month / 1. I have not practised these at all over the past month”. The scale ranges from 6-18, and scores from participants ranged from 8-18, with a mean of 14.3 and a normal distribution.

- **Personal Significance Appraisal:** To assess the perceived personal significance of taking part in the intervention, two items were included in post-intervention assessment that have been used in every study on the REP-S so far: (1) “Participation in the resilience workshop and practice programme has been a positive learning experience for me” and (2) “Participation in the resilience workshop and practice programme has provided me with tools and techniques that I think will positively affect my development as a person during my time at university”. Responses were measured on a 5-point Likert Scale from ‘1 strongly disagree’ to ‘5 strongly agree’.
- **Open-Ended Questions:** Participants were asked to respond to the following two open-ended questions: (1) “The past year has been one of online learning and remote studying for most students due to the COVID-19 pandemic. Tell us in a few sentences how you personally think that has affected (a) the need for developing resilience in students and (b) for the role that resilience workshops such as the REP-S play in supporting this.” (2) “The REP-S was originally devised for face-to-face delivery but has been adapted to be delivered in an online format. Tell us in a few sentences anything about the online format that you think was effective, and/or any ways that you think the online delivery could be improved.”

Analysis of Qualitative Data

Qualitative data were analysed using Structured Tabular Thematic Analysis (ST-TA), which is a form of thematic analysis designed for use with brief texts (Robinson, 2021). The method can work with inductive or deductive approaches to thematic analysis; an inductive approach was selected to analyse the question responses, given the exploratory nature of the qualitative element of the study and the lack of precedent for themes. The phases of analysis are as follows: *Phase A - A Priori Theme Selection (only for deductive analyses so not necessary for the current study); Phase B - Deep Immersion in the Data; Phase C - Generating Initial Codes and Themes; Phase D - Tabulating Themes Against Data Segments; Phase E - Checking Inter-analyst Agreement; Phase F - Exploring Theme Frequencies; Phase G: Developing Thematic Maps and Diagrams; Phase H - Producing the Report.* Inter-analyst agreement following blind coding of 25 responses to each question was 79% for brief texts provided in response to both questions. Following this, the two analysts discussed the points of difference to ensure thematic agreement of 80%+.

Procedure

Students at the University of Greenwich were recruited by email. They were sent an email asking if they would like to participate in a resilience training programme and to express an interest by providing details via an online form. They were informed that individuals who completed the research questionnaires and the workshop would receive a £10 Amazon voucher. Students who expressed an interest were then sent dates for 10 workshops along with sign-up forms using Eventbrite. Students who signed up for workshops were sent the pre-workshop questionnaire 24 hours before the workshop day. The workshops were all delivered via Microsoft Teams. A REP-S day consists of six 45-min sessions with breaks in

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between and an extended lunch break. Following the day of workshops, students receive emails with homework tasks and reminders every 3 days for 30 days and are asked to practice the techniques regularly for these 30 days. After 30 days, students receive an email with the post-intervention questionnaires and a certificate of completion.

QUANTITATIVE RESULTS

Descriptive Results

In response to the closed questions about the personal significance of participating in the intervention, the frequency of distribution of participant responses is shown in Table 1. In total, 93% agreed or strongly agreed with the statement that the workshop was a positive learning experience, and 90% agreed or strongly agreed with the statement that the workshop will positively affect their development as a person. Therefore, our hypothesis that these questions would receive an 80%+ agreement was supported.

Table 1. Percent of responses to each personal significance question by rating scale point

	“Participation in the resilience workshop and practice programme has been a positive learning experience for me”	“Participation in the resilience workshop and practice programme has provided me with tools and techniques that I think will positively affect my development as a person during my time at university
Strongly agree	74	77
Agree	19	12
Neither agree nor disagree	5	9
Disagree	0	0
Strongly disagree	1	1

Inferential Findings

It was hypothesised that participants would show a drop in perceived stress and neuroticism, along with an increase in self-reported resilience over the 4-week duration of the study. To test this, given that data were normally distributed and assumptions for parametric tests were met, a paired t-test was conducted to compare the pre-intervention mean and the post-intervention mean for the three dependent variables. It was found that, as hypothesised:

- Perceived stress significantly decreased at the mean level from 32.8 to 25.5 ($t(53) = 9.02, p < .001$)
- Resilience significantly increased at the mean level from 18.7 to 21.2 ($t(52) = -4.15, p < .001$).
- Trait neuroticism significantly decreased at the mean level from 26.2 to 22.2 ($t(53) = 6.87, p < .001$)

Extent of participation in the REP-S varies according to amount of time and commitment that students give to practising the techniques they learn. Therefore, it was predicted that engagement with practising the activities over the month of the intervention would predict lower stress, lower neuroticism and higher resilience. Engagement with the intervention, as measured by combining self-reported involvement levels with each of the 6 workshop activities over the 4-week period, was negatively correlated with change in perceived stress; this correlation was in the predicted direction but was not significant ($r=-.20, p=.07$). The correlation between engagement and change in resilience was close to zero ($r = .01, p=.47$). The correlation between engagement and change in neuroticism was in the predicted direction and significant ($r=-.25, p<0.05$). Thus the hypothesis that engagement would predict change in lowering stress and neuroticism, while increasing resilience, was partially supported.

QUALITATIVE RESULTS

A thematic analysis was conducted on the responses to the two open-ended questions asked. The results of these two analyses are presented below.

Part 1: Resilience and the REP-S in the Context of the Pandemic

The first question presented to participants was: “The past year of the pandemic has been one of online learning and remote studying for most students. Tell us in a few sentences how you personally think that has affected (a) the need for developing resilience in students and (b) for the role that resilience workshops such as the REP-S play in supporting this.” The four main themes extracted from the 54 responses to this question are shown in Table 2, along with the six subthemes for Theme 1.

Pandemic-Induced Difficulties

85% of participants referred to a range of difficulties in relation to their studies and their life more broadly that had been induced by the COVID-19 pandemic and the social distancing measures taken to mitigate its effects. The most prevalent of these was *Social Disconnection Difficulties*. 30% of the sample included statements coded within this subtheme, such as comments about difficulties communicating with others, a sense of dislocation from university life, feelings of isolation and loneliness, and fears about socialising or meeting people after distancing measures have been released. An example is:

It's been much more difficult to talk to people, most of the time you're not meeting anyone face to face and when you are it's behind a mask.

The second most prevalent category of difficulty was *Online Learning Difficulties*. 20% of participants referred to this, with comments including the challenge of learning new digital skills, problems with lecturers not adapting to online learning platforms, miscommunication between staff and students, handling disruptions and distractions at home while engaging in learning activities and difficulties with concentration. An example is:

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Table 2. Themes from responses to question about the workshop’s role in the context of the pandemic year

Themes (Main Themes Numbered, Subthemes Bulleted)	Frequency of Cases in Which Theme Present (% of Total N=54 in Brackets)
1. Pandemic-induced Difficulties	46 (85%)
• A. Social disconnection difficulties	16 (30%)
• B. Online learning difficulties	11 (20%)
• C. Difficulties with stress levels and mental health	11 (20%)
• D. Self-motivation difficulties	9 (17%)
• E. Mental health difficulties	5 (9%)
• F. Difficulties due to lack of social support	5 (9%)
2. Less difficulty than normal / a time of positive challenge	3 (6%)
3. Workshop beneficial in improving coping with these difficulties	43 (80%)
4. Perceived importance of having and building resilience in the context of current difficulties	23 (43%)

Students have faced unprecedented challenges this year and the move to online learning caused uncertainty in the following areas: initial frustration at the lack of suitable wifi capabilities, especially with blended learning. Challenges on lecturers reflected in the course management - timing of assignment feedback, increased stress levels - highly recommend an adapted course for lecturers.

The third most prevalent category was *Difficulties with Stress Levels and Mental Health*. This referred to mentions of dealing with the effects of the pandemic and remote studying situation on stress and mental health that were not specific to a particular cause but were a function of the whole situation being experienced as overwhelming. An example:

As this past year involved a lot of things many people and students have never encountered before, I think we all got a bit “stuck”, felt hopeless, and thus struggled with a number of things - our mental health being at the center of that.

The fourth most prevalent difficulty theme, mentioned by 17%, was *Self-Motivation Difficulties*, which subsumes all comments about the struggles of motivating oneself, managing time and remaining self-disciplined in a remote working situation. Participants referred to how the structure of attending face-to-face sessions in normal years is essential to motivation, and removing that face-to-face element created a challenge for keeping motivated:

Being on your own and in isolation make it really hard to stay in control and it makes it very easy to become unmotivated.

Finally, 9% referred to *Difficulties due to Lack of Social Support*, which included comments about feeling unsupported and unable to reach out to staff or other students for help, due to the remote studying environment:

Students no longer have the informal contact with other students and tutors this can mean that small issues are not discussed and have the potential to build up and cause stress.

Reaching out for support is more difficult these times when everyone's concern is the pandemic.

Less Difficulty Than Normal / A Time of Positive Challenge

Three participants mentioned that the year of the pandemic had been a time of either lessened stress or one that was predominantly about positive challenge rather than problematic stress. For example:

I think it's been less challenging to have all of my university time at home, because I have been able to manage my time more efficiently. Working from home has meant I don't feel pressure to socialise as I may if I were on campus, as I have a busy lifestyle already, and would find additional pressures unfavourable.

Perceived Importance of Having and Building Resilience in the Context of Current Difficulties

This theme, mentioned by 43% of participants, subsumes all references to the importance of building resilience in the context of having to adapt to the challenges of the pandemic and remote studying. These include mentions of the importance of adaptability, the importance of self-development in difficult times, and so on. For example:

Developing resilience in students to deal with adverse situations is crucial, especially at times like these. In my opinion, the need for skills like resilience has skyrocketed in the past year.

I believe people, and especially students under so much stress as we are, need to be equipped with resilience and positive reframing techniques to push through the challenges and understand our emotions better, so that we can respond and adapt, rather than react and break.

Workshop Beneficial in Improving Coping With These Difficulties

80% of participants stated that they felt that participating in the REP-S was beneficial in helping them handle the complex difficulties and challenges of the pandemic. A number also mentioned that they feel it would be beneficial to make it more widely available. Example quotes that referred to the beneficial nature of the workshop are as follows:

The past year has been, from personal experience, extremely detrimental to student's mental health. The lack of in-person social interactions and lack of job opportunities has made many young adults lose hope for their future. Developing resilience through the REP-S resilience workshops is a great way to offer support and help people build the skills they need to help improve their mental health and gain more confidence in themselves.

Online learning and remote studying have been difficult and I think it made people realise how important good mental health is. Developing resilience in students to deal with adverse situations is crucial,

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especially at times like these. In my opinion, the need for skills like resilience has skyrocketed in the past year and having access to workshops like REP-S is invaluable.

Part 2: The Online Delivery of the Rep-S: Evaluative Comments

The second open-ended question participants were asked to respond to was: “The REP-S was originally devised for face-to-face delivery but has been adapted to be delivered in an online format. Tell us in a few sentences anything about the online format that you think was effective, and/or any ways that you think the online delivery could be improved.” Table 3 shows the 9 themes extracted from the response data for this question.

Table 3. Themes from responses to question about the online delivery format

Theme	Frequency of Cases in Which Theme Present (% of Total N=53 in Brackets)
1. Online delivery as promoting participation: convenient and accessible	6 (11%)
2. Comfort, engagement and perceived safety of the online environment	11 (21%)
3. Effective communication and interaction facilitated by online delivery	24 (45%)
4. General effectiveness comments	23 (43%)
5. Positive comments about structure, duration and breaks	13 (26%)
6. Structural limitations or issues	7 (13%)
7. Attention difficulties experienced	4 (8%)
8. Communication and interaction difficulties due to online format	8 (15%)
9. More follow-up information needed	2 (4%)

Positive Comment Themes

84% (76/91) of comments about the online format of the workshop were positive. These were categorised into five themes. The first theme, mentioned by 11%, was “*Online delivery as promoting participation: convenient and accessible*”. This included comments about how an online format encourages participation for students who are unable to participate in person and who find the prospect of attending in person to be problematic for a variety of reasons. An example quote within this theme was:

I thought the online delivery was cracking. I personally preferred it; removed a lot of the motivational disincentives to attending, got to do it in a comfortable and safe environment where I wasn't worried about looking silly during power poses or breathing exercises, and found the leaders really compassionate.

The second theme, *Comfort, engagement and perceived safety of the online environment*, mentioned by 21%, pertained to sense of ease and comfort of being at home for the workshop and the sense of not being visible when practicing the breathing exercises and meditation, which helped to overcome self-consciousness. An example quote was:

I think the online format was effective as it was more personal doing the activities like the breathing exercises, for example, from the comfort of my own home.

The third theme – *Effective communication and interaction facilitated by online delivery* – was the most prevalent, with 45% of participants mentioning it. This theme subsumed all comments that related to how online delivery, and the use of breakout rooms, enhanced communication and interaction rather than undermining it. These included the benefits of partial anonymity and turning cameras off.

The way the online workshops were delivered was just as great as face-to-face. We were still able to discuss in small groups and it removed the need to go to university to have them delivered face-to-face. We were still able to interact with each other and learn different opinions.

Being online means that students feel more willing to speak up and share their experiences.

I also enjoyed the breakout rooms and being able to talk to certain individuals from the group in-depth.

43% of participants mentioned “General effectiveness comments”. These were non-specific positive evaluations about participation in the workshop that did not give reasons for the evaluation. For example:

I think the full-day workshop was a success despite the online delivery

It was perfect.

26% of participants commented on the positive structure of the event. The day is fairly intensive, with six 45-minute sessions in a day, but a number of participants stated that due to the regular breaks, this was not a problem:

Frequent breaks were good to break up the day to enable more focus and enjoyment of the workshop.

Themes About Problems and Issues

16% (15.91) of comments about the online format of the workshop mentioned perceived problems and issues for improvement. 13% of participants mentioned *Structural Limitations and Issues*. These included the need for additional sessions, being too long, a need for the day to be broken down, more groupwork, and changing breakout rooms to ensure that each breakout room has different people, rather than sample subgroup of participants for each session. For example:

I would like to see more group work during the workshop and if that is possible short 121's with the workshop leader.

8% mentioned *Attention Difficulties Experienced*: the difficulty of paying attention for the duration of the session due to the online format and eye fatigue:

It was effective but very long so easy to get distracted.

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Subsumed within the theme of *Communication and interaction difficulties due to online format*, 15% reflected that the online format makes communication more challenging, for example:

The social interaction was nowhere near as great as it could have been when delivering the workshop live, however the knowledge and semi structured flow made it still enjoyable.

Finally, in *More Follow-Up Information Needed*, 4% of participants expressed the view that provision of more info via factsheets or handouts would be beneficial. For example:

I'd have liked to have maybe had a printable worksheet or two based on the content of the presentations, but that's just because I find it more difficult to both pay attention and take full notes when talks are online rather than in person.

DISCUSSION

The aim of the present study was to deliver and evaluate an online version of the REP-S. In line with our predictions, it was found that taking part in the REP-S had beneficial outcomes in terms of decreasing stress and trait neuroticism and increasing resilience. This supports previous randomised control trial research on the REP-S showing that participating in a brief resilience intervention was associated with significantly decreased perceived stress, trait neuroticism and enhanced self-esteem over a period of one month (Robinson et al., 2021). The quantitative findings are also in line with previous studies on other resilience interventions showing an improvement in resilience scores post-intervention in a sample of university students (Steinhardt & Dolbier, 2008) and nurses (Chesak et al., 2015). This further supports the idea of resilience being a malleable trait that can change following intervention activities or self-development work (Luthar, 2000). The quantitative results showed that there was a significant decrease in perceived stress, lending further support for the role that interventions can play in helping students to effectively lower stress levels, especially within the current rise of psychological stress experienced among this population. While these findings do not have the benefit of being relative to a control group, they are aligned with previous findings, and the change found in neuroticism is contrary to what one would expect of a period of a month without intervention (Cobb-Clark & Schurer, 2012), hence assuming that the change in self-reported neuroticism is a function of participation in the intervention is a justifiable inference.

The qualitative analysis found that students have experienced a range of complex studying-related difficulties due to the pandemic, including those that relate to social disconnection, not feeling supported, feeling demotivated and struggling with online learning. 80% of participants were explicit that the workshop was an important intervention at this time at helped to address the difficulties there were experiencing. Comments on the online format included a range of positives and negatives, with the positives (84% of comments) being far more prevalent reports than negatives (16% of comments).

The workshop is only one part of the intervention. Equally important is the month-long practice period with regular email reminders to instantiate new skills, habits, and ways of coping. The use of follow-up emails during the practice period was perceived positively by participants, supporting previous research indicating the useful role that reminders play (Hudson, Briley, Chopik & Derringer, 2018). Despite the mixed findings in relation to the effectiveness of online interventions (e.g. Mayor-Silva et al., 2021),

the findings from the qualitative accounts in the current study shed light on the importance of creating an effective resilience intervention that is accessible online, with many students suggesting that this is preferable to a face-to-face format. This also highlights the value of including personal significance as an additional source of data, not least because it is now acknowledged as an important complement to statistical significance (Bothe & Richardson, 2011), but also because such interventions such as the REP-S aim to sow seeds of knowledge and awareness for future developments. This is particularly relevant in the context of the current pandemic, where there has been a major shift to online learning and access to resources. Increasing access to online interventions, therefore, can aid in improving technology and digital literacy. Overall, the findings from the quantitative and qualitative data suggest that the workshop was experienced as a generally positive and beneficial experience and that the transfer of the REP-S to an online format was successful. Indeed, the results suggest that online delivery has many benefits to face-to-face delivery and that the relative merits of the two should be the continued focus of research.

Whilst notable changes were found in the direction predicted for pre- and post-intervention self-reported resilience, perceived stress and neuroticism scores, the findings should be reviewed with caution. Due to logistical constraints that pertained to participant access and the restrictions of the COVID-19 pandemic, the design of the current study did not involve a control group. Therefore, mean-level changes in the variables of interest are not indicative of a causal link. Despite this, however, the finding that lower perceived stress and neuroticism correlate with higher intervention engagement over the practice period month is important, as it suggests that a successful outcome from the intervention is a function of how much participants practise the skills and techniques they have learnt through the 4-week practice period. However, although this fits with our prediction, as with the mean-level findings we cannot infer causality from this relationship. It may be that the causal path is at least in part in the other direction; that intervention engagement is prevented by higher levels of stress.

The prediction that trait neuroticism scores would decrease over the course of the intervention was supported in the current study. Such changes would not be expected over the course of a month without an intervention, suggesting that the observed change in mean scores is a direct function of the intervention itself. Indeed, previous research has consistently indicated that neuroticism and resilience are related to affective states, with neuroticism being one of the strongest predictors of negative affect (Howell & Rodzon, 2011). Neuroticism, therefore, is a psychological trait of considerable importance for students in higher education, because it is strongly linked to a number of adverse outcomes and is inversely associated with several positive life outcomes, including self-esteem (Watson, Suls & Haig, 2002) and resilience (Campbell-Sills, Cohan & Stein, 2006). Future research should explore this relationship further with the use of a control group as well as collecting follow-up data at several points in order to examine the long-term efficacy of a brief resilience intervention.

The study has various limitations that call for future research to be addressed. Firstly, the quantitative evaluation was based on self-report data. Getting data from third parties on a person's behaviour, direct behavioural data, of physiological data that is a reliable marker of stress, will be an important addition to this body of research going forward. Secondly, the evaluation was carried out over the course of one month, with a two-phase design. Further research will benefit from follow-up phases that assess whether the changes in stress, resilience and neuroticism are ephemeral or enduring. Thirdly, the design included an intervention group but no control group, as this was not viable within the resource base allocated to the project. The aim in subsequent studies will be to compare change in the intervention group with a control group. Fourthly, the research was conducted at one university, but to establish the generalisability of the intervention's efficacy, research across multiple institutions will need to be conducted. This is

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the next step for the REP-S; we are planning implementation and evaluation at universities in the UK, Ireland and India.

In conclusion, the results from the present study have practical implications for the cultivation of resilience via training programmes at higher education institutions. The pre-post quantitative findings, personal significance ratings, and qualitative feedback all point towards wide-ranging benefits of participating in the REP-S, and thus to its potential for wider dissemination. Given the ambiguous previous findings pertaining to remote interventions, the online delivery was surprisingly successful. Our data suggest that this is due in part to the fast-growing digital literacy and familiarity with remote learning technologies that has occurred during the COVID-19 pandemic. The era of online resilience training may have just begun.

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APPENDIX

Table 4. The three elements and six workshops of the REP-S

Section	Activity
<p>1. Psychophysiological (mind-body) Resilience</p>	<p>1a. Breathing Techniques</p> <ul style="list-style-type: none"> • Introduction to the physiology of breathing, the effect of breathing on stress and vice versa • Introduce and practise three breathing techniques; belly breathing, slow breathing and resistance breathing. <p>1b. Mindfulness Meditation</p> <ul style="list-style-type: none"> • The background and theory of mindfulness is introduced. • A 5-minute mindfulness meditation is done • A 5-minute guided relaxation is done • Participants get to discuss their experience of the breathing and meditation in break-out rooms
<p>2. Cognitive Resilience</p>	<p>1a. Positive reframing, including reframing beliefs about failure</p> <ul style="list-style-type: none"> • Introduce the distinction between event and interpretation, and introduce common “negative frames” • “Frame-flip stories” are introduced and discussed, in which the frame around an event changes over time as outcomes change • The concept of fear of failure is defined and its empirical effects presented. Students share the words they associate with failure and create a word cloud. • Discussion of how failure can lead to positive change and learning. Failure associations exercise is repeated, focusing on positive words that relate to good outcomes that perceived failure can bring. <p>1b. Goal Setting and planning</p> <ul style="list-style-type: none"> • Goal mapping: Participants are asked to create a ‘mind map’ of their goals for the next month. • Goal scheduling: Participants are given guidance on how to create a schedule of goals and plans using a timetable or planner to ensure that goals have a clear timeframe and prioritisation • SMART goals: The theory of SMART goals is introduced (specific, measurable, attainable, realistic, time-bound) • Effective planning: Techniques for positive planning introduced, including using written time-linked checklists and linking plans clearly to goals.
<p>3. Social Resilience</p>	<p>3a. Effective Help-Seeking</p> <ul style="list-style-type: none"> • A brief discussion on the various forms of help-seeking behaviour and the paradox of help-seeking (people who need help tend not to reach out for it). • Exercise: Compose a list of people who might be possible sources of help during their time as a student and another list describing the potential barriers to seeking help and discuss in groups. • Discussion of how social media relates to help-seeking; how it can be a source of social support, but also undermine social support. <p>3b. Assertiveness</p> <ul style="list-style-type: none"> • Theory of assertiveness presented, with examples • Assertive body language presented and discussed • Good ways of saying “no” presented and discussed • A 4-point plan for responding assertively to challenging social situations presented. • Two example scenarios are presented for participants to explore possible assertive solution to.
<p>Month of practice</p>	<ul style="list-style-type: none"> • After the workshop, participants are sent a different email every three days for 30 days, with tips and reminders for practising the techniques they have learnt.

Chapter 4

Digital Interventions for Dual Diagnosis

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ABSTRACT

Dual diagnosis is a leading contributor of disease burden worldwide. Whilst integrated treatment is recommended, there are considerable barriers that may inhibit access to integrated care, including a lack of training and resources. Digital interventions may enable access to support, providing a space for people to engage in treatment when they need it most. This chapter reviews the current literature on the efficacy of digital interventions for dual diagnosis. Computer-based interventions were effective at improving dual diagnosis outcomes; however, the combined effect of computer-based interventions and therapist support was found to be more effective than the effects of computer-based interventions alone. The evidence-base around smartphone applications is lacking, and there are perceived difficulties with this technology in addressing the complexity of issues faced by people with dual diagnosis. Future research should include standardised terminology to describe techniques used within interventions and consider a variety of research methods to understand implementation.

INTRODUCTION

What Is Dual Diagnosis?

The World Health Organisation (2010) has defined dual diagnosis as “comorbidity or the co-occurrence in the same individual of a psychoactive substance use disorder and another psychiatric disorder”. The term “dual diagnosis” is not without critics (e.g. Bhalla & Rosenheck, 2018), as this may not sufficiently capture the complexity of issues faced by individuals. Those with dual diagnosis are not a homogenous group, and this reflects a broad array of psychological disturbance, including anxiety, depression,

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schizophrenia, bipolar disorder, and obsessive-compulsive disorder, in combination with various types of substance use disorders ranging from tobacco to opioid dependence (Nigam et al., 1992; Ridgely et al., 1990). Furthermore, a person with dual diagnosis can present with multiple conditions in terms of mental health, substance use, and physical health and lifestyle difficulties (Bhalla & Rosenheck, 2018) and these conditions may even exacerbate each other (Rorstad & Chechinski, 1996). It has been argued that comorbidity (Rorstad & Checkinski, 1996) or even multimorbidity (Bhalla & Rosenheck, 2018) may more accurately define this condition. Even though the term dual diagnosis is used here to describe those with co-morbid mental health and substance use difficulties, it is important to acknowledge that these conditions do not typically occur in isolation and the term dual diagnosis still persists in the literature and clinical practice.

Substance use and psychological disorders coexist at a higher than chance level in the population, and this is particularly the case in patients who are being treated for either mental health or substance use alone (Drake & Wallach, 2000). Weaver et al. (2003), showed that between 75% and 85% of individuals attending substance misuse treatment facilities also have psychiatric disorders. In addition, about half of those who are diagnosed with mental health disorders are likely to experience substance use disorder at some point in their lives (Kessler, 2004). Epidemiological evidence suggests that psychological disorders typically have an earlier onset than substance misuse (Kessler, 2004) with psychiatric disorders usually developing in middle childhood to adolescence, and substance use disorder appearing in late adolescence or early adulthood (Soderstrom et al., 2005). This suggests that in some cases, substance misuse may be a consequence of psychological disorder, however it may be more complex than it seems.

Boden and Fergusson (2011), identify three trajectories by which dual diagnoses can develop. An individual could develop a psychiatric condition that then leads to substance use as a form of self-medication, or in response to heavy prescribed psychotropic medication use. An individual could develop a problem with substance use, that then leads to psychiatric conditions, for example alcohol and major depressive disorder. Alternatively mental health and substance use problems may be causally related and simultaneously increase the risk of each other via a feedback loop. Kessler, (2004), argues that there is a link between the types of substances abused and characteristics of the psychiatric disorder. For example, substance use disorders are more strongly associated with disorders such as bipolar depression, attention deficit hyperactivity disorder, conduct disorder, and antisocial personality disorder, which are considered externalising types of psychiatric disorder (Kessler, 2004). In particular, individuals with mood disorders typically are drawn to substances which have antidepressant effects, and those with anxiety disorders are drawn to substances with anxiolytic effects (Schulte & Hser, 2014). This suggests that individuals might be seeking self-medication to relieve symptoms of their psychiatric condition. However, it can be argued that it might not be as simplistic as this, as substance users typically abuse more than one type of substance dependent on availability (Riggs et al., 2008).

Individuals who suffer with both psychiatric disorders and substance use disorders tend to have more severe symptoms, that are more persistent and more resistant to treatment than those with just a single diagnosis (Kessler, 2004). Substance use has been shown to exacerbate symptoms of psychiatric conditions resulting in hospitalisation, poor prognosis and suicidality (Ridgely et al., 1990). The severity of psychiatric symptoms has been shown to predict successful responses to treatment, with those with the most severe symptoms being indicative of poor treatment outcomes (Case, 1991). Dual diagnosis can exist without formal diagnoses as substance users may withhold information about their substance use, due to the legality of such behaviour and fear of punishment for illegal activity (Mueser et al., 2016). In addition, some symptoms of substance use can mimic psychiatric symptomology such as psychosis

and alcohol withdrawal (Riggs et al., 2008), making it difficult for health professionals to determine the nature of their complex disorders and providing appropriate treatment options (Kessler, 2004).

Traditional Treatment of Dual Diagnosis

Dual diagnosis patients require a more structured approach to treatment than a typical mental health treatment centre provides, due to the complex interplay between psychotropic medications and drugs of abuse (Case, 1991). The National Institute for Health and Care Excellence (NICE, 2016) developed guidelines for the treatment and rehabilitation of patients with dual diagnosis. They suggested that services need to take a multi-agency approach to treatment for this group. However, at present the treatment options appear to range from serial treatment of each disorder in turn, parallel treatment of respective disorders in two types of treatment centres, or integrated settings where mental health is treated alongside substance use. Whilst serial and parallel service models attempt to treat both conditions, individuals with dual diagnoses may struggle to obtain treatments for both conditions, due to mistakes or delays in referrals, availability of treatment options, or the interaction between the co-morbidities making treatment for one difficult (Priester et al., 2016). This can cause extra burden for the individual accessing single services rather than joined up integrated care (Ridgely et al., 1990), therefore an integrated approach may be the most beneficial to patients.

Treatment programmes that consider all aspects of dual diagnosis, or include substance use disorder therapy as an adjunct to mental health services, have had some success in helping the patient to recover (e.g. Kikkert et al., 2018; Moggi et al., 2002). These programmes typically contain prescription medications, group substance use therapy and psychological therapy. However, there tends to be a high attrition rate, with as low as 22% of patients remaining in treatment for over a year (Nigam et al., 1992). Individuals with dual diagnosis pose unique challenges for treatment, as their condition is typically more severe with restrictions on pharmacological options for treatment due to the potential exacerbation of the substance use disorder (Kessler, 2004). As a result, individuals who have a dual diagnosis tend to have poorer outcomes, when their treatment programme does not address the substance use element of their illness (Horsfall et al., 2009). It is argued that poor therapeutic outcomes in dual diagnosis patients are a result of continued substance use exacerbating psychiatric symptoms, leading to chronic mental health conditions (Case, 1991).

An integrated treatment approach is the most effective method of treating dual diagnosis patients, however these are not standardised at present (Morisano et al., 2014). Therefore, it is essential that the resources of mental health treatment programmes and alcohol and drug use services are combined, in the treatment of these patients. Treatment for individuals with dual diagnosis is complex and requires multifaceted services to support their recovery (Phillips et al., 2010). A variety of treatments and approaches may be needed for a dual diagnosis patient, with longer term management being re-evaluated and adjusted in accordance with the needs of the individual (Phillips et al., 2010).

In addition, there are systemic barriers that can inhibit the ability of services to provide integrated care. Watkins et al. (2021), examined the perceptions of mental health care providers, staff, and administrators, of the ability to provide pharmacotherapy for alcohol use disorders alongside mental health difficulties in their organisations. They found that there was a perception of organisational constraints such as time, staffing and workloads, leading to the perception that mental health clinics are not able to provide this kind of dual treatment. As a result, individuals with dual diagnoses struggle to obtain treatments for both substance use and psychiatric conditions, which can cause extra burden for the individual

accessing single services, rather than joined up care (Ridgely et al., 1990). Due to the difficulties and barriers faced by individuals with dual diagnosis, specifically within face-to-face settings, the objectives of this chapter are to explore the literature around the efficacy of digital interventions for dual diagnosis.

BACKGROUND

Support for Dual Diagnosis Service Users

Individuals with dual diagnosis face some significant life challenges. They are typically more at risk from suicide, violence, criminal exploitation and infections associated with drug use and risk behaviours such as HIV, Hepatitis B and Hepatitis C (Lowe & Abou-Saleh, 2004). They experience frequent episodes of hospitalisation. However, mainstream mental health services tend to have staff who lack specific training and skills in dealing with substance misuse and lack capacity to care for these individuals, who experience the unique challenges of dual diagnosis (Lowe & Abou-Saleh, 2004). Furthermore, these individuals tend to fall through the cracks when it comes to social care, and housing with limited access to care in the community or residential treatment care (Staiger et al., 2011). Relationships with family and non-substance using friends, is also crucial for recovery and rehabilitation (Groh et al., 2007). However, a majority of individuals with dual diagnosis report feeling unsupported by friends and family, as these relationships may have broken down due to the disruptive nature of the symptoms of their complex condition (Staiger et al., 2011). Therefore, it is important that care outside of treatment centres is better coordinated and provides holistic care addressing employment, housing, and relationships (Tiet & Mausbach, 2007).

One way that relationships could be enhanced and facilitated is through group support. Indeed, research has shown that patients feel they need to talk about their issues, to make sense of what is happening in their mind (Van Zyl & Geyer, 2019). Group therapy and support is considered as an essential component of treatment and service users report that this type of support helps them normalise and validate their experiences (Van Zyl & Geyer, 2019). Being engaged in social support has been shown to assist with reducing and eliminating substance use and improving mental health outcomes (Haverfield et al., 2019). Additionally, this group of patients often report a lack of social support available to them outside of treatment programmes, leading to social isolation and loneliness, and the temptation to reconnect with substance using friends and ultimately relapse (Davis & O'Neill, 2005). Traditional face-to-face support groups may work for some individuals, however due to the persistent stigmatisation of both mental health difficulties and substance use, some service users may be reluctant to talk to others about these difficulties in a face-to-face environment (Roush et al., 2015). There may also be logistical challenges in accessing these specialised groups such as local availability, cost of services, and the restriction of meeting up at specific times, meaning that patients may not get the access to the support that they feel they need (McGovern et al., 2014).

Digital technologies have advanced exponentially in recent years and may provide a unique opportunity to reach populations who may experience barriers to traditional forms of organised social support (Bradbury et al., 2014). There has been a growth in the number and types of resources available online to provide support to individuals with dual diagnosis (Dugdale et al., 2019). These range from information on treatment options, online therapeutic programmes, and online support forums, Facebook groups, Twitter, and Instagram support groups, providing mutual aid and social support for sufferers (Dugdale

et al., 2016). These 24-hour access, asynchronous support groups provide access to support as and when a person feels they may need it (Coulson & Coulson, 2019). Individuals can read through posts and information at leisure and ask questions in an anonymous way which can be beneficial, particularly with stigmatising conditions (Coulson, 2005). It provides a sense of a safe meeting place, where people can discuss specific issues relating to their diagnosis symptoms, treatment and living with and recovering from these conditions (Bartlett & Coulson, 2011). As such digital online support communities, may play a vital role in overcoming logistical barriers to benefitting from the effects of social support, on treatment outcomes and recovery.

DIGITAL INTERVENTIONS

Computer-Based Interventions

Computer-based interventions (CBIs) relate to digital support or support received online. This may include, but is not limited to, resources delivered via websites, email, or software including via USB drive or CD-ROM. These resources may be delivered with varying degrees of support, from full healthcare professional support alongside use (guided intervention), minimal support, or no support (self-help). Any support that is offered may be delivered synchronously (for example, guiding the person through the programme in face-to-face or online settings) or asynchronously (for example, checking in with the service user via email). Similarly, content access can differ between simultaneous access, all parts of the intervention can be accessed in any order, and sequential access, where the programme is completed using a linear structure. In keeping with the digital theme, many participants from the studies reviewed, were recruited via online methods, including websites, email and social media advertising (e.g. Brief et al., 2013; Sundström et al., 2016; Tait et al., 2015). Although offline recruitment, including referral through patient and residential services, was also typical (e.g. Acosta et al., 2017; Elison et al., 2017)

There is no set way of delivering a CBI, however providing a wide range of ways in which to access support, may be generally beneficial. Different types of intervention may work best for different people, as well as different intensities of healthcare professional support (Ho et al., 2016). Indeed, for dual diagnosis specifically, there is no standardised treatment approach, although it is recommended that treatment is integrated where possible (Morisano et al., 2014). Within the literature also, there is a noticeable distinction between CBIs for dual diagnosis and those primarily targeting either mental health or substance use, with secondary consideration given to the other.

Populations targeted for dual diagnosis interventions include veterans, young adults, those receiving treatment for substance misuse or mental health difficulties respectively, and those in the general population experiencing dual diagnosis. For veterans, CBIs typically focused on Post-Traumatic Stress Disorder (PTSD) specifically and its co-morbidity with substance misuse difficulties. Techniques from Cognitive Behavioural Therapy (CBT) were commonly employed, however there were differences between interventions as to specific strategies used. For example, Acosta et al. (2017), focused on challenging negative thoughts, relaxation, and assessment with feedback. When compared against primary care, this intervention (alongside primary care treatment as usual), led to reductions in substance use (significant change for alcohol and non-significant reduction for drug use), but no effect was found for PTSD symptoms. Contrastingly, Brief et al. (2013), included techniques related to readiness to change and evaluating the pros and cons of this, developing action plans to cope with risky situations and setting

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behavioural goals. This led to a reduction within groups for both alcohol outcomes and PTSD symptoms post-treatment. However, the strength of the intervention may lie in something else rather than just the techniques used. Although primarily targeting alcohol reduction, a brief CBI which drew upon on assessment and normative feedback, reported significant within group improvements to depression and alcohol use (Cucciare et al., 2013a, 2013b). Again however, there was no difference reported between the intervention and the comparison (health information). Ultimately, CBIs here may be as useful as treatment as usual and offer respective improvements to dual diagnosis symptoms.

For young adults, there appears to be a difference between therapeutic techniques employed within CBIs and the relative effectiveness of these. Again, CBIs using CBT-based techniques, including assessment, self-monitoring, psychoeducation, action planning and goal setting were effective at reducing symptoms of depression and alcohol use (Deady et al., 2016). Deady et al. (2016), found these outcomes were maintained at 6 months follow-up in the 18-25 year olds tested, when compared against a healthcare website used as a control. Conversely, a CBI using a social norms approach, whereby feedback was given and used to compare and highlight drinking norms, demonstrated no significant effects for alcohol use or co-morbid depressed mood (Geisner et al., 2015). This contrasts with the above research on veterans by Cucciare et al. (2013a, 2013b), who used similar normative feedback techniques, and found significant within group reductions to co-morbid mental health and substance use symptoms. Whilst there is a clear difference between the groups tested, this may further reflect differences between additional support received. For example, veterans were recruited from primary care settings, after presenting to their healthcare provider as having substance use difficulties. In contrast students were recruited on a large scale and then tested for eligibility using dual diagnosis symptomatology measures. As veterans were already actively seeking treatment, this may indicate a greater level of treatment readiness and motivation to engage with support, which are associated with better treatment outcomes generally (DiClemente et al., 2008).

Indeed, for those already receiving treatment for their substance misuse or mental health difficulty, several programmes can be seen to target co-morbidities with significant results. For example, Glasner et al. (2018) reported significant within participant reductions to depression and cannabis use for patients in psychiatric care, using a CBI which drew upon CBT and Motivational Enhancement Therapy. Similarly, Wolitzky-Taylor et al. (2018), drew upon a CBT-based intervention to target anxiety and substance misuse for those receiving substance misuse support. Significant reductions were found for both outcomes reported post-intervention and at 6 months follow-up, compared to usual community-based care for substance misuse. This CBI was therapist directed and online sessions were used as a guide, for substance misuse counsellors to navigate therapeutic material and increase treatment fidelity. Interestingly, CBI research by Elison et al. (2014, 2015a, 2015b, 2017), has investigated the impact of their intervention within both mental health settings (Improving Access to Psychological Therapies – National Health Service England) and community-based substance misuse settings. As above, this intervention drew upon CBT-based techniques, including psychoeducation, feedback, cognitive restructuring, relapse prevention, and goal setting. This demonstrated significant within group reductions to mental health and substance misuse post intervention. Whilst therapist directed support is recommended for this intervention, the impact of this was not clear, as the CBI can be used as self-help and the research does not differentiate between these conditions. Overall, it would be interesting to ascertain the added impact of therapist support, and receiving concurrent care for difficulties, alongside accessing CBIs.

The comparative impact of therapist support was investigated by Kay-Lambkin et al. (2009, 2011, 2012). Using a CBT and Motivational Interviewing (MI) CBI, including assessment feedback, psycho-

education, and goal setting to target depressed mood and substance use, the researchers found that the CBI was as effective as therapist support at 3-month follow-up compared against person-centred treatment (Kay-Lambkin et al., 2011, 2012), and at 12 months follow-up for mental health and substance use outcomes, compared against brief intervention (Kay-Lambkin et al., 2009). It is worth noting that participants recruited for these studies, engaged in research-based treatment within study clinics. Although they were recruited from a wide range of settings, including outpatient substance misuse, primary care, and mental health settings, participants could also self-refer from the general population. Again, the impact of concurrent treatment and how this affects motivation, engagement and overall therapeutic outcomes cannot be ascertained.

Further research using just self-referral via social media advertising for recruitment, yielded non-significant findings. Batterham et al. (2018), drew upon other CBIs to create their programme, drawing upon CBT, MI and Acceptance and Commitment Therapy (ACT) techniques, including specific behavioural activation, cognitive reframing, problem solving, mindfulness psychoeducation, and social norms, to target mental health, suicidality, and substance use. Although there was a within participant reduction on outcome measures, differences were non-significant when compared against an attention control (healthcare information website). The intervention initially set out to target young people but opened recruitment up to adults of any age. It is questionable whether the content of the intervention was therefore tailored correctly to engage all adults, given the importance of tailoring approaches to increase engagement (Lustria et al., 2009, 2013). Furthermore, there is less control over who accessed this intervention and their eligibility. For those who have been directly referred to treatment, or who complete their treatment within a relevant healthcare service, outcomes seem to be much improved. This is supported by literature which would suggest that people already engaging in treatment, whether concurrently or receiving a referral via services to engage in digital health (indicating that health concerns are known to a healthcare professional), may already demonstrate greater motivation to change (DiClemente et al., 2008). Moreover, individuals who are less motivated to engage in treatment may benefit from increased support, especially at the early stages of their recovery (DiClemente et al., 2008), and face-to-face support or interaction with a therapist alongside CBIs may be of greater benefit for these individuals.

In addition to the CBIs targeted at adults with dual diagnosis, there is evidence evaluating the efficacy of CBIs for dual diagnosis in children. Compared to health information control and the effect of online interventions for substance misuse or mental health respectively, combined online dual diagnosis support resulted in reduced drinking, reduced mental health symptoms, and increased knowledge of alcohol and cannabis (Teesson et al., 2020). This intervention drew upon CBT-based techniques, including psychoeducation, and includes both online and offline components. This education was delivered via the internet, and activities and discussion delivered by a trained teacher within a classroom setting. Due to the interactive element conducted outside of the online setting, the relative impact of this intervention as computer-based support is unclear, other than providing an element of fidelity between groups over time. Generally, the evidence for use of CBIs for dual diagnosis within this population is limited. Furthermore, as the purposes of interventions here are primarily preventative, it may be necessary for interventions of this type to include more opportunities for discussion and knowledge building (Marsch & Borodovsky, 2016).

To summarise some of the research into CBIs primarily targeting mental health, with substance use considered as a secondary outcome, these interventions mainly resulted in reductions to mental health (Levin et al., 2017; Lewis et al., 2017; Musiat et al., 2014), with few indicating reductions to substance use (Billings et al., 2008). The overall ratio of mental health to substance use interventions for co-morbid

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symptoms also favoured substance use treatment as a primary outcome. Comparatively, CBIs primarily targeting substance misuse report significant reductions to substance misuse and mental health outcomes compared against waitlist control (Boß, 2018; Postel et al., 2010, 2015; Tossmann et al., 2011) and psychiatric inpatient care (Rupp et al., 2012), but not against substance use treatment support (Tiburcio et al., 2018; Wilson et al., 2015). There is also an indication here of the added benefit of therapist support, as significant reductions in substance misuse have been found between groups for CBIs with therapist support compared against the effect of the CBI alone (Schaub et al., 2015; Sundström et al., 2016).

Overall, CBIs are generally effective at treating symptoms of dual diagnosis, and in some cases, may even be as effective as therapist support (e.g. Kay-Lambkin et al., 2009, 2011, 2012). However, CBIs conferred greater benefits to those who had been referred from additional healthcare settings. On the whole, individuals may benefit from receiving a combination of online and offline support. Furthermore, where dual diagnosis interventions are not available, service users are more likely to benefit from substance misuse interventions, than mental health focused CBIs.

Smartphone Applications

Healthcare interventions can also be delivered via applications ('apps'), software for smartphones. Reviews suggest that these typically demonstrate high acceptability and most include some element of behaviour change theory (Payne et al., 2015; Zhao et al., 2016). Furthermore, with the accessibility and mobility of smartphones, healthcare apps may become essential in engaging with healthcare and receiving support from practitioners (Harrison & Baker, 2018).

Despite the proliferation of smartphone technology alongside the ever-growing development of healthcare related apps, there is limited research around the utility of app-based support for dual diagnosis. Rizvi et al. (2011), used Dialectical Behaviour Therapy, including assessment, pros and cons for action, and emotion regulation techniques within their app, targeting Borderline Personality Disorder and substance use. This pilot intervention was deemed acceptable and over the short-term use of the app (10-14 days), participants reduced their urges to use substances, reductions in intensity of emotion related to distress, and reductions in depression and distress overall. Attrition rates for online interventions is typically high (Nguyen et al., 2004), and this short-term use may push people to engage during this time, with greater adherence typically reported at the beginning of an intervention (Heron & Smyth, 2010). However, the longer-term value of the app is yet to be ascertained, as is the benefit of the app beyond the pilot testing.

Regarding dual diagnosis, the nature and functionality of apps generally may impact on the research conducted within this area. Apps are typically seen as generic and as such may not match or support the complexities faced by people suffering from dual diagnosis, including the need for peer support and worries around an app exacerbating symptoms (Harrison & Baker, 2018). Interestingly, participants in the intervention conducted by Rizvi et al. (2011), were already accessing DBT-based support within outpatient settings alongside testing the app. Therefore, participants were also receiving face-to-face support with a practitioner alongside others experiencing similar difficulties. This potentially overcomes some of the reported limitations and concerns with apps for dual diagnosis and again highlights the benefit of online and offline support.

Commonalities Between Computer-Based Interventions and Smartphone Applications

Digital health technologies provide opportunity for self-help through engaging with these resources on an individual level, and empowering people to take control and ownership over their own recovery. 'Recovery capital' is the sum of resources at one's disposal to progress in recovery and ability to develop the skills needed to maintain this (Best & Laudet, 2010). Human capital for example relates to personal recovery resources, including health, skill development and values (Cloud & Granfield, 2008). This can provide an understanding of the utility of digital health in supporting acquisition of positive and therapeutic tools and resources to support recovery. Contrastingly, another area of recovery capital is social capital, which relates to resources gained through social support and relationships (Cloud & Granfield, 2008). Interestingly, between the CBIs and apps reported here, the context in which digital healthcare is provided could impact on the efficacy of the intervention itself. For example, the combined effect of online and offline therapist support has been found to be more effective at reducing substance misuse (Schaub et al., 2015; Sundström et al., 2016) and depression (Kay-Lambkin et al., 2009), than the effect of the online intervention alone. Developing a 'human' therapeutic relationship may be key and this could reinforce the effect and value of combined online and offline support. Social isolation is also a concern for those with dual diagnosis (National Institute for Health and Care Excellence, 2004), so it is important to ensure that this is mitigated through increasing face-to-face support. Conversely, digital health interventions can provide additional care outside of typical office hours and reduce the workload of therapists under financially stretched healthcare systems (Glasby, 2017), as digital interventions can be delivered to multiple people at any one time (Griffiths et al., 2006). Wrap-around care can therefore be provided through integrating digital interventions into dual diagnosis treatment services. Consequently, it is important to ensure that developers consider the overall building of recovery capital, notwithstanding the importance of social capital. Furthermore, practitioners should also consider where online interventions are not available, signposting people to online resources generally (e.g. Dugdale et al., 2016).

Further investigation of context across digital interventions suggests that not all interventions took place within a therapeutic setting, with some options being purely self-help and completed by the service user at home. Many interventions included online recruitment methods to engage the treatment population, however this was typically in addition to clinical or social referral measures. Where recruitment was purely internet-based, specific population targeting, for example veterans with dual diagnosis (Brief et al., 2013), appeared to yield more favourable results than those broadly seeking participants with co-morbid mental health and substance misuse difficulties (e.g. Batterham et al., 2018). It is unclear whether the intervention setting or the recruitment strategy, significantly impacted on the efficacy of results, therefore further investigation is warranted by researchers, including qualitative research on the impact on participants.

RECOMMENDATIONS AND FUTURE RESEARCH DIRECTIONS

Many interventions targeting the treatment of substance use and co-morbid mental health outcomes do not set out as a dual diagnosis intervention. This reflects face-to-face services, many of which do not concurrently treat symptoms as recommended (Morisano et al., 2014). This disparity found between the treatment goals of interventions may impact on treatment approaches utilised, and the effectiveness

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of this support for co-morbid symptoms. For instance, CBIs primarily targeting substance misuse were more likely to be effective at reducing co-morbid symptoms, than those primarily targeting mental health. This is reflected within offline settings also, as those with co-morbid symptoms may be less likely to benefit from mental health triage (Health and Social Care Information Centre, 2014). Indeed, within the research studies highlighted here, CBIs primarily targeting substance misuse difficulties were more effective than psychiatric inpatient care at reducing co-morbid symptoms (Rupp et al., 2012), but may be as effective as substance misuse inpatient care (Wilson et al., 2015).

This inequality is further exemplified in the proportion of primary substance use and mental health interventions targeting co-morbid symptoms. Overall, there is a greater focus on secondary mental health outcomes within substance misuse CBIs, whereas the amount of mental health CBIs targeting co-morbid substance misuse symptoms is much lower. Commonly mental health difficulties are present in around 90% of those seeking substance misuse treatment, whereas substance misuse difficulties co-occur within around 14-54% of those with seeking support for mental health difficulties (European Monitoring Centre for Drugs and Drug Addiction, 2013). It is therefore recommended that developers draw upon the success of treatments from the substance misuse sector, in the absence of dual diagnosis support, when planning an online intervention. Implementing an online programme within substance misuse settings, and utilising practitioner knowledge of co-morbidity within these settings would also be beneficial, further drawing upon the success of interventions delivered within services and alongside offline support.

Attrition across the interventions was relatively high, however this is symptomatic of the clinical population (Claus & Kindleberger, 2002; Nigam et al., 1992; Torous et al., 2020) and of online interventions generally, with some evidence reporting between 4-51% attrition for online interventions (Nguyen et al., 2004). This is problematic in terms of analysing outcomes, with many studies reporting intention-to-treat data. Furthermore, typical quality assurance measures for the purposes of meta-analyses may not be best suited to assess online intervention research, as this can impact the overall quality score of the paper (e.g. Dugdale et al., 2018). Within substance misuse interventions specifically, participants' concerns over privacy of data may impact engagement and attrition rates (e.g. Schaub et al., 2012; Tait et al., 2015). Aside from addressing specific concerns, highlighting the importance of pilot research within the target group to identify issues, there are strategies that may be employed to generally improve implementation and reduce attrition including using reminders to engage in treatment and monetary incentives for taking part (Linardon & Fuller-Tyszkiewicz, 2020), and incorporating game functionality (gamification) into interventions (Litvin et al., 2020). Interestingly, online enrolment may also contribute to attrition rates (Linardon & Fuller-Tyszkiewicz, 2020), as seen across some of the studies reported here.

Generally, attrition is considered a negative outcome. Indeed, within the realm of research, this greatly affects the significance of findings. However, considering the therapeutic element of the programmes, despite these high attrition rates, most online studies report positive user satisfaction (Nguyen et al., 2004). Arguably, for online interventions where the person has control over the strategies they access, they may decide to immediately focus on these areas and get the support they need within a short timeframe. It should be considered whether the research typically employed for online interventions is appropriate. Qualitative analyses would provide useful data into the efficacy of the intervention and the implementation of this within a wider setting. Furthermore, randomised control trials are time consuming and may not be suited to online interventions, where the market is constantly updating and improving (Gokgoz et al., 2021). An emphasis on small scale quantitative research would provide efficacy data and directly feed into further development (Craig et al., 2008). It is therefore recommended that researchers consider

a spectrum of research methods in understanding the efficacy of their intervention, but also that journals publishing work around digital healthcare are supportive in considering work which can contribute to a variety of knowledge around these interventions, rather than seeing randomised controlled trials as the 'gold standard'.

Across the interventions, many reported therapeutic techniques used, for example Cognitive Behavioural Therapy. However, it was often difficult to ascertain specific strategies incorporated within the programmes, with some descriptions either incomplete or imprecise. Difficulties and inconsistencies around the reporting of complex behaviour change interventions can be seen generally, and developers should use standardised terminology where possible. For example, the Behaviour Change Technique taxonomy v1 (Michie et al., 2013), details the smallest observable and replicable components of behaviour change, developed through exploring the specific active ingredients across behaviour change interventions. Utilising a common language within intervention design, can improve the replicability of research and therefore further evaluation of the intervention and synthesis of findings (Abraham & Michie, 2008; Michie et al., 2009). Evidence already suggests that self-monitoring, goal setting, action planning and feedback may offer the most benefits in an app-based intervention for alcohol reduction (Garnett et al., 2015). Similarly, where these techniques have been incorporated in the above literature, within online intervention design generally, they have been found to be effective. However, further research on specific behaviour change techniques of use for dual diagnosis is yet to be investigated. By clearer reporting of specific techniques within studies, it would facilitate synthesis and evaluation of behaviour change techniques that would be beneficial for dual diagnosis.

CONCLUSION

Individuals with dual diagnosis of mental health and substance use difficulties face significant and unique challenges in both treatment and recovery. There are substantial barriers to accessing appropriate treatment, with integrated support where possible. In general, there is also a lack of dedicated dual diagnosis services (Priester et al., 2016), as well as specialist staff training (Clark et al., 2008), both of which would help to build upon and further support evidence-based treatment approaches for this condition. Digital interventions may be of benefit here and may address barriers to face-to-face treatment generally, and for dual diagnosis specifically. Digital interventions can increase fidelity of dual diagnosis treatment programmes and provide 24-hour access to support, wherever the person is located (Griffiths et al., 2006), reducing social isolation faced by this patient group. Due to the stigma faced by substance users and issues regarding the legality of using substances (Mueser et al., 2016), people with dual diagnosis may also benefit from the anonymity that digital interventions provide (Coulson, 2005). These digital interventions may be as effective as face-to-face therapist support, however the integration between digital and face-to-face interventions appears to provide the best therapeutic outcome. This wrap-around care enables individuals with dual diagnosis to access support when they need it most and benefit from interaction with a healthcare professional, who can monitor symptoms, as well as enabling the person to take control over their recovery outside of therapeutic sessions.

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KEY TERMS AND DEFINITIONS

Cognitive Behavioural Therapy: A psychotherapeutic approach that considers and targets the interaction between maladaptive thinking patterns, unhelpful behaviours, and negative emotions.

Comorbidity: More than one illness or disorder occurring within an individual at any one time.

Dialectical Behaviour Therapy: A psychotherapeutic approach which teaches patients how to change dysfunctional behaviour through learning emotional regulation and acceptance techniques.

Dual Diagnosis: The co-occurrence of two distinct disorders within an individual. Commonly relates to the co-occurrence of mental health and substance use disorders and difficulties.

Motivational Interviewing: An approach to facilitate behaviour change through resolving ambivalence and eliciting reasons and motivation to change in patients.

Multimorbidity: More than two illnesses or disorders occurring within an individual at any one time.

Recovery Capital: The sum of one's resources to progress in recovery from substance use difficulties and the ability to develop the skills needed to maintain recovery.

Section 2

Support via Smartphone Applications, Therapeutic Games, and Social Media


Chapter 5

The Use of Social Media, Online Support Groups, and Apps for Pregnant Women During COVID-19

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ABSTRACT

At the start of 2020, the World Health Organisation (WHO) declared COVID-19 as a global pandemic. Pregnant women were deemed a vulnerable group globally and advised to shield. Due to social distancing and the changes in maternity services, it was a reasonable assumption that pregnant women would turn to the online platform for advice and guidance. Using reflexive thematic analysis, this chapter explored the effect of social media, support groups, and app usage on pregnant women during the outbreak. Results evidenced that pregnant women utilised social media, support groups, and apps for information and support. Positive aspects were maintaining social connections whilst adhering to social distancing guidelines, access to support groups and people in similar situations, and ease of access to information. Negative aspects were excessive amounts of and overwhelming information, misinformation, judgement from others, and increased anxiety. Apps were deemed positive for general pregnancy but lacked COVID-19-related information.

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INTRODUCTION

This chapter aimed to explore the positive and negative effects of social media usage, support groups and app usage in general and in a pandemic. The chapter achieved this by providing the reader with context regarding the global outbreak of COVID-19 and how this encouraged the use of social media for connection and information. Within the chapter, the results of an exploratory, qualitative study are reported and interpreted using reflexive thematic analysis.

BACKGROUND

This study is the qualitative arm of a larger one. The initial quantitative research explored diagnosed and perceived, levels of generalised anxiety disorder and health anxiety in pregnant women during the COVID-19 outbreak. A sample of 674 participants completed an online questionnaire consisting of demographic and pregnancy-related questions, the GAD-7 and HAI. Results evidenced that the COVID-19 outbreak had indeed increased self-reported levels of general anxiety and health anxiety in pregnant women.

In light of social distancing guidelines, and the recommendation that pregnant women shield as a precautionary measure, it was reasonably assumed that social media and apps would be further frequented due to increased isolation. This necessitated an exploratory, qualitative study to explore the positive and negative effects of social media usage, support groups and app usage in light of COVID-19 for women during pregnancy.

LITERATURE

The World Health Organisation (WHO) declared the novel strain of coronavirus (2019-nCoV; COVID-19) a global pandemic on the 11th March 2020 (WHO, 2020). By the end of March 2020 over 100 countries had declared a 'lockdown' (Dunford et al., 2020) to control the exponentially increasing rates of infection. Initially defined as "*pneumonia of an unknown cause*" (Hui, Madani, Ntoumi, Koch & Dar, 2020), COVID-19 is an upper respiratory disease which is estimated to have infected 140 million and caused the death on 3 million people in over 200 countries (BBC World, 2021). Governmental agencies and health organisations released and updated information daily; best advising individuals on how to avoid transmission. Globally, individuals with specific underlying health issues were categorised as 'vulnerable,' highlighting their susceptibility of contraction. In the UK those who fell into this category were formally contacted in writing by the government and advised to 'shield' (Gov.uk, 2020), which is the practise of protecting one's self and others by avoiding direct contact with others by remaining inside the home. As a precautionary action, those over 70 and pregnant women were deemed a vulnerable category globally. Dashraath et al. (2020) stated that, "*pregnant women represent a uniquely vulnerable group in any infectious disease outbreak because of their altered physiology, susceptibility to infections, and compromised mechanical and immunological functions.*" This was not evidence of higher rates of contraction during pregnancy, rather a cautionary measure due to pregnancy altering physiological responses to severe viral infections (Royal College of Obstetricians and Gynaecologists; RCOG, 2020). Further research has since evidenced that if COVID-19 is caught during pregnancy, individuals may become more ill than non-pregnant women, especially in the third trimester (RCOG, 2021). As pregnant

women were given ever varying advice and guidance, they were also faced with changes to their maternal healthcare; such as cancellations to routine appointments, alterations to their birth plans and coming to terms with experiencing labour alone. This, in addition to the concern that mother or baby may contract the disease instigated heightened levels of anxiety (Rathbone, Prescott & Cross, 2021). Recommendations concerning COVID-19 were perpetually uploaded to the online platform en masse and updated as and when new evidence came to light. Not only was information distributed via validated channels such as trusted governmental bodies and healthcare organisations, but it was also rife on social media platforms. Recent research has coined the excess information online regarding COVID-19 an “*infodemic*” (Cinelli et al., 2020). The same study also evidenced that misinformation was spreading amongst social media platforms via questionable sources, at the same rated as validated, trustworthy information (Cinelli, 2020). This spread may have left users, including pregnant women, vulnerable to the acquisition of unsound advice and guidance. A qualitative study carried out by Prescott & Mackie (2017) explored how and why women utilised social media platforms to gain support and information during pregnancy. Positive aspects such as, being reassured by the experiences of others, feeling less alone and the normalising of pregnancy specific symptoms were reported. This study reported that social media was a valid form of social support for pregnant women, which was echoed by Baker & Yang’s (2018) research, which found that a significant number of mothers reported “friends from social media” a form of social support. During pregnancy, online health information seeking is beneficial to help women understand information conveyed by a clinician, further promoting active participation in one’s personal healthcare (Lagan, Sinclair & George, 2010). Conversely, negative effects of online health information seeking during pregnancy have been reported. Prescott & Mackie (2017), found that the worst case scenarios documented by others may cause increased anxiety. Some women reported perceived negative effects as addictive and worsening severity of negative emotions (Archer & Kao, 2108). Regardless of the positive or negative effects, social media is becoming more frequented for social and informational support during pregnancy. With recommendations for shielding and the alterations to maternity services, It was a reasonable assumption that due to self-isolation and social distancing guidelines, pregnant women would further frequent online and social media platforms for information and support, due to the lack of in person experiences and face to face appointments. These assumptions necessitated an exploratory study. This chapter aimed to explore the positive and negative effects of social media usage, support groups and app usage in light of COVID-19 for women during pregnancy. **METHOD Design**

This chapter reported the qualitative arm of research which followed a quantitative study that explored the prevalence of General Anxiety Disorder (GAD), Health Anxiety (HA), Illness Anxiety Disorder (IAD) and Somatic Symptom Disorder (SSD), during the COVID-19 outbreak (Rathbone, Prescott & Cross, 2021). The qualitative questionnaire items were purpose written, open ended questions exploring the effects of certain technological resources during the outbreak. Recruitment Due to the social distancing and self-isolation policies implemented by governing bodies globally, the questionnaire was disseminated online. Whilst online synchronous interviews may have been facilitated for data collection, the process may have been more difficult and time consuming due to time zone differences. Engagement may also have been hindered by alterations to participants’ usual routine, preventing virtual commitments. Participants were given all study information prior to questionnaire commencement Social media platforms such as Facebook and Twitter were utilised to share the study. When the questionnaire was posted on Twitter, it was then retweeted by others. Twitter analytics shown that the tweet made 3592 impressions, was engaged with 190 times, and had 13 retweets. The questionnaire was disseminated in general Facebook support groups for mothers and mothers to be. These groups were sourced by the

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researchers using search terms such as “pregnant,” “expecting,” “family,” “baby,” “child,” “mother,” “mum,” “mummy” and “baby”. The study was posted in 23 groups (with permission in closed groups) which cumulatively engaged in excess of 1,426,318 members.

Organisations such as National Childbirth Trust (NCT), Mumsnet, BabyCentre and Child.org, were approached to share the questionnaire on their platforms.

Participants

Overall, there were 674 female participants in this study. Table 1 and Table 2 evidences the participants age range and countries of origin, respectively.

Table 1. Participant age range

Age	Frequency	Percent
21-25 years old	107	15.9
26-30 years old	267	39.6
31-35 years old	243	36.1
36-40 years old	45	6.7
41-45 years old	4	0.6
Total	674	100.0

Table 2. Country of origin

Country of Origin	Frequency	Percent
UK	102	15.1
USA	535	79.4
Europe	1	0.1
Africa	3	0.4
Asia	2	0.3
Australia	10	1.5
Pacific Islands	1	0.1
Other	20	3.0
Total	674	100.0

Materials

Of the eight, purpose written, qualitative questions, the first two explored experiences of any complications during current and previous pregnancies (*‘In general, what are your main anxieties/concerns about pregnancy?’* and *‘In light of the COVID-19 outbreak, what are your main anxieties/concerns about pregnancy?’*).

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The following three questions explored the participant's general anxieties and concerns about pregnancy and general social media use during pregnancy alongside how these had changed due to COVID-19 ('*In general, how/why do you use social media during your pregnancy?, In light of the COVID-19 outbreak, how/why are you using social media during your pregnancy?*' and '*Do you use any online/social media support groups? If yes, which ones and how have they been beneficial in general and in light of the COVID-19 outbreak?*').

The next question explored the use and efficacy of mobile apps (*Do you use any mobile apps? If yes, which ones and how have they been beneficial in general and in light of the COVID-19 outbreak?*). Mobile app usage was included as all mainstream social media platforms have dedicated apps.

The final two questions explored the positive and negative effects of social media in general and during the outbreak ('*In general, what positive/negative effects of social media have you experienced during pregnancy?*' and '*In light of the COVID-19 outbreak, how has social media been a positive or negative resource for you during pregnancy?*').

Procedure

The questionnaire was disseminated online via social media platforms. As Twitter is an open platform, it was posted and retweeted publicly. As Facebook groups are often closed access, group administrators were contacted to explain the study and request permission to share. Only when permission was granted was the study posted within the group. Permission was gained by consent being granted after administrators of closed groups had read and fully understood the study information sent directly to them. Several replies were received; however, most groups either automatically approved or denied the post without replying to the direct message.

Organisations were contacted using the same method. The organisations posted the questionnaire to their relevant social media channels. Following this, the participants used the anonymous link, which led them to the questionnaire on Qualtrics. After the survey was designed and posted live, Qualtrics provided an anonymous link to the survey so that participant's identity was protected. The questionnaire was live from 30/03/2020 to 03/04/2020.

Data Analysis

Qualitative data was analysed using NVivo 11 and inductive reflexive thematic analysis (Braun & Clarke, 2006; Braun & Clarke, 2019).

Ethics

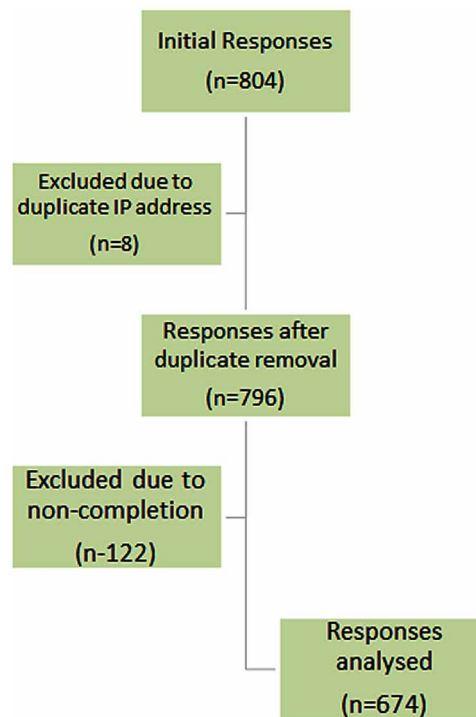
This study was given ethical approval by the University of Bolton's ethics committee in March 2020. All participants gave their consent for use of their data in this study on the proviso that no identifiers were included.

RESULTS

Data Handling

Primarily, there were 804 responses to the survey. Of the response set, when studying the respondents IP addresses, 8 of these were duplicated responses and were therefore removed from the data set. When further exploring the data, it was found that 122 participants had not completed the qualitative aspects of the survey. Therefore, these results could not be analysed and were removed from the data set. This is evidenced in Figure 1.

Figure 1. Response exclusion flow chart



Analysis

For the analysis of the qualitative data obtained from this study, inductive, reflexive thematic analysis was utilised (Braun & Clarke, 2006; Braun & Clarke, 2019). An inductive method meant that the coding and theme development was guided by the data. Inductivity was deemed the most appropriate approach due to the unprecedented circumstances of the global pandemic and the objectives of the research. However, it is acknowledged that the semantics of the data may have played a critical role in data analysis; therefore, codes and themes may mirror explicit data content. This is also true for essentialism; wherein, an assumed reality becomes evidential within the data. As stated by Braun & Clarke (2006; 2019) it is not

unrealistic that the three approaches may cluster together dependent on the research, and that separation is not always crucial, so long as analysis is coherent and consistent.

Following the six recursive phases set out by Braun & Clarke (2006; 2019) data familiarisation began, and initial codes were generated. Primarily, as evidenced in Table 3, data was coded into base themes; general experiences and experiences relating to COVID-19, or positive and negative effect. These then became the overarching themes when reflecting on the research objectives. Next, subthemes were identified, reviewed, concisely defined, and reported by all authors.

Presented in Table 3 are all base themes, themes, and subthemes, along with frequency of reference in numerical format. It was expected that health would be a frequently reported concern, so this information was coded under a singular theme. It became apparent that the theme Health needed to be dually fragmented into the subthemes Child and Parental, due to the volume and specificity of responses. This was also true for the COVID-19 Related Healthcare theme. Whilst Healthcare was a singular theme, this too was fragmented upon review into Provisos and Lack of Support. This was because healthcare provisions and lack of support when accessing said healthcare presented as two separate concerns. Social Media Use consisted of two base themes; General and COVID-19 Related. In both base themes was the theme of research. This theme was refined further into two subthemes: Resources Online and Others Online. This was because responses indicated that both uploaded online information and users were considered means of information acquisition. Throughout the analysis, it became apparent that several subthemes were repeated. Upon reflection it was considered that this occurred due to context of the questions being asked. The sub themes took on different meanings when considered in a general context and when then considered in the context of a global pandemic.

Findings

Throughout the qualitative findings, bracketed numbers next to themes and subthemes denote the frequency of their occurrence during data analysis.

Anxiety During Pregnancy (1615)

General (782)

In general, anxiety throughout pregnancy was prevalent for various reasons typical of gravidity. The one most expected theme was Health, divided into two subthemes: Child and Parental. Other subthemes were Previous Complication, Labour, and Loss (Figure 2).

A recurring anxiety stated by participants was concerning their unborn child's health. Participants tended to ruminate upon the possibility that their child may suffer from ill health pre- or post-birth. Many participants reported that their main concerns were complications related to foetal health.

Participants appeared to have specific concerns surrounding their child's health. Further expansion of complications was offered by participants; specifying exact medical issues which they were fearful of happening as shown in the following quote;

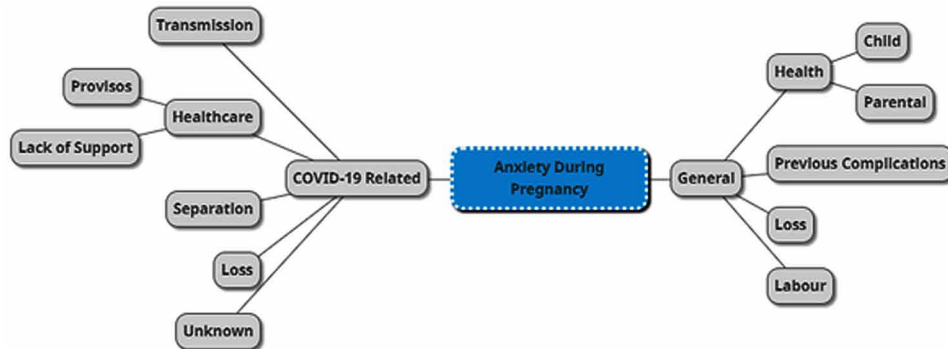
I worry my baby isn't developing properly or getting enough nutrients from me. I also worry about my baby dying from either the cord being wrapped around its neck or any possible complications. Before I

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Table 3. Objective, references to objectives, base themes, themes and subthemes

Objective	References to Objective	Base Theme (References to Base Theme)	Theme (References to Theme)	Subthemes (References to Subtheme)		
Anxiety during Pregnancy (O1)	1615	General (782)	Health (414)	Child (275) Parental (139)		
			Previous Complications (66)			
			Loss (115)			
			Labour (187)			
		COVID-19 Related (833)	Transmission (293)			
			Healthcare (316)	Provisos (115) Lack of Support (201)		
			Separation (106)			
			Loss (61)			
			Unknown (57)			
Social Media Use (O2)	1373	General (691)	Research (205)	Resources Online (132) Others Online (73)		
			Social Connections (454)	Maintaining Relationships (223) Groups and Connection (109) Shared Experience (78)		
				Indifferent/Adverse (32)	Adverse Opinions (6) Distraction (26)	
		COVID-19 Related (682)	COVID Specific Updates (245)			
			Research (148)	Resources Online (68) Others Online (80)		
			Social Connections (228)	Maintaining Relationship (59) Groups and Connection (95)		
				Shared Experience (74)		
			Avoidance (61)	Direct (22) Indirect (39)		
		Online Support Groups During COVID-19 (O2)	257	Positive Aspects (200)	Healthcare Information (44)	
					Relieved Anxiety (14)	
					Positive Stories (18)	
Shared Experience (70)						
Support (54)						
Negative Aspects (57)	Increased Anxiety (44)					
	Censorship (3)					
	Other (10)					
Social Media Effect (O2)	1003	Positive (510)	Information (103)			
			Support (129)			
			Shared Experience (102)			
			Outcomes (Positive) (176)			
		Negative (493)	Increased Anxiety (155)			
			Misinformation (81)			
			Outcomes (Negative) (89)			
			Conflicting Opinions (72)			
			Negativity (96)			
App Usage (O2)	247	General (169)				
		COVID Related (78)				

Figure 2. Thematic map (anxiety during pregnancy)



had my genetic testing, I was worried she would have a genetic disorder. I worry about complications at birth and not being at a hospital with a NICU. I worry that if I don't move around enough in the day, that she won't get enough blood flow or won't be as healthy (Participant 238)

This anxiety surrounding health was also directed towards the participants personally. Some participants noted that their fear for their own health was related to the health and care of their child. One participant worried that if she did not consider her own health, then this would have a detrimental effect on the health of her child;

I am 14.5 weeks, so I no longer worry about losing the pregnancy, but I am concerned about birth defects if I do not take care of myself (Participant 522)

There was a concern that if the mother fell ill, they would not be able to care for their child at the optimum level. Other participants were concerned that their advanced maternal age would have a negative effect on their child's health; being the cause of birth defects or miscarriages.

Participants expressed concerns related to complications which had occurred in previous pregnancies. This was especially true for participants who had experienced miscarriages prior to their current pregnancy. Multiparous women also expressed concerns regarding health issues of previous children and the fear that similar situations may reoccur.

For pregnant women there were concerns around the childbirth experience itself. For some women, this was because this would be their initial experience of the process. Those who had previously given birth felt anxious about the labouring process due to previous negative experiences in previous pregnancies.

The loss of a child was a salient concern for pregnant women in general. Some women had this anxiety in general, but others experienced anxiety surrounding loss due to previous experience, making it harder for them to relax and enjoy their current pregnancy.

COVID-19 Related (833)

Whilst the usual anxieties remained for pregnant women, these were either added to or altered somewhat due to the outbreak. The subthemes were Transmission (293), Healthcare (316), which was divided into Provisos (115) and Lack of Support (201), Separation (106), Loss (61) and Unknown (57).

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The most referenced anxiety for pregnant women since the COVID-19 outbreak was the risk of transmission, whether this was to the child, or parent. One participant stated that her main concern was anxiety about being separated from her baby if she was to get the virus;

Not getting diagnosed with COVID-19 and making sure my spouse doesn't get diagnosed either. With how awful the virus is, babies have been separated from their parents and I'm terrified and on edge about somehow contracting the virus (Participant 75)

Another theme which caused anxiety throughout the global pandemic for pregnant women was healthcare. The concerns raised in this theme were both provisos and lack of support. Pregnant women expressed concerns towards how their birthing experiences and plans would be altered. It is a common occurrence that pregnant women will tailor their birthing plan to meet their personal requirements during labour. Due to changes in hospital policies, women became anxious about how their planned birthing experience would be altered.

How will my delivery be impacted by the current situation? I also wonder what policies will be enacted that will change my ideal birth plan (Participant 379)

Some women may opt for a home delivery rather than a hospital stay. With the implication of social distancing, it was unknown whether medical professionals would be available to attend home appointments, leaving women no other choice but to birth in a hospital setting. Participants referred to changes to routine appointments and tests which monitor both the mothers and the child's health. One participant expressed her concern at the minimalistic routine monitoring.

Due to appointments being limited due to corona (sic) I worry about the baby's health as they are no longer checking fundal height for growth, heartbeat or mother's blood pressure or position of baby (general position and level of engagement (Participant 401)

There was repeated concern concerning how strained the healthcare services may be under the added pressure of a global pandemic. This led to further anxieties about support in hospitals for pregnant women during the birthing process. Participants were concerned as to whether hospitals would be able to facilitate pregnant women due to being overrun.

Doctors & staff having been exposed & contracting it while pregnant. Going to my I want the doctor to tell me in person that I am ok. doctors' appointments. Fear of having no medical services available when it's time to deliver. Exposure to my newborn and myself during labor/delivery/recovery etc. The list of fears goes on & on (Participant 50)

Cross contamination from healthcare professionals and settings was also a concern for participants. Concerns about direct exposure from healthcare were expressed and others were concerned about indirect exposure from patient to patient via the medium of a healthcare professional.

Within the theme of Healthcare in relation to the outbreak, many women were concerned about the lack of support they would have access to during labour. This seemed especially worrying regarding the presence of preferred birthing partner, if any were allowed dependant on the hospital policies and

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procedures. Both the health care provisos and possible lack of support from their spouse were equally concerning for pregnant women, as the example quote below shows.

This is my first pregnancy. I worry most about being uneducated or not learning enough. My OB appointments are cut shorter and spread farther apart. The thought of not having a support person with me worries me the most. I literally and actually could not do this without my husband- let al.one considering how that affects him, too (Participant 91)

Women understood that if there was a possibility of either their selves or their child testing positive for COVID-19, the advice from healthcare professionals would be to isolate for the duration of the virus. However, the thought of being separated from a new-born was cause for heightened anxiety. This was a prevalent concern, with 106 women expressing, fears of catching virus and being separated from the baby.

As aforementioned, the loss of the pregnancy or the child was a typical, general pregnancy concern. However, in light COVID-19 this anxiety was exacerbated amongst pregnant women. There was a general fear of contracting the virus and losing the baby due to complications with the virus.

Due to the novelty of the virus, an anxiety amongst participants regarding pregnancy appeared to be a fear of the “Unknown.” Participant 23 stated that she was experiencing the same anxieties and some novel to the COVID-19 outbreak; however, she could not acquire any affirmative answers to her queries.

The same concerns I already had (healthy baby and delivery) now seem to be less likely or far more uncertain. Plus anxiety about what the hospital experience will be (or if there will even be a hospital that is not overrun with COVID). Also worried now about whether my partner will be there, or if we test positive if the baby will be taken into isolation. There is already so much to be nervous about in having a baby, and now none of the usual “assurances” even apply anymore

This was also true for healthcare professionals. A registered nurse (Participant 188) said,

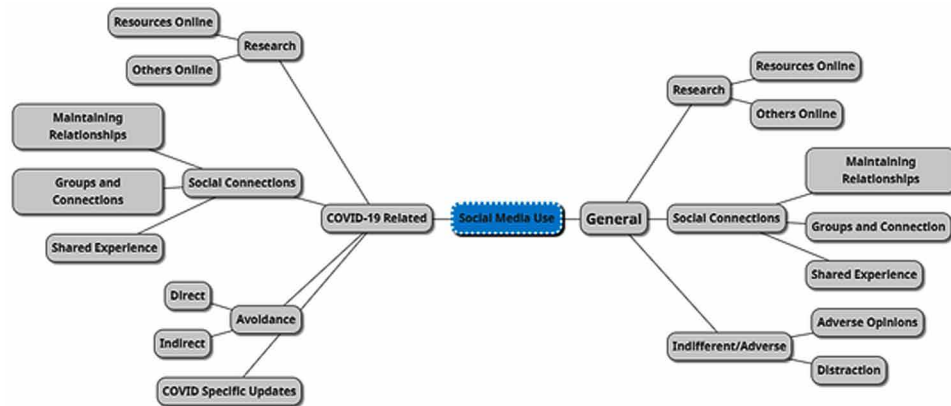
That the CDC and other organizations don't know how Covid (sic) influences pregnancy at all stages. And tell you just to follow standard precautions even though we are considered in the high risk group. I'm worried if I get the virus and it is a more severe reaction that I put my baby in harm's way (I'm a registered nurse).

The lack of information concerning the effects of the virus on pregnant women, and the dearth of research in the area concerned participants. One participant (258) noted that her concerns were,

the unknowns about how it affects pregnancy, the severity of how it can affect me and the limited research that has been (rightfully) done on it.

Social Media Use (1373)

Figure 3. Thematic map (social media use)



General (691)

Social media use is an integral part of contemporary society and there were many reasons why pregnant women turned to the resource in general whilst pregnant. The subthemes in General Social Media Use were Research, separated into Resources Online and Others Online, Social Connections, further refined into Maintaining Relationships, Groups and Connection and Shared Experience and Indifferent/Adverse, divided into Adverse Opinions and Distraction (Figure 3).

Many women used the platform as a medium for carrying out research. However, there appeared to be two main methods of research using social media.

Participants explained that they used social media as a medium to access research material. Some participants stated that they used social media as a research tool. Whilst there is no consensus that social media is the most credible source for research, participants stated that they did indeed use social media to research, seeking only reliable information. Women were also using the platform to stay abreast of changing updates, information, studies, and guidelines.

Via social media, pregnant women considered hearing the first-hand experiences of other women in similar situations to themselves to be a valid way of acquiring data. Participants suggested that the experiences of others provide beneficial information.

I often read about other people’s experiences, thought and advice. I like to be as informed and aware of certain possible situations. I also like to crowd source questions (Participant 255)

In general, pregnant women used the online platform as a medium to initiate and maintain social connections, regardless of the relationship type, such as friend, family, partner etc.

In general usage, participants accessed the social media platform to maintain relationships with loved ones, to keep them updated and informed. Some of the participants utilised social media to maintain their personal relationships and keep loved ones updated with any information or changes occurring to

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their pregnancy, especially when said loved ones lived a long distance away. One participant (20) used social media to bridge long distance familial relationships.

Many actively joined and participated in groups on social media which were specifically tailored with information for pregnant women. This can not only help women gain information but also provide a sense of connection in a forum where they could speak openly to others. Facebook groups specific to pregnant women dealing with similar feelings during this time. It helps to feel less alone.

One woman explained that,

I am in a few Facebook groups for pregnant women and I use those to ask my questions openly without fear of judgement. I have also used the groups as a means of support when I'm worried about something or when I'm excited about something (Participant 238)

Whilst some women engaged in social media groups for connection, others engaged in social altruism by encouraging others to feel less alone. This was true for Participant 364.

I get information about what other pregnant mothers are going through. I am also a health care provider and I try and give out advice when solicited

Participants tended to engage with others and search for first-hand experiences so that they could normalise their own experience. It was also helpful for pregnant women to know that their online cohorts were doing as well as they were at any given time. Whilst many women used social media for positive aspects, it is important to note that others had adverse or indifferent opinions to the platform.

Whilst there were only a few references pertaining to adverse opinions, it is important that they are acknowledged when considering social media for support. One participant deemed social media groups as judgemental and unhelpful and another participant thought online groups to be a potential trigger for her and others.

I used it a lot more before I got pregnant. When I got pregnant I realised there was a lot of people posting negative things about, miscarriage, bleeding etc on sites like NETMUMs places like that. So I just decided to not read it as it can influence your thoughts and make you worry more (Participant 70)

Throughout the responses, there were references to social media being used in general as a type of distraction. One participant also referred to monotony she felt when having to socially distance, explaining that she used social media, *To cure the boredom that comes with social distancing* (Participant 136)

COVID-19 Related (682)

In light COVID-19, participants have utilised the social media platform for further reasons. The subthemes in COVID-19 Related Social Media Use were COVID-19 Specific Updates, Research, separated into Resources Online and Others Online, Social Connections, further refined into Maintaining Relationships, Groups and Connection and Shared Experience and Avoidance, divided into Direct and Indirect.

The most referenced subtheme was participants seeking COVID-19 specific updates. Social media appeared to provide an ease of access to real time updates on COVID-19. As previously stated, it is a

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usual occurrence that pregnant women seek information online. However, the focal point of the participant's research altered during the initial outbreak.

Like those who accessed direct updates on the virus itself, participants were engaging in self-led research to educate themselves further on the virus and how it could affect them and their unborn child.

I use it to stay up to date on the virus, learn about symptoms and learn how it affects pregnancy and infants (Participant 145)

Again, it was beneficial for women to hear about the first-hand experience of others to gain information and further explore the effects of COVID-19 in pregnancy. Participant 197 eradicated demographic constraints to communicate with others; *"I'm learning more about what is going on elsewhere in the world and for other pregnant moms."* Participants obtained information from others about their personal and medical experiences online. Again, similar as to in general, considering the COVID-19 outbreak, social connections remained, or were if not even more, important to pregnant women.

Maintaining relationships was pertinent due to restrictions which had been applied surrounding social distancing and shielding advice given to pregnant women. Participants used this medium due to the social distancing rules.

Participants joined groups to make connections with other women. Many explained that due to the outbreak, they had joined groups for connections to gain emotional support from others in the same position.

To follow updates and also connect with other pregnant women who understand the fears, frustrations, and disappointments we are experiencing due to the outbreak (Participant 245)

Participants shared their personal experiences and feelings about being pregnant during a global pandemic with others using social media. One woman mentioned that sharing experiences and feelings with others assured her that her feelings towards the situation were valid.

To read about other hospitals labor and delivery policies, and try to find consolation in other women worried about the same things I am. Sometimes I use it to try to distract myself from my worries. Joining a pregnant moms support group through Covid allows my feelings to be justified (Participant 232)

Whilst some participants were actively attempting to keep up with the latest information, small amounts were attempting to avoid updates, whether this was direct or indirect. However, whilst some participants were using the medium to research and promote positivity, others have begun to actively avoid the topic in fear of becoming overwhelmed or being met with misinformation.

I am trying to limit my social media time because there is a lot of fake news/facts. I prefer to get my information directly from CDC or my state health department (Participant 54)

Participants stated that the updates and news surrounding COVID-19 had begun to increase their levels of anxiety. Due to this they began to directly avoid the information.

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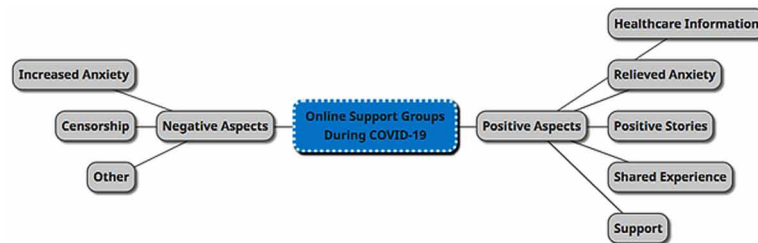
I'm trying to use social media less often for shorter periods because the constant exposure and conflicting information is raising my anxiety (Participant 528)

Some participants were indirectly attempting to avert the information by still using social media, but avoiding information pertaining to the pandemic. Other participants attempted to use social media as a distraction from the news.

Support Groups During COVID-19 (257)

When exploring the use of support groups during the COVID-19 outbreak, two main themes were evident: Positive Aspects and Negative Aspects. The subthemes for the Positive Aspects theme were Healthcare Information, Relieved Anxiety, Positive Stories, Shared Experience and Support. The subthemes for the Negative Aspects theme were Increased Anxiety, Censorship and Other (Figure 4).

Figure 4. Thematic map (online support groups during Covid-19)



Positive Aspects (200)

Many participants reported the positive aspects of online support groups during COVID-19. Support groups on social media platforms can be positive, efficacious resources. Some participants perceived online support groups to be positive as they were a method of gaining access to healthcare information.

Participants were turning to support groups during the outbreak to discuss healthcare information and any changes, which are happening frequently as, and when they are updated. Also, participants who were pregnant and worked in the healthcare sector were turning to this resource to discuss best practise with other women in the same position as their selves. This is also true for participants who have taken a more active-distanced role in their personal self-care during pregnancy. For instance one participant reported,

I have recently joined a local health board education group on Facebook which offer reading material, yoga videos and other videos on topics that would be covered in an antenatal class. I think this was specifically made due to the Covid (sic) outbreak. I have also followed new Instagram accounts that are offering other free classes and support during this time (Participant 535)

It appeared that engagement with the resources and information which the support groups presented their members with were effectual resources to relieve participant's anxieties either through research or by communicating with others.

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It was also advantageous for participants to read positive accounts of personal stories from other pregnant women, especially when this concerns childbirth. Similarly, participants believed the online support groups to be positive spaces during such a difficult time. In addition to hearing the positive experiences of others, participants were partial to having a safe online space where they could share their experiences with others and be met with acceptance. As this participant explains,

I was able to vent and have people who understood. Most people, who aren't pregnant, just tell you to be positive and you will get through it. Only those in this situation understand the extreme worry and anxiety that comes with having a baby during a pandemic (Participant 85)

As mentioned in general, participants were still using the online support groups to share experiences from others. This was especially true for emotional support. The outbreak has caused an increase in anxiety for pregnant women and understanding that this is a typical emotion in such unprecedented times can be beneficial. There was an onus on the shared experience of anxiety in the current climate. As expected, participants gained a sense of support from others from online groups.

Negative Aspects (57)

Whilst there were several positive aspects of online support groups during the global pandemic, there were also reports of negative aspects. Numerous participants' perceived information posted and discussions occurring, at times in support groups elevated their levels of anxiety, especially when faced with the anxieties of others. It was suggested that the pregnancy support groups which were tailored for women with anxiety had often triggered further personal anxieties; concerns which, until faced with the information on an online support group, they had never considered.

The anxiety groups in particular can actually fuel my anxiety more than relieve it, as I hear things others are concerned about that I hadn't even considered (Participant 273)

Due to the global outbreak being the main foci and anxiety trigger for many, some groups attempted to censor the topic to maintain a sense of calm within the groups. However, some believe that the censorship of their negative cognitions and anxieties could have been more detrimental than helpful.

Some of the groups irritate me because the moderators say they only want positive posts. I'm sorry but it should be encouraged that we don't have to be positive. Many of us are not feeling positive right now (Participant 23)

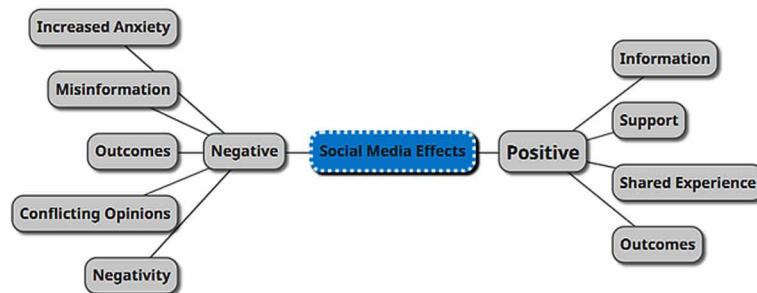
One such negative aspect of support groups under the current circumstances were conflicting perspectives of people's reactions to the outbreak. This was arguably based more on personal opinions and belief systems.

I don't like it much - I find it irritates me to see people complaining about cancelled baby showers when doctors are literally deciding who to let live and who to let die (Participant 208)

Social Media Effects (1003)

Concerning O2, when exploring the effects of social media, again, the two themes were Positive and Negative. The subthemes for the Positive theme were Information, Support, Shared Experience and Outcomes. The subthemes of the Negative theme were Increased Anxiety, Misinformation, Outcomes, Conflicting Opinions and Negativity (Figure 5).

Figure 5. Thematic map (social media effects)



Positive (510)

Similar to online support groups, participants reported several positive effects of social media in general. Participants found that a positive effect of social media was information acquisition. Participants can access the information they are searching for easily which provides instant gratification. Participants stated that social media use was positive as they could gain support from this resource. Women were able to gain a sense of reassurance and allay their anxieties when met with the support of others online.

Generally, people pulling together to give likeminded advice is very positive and reassuring often making me feel less like a freak for having certain worries (Participant 21)

Shared experiences were repeatedly identified as a positive aspect of One participant found that the most positive effect of social media during the COVID-19 outbreak was the, “*We are in this together*” attitude (Participant 422). Information posted regarding the positive outcomes which others had experienced gave participants a sense of reassurance during uncertain times. Other women who were experiencing their first pregnancy found the information given to be helpful and educational. Positive outcomes documented by others were also reassuring considering increased anxieties due to the COVID-19 outbreak.

Negative (493)

Again, whilst some reported positive effects of social media use, other reported more negative outcomes which are equally as important to explore. It was apparent that pregnant women, when met with information regarding the outbreak on social media, experienced heightened levels of anxiety which could cause a detrimental effect on their health and wellbeing. It was mentioned that being met with the anxieties of others in turn increased their own anxieties.

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I have found that reading threads in some groups has given me more anxiety about problems I hadn't thought of (Participant 244)

One of the most salient negative effects identified by the participants, which is in general an unmanageable aspect of social media, was the increased presentation of misinformation they were met with. A participant explained,

Increased fear and frustration, the realization that people prefer to learn from social networking rather than self-research. Trying to fight misinformation in as many places as possible (Participant 402)

It was also reported that being met with misinformation led to negative effects.

I find social media to predominantly be negative due to misinformation, panic and paranoia (Participant 267)

Others were aware that, whilst information can be valuable, it can also be overwhelming when trying to decipher its credibility.

It was difficult for participants to hear of other situations wherein there were negative outcomes. Reading about negative outcomes for others has the propensity to increase anxiety for the reader.

Social media, while helpful during my pregnancy, can sometimes cause me to be anxious when other moms share of miscarriage or abnormal defects in their developing fetuses (Participant 95)

Conflicting opinions were hard to read for some women. These tended to increase anxiety amongst women. Participants believed, if conflicting opinions were presented by different users, then this could lead to negative communication and an increase in anxiety levels.

Some people can be very opinionated and firm with certain topics instead of supporting and allowing each other to learn and grow (Participant 185)

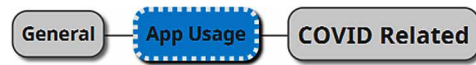
Social media had the propensity to be a negative space which can negatively affect the mental health state. One participant expressed how the negative discourse and misinformation was disruptive on social media.

I'm sick of people posting negative things on COVID or misinformation. Or even their opinions. It's a trying time for all; people need more support than negativity (Participant 102)

App Usage (247)

Half of the participants responded positively when asked if they used apps. The theme App Usage was divided into responses concerning General app use and COVID Related app use (Figure 6).

Figure 6. Thematic map (app usage)



General (169)

Participants used mobile apps for several reasons throughout their pregnancy. Social media apps were used for support groups and information. Users engaged with mindfulness content for therapeutic reasons and others used games as a distraction technique. The most popular apps used were pregnancy specific, due to their helpfulness. Other participants reported that they utilised apps for a host of beneficial reasons such as entertainment, community, communication, following their pregnancy journey and as a form of anxiety relief.

COVID Related (78)

There was a divided opinion amongst participants regarding whether mobile apps have been useful in relation to COVID-19. There was also variation seen in app usage and whether they provided updates on the outbreak as evidenced in the following quote,

I use them to keep up to date on baby development. I have continued to use these for support during COVID-19, and some have provided helpful articles regarding Covid-19 (Participant 67)

DISCUSSION

Social Media Use

Within this chapter, participants reported using the social media platform to obtain information relevant to pregnancy which supports previous research (Johnson, 2014). Considering the global pandemic, it is logical to assume that many pregnant women became housebound, where possible, to adhere to social distancing and isolation guidelines. Results supported the assumption that social media would be frequented more as pregnant women explained how they turned to the platform to maintain social connectedness with family and friends and to minimise the sense of isolation. Participants referred to using social media to connect online as they could not do so physically.

Social media was used as a means of giving and gaining support. During the outbreak, social media has been a vital resource for maintaining familial and supportive connections. When considering engagement in online peer to peer support, some used social media for positive reasons, such as engaging in active research and relaying information via digital altruism (Ferrara, 2020).

Conversely, previous studies have reported that excessive social media use can have more negative aspects. Whilst it cannot be denied that users can gain emotional support from the use of social media, there is a possibility that users may become addicted, leading to lower self-esteem and various mental health issues (Fang, Wang, Wen & Zhou, 2020). Within this study some participants opted to avoid so-

cial media so that they may avoid being met with information regarding the COVID-19. This was either because, being met with constant updates was too overwhelming and stressful, or the thought of being met with incorrect information was anxiety inducing.

Online Support Groups During COVID-19

Of a study of 117 mothers 84% considered their friends on social media to be forms of social support (Baker & Yang, 2018). Another reported that pregnant women and mothers place high value on the support they receive through social media when discussing their pregnancy (Lupton, 2016). Social media support groups have become a beneficial space to share health information with others online. This study highlighted the trueness of that, especially for those who can share experiences with other women in the same situation as they. Pregnant women used social media support groups to discuss their health with the aim to relieve their pregnancy related anxieties. One way this was achieved was via the exchange of positive stories concerning pregnancy and childbirth with others.

However, some responses suggested that others may have found social media support groups to be more anxiety inducing than calming during the outbreak. This was due to the fact that being inundated with updates regarding the virus became overwhelming. Previous research has evidenced that a greater presence and use of social media can lead to social media fatigue (Bright, Kleiser, & Grau, 2015). Also, the vast amount of data generated online can increase the possibility of information overload (Fu, Li, Liu, Pirkkalainen & Salo, 2020). The current study is in support of previous research as, for some, too much information became overwhelming and anxiety inducing.

Some were triggered by the personal opinions of others. Due to subjective opinions and beliefs, conversations on social media may become judgmental and polarised, which may possibly go unseen by moderators (Regan & Brown, 2019). Some found that complete blanket bans on discussing the topic of COVID-19 in social media support groups was more detrimental than addressing it.

Social Media Effects

Overall, the chapter evidenced that pregnant women found that sharing their experiences with other women in similar positions with similar concerns was efficacious. The support received from social media was mostly perceived to be effectual in reducing levels of anxiety. Since the initial outbreak women were using social media to find childbirth stories with positive outcomes to reassure themselves. However, when accessing this information, participants became privy to stories which had negative outcomes. From the results it could be posited that negative outcomes may increase anxiety, even more so when met with concerns which had not yet been considered. Previous qualitative studies have suggested that reading extreme cases of first-hand experiences causes increased anxiety for pregnant women (Prescott & Mackie, 2017).

Women were concerned about the negative effects of social media caused by the spread of misinformation. Some women experienced heightened anxiety when they noticed that misinformation was being spread, Others became more anxious when they were attempting to discern between reliable and unreliable information. The WHO has introduced a guide to combat the spread of misinformation online using a four-pillar framework. The four pillars are, Facilitating Accurate Knowledge Transfers, Knowledge Refinement, Filtering, and Fact-Checking, Build eHealth Literacy and Monitoring, Infodemiology, Infoveillance, and Social Listening (Eysenbach, 2020).

Some deemed online pregnancy groups to be negative spaces due to feeling judged by others and having their choices regarding their pregnancy and their children questioned or dictated by strangers.

App Usage

Throughout the chapter, in general, pregnancy specific apps were favoured. Previous research has found that pregnancy specific apps are effective in promoting physical and mental maternal health (Chan & Chen, 2019). Women also used therapeutic apps to relieve their anxiety autonomously and used gamification for distraction. Throughout the study there was no direct reference to specific apps relating to COVID-19. However, there were discrepancies in opinions regarding the effectuality of apps during the outbreak. Some mentioned that the pregnancy apps they were using provided articles from validated sources about the COVID-19 outbreak and some stated that their apps relating to pregnancy had not offered any beneficial advice on the topic.

Whilst there is no shortage of health-related apps, many of them have not undergone any rigorous testing. Where some make claims to be evidenced based, it is parts of the therapeutic contents which are evidence based, not the app itself (Tourous *et al.*, 2019). A qualitative study which accrued user feedback from mental health apps raised content issues such as low quality/limited content, amateur delivery, and missing features. Ethical issues such as unsolicited messages and data breaches were also raised (Baumel, Muench, Edan, & Kane, 2019). For apps to be beneficial during pregnancy, they must be evidence based. During the outbreak, these apps would benefit from including updated information on COVID-19 and how said information affects their target audience.

Limitations

One limitation of the chapter is that the assumption was made that there was an increase in social media use for information and support by pregnant women. Whilst this was a logical assumption, there were no comparative statistical data to evidence this as true. As with all qualitative research, it is important to highlight the possibility of researcher bias, both when formulating the research questions and analysing data due to the subjectivity of the process.

FURTHER RESEARCH

More recently social media platforms have actively engaged in the implementation of source validating tools. If the platform identifies information as incorrect or untrustworthy it will offer the user a validated website to visit. This resource is vital for stopping the spread of misinformation, and its continuation and betterment will promote skilled data acquisition.

It would be beneficial for app developers to ensure that they have the facility to update information as and when needed on their products so that their target audience has ease of access to information regarding serious global health affairs which may affect them.

Further research would benefit from repetition. This study was carried out at the height of the COVID-19 outbreak. Being over a year post outbreak, imminent research via repetition may return different data regarding the positive and negative effects of technology use. This may be due to the slow relaxing of shielding guidelines and the ability to meet face to face in certain instances.

CONCLUSION

The chapter demonstrated that pregnant women accessed social media for pregnancy information in general circumstances. Further it was used for information relating to COVID-19 and pregnancy. Social media allowed pregnant women to maintaining their social connections when social distancing and shielding. Whilst social media was a method of retrieving updated information, others opted to avoid the usage of social media as being met with too much information regarding COVID-19 could be overwhelming. Social media support groups were beneficial as they provided instant access to the support from others who were (or have previously been) in similar situations as the user. However, this same resource became a trigger of anxiety for others. Perceived social support and reading the personal experiences of others with positive outcomes had positive effects on the readers. However, reading the personal experiences of others with negative outcomes was identified as a trigger to some, which supported the findings of previous literature in the area. How pregnant women reacted to the spread of misinformation varied. Some were adept at confirming valid sources, yet others instantly experienced increased anxiety due to uncertainty. Pregnancy apps are favourable resources. Some app developers were gradually integrating information surrounding COVID-19 into their apps such as links, updates, sources, and articles, as and when released.

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Chapter 6

Skilful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy: Application Development

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ABSTRACT

The development of the Skilful surfing Online For Anxiety Reduction (SO-FAR) in pregnancy (SO-FAR) mental health (mHealth) application (app) was supported by previous research which modelled the theory of Skilful Surfing. The model informed the app development, with each facet of the model corresponding to a different intervention included in the app. The aim of this chapter was to report the development of an mHealth app to relieve pregnancy-specific health anxiety. App content inclusion was based on previous literature and recommendations for mHealth app inclusions. Overall, the chapter provides the reader with a comprehensive account of the development of the SO-FAR app which may reduce levels of pregnancy-specific HA by encouraging women to become more adept when navigating through online health information, self-aware, and educated and promoting the ability to identify triggers and understand when and why they are experiencing maladaptive cognition and rumination in a self-guided manner.

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INTRODUCTION

In this chapter, the development of an interventional mental health (mHealth) application (app) will be reported. The app was termed, Skilful surfing Online For Anxiety Reduction (SO-FAR) in pregnancy and aimed to relieve health anxiety in pregnant women. Initially, introductory background information will provide the reader with context regarding the previous research in which the roots of the app were based. Extant literature was considered and informed the rationale for the app development and aims of the chapter. Following the introduction, this chapter will systematically discuss each facet of the app and justify content inclusion. The justification of content inclusion will be supported by previous research and recommendations for mHealth app content. Each facet of the app will consist of an individual intervention. For optimum depiction of content and aesthetics, the app development process will be reported in written format and evidenced pictorially throughout. After this chapter navigates the reader through the app development process, the app development will be discussed and summarised.

BACKGROUND

The development of the SO-FAR app stemmed from previous research which aimed to define the theory of Skilful Surfing. Skilful Surfing is;

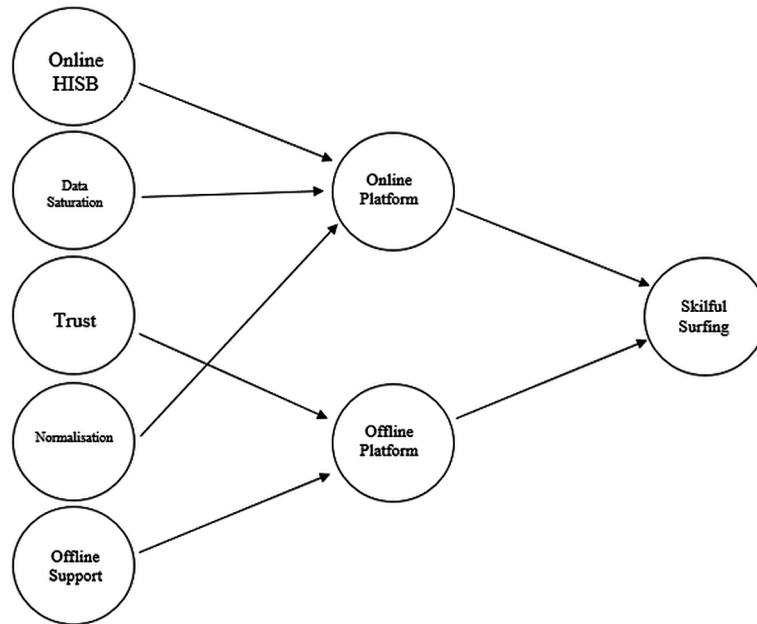
-proactively engaging in oHISB, be self-aware when attempting to reach data saturation, understand the typicality and atypicality of symptoms, facilitate communication with experienced cohorts, effectively navigate through online health information identifying reliable sources, clarify said health information with professionals offline, remain engaged with offline support networks and understand that both online and offline resources and support are more effective when utilised in unification.

This definition was formulated based on a structural equation model which supported the modelling of the theory as evidenced in Figure 1, which was subsequently used as the foundation for the SO-FAR app.

The facets of the Skilful Surfing model were informed by previous definitions and models of health information seeking behaviour (Health Information Acquisition Model [HAIM], Freimuth, Stein & Kean, 1989; Comprehensive Model of Information Seeking [CMIS], Johnson, Donohue, Atkin & Johnson, 1995; Planned Risk Information Seeking Model [PRISM], Kahlor, 2019)., preceding key studies concerning online health information seeking behaviour online during pregnancy (Prescott & Mackie, 2017; Prescott, Mackie & Rathbone, 2018; Rathbone & Prescott, 2019), and sampling of the e-Health Impact Questionnaire (e-HIQ1; Kelly Ziebland & Jenkinson, 2015), a measure which explored general views about the use of online health information websites.

The facets were Online Health Information Seeking Behaviour (oHISB), Data Saturation, Trust, Normalisation, Offline Support, Online Platform, Offline Platform, and Skilful Surfing. The Online Health Information Seeking Behaviour (oHISB) aspect explored the ‘Who?’, ‘What?’, ‘When?’, ‘Where?’ and ‘Why?’ of the user’s behaviour. It explored who the recipient of the search was, what they were searching for and when, where they were search and why. The Data Saturation aspect aimed to distract users from excessive searching. The Trust aspect of the app used a ‘True of False’ game to dispel pregnancy myths and provide psychoeducation. Normalisation presented users with online support networks they could utilise to communicate with likeminded people. The Offline Support aspect sign posted users

Figure 1. Model of skilful surfing



to support services they could access outside of the internet and provided mindfulness techniques and CBT. The Online and Offline Platform aspects of the apps encouraged users to reflect by offering them a check list of new skills they have acquired through the app.

The introduction section of this chapter provides an overview of the background literature concerning anxiety, pregnancy and online health information seeking behaviour (oHISB), which subsequently leads to the development of the SO-FAR app.

In response to the need to reduce health anxiety specific to pregnancy by educating women to adeptly seek online health information, and capitalise on the ease of access to technological devices in today's society, a mHealth app was devised. This chapter depicts the development of the Skilful surfing Online For Anxiety Reduction (SO-FAR) in pregnancy app which aims to reduce levels of health anxiety specific to pregnancy using various techniques.

LITERATURE

Pregnancy and Anxiety

Anxiety is a typical reaction to circumstances that may cause worry or concern, which triggers both physical and psychological symptoms. Mild to moderate levels of anxiety are perceived as normal when faced with stressors. However, when these anxieties have a negative impact on day-to-day life, they are considered a mental health issue (Spielberger, Gonzalez-Reigosa, Martinez-Urrutia, Natalicio & Natalicio, 2017; Klein, 2018; Rathbone & Prescott, 2019). Previous research has shown that women are more likely to experience any form of anxiety than their male counterparts (McLean & Anderson, 2009). One such

Skilful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy

anxiety pertains to health. Health anxiety (HA) is typically determined as the apprehension of being ill based on the misinterpretation of symptoms (Owens, Asmundson, Hadjistavropoulos & Owens, 2004). As aforementioned, women are more likely to experience anxiety and are the only sex to experience pregnancy. Pregnancy, disregarding medical incongruities, is perceived to be an anticipated, archetypal happening within a female's being. Due to the various health-related changes experienced in such a short time span, and the impending changes the birth of a child will inevitably cause, pregnancy can be an anxiety-inducing time. Pregnancy specific anxiety is defined as concerns and fears about being pregnant, childbirth itself, offspring health and impending parenting capabilities (Da Costa, Larouche, Dritsa & Brender, 1999; Huizink, Mulder, Robles de Medina, Visser, & Buitelaar, 2004; Ross & McLean, 2006; Stoll, Swift, Fairbrother, Nethery & Janssen, 2018).

Previous research has proffered the possibility that pregnancy-specific health anxiety may, in fact, be a distinct clinical diagnosis that remains difficult to diagnose due to many health-related symptoms and health care appointments relating to pregnancy and also the rigid time constraints (Rathbone & Prescott, 2019). This may lead pregnant women to engage in oHISB. oHISB is the act of seeking health information online. Internet access can be a valuable resource for those in need of answers to health related queries as it provides instantaneous access and a surfeit of knowledge. However, it is salient to note that not all information found online is reliable and some may struggle to decipher the validity of an information source. For pregnant women who are adept at engaging in oHISB and can effectively navigate through a mass of online data, utilising only trustworthy sources, the act can be extremely beneficial for sating queries and allaying concerns and anxieties. However, for those who digest and trust all or incorrect online information, oHISB can increase health anxiety specific to pregnancy and become the causal factor of further anxieties.

Pregnancy and Online Health Information Seeking Behaviour

Previous research has explored what triggers pregnant women to partake in oHISB and the subsequent effects. Prescott and Mackie (2017) evidenced that the amount of time spent searching online tended to influence the optimisation of the ability to Skilfully Surf. The results reported a correlation between excessive amounts of time spent searching online and what has been termed, Problematic Internet Use (PIU). PIU has been demarcated as an unsuitable usage of the internet which subsequently has a detrimental effect on psychological and social functioning (Spada, 2014; Laconi, Vigouroux, Lafuente & Chabrol, 2017). It has been noted that individuals who experience PIU have the inability to control the amount of time they spend online (Jung et al. 2014; Spada, 2014). Some participants in Prescott and Mackie's (2017) study reported that they found it hard to know when to stop searching online for health information. Due to this, participants began to search excessively. Whilst they were aware that some searches were unnecessary, they found it hard to stop. One of the reasons that participants spent so much time online was due to repeating previously executed searches. This was done for several reasons such as, finding information from various sources, making sure information was consistent across said sources, finding sources which were easier to understand, topical reassurance and disagreement with the original information. Repeated online searches could not only increase time spent searching online but also, pregnancy specific HA. This is especially true when women find conflicting information online and are unaware how to navigate to the most reliable source to ease their concerns.

Participants sought data saturation for a stronger sense of reassurance. This was achieved when participants fully understood health information which they had queried, and when they felt like they had

exhausted all possible sources of information. Participants of Prescott & Mackie's study (2017) evidenced that they were able to decipher which online sources were credible or not. Many participants gravitated towards the NHS website and other government validated web information sources. However, this is not true for the entirety of internet users. Online health information can be difficult to traverse due to the lack of ethical or governmental regulatory bodies controlling uploaded information (Eastin, 2001). Due to this unregulated flow of information, internet users can become confounded when attempting to determine which sources are credible or not (Adoni, Cohen & Mane, 1984). A sense of belonging and familiarisation was influential when exploring the ability to online search effectively. Reading other women's post and blogs that related closely to the participants own situation reduced worry and ensured the participant that many of their symptoms were typical. Frost & Massagli (2008) found that when patients shared information online which were similar, more positive social evaluations were made and social bonding was instigated. However, whilst this more personal method of oHISB may grant the user with a sense of belonging, there is a risk that women could misinterpret the subjective narratives they are faced with. Prescott & Mackie (2017) found that participants frequently came across subjective health accounts like their own which were more inclined to document the "worst case scenario." This can trigger or exacerbate levels of pregnancy specific HA as women can, not only misconstrue the narrative, but also, misinterpret their own symptoms, attributing the most severe outcome and diagnosis to their own health conditions.

Prescott, Mackie & Rathbone (2018) also carried out research which looked at the predictors of HA during pregnancy. Results from this study suggested that if a pregnant woman is not able to identify when she has researched enough to satisfy her query regarding health, levels of HA will increase. Similarly, the study found that repeating searches when researching around a particular health query increases levels of HA. This could be because users will be presented with a plethora of conflicting information. Interestingly, within this study, using different sources when researching a health query online was not a significant predictor of HA during pregnancy. This could be because the participants were using various sources to ensure the highest level of informational validity when acquiring health related data online. In a third study (Rathbone & Prescott, 2019), evidenced that searching repeatedly online for the self was not a significant predictor of HA during pregnancy, but doing so for one's unborn child was. This study suggests that if women experience high levels of pregnancy specific HA, these anxieties may be carried on into motherhood when the baby is born. "Anxiety specific to pregnancy ceases when gravidity comes to an end and feelings of health anxiety then tend to be transferred from the mother (parent) to the child when one becomes a new parent" (Rathbone & Prescott, 2019). This research evidences the necessity for an intervention to help relieve pregnancy specific HA prior to childbirth.

APPLICATION DEVELOPMENT

The SO-FAR app was conceived and designed as part of a psychological study with technical developments of the application undertaken by a commercial company which will be referred to as application developer (AD). The focus of this chapter is on the application development and due to General Data Protection Regulations (GDPR) details of the study and the name of the commercial organisation have been removed.

Prior to the development of the Skilful Surfing app, the previous systematic research of Bakker, Kazantzis, Rickwood and Rickard (2016) was considered. This research gave 16 recommendations on

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Table 1. Recommendations for future mental health apps

Evidence	Recommendation	Details
Demonstrably effective, but more research needed in MHapp field	<ol style="list-style-type: none"> 1. Cognitive behavioural therapy based 2. Address both anxiety and low mood 	<p>Start with an evidence-based framework to maximise effectiveness.</p> <p>Increases accessibility and addresses comorbidity between anxiety and depression. Also compatible with transdiagnostic theories of anxiety and depression.</p>
Probably effective, but more research needed in MHapp field	<ol style="list-style-type: none"> 3. Designed for use by non-clinical populations 4. Automated tailoring 5. Reporting of thoughts, feelings, or behaviours 6. Recommend activities 7. Mental health information 8. Real-time engagement 	<p>Avoiding diagnostic labels reduces stigma, increases accessibility, and enables preventative use.</p> <p>Tailored interventions are more efficacious than is rigid self-help.</p> <p>Self-monitoring and self-reflection to promote psychological growth and enable progress evaluation.</p> <p>Behavioural activation to boost self-efficacy and repertoire of coping skills.</p> <p>Develop mental health literacy.</p> <p>Allows users to use in moments in which they are experiencing distress for optimum benefits of coping behaviours and relaxation techniques.</p>
Supported by theory and indirect evidence but focused research needed	<ol style="list-style-type: none"> 9. Activities explicitly linked to specific reported mood problems 10. Encourage nontechnology-based activities 11. Gamification and intrinsic motivation to engage 12. Log of past app use 13. Reminders to engage 14. Simple and intuitive interface and interactions 15. Links to crisis support services 	<p>Enhances understanding of cause-and-effect relationship between actions and emotions.</p> <p>Helps to avoid potential problems with attention, increase opportunities for mindfulness, and limit time spent on devices.</p> <p>Encourage use of the app via rewards and internal triggers, and positive reinforcement and behavioural conditioning. Also links with flourishing.</p> <p>Encourage use of the app through personal investment. Internal triggers for repeated engagement.</p> <p>External triggers for engagement.</p> <p>Reduce confusion and disengagement in users.</p> <p>Helps users who are in crisis to seek help.</p>
Necessary for validation of principles	<ol style="list-style-type: none"> 16. Experimental trials to establish efficacy 	<p>It is important to establish the app's own efficacy before recommending it as an effective intervention.</p>

(Bakker, Kazantzis, Rickwood and Rickard, 2016)

inclusive aspects of mental health apps (MHapps) to increase interventional efficacy (Table 1). Throughout this chapter, where relevant, said inclusions of recommendations are identified.

A draft version of the app designed on Microsoft Word was sent to the AD as a reference point during design. This version was crude but contained all the research related information needed for inclusion, using comments in the track changes section. Examples evidence various stages of the app in the initial development format in the following figures (Figure 2-4).

After the AD was given the first draft and the relevant information they conferred back and forth regarding development, information inclusion, data recording and aesthetics. To communicate with

Figure 2. Log on/Sign-in menu of skilful surfing (draft format)



the AD, an app named Asana was used. This app helps teams who are working on a singular project to monitor and organise their tasks. The figures below (Figure 5) provide an example of how Asana aided task management. Any identifying information, from names to email addresses, has been redacted from the images.

After the initial version of the app was developed, the app TestFlight was downloaded. This app is an Apple Inc. owned service which allows over the air installations and testing of beta apps for developers. Using this facilitated further conference on all aspects of the app until both the AD and the authors were satisfied with the final version.

App Introduction and Information

The app was termed, Skilful Surfing Online for Anxiety Reduction (during pregnancy). The app was then later referred to using the acronym SO-FAR for ease. The acronym was beneficial in the design of the app logo as it allowed for a concise name (Figure 6).

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Figure 3. Skilful surfing menu (draft format)

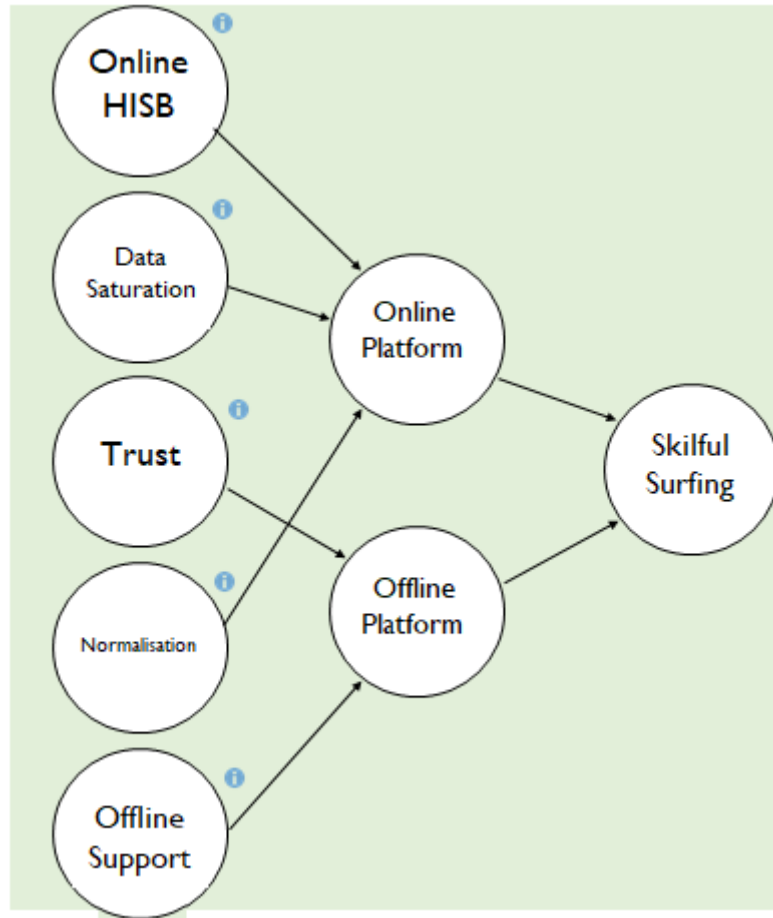


Figure 4. Skilful surfing menu (draft format)

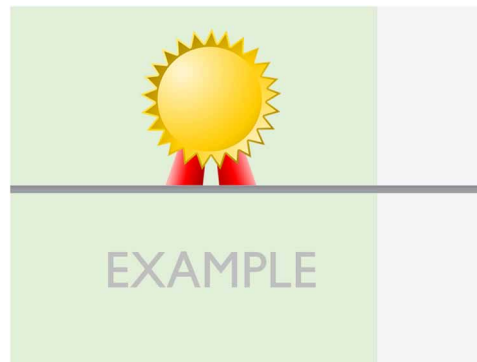
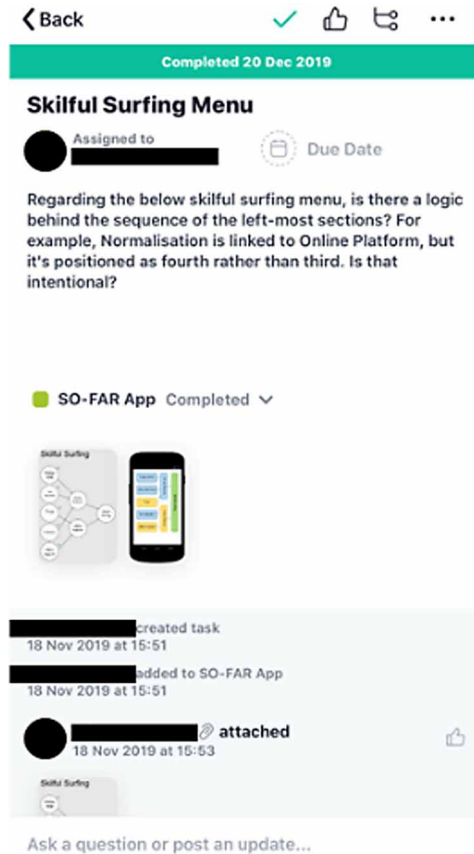


Figure 5. Task management

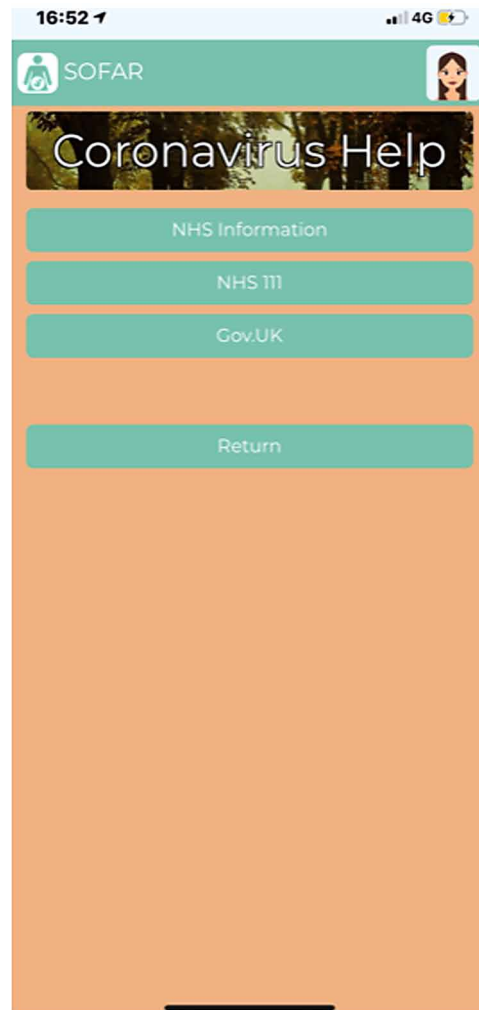


The initial screen stated the title and provided a summary which expressed that the app was designed for health anxious Mums to be. This sentence was inserted so that users had clarity regarding the purpose of the app.

Figure 6. SO-FAR app logo



Figure 7. Signposts



It was a requirement of the app that the user initially read the app introduction information and/or listened to an audio file prior to commencement of registration and utilisation of the app. The ‘listen’ feature, provided the user with all information regarding the app.

The rationale for the audio inclusion was to foster a more personal experience for the user and to increase accessibility. The app also contained a textual option for the user which they could read if they were audibly impaired, if they did not understand the audio, did not want to listen or if their device experienced technological difficulties upon playing the audio. The textual option could also be referred to if they felt the need to reiterate information from the audio itself. Users were signposted to charities and organisations such as the Samaritans and the NHS if they felt they needed further support not offered within the app. Considering the COVID-19 outbreak, further information was given in the form of governmental and health web sites, for those who wished to seek further information on the topic (Figure 7). This met the MHapp recommendation 15, which recommends links to crisis support services.

Figure 8. Avatars



The preliminary data accumulated from users was demographical. Users were prompted to provide information such as age range, chronology of pregnancy, health information, previous diagnoses, and marital status.

The user then completed the Health Anxiety Inventory (HAI-18; Salkovskis, Rimes, Warwick & Clark, 2002). Scores from the HAI-18 were then used to gauge not only the user's level of HA prior to the use of the interventional app, but also levels of HA throughout the use of the app and after completion of the SO-FAR app. This was achieved by push notifications being sent to the user via the app to repeat the HAI-18 every 4 weeks. This met MHapp recommendation 13; offering reminders to engage.

After the Introduction and Information section was reviewed, user enrolment complete and the HAI-18 questions answered, the user was then presented with an editable avatar used to represent their selves as they navigated their way through the app. This feature was another method of personalisation to encourage engagement. The avatars 'bump' grew in relation to how many weeks pregnant the user stated they were upon registration. The personalisation of the avatars strived to be as inclusive of all ethnicities and cultures as possible within the confines of the app development. It was assumed that if the app were tailored to be more interactive and allowed the user to immerse aspects and characteristics of their offline self to an online self, this would encourage usage. Examples of avatar personalisation are evidenced below (Figure 8).

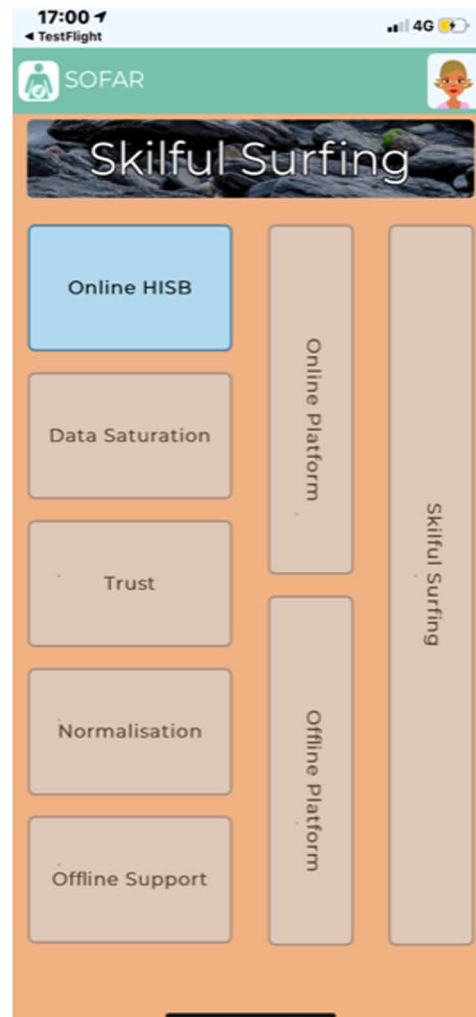
Allowing the user to personalise their own avatar met MHapp recommendation 4, as it allowed the interface to be tailored to the users' preference.

Once the user had created a personal password, logging on could occur whenever the user deemed fit to use the app. For ease of use, the option was given for the application to remember both the email and password simultaneously. However, if the user decided to do this, it was at their own risk, as no one else could control who may use the mobile device on which the app was downloaded and installed.

The log in section was designed in a simple manner, meeting the MHapp recommendation 14 as it ensured a simple and intuitive interface and interactions.

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Figure 9. Skilful surfing model/app layout



Skilful Surfing

The model of Skilful Surfing, based on previous research, was used as an informative and interactive mHealth intervention for women suffering from pregnancy-specific HA, as explained previously, in the chapter background section. Each aspect of the model directed the user to a different section of the app (Figure 9).

Each aspect of the app systematically opened as the previous aspect was completed. Users had to work their way from the upper left-hand side and move down to complete the course. When Online HISB, Data Saturation and Normalisation were complete, they turned blue and unlocked the Online Platform section. This was also true for Trust and Offline support aspects. When complete, these two unlocked access to the Offline Platform (Table 2).

The online and offline platform aspects referred to where the user obtained information and support, which subsequently led to the final aspect of the model, Skilful Surfing.

Table 2. Skilful surfing model/app layout

Aspect of the Model	Informative Explanation
Online HISB	Online Health Information Seeking Behaviour is how people use the internet to search for health information
Data Saturation	Data saturation is about recognising when enough information has been acquired to answer a health-related question
Trust	Trust is about how much trust there is in health information from both offline and online sources
Normalisation	Normalisation is the reassurance that health issues and symptoms are completely typical to pregnancy
Offline Support	Offline Support is how and where information is gotten in the real world

Online Health Information Seeking Behaviour (oHISB)

Self-reflection occurs when an individual studies their self introspectively exploring the schema of personal capacity, character and carriages which influence personal conduct, choice, and social interaction (Johnson *et al.*, 2002). Self-reflection has a long-spanning place in philosophical history, reaching as far back as Classical Greece. Plato wrote in his dialogue Charmides,

Then the wise or temperate man, and he only, will know himself, and be able to examine what he knows or does not know, and to see what others know and think that they know and do really know; and what they do not know, and fancy that they know, when they do not. No other person will be able to do this -Plato

More recent research suggests that self-reflection is a method of assessing the self and is a key factor in the self-regulatory process which underpins behavioural modification in both clinical and general populations. Self-reflection has shown efficacy in various areas such as education (Schunk & Zimmerman, 1998), nursing (Bagay, 2012), sport (Anderson, Knowles & Gilbourne, 2004), psychology and mental health. Self-reflection has also shown to be efficacious when used for performance-enhancing coaching with nonclinical populations (Grant, Franklin & Langford, 2002). For this reason, self-reflection has been used effectively as a counselling technique for some time (Laireiter & Willutzki, 2003; Boud, Keogh & Walker, 2013; Wosket, 2016). Encouraging the user to self-reflect met MHapp recommendation 6, as there were several recommended activities which aimed to encourage the development of coping skills.

For the integration of self-reflection in the app for this study, the first aspect of the model that the user was presented with was designed to assist with the exploration and reflection of how they personally use the online platform to search for health information. This aspect was designed this way to lead the user into an ad hoc session of self-guided counselling using the medium of self-reflection. This was achieved by questioning the user about the ‘Who?’, ‘When?’, ‘What?’, ‘Where?’ and ‘Why?’ These questions are depicted pictorially within a screenshot of the app, and then a concise table is provided, presenting the initial integrative word (aspect), the reflective question and the method employed within the app.

Table 3 displays the aspects of the questions; reflective questions posed and describes further, how said respective question encouraged self-reflection.

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Table 3. Aspects, reflective questions and methods

Aspect	Reflective Question	Method of Reflection
Who?	Who do you search for most online?	For the sake of data collection, this part of the app asked the user who they searched online for the most (their unborn child, their self or another). This also helped the user to understand why they sought information online the most and whose health caused them increased levels of anxiety. If the user selected the option 'other' then a text box appeared, in which they were prompted to explain their searching habits.
When?	When are you searching online?	It was salient that the user understood that searching online for health information was typical; however, if they continued to search for 30 minutes or more, and still did not feel adequately informed and reassured, then the searching was becoming excessive and could have a detrimental effect on anxiety levels. This section of the app equipped the user with a timer, in which a countdown of 30 minutes commenced. If the user was still searching for online health information past this allocated time slot, the app advised them to contact an offline source such as their general practitioner or midwife (MHapp recommendation 10).
What?	What information are you searching for?	This question was not only reflective, but a part of data collection. It asked, 'Which information do you search for most frequently?' (your physical health, your unborn baby's health, your mental health and other). Again, if another was selected, then a text box appeared, for further explanation.
Where?	Where are you searching for the information?	This was not only an encouragement to reflect, but a method of signposting. Here it was explored as to where a user obtains data from and whether it was a reputable online source. Websites of reliable information from the relevant governing bodies and charities were provided for the user.
Why?	Why are you currently searching?	This question was posed to understand why the users were searching for information. This question gave the user the biggest cause for reflection and acted as a reminder to remain focused upon their initial query.

Data Saturation

Data saturation describes the repeated return of information. When one is health-information seeking online, further seeking, does not always lead to further data acquisition, but merely reiterates information which the user has previously found and read (Mason, 2010). Whilst searching for health information online, individuals tend to attempt to reach a point of data saturation; wherein they feel as though they have explored enough data to answer their question, concluded and feel reassured by the data which they have been presented with. The process of reaching data saturation can consist of one, thorough, understandable answer to a query or can be a longer procedure if the user is provided with multiple answers to their query which are unclear or conflicting.

It is not unusual to become distracted in a negative way when attempting to reach such saturation using the online platform. If online health information returns further uncertainties, then this may possibly lead to increased searches and higher levels of HA. Due to this fact, it is crucial that when an individual finds the answer to their query when seeking health information online, that they do not unnecessarily continue their search, to avoid information which may be irrelevant to their health query or instigate a further lack of understanding.

To act as a distraction technique, this section of the app provided the user with a gamified function. The inclusion of gamification promotes the motivation to engage with the app (MHapp recommendation 11). This aspect aimed to remind users to remain focused on their initial health query and when they have reached data saturation, served as a distraction technique. HA can lead to fixation on health issues and maladaptive cognitions.

The game was called ‘*Catch the Baby’s Items!*’ It was a game of falling items wherein the user must ‘catch’ any baby-related products by moving their personalised avatar underneath said product as it drops. The baby’s items were those such as feeding bottles, dummies/pacifiers, teddy bears and rubber ducks. However, there was also a selection of ‘mummy’s items’ such as coffee cups, chocolate bars and a mobile phone. If the player caught these then they lost up to three virtual “lives” and the game was over. There were 20 levels which increased in speed as the user levelled up (Figure 10). This game acted as a disruptive intervention to redirect the attention of health anxious pregnant women.

Trust

Previous research has highlighted the questionable reliability of invalid health data, which may negatively affect the outcomes of online health information-seeking behaviour.

The integrity and reliability of information found online can be questioned as, to date, there are no comprehensive criteria or stringent guidelines in situ to prevent the dissemination of fabricated or fictitious information. Digital information can be easily manipulated, altered, plagiarised, or misrepresented (Metzger, 2007). Due to the lack of regulations concerning information upload, almost anybody could assume the role of an author, yet lack the apt expertise to topically narrate, essentially providing only subjective opinions.

Due to this, it is important that users know how to search for health information online skilfully, deciphering which sources are credible and which information is tangible. To encourage proactive, self-psychoeducation, included in the app was the game of ‘*True or False,*’ where users had to decide whether the information they were presented with were reliable facts or pregnancy myths. After the user answered, a brief explanation was given regarding informational integrity (Figure 11).

The aim of this game was not only to educate users on common myths and misconceptions, but to also teach users how to identify unreliable pieces of information regarding pregnancy when independently navigating their way through online health information. This section provided mental health literacy which is MHapp recommendation 7.

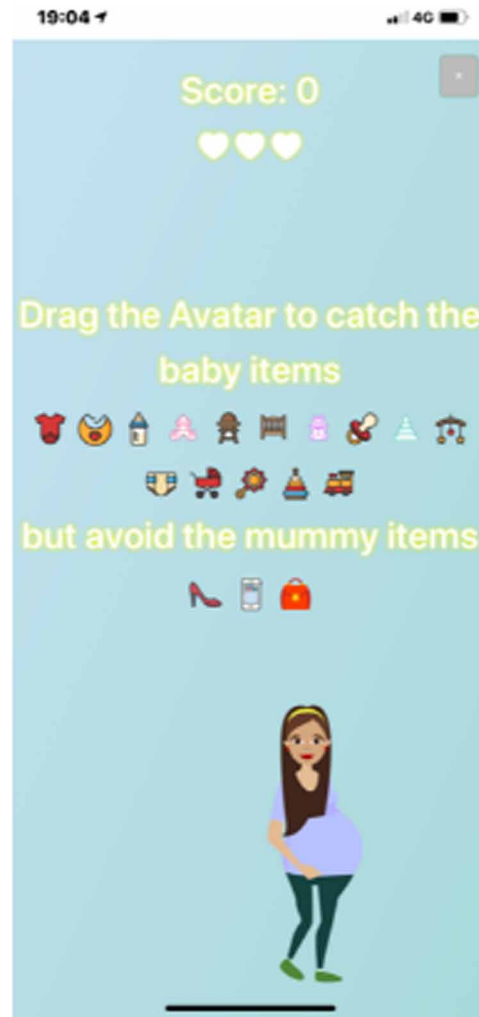
Normalisation

When pregnant women are searching online for health information, they are not solely seeking facts, figures, and statistics. It is also true that said women are searching for a sense of reassurance from others who are experiencing, or have previously experienced, similar health issues. Interaction with those who have experienced the same, or similar, health issues and symptomology can provide a sense of reassurance for others via the medium of general conversation, topical reassurance and by providing comfort by means of normalising their symptoms and promoting the understanding that they may not be atypical to gravidity.

Previous research has evidenced that, rather than utilising technology to resist the biomedical paradigm; the use of the resource not only encourages the doctor-patient relationship but also allows for

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Figure 10. Catch the baby's items!

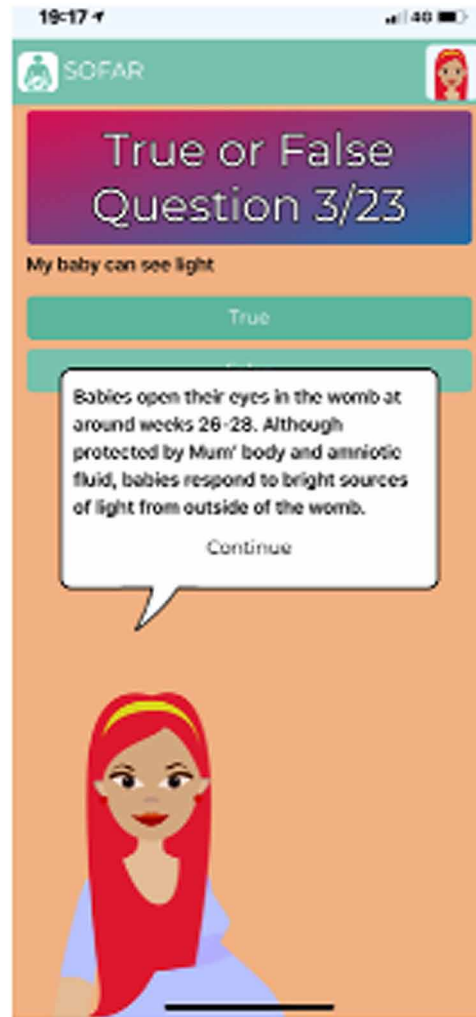


the confirmation of normalcy (Song, West, Lundy & Smith Dahmen, 2012). Using the online platform to reach out to others enables the user to gain a sense of camaraderie, support and to feel less alone (Prescott & Mackie, 2017).

Normalisation of symptoms using the internet can be achieved using resources such as chat rooms, blogs, forums, and the social media platform. To encourage the users to partake in this more intimate method of reassurance, the app contained hyperlinked chat rooms and forums. The app also continues to discuss the positive and negative facets of using social media such as Facebook when discussing confidential health information.

It is important that users were aware that it may be harder to remain anonymous on social media sites than it would be within a chat room. Many chat rooms identify users with a self-selected username which can be both generic and nonsensical, essentially providing no identifying information.

Figure 11. True or false

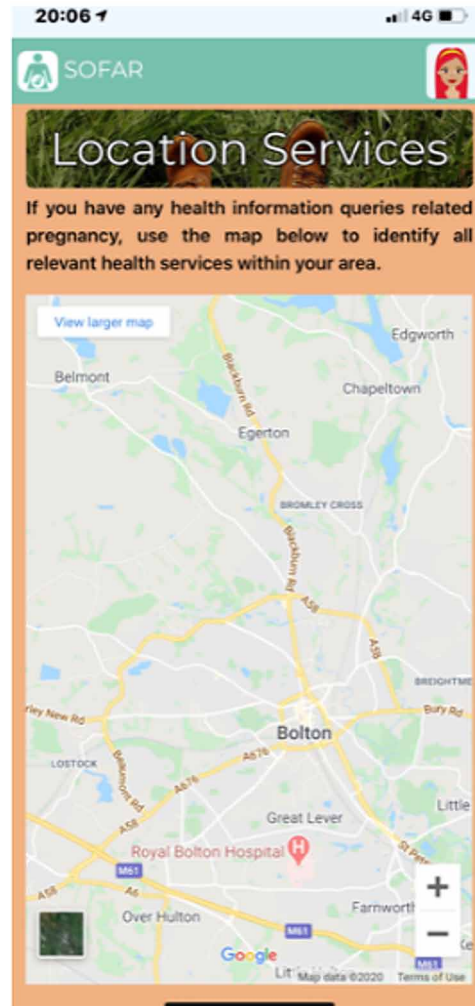


Offline Support

The term 'Offline Support' was inclusive of the support that users could access in the world outside of technology. This related to the many support services a user may utilise in their personal life, such as medical health professional appointments, health care specific informative classes, self-guided therapeutic support or even discussing their issues with family and friends.

This section of the app intended to equip the user with information they may need to manage their own physical and mental health issues effectively in the offline world (MHapp recommendations 6. Recommend activities and 10. Encourage nontechnology-based activities).

Figure 12. Location services



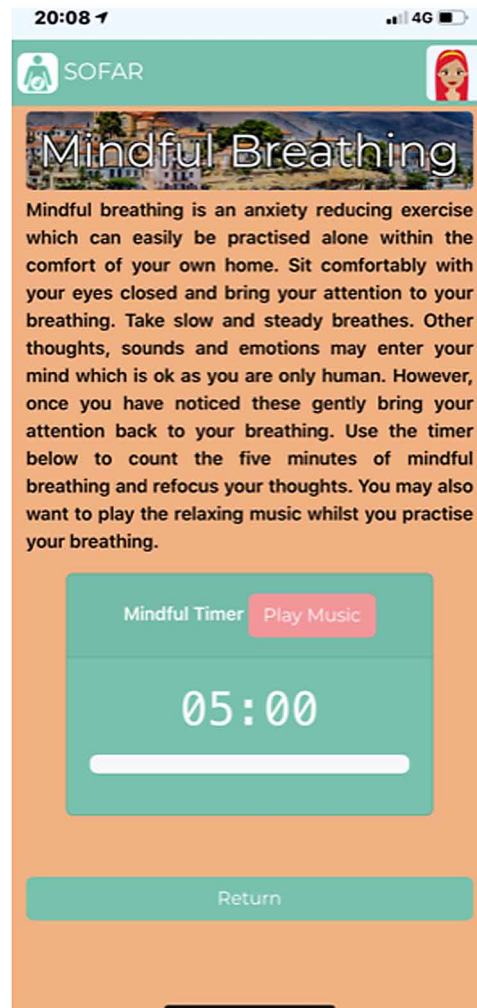
Location Services

If the user had any health information queries, wherein the optimum amount of information would have been gained from speaking face to face with the relevant health care professional, they were encouraged to use the location service on this app. With the embedding of Google maps, the user could search for services such as general practitioners, hospitals, drop-in centres, and support groups, finding the nearest one to them using a locality marker and the most effective mode of transport (Figure 12).

Mindfulness Techniques

Mindfulness is described as paying attention in a particular way: on purpose, in the present moment, and non-judgmentally (Kabat-Zinn, 2009). Much previous research has evidenced that mindfulness can

Figure 13. Mindful breathing



aid in reducing and regulating feelings of anxiety (Coffey, Hartman & Fredrickson, 2010; Roemer & Orsillo, 2010; Desrosiers, Vine, Klemanski & Nolen-Hoeksema, 2013).

In contemporary society, it can be difficult to schedule time to practice mindfulness techniques and to focus upon one's self in an introverted manner. This is due to numerous reasons such as the various roles and responsibilities of the individual, an excessive amount of stress or even an unintended self-neglect of one's personal mental health state. Mindfulness can be complicated to carry out for those with HA due to excessive rumination and maladaptive cognition typical to the disorder. It can be harder for individuals with anxiety to focus on positive aspects due to the invasive nature of pejorative thoughts.

SO-FAR proffered a brief explanation of mindfulness to the user. The description of the technique was understandable and provided a transient description of the concept of mindful breathing. The app encouraged the user to participate in the action using an integrated timer which spanned five minutes (Figure 13).

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The user also had the option of playing tranquil music whilst practicing their mindful breathing technique. Previous studies have found that there is a negative correlation between excessive rumination and the ability to partake in mindful breathing (Burg & Michalak, 2011). Due to the nature of pregnancy-specific HA, users may find partaking in this self-help technique more difficult than others. Being aware of this, a sound bite of five minutes' worth of relaxing music was included within this section as it has previously been evidenced that compositions of a calm and serene tempo can alter emotional states, essentially reducing levels of stress and anxiety (Elliot, Polman & McGregor, 2011).

Another mindfulness technique extended to the user Notice, Observe, Wise; which goes by the acronym N.O.W. This easy to utilise and understand technique helps users to refocus their thoughts when they are experiencing high levels of anxiety.

N was for notice. This method encouraged those with a high level of anxiety to notice the way they were feeling and come to accept it to avoid the increase of such emotions and concerns. O was for observe. This encouraged the user to observe what they are doing within the moment and to explore whether they could notice the triggers for their HA. W was for wise mind. This encouraged the users to rationalise their thoughts, redirect their focus and essentially relieve their anxiety.

5 4 3 2 1 was a distraction technique. This encouraged the user to redirect their focus from the issue which was triggering their HA. This practice encouraged the user to name 5 things they could see, 4 things they could hear, three things they could feel, 2 things they could smell and to take 1 deep breath and subsequently refocus.

What Should You Do?

When pregnant, women may experience heightened levels of anxiety as they are not only concerned for their personal health and wellbeing but also that of their child. Regardless of parity, a woman can experience feelings of confliction if they come across a health situation, in which they are unsure of how to think, behave or react. This is especially relevant when considering the surfeit of health information online, which may often be contradictory. As aforementioned, it cannot always be ascertained whether online information is true or not due to the lack of regulations in place when uploading information onto the internet. Sources are not always reliable and can cause further confusion and higher levels of HA.

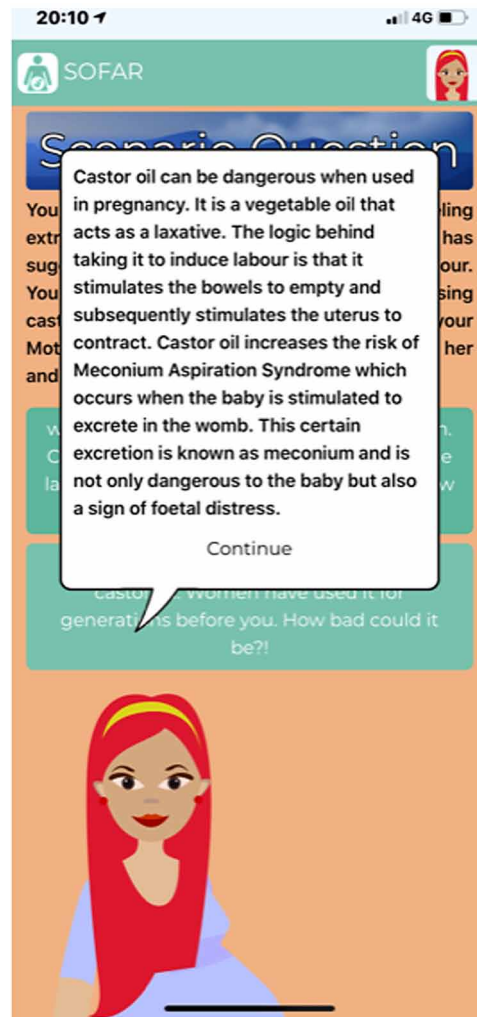
This section of the app was a multiple-choice game which aimed to aid pregnant women to differentiate between what is true or false where conflicting information is the norm and to rationalise thoughts, assess situations and to make more productive and informed choices about both their health and the health of their unborn child (Figure 14).

My Pregnancy Diary

My Pregnancy Diary was a feature within the app which used the basic elements of CBT to encourage the user to self-reflect on their thoughts, emotions and behaviours and consider how they can guarantee a more positive outcome if they are ever faced with the same pregnancy-specific HA again. My Pregnancy Diary met several of the MHapp recommendations (1. Cognitive Behavioural Therapy, 5. Reporting of thoughts, feelings, or behaviours, 8. Real-time engagement, 12. Log of past app use and 14. Simple and intuitive interface and interactions).

CBT has proven to be efficacious when used to treat anxiety disorders time and time again (Kendall *et al.*, 1992; Otto, Smits & Reese, 2004; Norton *et al.*, 2013; Fjermestad, 2016; Rathbone & Prescott,

Figure 14. What would you do?

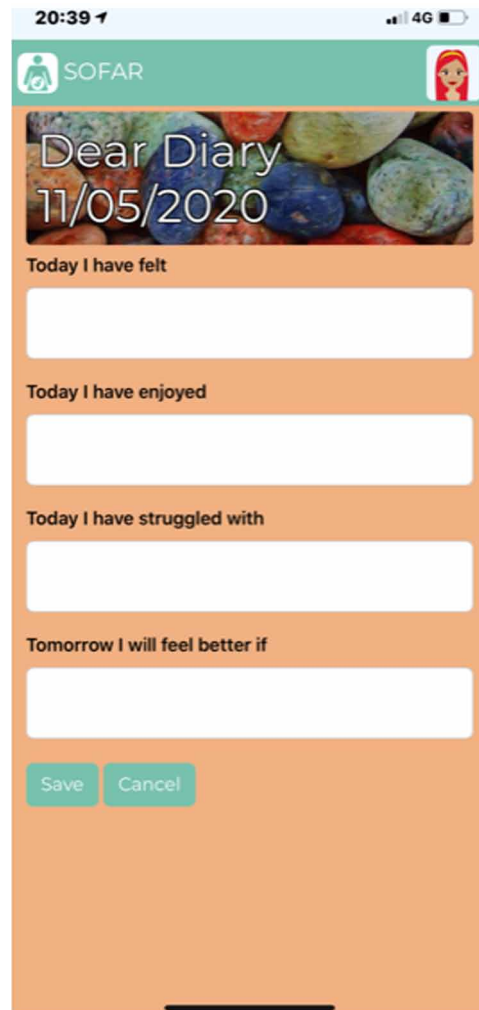


2017; Rathbone, Prescott & Clarry, 2017). This has also been true for HA (Surawy, McManus, Muse & Williams, 2015; Daniels, Brigden & Karcorova, 2017; Newby *et al.*, 2018). My Pregnancy Diary was a feature within the app which asked questions using a statement method which the user could complete, as evidenced below (Figure 15).

Below each statement was a text box in which users could log their answers. The text box method allowed the user to be as open as possible when giving their answer, ensuring that there was no restraint to their word count. This was deemed the optimum way to acquire qualitative data from the users. This is important as pregnancy and health-related issues are extremely subjective, varying from woman to woman. Users could save the data from their diary entry so that they may return to their entries to engage in further reflection (Figure 16).

Skilful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy

Figure 15. My pregnancy diary



20:39 4G

SOFAR

Dear Diary
11/05/2020

Today I have felt

Today I have enjoyed

Today I have struggled with

Tomorrow I will feel better if

Save Cancel

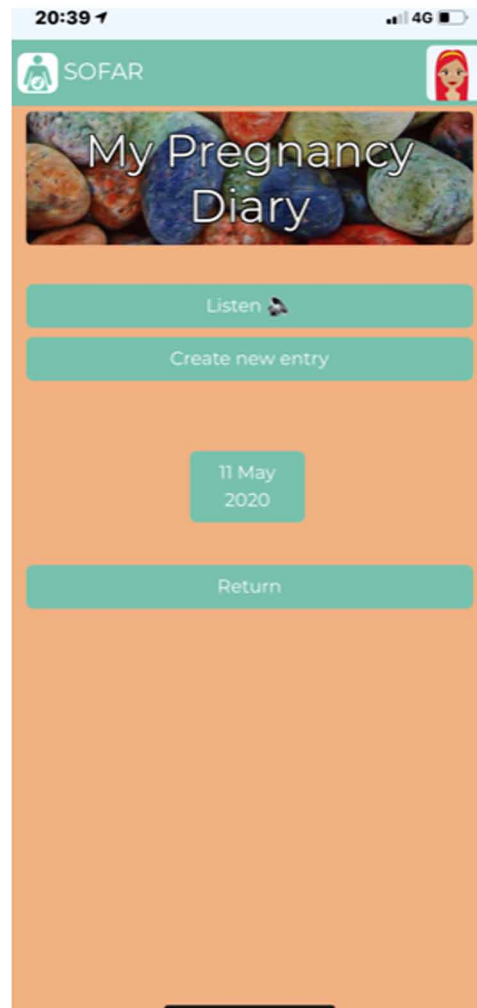
Talk It Out

This section was purposeful as it encouraged users to reach out to any support network, they had around them, whether it was family or friends or health care professionals. If the user did not have a close support network, did not feel as though they could discuss their health anxieties with their close ones or did not have the optimum doctor-patient relationship, then they were signposted to relevant organisations which could offer validated, impartial advice to those who contact them, such as Anxiety UK, Samaritans, the National Childbirth Trust (NCT) etc.

The Online and Offline Platform

This section of the app supported the user to reflect on the skills that the SO-FAR app had equipped them with and how effective the inclusive interventions had been for them. The user was presented with

Figure 16. My pregnancy diary (saved entries)



a list of statements which they were asked to ‘tick’ if they were relevant to their selves after using the app and submitted those answers for data collection. Both the online and offline platforms had a list of relevant statements (Figure 17 & 18).

Skilful Surfing

When both the Online Platform and the Offline Platform checklist had been submitted, the user had reached the end of the Skilful Surfing course and was met with this screen (Figure 19).

This section of the app marked the end of the Skilful Surfing course. However, although it concluded the Skilful Surfing course itself, users were encouraged to continue using the application as frequently as possible throughout their pregnancy so that they may remain refreshed on how to Skilfully Surf the internet for health information, utilise offline support networks, and use integrative therapy techniques to reduce pregnancy-specific HA using a self-guided method.

Skilful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy

Figure 17. Online platform skills checklist



DISCUSSION

This chapter has provided the reader with a comprehensive account of the development process of the SO-FAR Skilful app. It was explained how the app was designed and developed in partnership with the AD. All the facets (Online Health Information Seeking Behaviour, Data Saturation, Trust, Normalisation, Offline Support, the Online and Offline Platform and Skilful Surfing) were all detailed.

The interventions and counselling techniques utilised throughout were debated and justified; based on previous research and theoretical or empirical evidence of efficacy, intervention techniques included consisted of the likes of psychoeducation and signposting, and the basic counselling concepts included were self-reflection, mindfulness, and CBT.

Figure 18. Offline platform skills checklist



The psychoeducation within the app was placed here so that users may educate themselves further on pregnancy and to dispel any pregnancy myths which some users may believe to be valid information. If further help was needed, users were signposted to relevant charities and organisations.

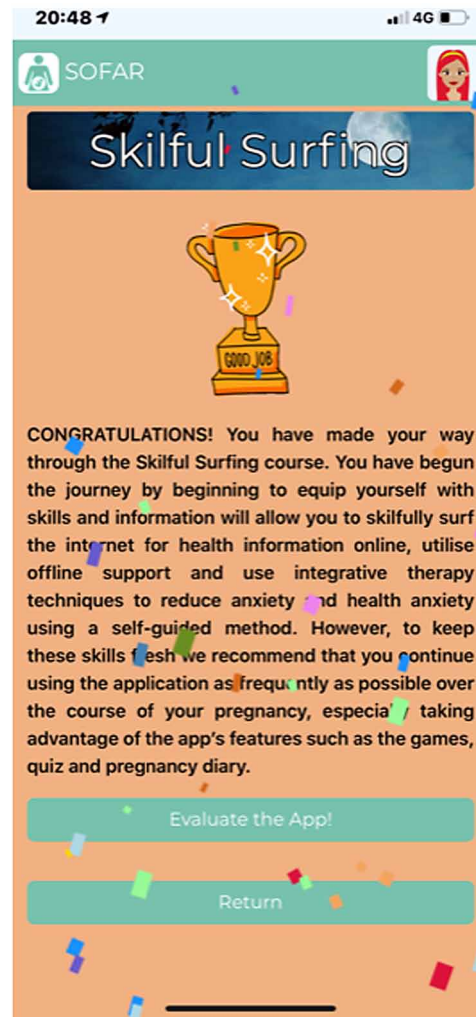
Self-reflection was promoted so that users may be able to evaluate their thoughts, feelings and behaviours, mindfulness was promoted to encourage users to become more mindful of their feelings so that they may learn techniques to promote a more positive mental health state and CBT was included due to its previously proven efficacy when included in mHealth interventions.

Although deliverance method is via an app, self-guided care was encouraged using both the online and the offline platform as the premise of the research and the app was that one can never act as a principal proxy to the other.

If women with pregnancy-specific HA acquire data from both an online and offline source, they may be able to take on a more active, participatory role when it comes to their own personal health care during

Skilful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy

Figure 19. Skilful surfing



gravity. Using both platforms allows women to become more informed patients and make informed choices about their health care and the choices they make whilst pregnant.

Overall, the aim of the app development was to reduce levels of pregnancy-specific HA by encouraging women to become more adept when navigating through online health information, further personal self-awareness and education; promote the ability to identify triggers and understand when and why maladaptive cognition and rumination are being experienced.

The development of the innovative SO-FAR is dissimilar to other pregnancy-related apps on the respective online marketplaces. The reporting of the development provides future researchers with information suggesting how counselling techniques may be included in pregnancy-related apps that adhere to the MHapp recommendations stemming from extant research.

If a woman presented with pregnancy-specific HA to the relevant maternal healthcare proviso, she may then be signposted and/or referred to an alternative provision which focuses on the mental health of the patient. Currently, many of the said mental health provisions are subject to oversubscription, leading

to long waiting lists for appointments. The app may be efficacious in reducing pregnancy-specific HA during the wait time and could possibly even allow women to manage their thoughts and feelings to the point where they no longer need the pre-booked appointment.

Further Research

The development of the SO-FAR app encouraged further development of mHealth apps to adhere to the GDPR, include personalisation, provide a space for psychoeducation, and incorporate counselling techniques such as, CBT, mindfulness, signposting, and reflection.. It would be beneficial for academic information within the app to be further condensed. This would ensure that the app would smoothly translate for use in clinical public or private health care settings.

Referring to the first of Pach, Rogge, Wang & Witt's (2021) five recommendations for future mHealth app development, gaining stakeholders opinions, it would be advantageous to include the opinions, experiences, and voices of potential users of the app or those who have engaged with the therapy via varying mediums such as, computerized, telephone, and face-to-face. This could ensure that the interventional method of the mHealth app is informed by the lived experiences of people who present with the respective mental health issue, who are the target audience. Future mHealth app development would benefit from input from multidisciplinary teams during the design and development stages. This could provide valuable insights regarding the positive and negative aspects of all methods of deliverance for those who may come to utilise it, essentially guiding the development, and improving the app.

Chapter Summary

Overall, the aim of the chapter was to report the development of a mHealth app to reduce pregnancy specific health anxiety in. This chapter has provided the reader with a comprehensive account of the development of the SO-FAR app. Here it was explained how the app was designed and developed in partnership with the AD and how the fundamental basis for the app was the model of Skilful Surfing, devised in previous research. All the facets (Online Health Information Seeking Behaviour, Data Saturation, Trust, Normalisation, Offline Support, the Online and Offline Platform and Skilful Surfing) were all detailed.

The chapter reported the interventions and counselling techniques utilised throughout. Based on previous research and theoretical or empirical evidence of efficacy, intervention techniques included consisted of the likes of psychoeducation and signposting, and the basic counselling concepts included were self-reflection, mindfulness, and CBT. Each different aspect of the model was depicted in depth and justification was provided for the addition of all information.

The psychoeducation within the app was placed here so that users may educate their selves further on pregnancy and to dispel any pregnancy myths which some users may believe to be valid information. If further help was needed, users were signposted to relevant charities and organisations.

Self-reflection was promoted so that users may be able to evaluate their thoughts, feelings and behaviours, mindfulness was promoted to encourage users to become more mindful of their feelings so that they may learn techniques to promote a more positive mental health state and CBT was included due to its previously proven efficacy when included in mHealth interventions.

Skilful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy

Although deliverance method was via an app, self-guided care was encouraged using both the on-line and the offline platform as the premise of the research and the app was that one can never act as a principal proxy to the other.

If women with pregnancy specific HA acquire data from both an online and offline source, they may be able to take on a more active, participatory role when it comes to their own personal health care during gravidity. Using both platforms allows women to become more informed patients and make informed choices about their health care and the choices they make whilst pregnant.

Overall, the aim of the app was to reduce levels of pregnancy specific HA by encouraging women to become more adept when navigating through online health information, self-aware and educated; promoting the ability to identify triggers and understand when and why they are experiencing maladaptive cognition and rumination.

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Chapter 7

Obsessive–Compulsive Disorder and Mobile Technology: A Research for Establishing the Main Features of an App Intervention for OCD Anxiety

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ABSTRACT

Obsessive-compulsive disorder (OCD) is characterized by the presence of persistent and unwanted obsessions, which take the form of intrusive thoughts. These lead to widespread anxiety and/or compulsions which take the form of repetitive acts to relieve anxiety. In 2020, for the author's master's degree final project, she decided to propose the creation of a mobile application for people with OCD, whose main purpose was to reduce the anxiety caused by it. Although mobile applications already exist for the treatment of OCD, it was necessary to fill some gaps and improve them. This chapter will examine the techniques that were applied on the investigation of the author's project—a competitor analysis and an exploratory qualitative research—and understand how they can help to retain some information that is beyond the literature review, and what needs to be retained from them to know which features and functionalities are most useful in an app that aims to support therapeutic intervention in individuals with OCD, as well as possible gaps that could be improved.

INTRODUCTION

In recent years, a major technological advance has been observed, which goes beyond solving communication and accessibility needs. This has been evolving rapidly and comprehensively (Islam & Mazumder, 2010), managing to respond to various needs, various types of users, problems and obstacles that arise through its use.

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Apps are daily present in our lives and can become an auxiliary tool, of wide reach, availability, and possibility of monitoring in diseases that could have the support of technology in their treatment, even though little developed, as is the case of obsessive-compulsive disorder (OCD) (Roncero, 2019).

Obsessive-compulsive disorder (OCD) is a serious disorder which, as its name implies, involves two phenomena - obsessions and compulsions. OCD is characterized by the presence of persistent and unwanted obsessions, which take the form of intrusive thoughts. These lead to widespread anxiety and/or compulsions which take the form of repetitive acts to relieve stress (American Psychiatric Association, 2014, cited in Sharma et al., 2018). An individual who carries it feels the urge to perform repetitive behaviors in response to an obsession. Associated with a reduced quality of life, as well as with high levels of social and professional prejudice, OCD brings with its thoughts and concerns that go beyond the rational.

A study conducted by Harvard University and organized by the World Health Organization, describes OCD as the tenth cause of disability in the developed world and it is estimated that about 2 to 3% of the world population suffers from this psychopathology (Abramowitz, 2008).

With the current context of the Covid-19 pandemic, the frequency of mental disorders is estimated to increase, however in OCD, the peculiarities of Covid-19 can directly impact the clinical course of these individuals. Topics of concern in OCD such as cleanliness, contamination, and the fear of contracting a disease now become a central topic in the news and media, which causes the exacerbation of this condition (Silva, 2020).

In 2020, for the author's master's degree final project, she proposed the creation of a mobile application for people with obsessive-compulsive disorder, whose main purpose was to reduce the anxiety caused by it.

It was intended that this mobile application could be used freely by users with OCD, but it could also be used as a complementary strategy in the therapy to be applied to this type of disorder, without, however, replacing existing therapies.

Based on the characteristics of obsessive-compulsive disorder, this app should focus on the anxiety, that is characteristic of this pathology, adding different functionalities compared to the ones of the existing apps. And, since OCD can be experienced differently by everyone, it was chosen to create a dynamic and versatile app that responds to the needs of each user.

In fact, the design and development of a multimedia project that addresses OCD was pertinent, since it is a mental disorder, little developed at the level of mobile applications, whose implementation could become very useful because it could be used at any time of the day, in the user's most anxious moments.

Although there are mobile applications whose goal is to support the patient with this type of disorder, these have some gaps that need to be improved and rethought, especially regarding the way they meet the different needs of these users, since OCD is experienced differently by them. The lack of some specific functionalities that could help the users to reduce anxiety was also a flaw in these mobile applications.

Regarding the structure of the chapter, this is composed of a brief approach to the topic of OCD and mobile applications for health, focusing on the concepts central to the work developed and the relevant relationships between concepts. After this, it is made an approach of the mobile applications for obsessive-compulsive disorder that already exist on the market.

The chapter continues with the supporting research where were employed two different methods – a competitive analysis and a qualitative exploratory research. It starts with the exploratory research, that involved in depth interviews with web and mobile designers and mental health experts, in order to better characterize this pathology and understand the forms of therapeutic intervention, as well as identify

Obsessive-Compulsive Disorder and Mobile Technology

which features and functionalities a mobile application should have to contribute to the reduction of anxiety caused by the obsessive-compulsive disorder. And it continues with the competitor analysis, that consisted of a comparative evaluation of the features and functionalities of mobile applications aimed at OCD diagnosis and intervention available in the Apple App Store and Google Play (based on a set of criteria).

Then, it is examined what is necessary to retain from this analysis and the functionalities and features that are most useful in a mobile application that aims to support therapeutic intervention in individuals with OCD, focusing on decreasing their anxiety levels and possible gaps that could be improved and rethought.

At the end of this chapter, there are given some contributions and limitations of the results and the technique employed. Some tips for prospect projects and for the future stage of development of the app, are also given in the end of the chapter.

OBSESSIVE-COMPULSIVE DISORDER

Obsessive-compulsive disorder (OCD) is a mental illness whose characteristic symptom, according to the DSM V, is the presence of obsessions and compulsions (Criterion A) (American Psychiatric Association, 2014). The second criterion for diagnosing OCD (Criterion B), according to DSM V, “emphasizes that the obsessions and compulsions must take up time (e.g., more than one hour per day) or cause clinically significant suffering or impairment to warrant a diagnosis of OCD” (American Psychiatric Association, 2014). This criterion helps distinguish the disorder from occasional intrusive thoughts or repetitive behaviors that are common in the general population.

Obsessions can be defined as recurrent and persistent thoughts, impulses or images that are experienced as intrusive and unwanted, and that cause anxiety or discomfort. These are subjective and tend to become fixed in consciousness, not easily removed (APA, n.d.; Gomes et al., 2010).

Compulsions, on the other hand, are conscious, standardized, recurring behaviors that arise when the individual tries to ignore or suppress these intrusive thoughts (Abramowitz, 2017). These are characterized by rituals, which are usually associated with decontamination (e.g., hand washing and cleaning), checking, repetition of routine activities (e.g., walking back and forth through a doorway), and orderliness; and by mental acts (e.g., praying, counting, or repeating words silently and phrases) in order to counteract an obsessive thought (Abramowitz, 2017).

It should be noted that obsessions are often related to compulsions and that, as a rule, an individual with obsessions tries to ignore, suppress, or neutralize them, either through other thoughts or through stereotyped actions (Rodrigues et al., 2018). Through compulsions, individuals seek to relieve the distress caused by obsessions that are sustained by pathological doubt (Peris & Schneider, 2019). This constant doubt that one has not done a certain task correctly and that compulsions are necessary to alleviate the anxiety caused by the initial obsession, is the main factor in maintaining OCD. Therefore, the individual learns that his behavior (compulsion) reduces his anxiety, at least momentarily, leading to an increased likelihood of that behavior happening again (Peris & Schneider, 2019).

However, it must be realized that this is a temporary reward, which leads to another state of anxiety. This leads to a reproduction of this behavior in a cyclical manner, based on a state of internal motivation in expectation of a reward (Aouizerate et al., 2004).

MOBILE HEALTH APPLICATIONS

When it comes to health applications, these are emerging technologies that fall under the broad heading of mobile health (*mHealth*). *mHealth* applications offer the opportunity to improve medical care and clinical services. These have the ability to monitor patients remotely, enabling the management of risk factors and the improvement of treatment adherence (McCurdie et al., 2012),

The number of these types of apps has been increasing over the years, and by the third quarter of 2020, 47.140 health apps were available on Google Play, while 48.608 were available on the Apple App Store (Clement, 2020).

Currently, inside mobile health apps, there are multiple segments that are divided into professional users and non-professional users. The two main categories of these types of mobile apps are wellness management and disease management, while other categories include self-diagnosis, medication reminders, and the ability for the patient to access their electronic portal (Kao & Liebovitz, 2017).

Wellness management apps, which include fitness, lifestyle modification, and diet and nutrition, account for about two-thirds of all consumer-facing apps (Kao & Liebovitz, 2017). By having tools that instruct and encourage a healthier lifestyle (Covolo et al., 2017) through healthy eating and physical activity, these types of mobile apps show a positive impact on promoting a healthy lifestyle for consumers.

The large use of mobile apps focused on managing diseases such as diabetes, asthma, and mental illness, reflects the growing interest in the use of *mHealth* apps for chronic disease management (Kao & Liebovitz, 2017). Apps that specialize or are specific to a particular disease can be useful to any individual who needs support in that disease. And while some of these apps cover a broad spectrum of general medical knowledge, they can be tailored to a specific disease.

Self-diagnosis apps can be used anywhere for emergency situations, allowing patients to select their symptoms and find possible diagnoses ranked by likelihood, along with patient education information for each condition (Kao & Liebovitz, 2017).

MOBILE APPLICATIONS FOR OBSESSIVE-COMPULSIVE DISORDER

For obsessive-compulsive disorder there are different mobile apps categorized as health apps, and these can be assessment apps, tracking apps, treatment apps, or incorporate features that allow for both diagnosis and intervention.

Assessment apps can be programmed with pre-defined algorithms, in which participants answer a series of questions based on subjectively reported symptoms to receive potential diagnoses (Labrique et al., 2013). These can also provide suggestions for possible pharmacological treatment options to assist clinicians with minimal psychiatric preparation (Labrique et al., 2013; Torous & Powell, 2015, cited by Ameringen et al., 2017).

Tracking apps offer healthcare professionals and patients the possibility of remote symptom monitoring through active and passive data collection (Ameringen et al., 2017). In active collection, users enter their own information, usually in the form of questionnaires, diaries, or subjective mood and anxiety ratings (Torous & Powell, 2015, cited by Ameringen et al., 2017). Passive data is collected automatically by many sensors built into smartphones, including GPS, accelerometers, calls, text activity, and microphones to detect social engagement (Torous & Powell, 2015, cited by Ameringen et al., 2017).

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Treatment apps, such as *mHealth* apps, create an opportunity to increase patient access to evidence-based mental health treatments (Ameringen et al., 2017). Most of these apps utilize treatment methodologies already established in existing psychological treatments, such as Cognitive-Behavioral Therapy.

These mobile apps can be used as a discrete form of treatment or come to complement formal treatment. To date, several meta-analyses have revealed that computer-based therapies are an effective means of treatment for anxiety disorders and depression (Andrews, Cuijpers, Craske, McEvoy & Titov, 2010; Davies, Morriss & Glazebrook, 2014; Richards & Richardson, 2012, cited by Ameringen et al., 2017), these, however, are recent.

In these types of apps, various approaches are used to improve mental health conditions. The approaches include “relaxation (31.4%), stress management (13.5%), symptom tracking (22.6%), relaxing audio (11.7%), keeping a journal (4.9%), connecting with mental health resources (1.1%), interpersonal support (2.7%), meditation (2.6%), and mood monitoring (9.4%)” (Islam & Choudhury, 2020).

Within these categories, we find different apps that support the patient with OCD, and some have already been examined and studied regarding their outcomes in the patient, as is the case of Boisseau et al. (2017) and Ameringen et al. (2017). These apps will be surveyed and briefly characterized here.

The *LiveOCDFree* app is a mobile application with the goal of intervening with individuals with OCD, based on the principles of exposure and response prevention (ERP). Through this app a user guide can be downloaded, which provides the rationale for exposure-based treatment of OCD, as well as guidance on how to set up a personalized ERP program and tips for working with specific OCD symptoms (Boisseau et al., 2017).

This app contains a video explaining its features, including how the individual should use the exposure practice tool and how to set up an exposure hierarchy; how to set reminders for ERP practice; and how to assess general anxiety before and after exposure practice. After creating an exposure hierarchy, the user identifies specific exposures to the practice (e.g., touching doorknobs) without engaging in the compulsive behaviors they have identified (e.g., washing their hands).

Through the app, participants can also create personal tapes and loop scripts for their imaginary exposure. In addition to this, users can track their progress with ERP, including their success in completing ERP exercises and see how their anxiety ratings change over the course of their practice. This is an application that sets goals and rewards for practicing exhibitions.

To investigate the viability, acceptability, and preliminary effectiveness of *LiveOCDFree*, twenty-one participants with mild to moderate OCD symptoms were included in a 12-week open trial of the app-driven self-help ERP (Boisseau et al., 2017). The results obtained in the aforementioned study suggest that *LiveOCDFree* holds promise in helping individuals with OCD conduct displays without requiring direct therapist involvement. However, some individuals still stated that they preferred or needed therapist assistance in developing the hierarchy and initiating exhibits (Boisseau et al., 2017).

Another app is *GGOC OCD Relief*, which aims to decrease the symptoms of OCD by acting on negative thinking and increasing the user’s awareness of negative thoughts by training the brain to challenge them.

In this app, the user is guided through a brief explanation of the mobile app’s goals and how it works. Next, the user is presented with 48 levels, with each level based on short games that have their own theme, and the user is recommended to complete 3 levels per day. The first levels are aimed at promoting the automation of positive “self-talk”. The themes that follow include self-esteem, belief in change, self-criticism, negative thinking, and more. *GGOC OCD Relief* has additional features, such as mood tracking, and these can be unlocked by purchasing a subscription.

A single case study evaluated the usefulness of the *GGOC OCD* as a relapse prevention tool for OCD. This, in addition to proving effective for individuals with OCD and reducing their symptoms or dysfunctional beliefs, was shown to be effective in contributing to maintaining therapeutic gains after Cognitive-Behavioral Therapy (Bélen et al., 2018).

Another mobile app is *nOCD*, which helps patients with two types of treatments: Mindfulness and exposure and response prevention (ERP) treatment. This app contains a guidance guide to use during a OCD episode; weekly tests to assess the severity of the disorder; information and education regarding OCD; data about the condition and treatment, which can be shared with a therapist; and motivational support through notifications.

In a pilot clinical study, 14 participants used *nOCD* with therapist guidance and preliminary results suggested that this integrated treatment can lead to a significant reduction in OCD symptoms (International OCD Foundation, 2018).

iCounselor: OCD is an app where users can rate the frequency and strength of obsessive and compulsive thoughts. Upon completion of this rating, users are given a selection of tools to help them with obsessions and compulsions, including ten calming activities, a thought “change” activity, and other methods to avoid resorting to rituals or compulsions. After completing one of these tools, users rate their obsessive and compulsive thoughts again, and repeat the process if necessary.

Anxiety Coach was created by the Mayo Clinic and is an app designed to help users reduce fear, worry and anxiety. Classified as a multi-purpose app for anxiety disorders, OCD and Post Traumatic Stress Disorder, it has several resources for dealing with anxiety. This mobile app offers a psychoeducation section, which provides educational information about anxiety and its treatment; a self-test section, which helps in tracking symptoms over time; a “To-do list,” which directs the user to make a list of dreaded activities and then to complete the tasks; and a final section, “Messages and alerts,” which alerts the user to when there are new tasks to complete.

Talkspace is an app developed for users interested in online psychotherapy. Through this mobile application, users connect with a therapist after answering a few questions in a free consultation. From the main *Talkspace* screen, users can send text, video, and voice messages to the therapist. There is also a tab called “Journey” through which users can adjust settings, view timelines, and track their progress. Another tab contains information regarding the therapist, such as their experience, credentials, focus, treatment approaches, availability, and schedules. It should be noted that *Talkspace* provides mentoring by therapists who specialize in various backgrounds.

For the credibility of this app, there is a pilot study to determine the viability of psychotherapy via text messaging (SMS) and web platforms. This had 57 adults seeking text therapy and the results indicated that 25 (46%) of participants experience significant symptom improvement, with high levels of satisfaction and cost-effectiveness (International OCD Foundation, 2018).

iCBT is an app available on the Apple App Store that helps users cope with depression and anxiety. Users can enter details of specific events that cause them anxiety, anger, fear, or other symptoms. *iCBT* aims to guide users through steps, which can be helpful in challenging and reframing the problematic thinking that can lead to stress and mental illness itself.

In this app, users assess their feelings during an event and describe all their negative thoughts. After this, they are guided to reformulate their thoughts by evaluating the event. The users then evaluate their feelings once again.

The *Obsessive Compulsive OCD Test* app is aimed at teenagers and adults dealing with OCD symptoms and behaviors. It is a mobile app that provides screening and psychoeducation to help users determine

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the presence and severity of OCD symptoms and learn a little more about it. The main features of this app are the “Descriptions” and “Test yourself” sections. This app also provides links to other apps from the same developer.

The *Impulse - OCD Treatment & Therapy* app is based on Cognitive-Behavioral Therapy and uses a structured therapeutic approach to combat OCD, by analyzing the user’s thinking and then providing methods and techniques to apply in everyday life. This app also makes use of Acceptance and Commitment Therapy, which is a branch of Cognitive-Behavioral Therapy, that focuses on understanding the sensations caused by anxiety and eliminating the feeling of “dread” that is conveyed by them (Impulse Therapy, 2020). By also using exposure and response prevention therapy, it is able to relieve anxiety and eliminate ritualized behaviors, which arise as a response to certain obsessions. In addition, this app works with Mindfulness, moving the user’s attention away from thoughts, focusing exclusively on the body and mind.

In *Impulse - OCD Treatment & Therapy*, the user is initially put through a course of therapy, providing the information, techniques and exercises needed to interrupt the cycle of OCD, followed by a monitoring of their progress, where regular updates are provided and a tracking of their path to recovery.

Finally, you can find the *OCD Anxiety Graph*, which is a diagnostic application designed to analyze the severity of obsessions or compulsions. Users rate the severity of their current OCD and can track their symptoms over time via a graph. The homepage of this application allows users to start a graph, view previous graphs, or delete all data from the graph.

That said, it is concluded that there is no standard for all these mobile applications. However, there are certain features that seem to remain common to most of these apps, such as user symptom evaluation and psychoeducation. Relaxation techniques, such as Mindfulness, are still poorly incorporated in apps for OCD.

TYPE OF RESEARCH

To be able to design and develop the authors’ application, it was necessary to choose the best research method for the project. To identify the functionalities, presented in all mobile applications supporting OCD, which could be equally relevant for the project, and to identify the gaps present in these apps, in order to fill and improve them, a competitor analysis was performed. This method consisted of a survey of the functions and functionalities of mobile applications available in the Apple App Store and Google Play.

Given the gaps in mobile applications that already exist on the market and in order to provide a greater support to the project, it was also used a qualitative exploratory research.

The qualitative exploratory research conducted aimed to obtain information from web and mobile design experts and from mental health experts, in order to support the design of the project, helping the selection of options and decision-making in the design and development of this mobile application.

This research had an exploratory nature, as there is little accumulated knowledge about the development of apps for intervention in this type of mental health issue. Since it was a qualitative study, it allowed obtaining in-depth information about the characteristics and needs of a user with obsessive-compulsive disorder, as well as the fundamental principles and guidelines for the development of an app to support this type of pathology, which is characterized by generalized anxiety.

One of the advantages of qualitative research is that it represents the views and perspectives of the participants in a study. The ideas emerging from qualitative research can represent the meanings attrib-

uted to real life events by the people experiencing them, rather than the values, biases, or meanings that were given by the researchers (Yin, 2015). It is through a qualitative research that it becomes possible to prove some knowledge acquired with the literature review, verify if there are any gaps that need to be corrected and obtain additional information from experts in their respective areas, to better guide the design of this app.

PARTICIPANTS

Therefore, to be able to obtain this kind of information, in order to support the design of the project, a total of 5 experts were interviewed, 4 of which belonged into the segment of mental health professionals, with experience in the area of obsessive-compulsive disorder, and 1 belonged to the segment of web and mobile design experts.

As for the samples, both were based on the same selection criteria, which was their expertise in this area. The idea was to interview the most appropriate experts to justify the decision making regarding the development and design of this mobile application.

Because they have specific training and clinical practice with patients suffering from this pathology, it was chosen to interview clinical psychologists who have experience in obsessive-compulsive disorder. Here, there was no restricted selection in terms of gender and age group, being only relevant their experience in psychological intervention and contact with patients who had this type of disorder. The mental health experts who were interviewed were aged between 25 and 35 years, female and had specialized training in the area, or a bachelor's or master's degree in areas relevant to the topic.

As for the selection of web and mobile design experts who may were involved in the development of an app for mental health or OCD, these were selected considering the mobile applications developed by them for obsessive-compulsive disorder, for anxiety and, in exceptional cases, for other mental disorders. The reason why designers of specific mobile applications for anxiety were chosen was that the range of applications for OCD was short and it became necessary to obtain more information regarding the development of a mobile application whose aim was to reduce anxiety arising from this pathology.

DATA COLLECTION

To collect the data necessary to carry out the study, a semi-structured in-depth interview was chosen, which allows the collection of more detailed and open-ended information, unlike what happens in a quantitative study.

The in-depth interview is one of the most widely used techniques in the social sciences and, according to Gil (2008) the interview has several advantages (Gil, 2008):

- It makes it possible to obtain data on human behavior in depth.
- It offers greater flexibility and clarification of the questions to the interviewees.
- It can capture body expressions and tones of voice of the interviewees.

Additionally, this type of interview enables access to the world of meanings of the user about that phenomenon (in this case, the disorder).

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There are several levels of interview structure, however, for the author's project, it was chosen the semi-structured interviews. This technique was used to elicit comments, opinions and suggestions from the interviewees that could shed light on some of the most relevant and less obvious aspects of this pathology and/or suggest relevant aspects to be considered in the project.

Semi-structured interviews combine open and closed questions and allow for a deeper, but also more flexible coverage of the topics under analysis. In this type of interview, the researcher should follow a set of previously defined questions, however, in a context like a more informal conversation (Boni & Lent, 2005). This type of interview is often used when it is desired to delimit the volume of information, thus obtaining a greater direction to the theme.

To conduct these interviews, two scripts were developed - one for the mental health experts and another for the web and mobile design experts. Both interview scripts were based on the literature review on the mentioned topics and the objectives indicated for the development of the project.

For the mental health experts, a script was prepared with 12 questions referring to two distinct sections: obsessions - characterization and form of intervention; and the use of technology in the context of therapeutic intervention. In a synthetic way, the structure of the script sequentially contemplated the two aforementioned themes.

The first two questions aimed to obtain a greater knowledge of this pathology, its characteristics, its symptoms, and the differences that exist in age and gender. The third question aimed to understand which of the existing therapies were adopted and their degree of success.

The fourth question belonged to the second theme and refers to the use of technology in the context of therapeutic intervention. This question aimed to find out if the mental health experts know and/or use any type of support technology for therapeutic intervention in patients with OCD and how often they use it, while the next question aimed to find out the reasons that lead these experts to use this type of technology in the context of therapeutic intervention.

The sixth question aimed to find out if the experts identify and/or use any mobile application to support therapeutic intervention in patients with OCD. The seventh and eighth questions aimed to characterize, from the experts' point of view on this disorder, the usefulness of a mobile application that supports the therapeutic process. These questions aimed to deepen the knowledge about the use of these mobile technologies within the therapeutic intervention, as well as to identify, from the perspective of mental health experts, which advantages and shortcomings they present. The next two questions (9 and 10) aimed to find out if the specialists have ever recommended the use of a mobile application to any patient with OCD to reduce or eliminate any symptom of this type of disorder and to understand, in the interviewees' opinion, if this target audience of patients raises any obstacles to the implementation of this type of tool. With these questions, it was intended to understand what the patient's attitude towards treatment is and if technology is, in fact, a complementary therapy that can support the intervention in these situations of anxiety and stress. The last questions aimed to identify, from the point of view of experts in this disorder, which features may prove to be most useful in a mobile application that supports the therapeutic process of OCD.

For web and mobile design experts, a script was also prepared, with 10 questions that allowed understanding which characteristics a mobile application to support OCD should have and which are the important aspects to be retained when creating this type of mobile application.

Therefore, the first two questions addressed the projects or research with which the designer was involved and what kind of care was taken in their design and development.

The third and fourth questions aimed to identify, from the designers' point of view, the functionalities that an application to support OCD characterized by generalized anxiety (among other symptoms), should have, as well as the fundamental principles or guidelines for its development.

Question five aimed to expand the knowledge about users with this type of disorder and find out which symptoms, from the experts' point of view, can be worked on within the scope of a mobile application, as well as the advantages that this type of application can have to this type of patients, considering their characteristics.

The sixth question was related to the results obtained in their projects and the advantages and disadvantages identified in the use of apps as a form of intervention in mental health problems health problems, as is the case of OCD.

The seventh and eighth questions aimed to identify, from the experts' perspective, the gaps in mobile applications for OCD, as well as the main difficulties encountered in the development of an app of this scope. These questions aimed to anticipate the difficulties that may exist during the development of the app.

Finally, there was a question about the challenges faced in the development of this type of mobile applications.

DATA COLLECTION PROCEDURES

In order to test each of the scripts prior to the interviews, two pre-test interviews were conducted - one for each script.

Through the pre-test interviews, some changes that were necessary to the script were identified, and the script was readjusted. These changes concerned the structure of two questions, which needed to be clearer and more concise. It is this type of readjustments, which are acquired in the pre-test interviews, that allow us to reach the final version of the script.

The contact with all the experts was made via e-mail or telephone. In all cases, a brief presentation of the project was given, explaining its objectives and purposes, indicating to which target audience this mobile application was intended. It was also emphasized the fact that it was important for these experts to collaborate in the project, in order to understand which features and functionalities should exist in an app to support the OCD. At the end of each email, an informed consent was attached.

Four of the interviews were conducted via digital platform (Skype), due to the pandemic we experienced and the confinement that was in force at the time of data collection. During these interviews, there was no noise from the outside, which prevented distraction, thus contributing to a better recording and later transcription of the interview.

One of the interviews was conducted by telephone, at the request and for the convenience of the interviewee himself. as with the interviews conducted via Skype, there was no outside noise that could interfere with the recording and transcription of the interview.

In order to authorize the audio recording of the interviews, consent to audio record the interview was requested at the beginning of each interview, and it was explained to the respondents that its use was restricted to academic purposes only, with confidentiality and anonymity guaranteed. To this end, each interviewee was presented with an informed consent document.

DATA ANALYSIS PROCEDURES

As part of the research supporting the project and to analyze the interviews conducted, it was also used content analysis. Content analysis corresponds to a set of communication analysis techniques, which uses systematic and objective procedures to describe the content of messages and seeks to understand what lies behind the words on which it focuses (Bardin, 1977).

Therefore, the first step in data analysis was to transcribe the interviews. After this transcription, it was necessary to build an analysis grid, in order to structure the categories and respective subcategories, the indicators/registration units and the context units.

According to Bardin (1977, p.117), in content analysis the message can be submitted to one or several dimensions of analysis and it is “from the moment that the content analysis decides to codify its material, that it must produce a system of categories”.

Categories are headings or classes, which bring together a group of elements under a generic title. Classifying elements into categories imposes the investigation of what each element has in common with others. of them has in common with others. Thus, it is correct to state that categorization has first objective is to provide, by condensation, a “simplified re presentation of the raw data” (Bardin, 1977, p. 119).

Within the categories, exist the registration units. The registration unit corresponds to the segment of content to be considered as a base unit, pointing the categorization and frequency count. This can be very variable in nature and size, “existing at the point of intersection of perceptible units (word, phrase material document, physical character) and semantic units (themes, events individuals)” (Bardin, 1977, p. 119).

The unit of context serves as a unit of understanding to codify the unit of register and corresponds to the segment of the message, whose dimensions serve to understand the exact meaning of the unit of register (e.g., phrase to word).

ANALYSIS AND DISCUSSION OF RESULTS

For this study it was relevant to do a content analysis, in order to sum up and retain all the information to better characterize this pathology, find out which symptoms should be worked, and which functionalities should be applied in this type of mobile app.

So that could be possible, it was important to construct a grid, followed by a description and analysis based on the results obtained through the interviews.

The first group to analyze were the mental health experts. From this analysis, emerged the theme “obsessive-compulsive disorder” that was divided into two categories - Characterization of obsessive-compulsive disorder and Treatments/forms of intervention in obsessive-compulsive disorder. Each of these categories were examined in detail through each table.

The first category of this analysis focused on the characterization of obsessive-compulsive disorder, where relevant aspects were approached. Besides confirming the literature review, this category brought a greater knowledge of this pathology and information about the patient’s attitude towards treatment.

In this first category, three subcategories were created: Symptomatology associated to OCD Inter-individual differences and Consequences. Another subcategory that emerged in this analysis refers to the inter-individual differences.

The second category explored the Treatments/Intervention forms in obsessive-compulsive disorder. Its subcategories were the Cognitive-Behavioral Intervention; the existence of comorbidities; the characteristics of the intervention applied to patients with OCD, and the relaxation exercises.

After the first theme, there was another theme - Use of technology in the context of therapeutic intervention - which had only the category "Mobile applications". In this category, there were found several references to features that could be available in a mobile application to support OCD. In this category it was also possible to observe these functionalities that, according to mental health experts, should be present in this type of mobile application.

In "Mobile applications", the subcategory "Symptoms worked on" also emerged and it was concerned about the patients' behaviors and main symptoms, which could be worked on through an app.

In sum, with the analysis of the interviews with mental health experts, the conclusion was that there should be a set of functionalities that complement each other and that, in order for the app to meet the proposed requirements, it would be best to use exposure and response prevention as a form of intervention.

According to the set of mental health experts interviewed, Cognitive-Behavioral Intervention is the best bet for long-term treatment in patients with OCD. As for its effectiveness, Cognitive Behavioral Therapy is the type of treatment that is proven to have the best level of effectiveness and is considered the best for overcoming this type of disorder and addressing the anxiety issue that is associated with OCD.

In addition, it could be interesting if the app had a self-monitoring area, a section where the user could relax and practice relaxation exercises, and an area where they could communicate with other patients with the same diagnosis. In all interviews, anxiety was mentioned as one of the main symptoms. According to the experts, this anxiety arises from a set of thoughts and worries that are and then becomes difficult for the patient to manage.

With the interviews, it was also concluded that once it is experienced differently among patients, OCD needs a dedicated and personalized treatment and cannot be seen in a comprehensive way, as not all patients have the same obsessions and may or may not have associated compulsions.

It is important to refer that this type of analyses was important to confirm the literature review. In fact, the first category of analysis focused on the characterization of obsessive-compulsive disorder brought relevant aspects that, besides confirming the literature review, brought a greater knowledge of this pathology and the patient's attitude towards treatment.

As well as for mental health specialists, a grid was made for the web and mobile designers. In this grid, "Supporting app for obsessive-compulsive disorder" arisen as a theme of analysis and there were two categories that emerged in this - "Design and development of a mental health app" and "App implementation".

Regarding the category "Design and development", three subcategories were created: "Factors to consider before designing the app", "Care to be taken in the design and development of a mental health app" and "Fundamental principles or guidelines". In this category was possible to understand which characteristics this type of mobile application should have and what are the important aspects to be retained when developing this type of mobile application.

The last category that emerged from the mobile and web designers' interview, was the "App implementation", whose subcategories were the "Benefits" and Difficulties Indicated". With this category, it was possible to understand what results should be obtained and what obstacles should be overcome in the realization of the app.

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Overall, with the analyze of the web and mobile design experts it was possible to retain that is important to remember that before designing the mobile application, research is needed to acquire a greater knowledge of the pathology.

Only after this research work the design and development of the app should begin, which involves working together with designers and programmers. At this stage it is necessary to consider this type of users and determine the best way to reward them and keep them engaged, since captivating the target audience and getting the reward is the most difficult part. A mental health app becomes beneficial when used as a complement to therapy, but it can also bring some difficulties of acceptance by the user.

On the whole, it is important to refer that both interviews were an important step to develop the project.

With the interviews with mental health experts, in addition to gaining a greater knowledge of this pathology and verifying some of the knowledge gained from the literature review, the author wanted to find out if technology created for therapeutic purposes can, in fact, complement therapy and help manage anxiety in these situations of anxiety and stress. The author also wanted to understand which of the existing therapies are adopted and how successful they are. Another objective of these interviews was to characterize, from the point of view of experts in this disorder, the usefulness of a mobile application to support the therapeutic process. From this question, it was intended to find out if the experts were already aware of mobile applications that use this type of therapy and, if so, identify the gaps. Finally, it was necessary to identify, from the point of view of the experts in this disorder, which functionalities could prove to be most useful in a mobile application that supports the therapeutic process of OCD.

With the designers a semi-structured interview was also carried out, in order to acquire more knowledge about the projects or investigations in which these designers had been involved and to understand the main characteristics of the mobile application. The interview also had the purpose to understand what care should be taken in the design and development of this type of mobile application that aims reducing the main symptoms associated with OCD, as well as the functionalities that should be present in this type of mobile app. With these interviews, it was also intended to understand, from the perspective of web and/or mobile designers, the main problems detected in existing technological devices directed to OCD and what are the difficulties identified in the development of an app in this context.

COMPETITOR ANALYSES

For the project, the mobile applications on the market for obsessive-compulsive disorder were also analyzed. This analysis aimed to identify the functionalities present in all mobile applications to support OCD that could be equally relevant to the project, and to identify the gaps present in these apps, in order to rethink and improve them.

In order to make this analysis more complete, there were surveyed the mobile applications for OCD present in Google Play and Apple App Store. After a research on this app stores, the mobile applications that could be analyzed were *GGOC: OCD Relief*; *nOCD*; *iCounselor OCD*; *AnxietyCoach*; *TalkSpace*; *iCBT*; *Obsessive Compulsive OCD Test*; *OCD Anxiety Graph*; *Impulse – OCD Treatment & Therapy*, and *liveOCDfree*.

After surveying these apps, it was carried out two distinct grids - one related to functionalities and another on the functions of these mobile apps.

The functionalities analysis had the objective of understanding what is essential and what could be “reinvented” in the app to be developed.

The analysis of the functions that are present in existing mobile applications, helped to understand which ones are the most used and which ones work best for this type of user. Because there is a categorization of these mental health applications regarding their functions (assessment, tracking, and treatment), this survey was necessary.

When analyzing the functionalities of existing mobile applications for this pathology, there is a higher incidence on self-assessment and psychoeducation, i.e., on symptom assessment and the provision of educational information about anxiety and its treatment. These two features reveal greater learning by the user regarding OCD and the origin of its symptoms.

Only two of the apps have the option of contacting the therapist and two use Mindfulness as a form of relaxation and reduction of anxiety that arises from this disorder. It should be noted that, within this set of apps, *nOCD* and *Impulse - OCD Treatment & Therapy* are the ones which focus more on the anxiety caused by OCD and on ways to overcome it.

It is also observed that in most of these apps there is not just one functionality, but a set of features that complement each other. *nOCD* and *Impulse OCD Treatment & Therapy* are the apps with the most functionalities, making them more complete. By downloading these apps, the user feels more supported as the app can more easily adapt to their needs. And, by having a greater set of features at their disposal, the user ends up benefiting from a more customizable experience, which in addition to exercises, can educate them about this pathology and provide some relaxation practices.

However, in most of these apps there is a lack of some functionality that could be important in supporting OCD, especially in reducing the anxiety caused by obsessions and/or compulsions.

Regarding the functions of the applications on the market, most of them have a treatment function, and all of them, except for *liveOCDfree* and *Impulse OCD Treatment & Therapy*, have at least two functions. It is also worth noting that the assessment function is accompanied by the treatment function, as can be seen in *nOCD*, *iCounselor OCD*, *AnxietyCoach* and *iCBT*.

It was also found that the most frequent function in this range of mobile apps is treatment and the least frequent is tracking. Only *GG OCD: OCD Relief*, *TalkSpace* and *OCD Anxiety Graph* have the latter function.

With this competitor analyses it was also possible to notice that there is also a lack of a more customizable experience that, in addition to exercises, can educate the user about this condition and help him to reduce some anxiety through relaxation exercises.

CONCLUSION

Taking into account the relevant contribution that technology and, in particular, mobile technology can have in the field of mental health, it becomes useful to create an app that can address a real problem that has been little addressed in terms of mobile applications.

However, for this to be possible, it is important to develop research to support it, with two vectors: an analysis of the competition to identify which functionalities prove most useful in a mobile application that aims to support therapeutic intervention in individuals with obsessive-compulsive disorder, focusing on reducing their levels of anxiety and possible gaps that could be improved and rethought; and an exploratory qualitative research to better characterize the contours of this pathology and understand the forms of therapeutic intervention, as well as identify which features and functionalities a mobile application should have to be able to contribute in reducing the anxiety caused by obsessive-compulsive disorder.

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After the analysis of 10 apps for obsessive-compulsive disorder, it was concluded that the mobile applications differed significantly from each other and that all of them lacked some functionality that could be important in supporting OCD and that should be included in the mobile app to be developed, especially in overcoming the anxiety caused by obsessions and/or compulsions.

From the analysis of the interviews with mental health experts, it was concluded that there should be a set of functionalities that complemented each other and that, for this app to meet the proposed requirements, it would be best to use exposure and response prevention as a form of intervention. Besides this, it could be interesting if the app had a self-monitoring area, a section where the user could relax with practice relaxation exercises, and an area where he could interact with other users with the same diagnosis.

Because it is experienced differently among patients, it was also concluded that OCD needs a dedicated and personalized treatment and cannot be seen in a comprehensive way, because not all patients have the same obsessions and may or may not have associated compulsions. This factor becomes, therefore, determinant in the conception of this type of mobile application.

Based on the interviews with web and mobile designers, it was concluded that the design of an app for OCD requires special attention to the user's daily life and how the app could capture their attention. Not only logic is essential, but also the issue of rewarding the user during the game, that is a fundamental part of gamification.

It is possible to perceive that both analyses made are important to verify the functions and functionalities that should be present in a mobile application for OCD and to find out if there is any kind of gap present in these apps that should be improved or rethought.

Qualitative research is important to check some of the knowledge gained from the literature review and to see if there are any gaps that need to be filled in, as well as to obtain additional information from experts in the respective fields. However, it is essential not only to do a literature review before this type of interviews, but also include several aspects from it in the interviews, in order to make the right questions and be sure what the major symptoms and characteristics of this type of pathology are. Only then, it is possible to reunite all this ideas and work on something in order to design an app to OCD patients.

In what concerns the samples, it is important to have a specific selection criterion. In this chapter we can see that both samples were based on the same selection criteria, which was their expertise in this area. The idea was to interview the most adequate experts to justify the decision making regarding the development and design of this mobile application.

Because they have specific training and clinical practice with patients suffering from this pathology, it was also better to interview clinical psychologists who had experience in obsessive-compulsive disorder.

As for the selection of web and mobile design experts who may were involved in the development of a mobile application for mental health or OCD, they were selected considering the mobile applications developed by them for obsessive-compulsive disorder, for anxiety and, in exceptional cases, for other mental disorders. It is important to have in account that is not always easy to interview an expert who was involved in an app of a specific mental disorder, because it doesn't exist or there is lack of that type of apps in the market. In that case, it is important to find experts who created a mental health app that works with similar symptoms.

Also, a competitor analysis was important to identify which functionalities are most useful in a mobile application that aims to support therapeutic intervention in individuals with obsessive-compulsive disorder, focusing on reducing their anxiety levels. Competitor analyses is an important method to realize what are the functionalities that need to be present in a mental health app and which ones to use to

reduce certain symptoms that are characteristic of certain mental disorder. This analyses also helped to realize if the app should be of assessment, tracking or treatment.

However, it is important to retain that despite the author's project, where only 5 experts were brought to interviews, research like this would be better to have more experts in order to get more information.

To conclude, it is important to have in mind that the ideal would be, - in a study case like this - in order to conceive an app focused on a mental health issue, to collaborate with some mental health institutions. Together with the institutions conduct usability tests with some of their patients, who have different obsessions and compulsions, in order to receive feedback from them and proceed with the necessary changes.

The collaboration of a programmer, who could help put into practice all the functionalities present in the app would be important. Once programmed, it would be interesting to repeat the usability tests, making sure that nothing would be missing.

It would also be useful, in a future stage of development of the app, the support of associations linked to this type of patients, which could test this app as a support tool in the treatment of patients with OCD.

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Chapter 8

“Piece of Mind” and “Wellbeing Town”: Engaging Service Users in the Development of a Wellbeing Game

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ABSTRACT

The long-term implications of COVID-19 for wellbeing are predicted to be both significant and enduring. Data from previous epidemics indicates long-term detrimental effects are more pronounced among particular demographics, including individuals with pre-existing mental health conditions. The Mental Health Independent Support Team (MhIST) is a charitable organisation offering a range of free-at-the-point-of-contact services via self-referral for a range of mental health and wellbeing concerns, both with and without diagnosis. Since March 2020, the organisation noted significant rises in demand for services. Serious games and their active involvement in eliciting rapid positive behavioural change is associated with their emergence as a key learning tool, with effects transferable to the real world. While a growing number of gamified interventions exist for a range of mental health diagnoses, their presence in the domain of positive psychology is more limited. The chapter reports two studies conducted to enhance the development of an educational game for adult wellbeing.

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INTRODUCTION

Outline

The following chapter will comprise of a synopsis of two empirical studies conducted in conjunction with the Mental Health Independent Support Team (MhIST) in Bolton, UK, to develop a serious game for adult wellbeing. In the following chapter proposal, contextual information is provided, along with an overview of the two studies; (1) a potential end-user survey to establish interest and preferences/requirements among the demographic prior to the development of two prototype games and (2) a user-feedback study conducted on these two prototypes to establish their acceptability and to outline directions for further development.

Wellbeing During the Covid-19 Pandemic

At the end of March 2020, the United Kingdom (UK) government initiated the first of a series of ‘lockdown’ restrictions aimed at decelerating the spread of COVID-19. These restrictions have been associated with detrimental implications for social connectedness and with increasing feelings of social isolation (White & van der Boor, 2020), which are established factors in promoting positive wellbeing (Jetten, Haslam, Haslam, Dingle & Jones, 2014; Al Issa & Jaleel, 2021). Contrastingly, the ability to perceive kindness, feelings of connectedness with community and essential worker status have been found to be associated with better mental health and well-being outcomes during lockdown (White & van der Boor, 2020).

Beyond the immediate and short-term future, the long-term implications of COVID-19 for wellbeing are predicted to be both significant and enduring (Hotopf, Bullmore, O’Connor & Holmes, 2020). However, it is as yet unclear who will be affected, how effects will manifest, and to what extent. Extant data from previous epidemics however has indicated that specific long-term detrimental effects are more pronounced among particular demographics (Cheung, Chau & Yip, 2008; Mak, Chu, Pan, Yiu & Chan, 2009), for instance increased risk of suicide in older adults following severe acute respiratory syndrome (SARS) (Yip, Cheung, Chau & Law, 2010). Early data from COVID-19 investigations indicate that self-harm and thoughts of suicide and self-harm were more prevalent among women, Black, Asian and minority ethnic groups, people experiencing socioeconomic disadvantage, and individuals with pre-existing mental health conditions (Lob, Steptoe & Fancourt, 2020).

The Mental Health Independent Support Team (MhIST) is a user-led charitable organisation located in Bolton, United Kingdom, offering a range of free at the point of contact groups and services via self-referral (including self-help groups, advocacy services, and talking therapies) to people with a range of mental health and wellbeing concerns, both with and without formal diagnosis. Service users present to the charity with a range of mental health needs at varying degrees of symptom severity. Of service-users providing feedback data (N=100) via an online survey in February 2020, 62.5% of service users were female, 36.4% male, and 1.1% did not state their gender. 19.3% of respondents were aged 18-29 years, 14.8% were aged 30-44, 46.6% were aged 45-59, and 19.3% were aged 60+ years. 48% reported having a long-term illness, and 29% of respondents reported themselves as having a disability.

Since the onset of the COVID restrictions at the end of March 2020, the organisation noted a rise in demand for services – increasing from approximately 1,500 referrals in the year to end of March 2020, to over 2,500 by December 2020. The severity of symptom presentation among service users was also noted to have deteriorated during this time. The organisation utilises a range of online facilities encom-

passing both the digitalisation of pre-COVID amenities via cloud-based video conferencing systems, as well as a range of new innovations designed to respond to changing demand amid the decreased availability face-to-face services.

Digital Games for Adult Wellbeing

First noted by Abt (1970), serious games are video games (VGs) designed with a primary purpose other than entertainment, usually to educate or inform the player (Djaouti et al., 2011). The intrinsic and extrinsic motivational systems employed by serious games engage users in learning opportunities with immediate feedback. The reinforcement ability of TGs and their active involvement in eliciting rapid positive behavioural change has been linked to their emergence as a key learning tool (Gentile & Gentile, 2008), capable of producing significant improvements across a diverse range of psychological conditions (Baranowski et al., 2013, Tárrega et al., 2015; Giner-Bartolomé et al., 2015; Rica et al., 2020), maintained beyond the virtual environment in which the game exists and operates (Bindoff et al., 2016).

Additionally, the reduced cognitive-load of games, and the comparatively fewer barriers to engagement (such as perceived probability of stigma) afforded by their use, in turn positively influences the probability of help-seeking behaviours (Wiljer *et al.*, 2020; Vallury et al., 2015). Using a computerised intervention for just one day per week has shown to have a positive effect on outcomes and attrition rates, with research reporting a 23% reduction in drop-out rates compared to conventional treatments (Scherer et al., 2017), and improvements to end-of-treatment outcomes (King, Currie & Petersen, 2012). There is therefore a clear capability for immersive games to make meaningful inroads to improving access to, and engagement with, psychological wellbeing protocols.

The importance of the needs and experience of the player however must not be overlooked in the design of gamified interventions (Fitzgerald & Ratcliffe, 2020). Previous literature has suggested that games designed for older adult players must cater to the requirements of the demographic in order to maintain engagement (Salmon et al., 2017), specifically indicating that while the need for challenge remains important, games for older adults ought to be easily accessible and intuitive to use. The concept of ‘flow’ first outlined by Csikzentmihalyi (1975) posits that the capacity of a game to create feelings of enjoyment and captivation can be linked to the successful completion of tasks which lie at edge of the player’s present abilities (Csikzentmihalyi, 1990; Belchior, Marsiske, Sisco, Yam & Mann, 2012).

Mechanically, previous research suggests that older adults prefer puzzle-based games above other genres (Charlier et al., 2012) and that their preference for fantasy-based games is low compared to younger demographics (Blocker, Wright & Boot, 2014). Adult gamers also reported less enjoyment and greater negative attitudes towards online multiplayer gaming (Nap, de Kort & Ijsselsteijn, 2009). Structurally, user-preference studies indicate that games are enhanced for older players by enhancing the colour palette and luminance contrasts on display, reducing use of text and the complexity of background imagery, and minimising the number of individual steps required to complete in-game tasks (Gamberini et al., 2006). As gaming may be less familiar to older adults, Gerling et al. (2012) suggest that game-designers can reduce the demands gameplay may place on cognitive functions by simplifying and homogenising the rules and physical operations required. This catalogue of preferences, which differ from those of younger players, underline the need to involve potential adult users in the design of gamified interventions to ensure end products best suit their needs (Havukainen, Laine, Martikainen & Sutinen, 2020).

In addition to structural and usability requirements, the notion of game-based learning may also be less familiar to older adults, with the potential value of using games as a learning tool being less appar-

ent (Charlier, Ott, Remmele & Whitton, 2012). Whether adults use serious games may be dependent on their judgment of the benefits of their engagement (Salmon et al., 2017). In this regard, a taxonomy of gameplay motivations among older adults has been developed (de Schutter and Malliet, 2014), suggesting ‘context’ (passing time or substituting for less-desirable real-world activities), and ‘content’ (learning and the enjoyment of gameplay) are key considerations when designing games for this audience. Further investigation is however warranted to ensure that these factors generalise across populations with differing mental health presentations.

MAIN FOCUS OF THE CHAPTER

The ‘Five Ways to Wellbeing’ framework (Aked, Marks, Cordon & Thompson, 2008) was developed to promote wellbeing among the general population, and consists of five methods for improving wellbeing in daily life (Hone, Jarden, Duncan & Schofield, 2015):

1. ‘connect’: emphasising the importance of social relationships (Chu, Saucier & Hafner, 2010);
2. ‘be active’: emphasises the benefits of regular exercise (Caddick & Smith, 2014);
3. ‘take notice’: emphasises awareness of personal emotions, sensations, and reflections (Galante, Galante, Bekkers & Gallacher, 2014);
4. ‘keep learning’: focuses on the importance of learning and achievement in driving self-efficacy and self-esteem (Randelin, Saaranen, Naumanen & Louhevaara, 2012);
5. ‘give’: emphasises selfless and meaningful behaviours (Quinn, Clare & Woods, 2010).

This conceptual framework is widely used in the promotion of wellbeing (Abdallah, Main, Pople & Rees, 2014). While a growing number of virtual interventions now exist in response to a range of mental health diagnoses, the availability of digital programmes in the domain of positive psychology is more limited. The Mental Health Foundation of New Zealand developed the web-based ‘The Wellbeing Game’, which raised user-awareness of ways to improve their wellbeing (Green, 2013), as well as reducing stress compared to non-players (Keeman, Näswall, Malinen & Kuntz, 2017). However, the game is now no longer available. The present research therefore aimed to address this gap in provision by designing an educational game for adult wellbeing, with the involvement of service users to ensure that the game best met their needs and preferences.

The present chapter reports the findings of two studies conducted with volunteering service-users from MhIST and the general public, in order to enhance the development of an educational game for adult wellbeing: (1) a potential end-user survey to establish interest and preferences/requirements among the demographic prior to the development of two prototype games and (2) a user-feedback study conducted on these two prototypes to establish their acceptability and to outline directions for further development.

STUDY ONE

Aims

In the first stage of the development process, existing service users of the MhIST charity were polled. The intentions of this initial survey were twofold: (1) firstly to ascertain the acceptability of a gamified intervention for adult wellbeing; (2) to establish any preferences and requirements among the demographic (including familiarity with, and access to, technology), before choices regarding game-conceptualisation, platform selection, and the development of prototype games could begin.

Method

Design

Initial demographic research took the form of self-report measures administered via anonymous online survey. While the data obtained from the survey was quantitative, the opportunity for participants to provide additional qualitative feedback was provided, in order to enhance the effectiveness of the feedback in developing prototype interventions (Laver, George, Thomas, Deutsch, & Crotty, 2015). Self-report survey was chosen as the method of data collection owing to its advantages for speed of data collection and accessibility for the respondents (Healey, Baron & Ilieva, 2002), of particular importance in light of the restrictions created by the COVID-19 pandemic.

Participants

Participants were recruited on a self-selecting volunteer basis via a mailing list sent by the MhIST charity, containing participant information for the study and directing interested parties to an online survey link hosted by Qualtrics. Upon following this link, participants were provided with a full overview of the study aims and intentions and were instructed that their consent was implied by the completion of the questionnaire, but that they may withdraw by a stated date. Before proceeding, participants generated a unique identification code and were instructed to make note of this, should they wish to withdraw later. Contact details of the lead researcher were also provided for this purpose, or should participants have any concerns or questions.

A total of 41 respondents completed the questionnaire initially. One later chose to exercise their right to withdraw, leaving a final *N* of 40. Of these, 12 were male (30.0%), 27 were female (67.5%) and 1 declined to provide their gender (2.5%). Ages of the participants were spread widely, including seven (17.5%) participants aged between 20-29 years, five aged 30-39 (12.5%), seven aged 40-49 (17.5%), twelve aged 50-59 (30.0%), six aged 60-69 (15.0%) and two aged 70-79 (5.0%). One respondent declined to provide their age (2.5%).

Materials and Procedure

Participants were asked a series of demographic questions relating to gender, age, the average hours a week they spent playing video games (including an option for if they did not engage with videogaming at all), the duration of an average play session (if relevant), and if they would be interested in a gamified

intervention for adult wellbeing. If respondents answered ‘yes’ to the latter of these questions, they were then directed to complete the rest of the survey – respondents stating they were not interested in a gamified wellbeing intervention were directed to the end of the survey and thanked for their participation.

Participants continuing through the survey were then asked about their preferences towards a range of potential game features, including ease of use, clarity of health information, availability on a range of platforms, customisability and replayability. Responses were collected on a six-point Likert scale ranging from 0 (‘not at all important’) to 5 (‘extremely important’). Finally, respondents were asked to complete the 10-item eHealth Literacy Scale (eHEALS) (Norman & Skinner, 2006), which measures perceived ability in using technology for the acquisition of legitimate health information. The first two items of the scale measure the respondent’s perception of information on the Internet generally and are measured along a five-point Likert scale ranging from 1 (‘not useful at all’) to 5 (‘very useful’) and 1 (‘not important at all’) to 5 (‘very important’) respectively.

The remaining eight items measure the respondent’s perceived capacity to source, evaluate and engage with Internet-based health information. Responses are collected along a five-point Likert scale ranging from 1 (‘strongly disagree’) to 5 (‘strongly agree’). A total score for the eHEALS can be calculated by summing the responses to the eight individual capacity items, with the minimum possible score being 8 indicating low perceived eHealth literacy, and maximum possible score being 40 indicating high perceived eHealth literacy. The psychometric assessment of the eHEALS scale conducted by Norman and Skinner (2006) demonstrated the scale has high internal consistency ($\alpha=.86$), although test-retest reliability was lower with a Pearson coefficient of 0.467. A full version of the survey can be found in *Appendix 1*.

Results

Descriptive Statistics

The aim of the present study was first to ascertain the acceptability of a gamified intervention for adult wellbeing, before proceeding to establish any preferences and requirements among the demographic (including familiarity with, and access to, technology). As previously stated, 40 respondents provided data via anonymous online survey.

General acceptability and interest in using a gamified intervention for wellbeing was good – 22 participants (55.0%) responded that they would ‘definitely’ be interested in such a game, with a further 15 participants indicating that they ‘might’ be interested (37.5%). Only 2 participants indicated that they would not be interested in such a game (5.0%). One participant did not provide a response (2.5%). Acceptability was good across the age ranges, although while younger participants were more likely to respond with definite interest, older participants were more likely to respond with ‘maybe’.

The amount of time that respondents spent playing videogames in an average week ranged between 0 hours and 21 hours ($M=4.29$, $SD=6.39$). Of note however, 17 respondents (42.5%) reported spending zero hours per week playing videogames, despite their potential interest in a gamified wellbeing intervention. For respondents who did report playing games, the average time that they indicated they would be likely to spend playing a game for wellbeing was 10-30 minutes.

In terms of specific features, mechanics and platform choices, participants were asked their preference towards a number of potential choices. The findings can be found in *Table 1* below:

“Piece of Mind” and “Wellbeing Town”

Table 1. Respondent preferences

Item	M(SD) (N Respondents)
How important would ease of use be for you?	4.11 (.91) (37)
How important would detailed health information be for you?	3.22 (1.24) (36)
How important would simple health information be for you?	3.53 (.94) (36)
How important would it be to have contact details for mental health services?	3.57 (1.41) (37)
How important would it be to have ways to track your wellbeing?	3.76 (1.23) (37)
How important would it be for the game to be available on a mobile device?	3.86 (1.38) (37)
How important would it be for the game to be available on a desktop computer?	2.70 (1.53) (33)
How important would it be for the game to be available online via a web-browser?	2.57 (1.61) (35)
How important would it be for the game to be customisable (e.g. change character appearance, game-settings, game-environment)?	2.94 (1.48) (34)
How important would it be to have an option to replay previously completed levels and tasks?	3.22 (1.36) (37)
How important would it be to have an option to save and export your data?	3.29 (1.34) (35)

The data provided by respondents differed notably over some of the items (e.g.), indicating the diversity of needs and preferences and the difficulty therefore of providing gamified interventions for the demographic. The highest rated items were for ease of use, availability on a mobile device and having ways to track wellbeing over time. The lowest rated items were for availability online via a web-browser, availability via a desktop computer and customisability. Participants responded with notable consistency regarding the need for the game to be easy to use, with all responses ranging between 3 and 5.

The need for a digital wellbeing intervention to be easily navigable was confirmed by eHEALS data. Respondent electronic health literacy scores indicated that while the sample overall demonstrated an average perceived ability to use the Internet for health-related purposes (M=28.57, SD=5.27), a notable proportion of the respondents reported low confidence with 19 respondents scoring below the mean, and 9 participants scoring ≤ 25 .

Further Analysis

The data was then assessed for normality to determine its suitability for further analysis. While Shapiro-Wilk testing found respondent age ($p=.659$) and eHEALS score ($p=.356$) to be normally distributed, the number of hours spent playing videogames on an average week was not ($p<.001$), likely a product of the large number of respondents ($N=17$) who reported a score of 0.

Table 2. Example responses from the additional feedback item.

Response
“Accessibility feature is simple graphic colour scheme font size”
“Sometimes there is too much information overload.”
“Selecting various aspects of wellbeing you need to work towards.”
“Anything that gives daily support so the game helps mind recover on low days or low periods”
“meditation that was available as part of level in the evening or levels with prompts to do things at certain times?”
“Anything that gives daily support so the game helps mind recover on low days or low periods”
“Mental health facts popping up on loading screens, local/online multiplayer options, a “get help now” button, extra mini games/activities eg 10 minutes of yoga or some guided meditation, reminders to come off the game and do some productive mental health techniques eg going for a walk or spending time with friends and family, in-game purchases eg links to mental health gifts such as wellness diaries, compliment pens or positive notes etc etc I have lots of ideas for things like this lol”
“I’d like challenges that could be transferred to real life situations with tasks and rewards”
“support interaction”

* Responses are as provided by participants and are quoted directly.

Gender groups were well represented across the age range of the respondents ($F(1,37)=.104, p=.749$), and no significant differences emerged between gender groups for the average number of hours spent playing video games ($F(1,37)=.181, p=.178$) or for eHEALS scores ($F(1,37)=.004, p=.948$).

No significant relationship emerged between eHEALS score and the average number of hours participants reported spending playing videogames in a given week ($r_s=-.234, p=.162$). A significant negative relationship between age and eHEALS score was noted, whereby older respondents reported feeling increasingly less confident with using technology for health-related activities ($r=-.335, p=.043$). Age also significantly correlated with the average number of hours spent playing videogames per week, whereby older adults were less likely to spend time playing video games than younger respondents ($r_s=-.564, p<.001$). As previous MhIST data indicated that 46.6% of participants were aged 45-59 and 19.3% of participants were aged ≥ 60 years, these findings were considered noteworthy when designing and conceptualising a game for wellbeing.

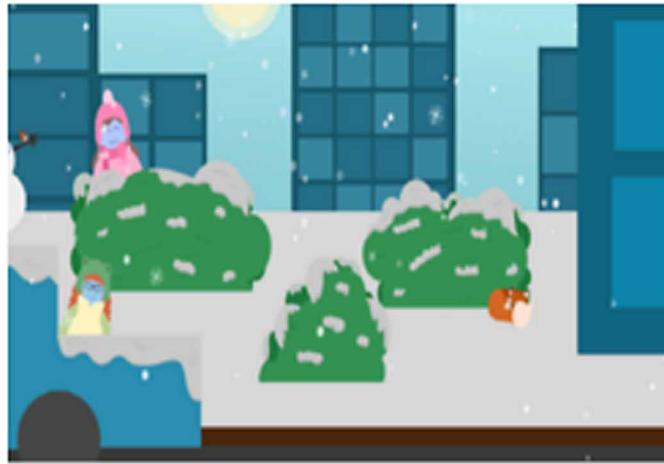
Additional Feedback

At the end of the survey, participants were provided with the opportunity to submit additional feedback if they wished to do so. A total of seventeen participants provided some form of additional feedback, which ranged in depth and detail. As this feedback pertained to just one item on the survey and was only answered by a subsection of respondents, this was not considered to be sufficient for any formal analysis procedure. Comments did however follow a discernible pattern, including a reiterated need for accessibility and for the game to be easy to use, prompts and reminders to engage with the game and the need for a game to be relatable to real-life wellbeing (e.g. by encouraging real-world activity or interaction with others).

A sample of the comments from this item can be found in *Table 2*.

“Piece of Mind” and “Wellbeing Town”

Figure 1. Example screenshot of ‘Piece of Mind’.



PROTOTYPE DEVELOPMENT

‘Piece of Mind’ and ‘Wellbeing Town’

Following on from the analysis of the above data, two prototypes were developed by students on the MA Games Development at the Centre for Games Design at the University of Bolton as part of their programme assessment, under the supervision of the module teaching team. The prototypes were intended to be working demonstrations of the game-concepts, offering players an insight into the intended direction, structure and aims of the game, incorporating the present findings and best practice in games design to embed the Five Ways to Wellbeing. The prototypes were designed with basic principles of motivational psychology in mind, in order to increase player motivation, including the use of reinforcement techniques, challenge and flow and competition.

For ease of distribution in the user-review study, both games were programmed initially to operate on desktop computer. Although the two prototype games differed in terms of the scenarios and mechanics used, they both retained the reliance on these motivational strategies, as well as placing the Five Ways to Wellbeing framework at the centre of player activity. An overview of these games can be found in the following section.

‘Piece of Mind’

‘Piece of Mind’ segments the components of the Five Ways to Wellbeing into a series of simply designed individual tasks for players to complete, each specialising in and focusing on a specific aspect of the framework. The game operates around an in-game sticker-book, which operates simultaneously as a central point for navigating between individual tasks as well as a means for the player to keep track of their progress. Individual tasks include clearing the sky of clouds to ‘take notice’ of an image in the background.

Additional items are also placed in the background of individual tasks in order to enhance the game’s capacity to promote taking notice. The successful detection of these additional items is rewarded with a

specific sticker, encouraging players to revisit tasks if additional items have not yet been detected, and enhancing the depth and replayability of the game. An example screenshot of the game along with a screenshot of the in-game sticker book can be found in *Figure 1* and *Figure 2*.

Figure 2. In-game sticker book.

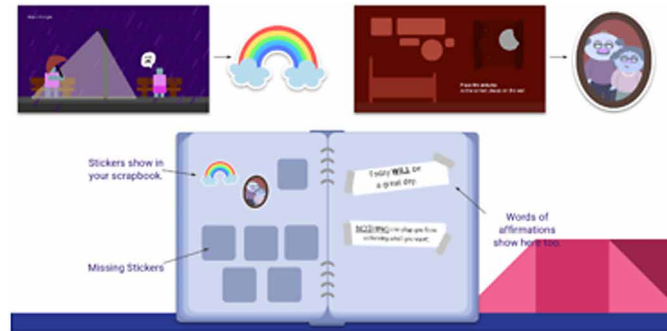
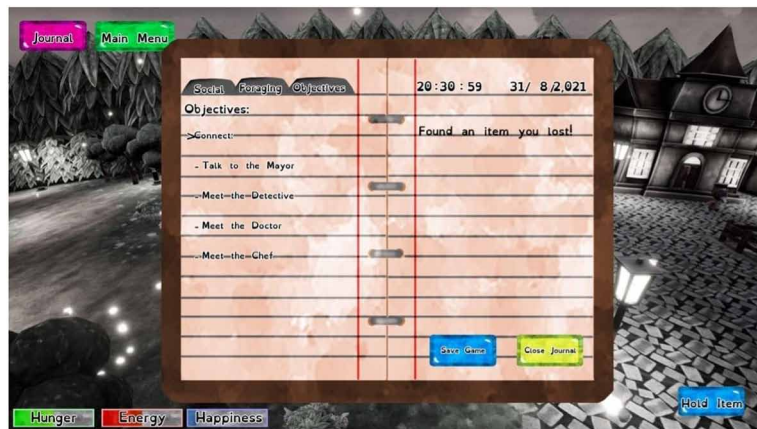


Figure 3. Example screenshot of ‘Wellbeing Town’.



Figure 4. In-game journal.



“Piece of Mind” and “Wellbeing Town”

‘Wellbeing Town’

By contrast, ‘Wellbeing Town’ does not separate the individual components of the Five Ways to Wellbeing framework into independent tasks, but instead combines these into a more complex ‘open-world’ role-playing game. Players take control of an in-game avatar and are tasked with navigating a small forest and neighbouring village environment inhabited by a small number of non-playable characters (NPCs). Tasks relating to the Five Ways to Wellbeing are provided by the NPCs and stored in an in-game journal, which acts as a central repository for task-reminders and rewards collected during gameplay.

The tasks themselves include ‘connecting’ with the NPCs, ‘learning’ about the game environment and its various characters and plants, and collection of items from the forest which the player can then ‘give’ to the non-playable characters, either for reward or to further the storyline. An example screenshot of the in-game world and of the in-game journal can be found in *Figure 3* and *Figure 4*.

Following the development of these two prototypes, a user-evaluation of the games was conducted to assess their acceptability, ease of use, and to allow users to contribute to the further development of the games.

STUDY TWO

Aims

In the second stage of the project following on from the user-survey and the development of the two prototype games, potential users were offered the opportunity to provide preliminary feedback, to ascertain the acceptability of the games and to assist with directions for further development.

Method

Design

As previously, anonymous online self-report surveys were deployed as the method of data collection owing to its advantages for speed of data collection and accessibility for the respondents (Healey, Baron & Ilieva, 2002). While the majority of the survey items were quantitative, respondents were again provided with the opportunity to submit additional feedback or thoughts in a qualitative item.

Participants

Participants were recruited on a self-selecting volunteer basis via a mailing list sent by the MhIST charity, containing participant information for the study and directing interested parties to an online survey link hosted by Qualtrics. In addition to MhIST users, access to the feedback survey was widened to the general public accessing any kind of service to improve their wellbeing, with the study hosted online via social networks. Upon following the survey link, participants were provided with a full overview of the study aims and intentions and were instructed that their consent was implied by the completion of the questionnaire, but that they may withdraw by a stated date. Before proceeding, participants generated a unique identification code and were instructed to make note of this, should they wish to withdraw later.

Contact details of the lead researcher were also provided for this purpose, or should participants have any concerns or questions.

Overall 60 responses were received, of which 28 were for ‘Piece of Mind’ and 32 for ‘Wellbeing Town’. A total with 20 participants provided feedback for both games, and 20 participants provided feedback for only one of the games. Of the 40 participants, 23 were male (57.5%) and 17 were female (42.5%). Ages of the participants were again widely spread, with three participants (7.5%) aged between 20-29 years, four aged 30-39 (10.0%), 14 aged 40-49 (35.0%), 12 aged 50-59 (30.0%), three aged 60-69 (7.5%) and four aged 70-79 years (10.0%).

Materials and Procedure

The two prototypes were hosted online on their own individual pages via itch.io – a website used by indie game developers to host, sell and download games. Additionally, a dedicated page on the MhIST website was created in order to direct potential participants to the itch.io pages. For users accessing the MhIST centre, a group of dedicated PCs were set up to enable visitors to review the games. While the two prototypes were surveyed separately, the structure, layout and items of the two surveys were kept identical in order to allow for comparison and consistency. For respondents from the general public, the itch.io and survey links were distributed online via social networks.

For MhIST respondents, service-users engaged with MhIST who had already provided their consent to receiving MhIST communications via email or text were contacted and informed about the development of the two games, that these were available to download and trial on PC, and that an opportunity to provide feedback would be provided via anonymous online survey. Members of the general public were recruited via marketing the research online.

The links to the itch.io pages were provided in the text/email and participants were recruited on a self-selecting volunteer basis. Visitors to the MhIST centre in Bolton were also asked if they would like to participate. Participants were informed that there was no requirement to take part, that they may trial either one of the games or both, and that their engagement with the research had no implications for their eligibility to continue to receive existing services. For online reviewers, survey links were distributed one week after the links to the games were shared. For reviews conducted by visitors to the MhIST centre, participants were allowed to play the prototype games for as long as they wished before reviewing commenced via the surveys.

Upon following the link to either of the online surveys, participants were initially asked to create an anonymous online code, so that their response could be identified should they later wish to withdraw, as with the previous study. Participants were then asked their age in years, gender, and the number of hours they spent playing video games in an average week. Participants were then asked ten questions scored on a Likert scale of 1 to 5, where ‘1’ equalled ‘strongly disagree’ and 5 equalled ‘strongly agree’. Items related to the ease with which the participant felt they could use the game, the quality of wellbeing information provided, the effects (or anticipated effects) of use of the game on player wellbeing and the motivational qualities of the game. This items could be totalled to provide an overall score for the game reviewed. An additional item was provided to enable participants to provide any further feedback they wished to provide. A full copy of the survey can be found in *Appendix 2*.

“Piece of Mind” and “Wellbeing Town”

Table 3. Responses by item

Item	‘Piece of Mind’ M(SD)	‘Wellbeing Town’ M(SD)
Q1: The menus and in-game tasks were easy to navigate.	3.93 (.77)	2.97 (.82)
Q2: The game made it clear to me what I was expected to do.	4.07 (.81)	3.03 (.93)
Q3: I was able to understand the game and how to use it without assistance.	4.25 (.80)	3.06 (1.05)
Q4: The types of activities in the game were appropriate.	2.96 (.84)	4.13 (.75)
Q5: Playing the game would help me to understand ways to improve my wellbeing.	3.11 (.74)	4.66 (.90)
Q6: Playing the game would help to improve my wellbeing.	2.64 (.87)	4.22 (.87)
Q7: The game contained enough variety of activities.	3.36 (.83)	3.94 (.84)
Q8: The activities in the game were enjoyable and rewarding.	2.82 (.72)	4.16 (.72)
Q9: The activities in the game were sufficiently challenging to keep my interest.	2.50 (.88)	4.13 (.83)
Q10: I would be motivated to play this game often to help improve my wellbeing.	2.75 (.89)	4.31 (1.12)

Results

Descriptive Statistics

The aim of the second study was to offer potential end-users of the games the opportunity to provide feedback, to ascertain the acceptability of the games and to assist with directions for further development.

Of the 40 participants, respondents spent an average of 3.87 hours videogaming in an average week (SD=5.69). Again, a large number of participants ($N=19$) indicated that they did not spend any time playing videogames usually.

Data was initially assessed for normality to determine suitability for further analysis using Shapiro-Wilk tests. While overall scores for ‘Piece of Mind’ were normally distributed ($p=.663$), the scores for ‘Wellbeing Town’ were not ($p<.001$). One outlier was detected in the data but was left in order to reflect the views of the respondents more accurately. Additionally, while age was normally distributed ($p=.100$), the number of hours which participants spent playing video games in an average week was not ($p<.001$), again likely due to the large number of participants reporting a score of ‘0’.

Scores from the quantitative items on the feedback survey were then assessed. A breakdown of the average scores by item can be found in *Table 3*.

Overall, ‘Wellbeing Town’ (M=38.59, SD=6.19) significantly outperformed ‘Piece of Mind’ (M=32.39, SD=4.44) ($Z=-4.983$, $p<.001$). No significant differences emerged for the game ‘Piece of Mind’ between gender groups ($t(24)=.269$, $p=.790$) or between age groups ($F(5,28)=1.418$, $p=.257$). Regarding ‘Wellbeing Town’, again no significant differences emerged between gender groups ($t(30)=-1.056$, $p=.299$) or between age groups ($F(5,32)=1.399$, $p=.257$). While these findings indicate that the games were reviewed with equal favour across these demographics, the small numbers of participants ought to be noted.

Players were more positive about the simpler design of ‘Piece of Mind’ when considering the ease with which they could navigate the game, clarity of task explanation and being able to use the game without assistance. However despite its more complex design, ‘Wellbeing Town’ outperformed ‘Piece of Mind’ across most of the items on the questionnaire, particularly with regards to items relating to effect on improving wellbeing, enjoyment, challenge and future use.

Additional Feedback

At the end of the survey, participants were provided with the opportunity to submit additional feedback if they wished to do so. A total of 33 items of feedback were obtained, 12 relating to ‘Piece of Mind’ and 21 relating to ‘Wellbeing Town’. Feedback for ‘Piece of Mind’ generally focused on the need for additional challenge and task-variety, as players noted that once they had played the demonstrations available, they would have preferred to have been more challenged with a wider variety of tasks:

If it was more challenging I would probably play this. Did teach me some things so could be useful.

The game was simple to use but not interesting or challenging enough. It would be better to have more activities and be more challenging then it would be rewarding to complete and make you want to use it again.

This game seemed a little to childish for use with adults. Although there’s some good information on wellbeing, the games were too easy and simple so I don’t think adults would play this for long.

More variety and make the games harder. I like the idea but this is too simple.

Feedback for ‘Wellbeing Town’ was generally positive and referred to the game’s ‘relaxing’ nature. Unlike ‘Piece of Mind’, which used a more simplistic and visual representation of the Five Ways to Wellbeing framework, respondents for ‘Wellbeing Town’ noted that they felt the game had been informative about ways to improve wellbeing. Respondents also commented on the variety of tasks available and the opportunity to freely navigate the in-game environment as they wished. In terms of suggestions for future improvement, feedback here complimented the quantitative survey in identifying the need for clear instructions and guidance, particularly when approaching the game for the first time. Participants also made suggestions for how the game might be further expanded:

The activities are more varied and you can do things in your own way which i liked. it was also good to just be able to free roam in the world without being forced to do things. could use some better instructions to make it clearer but once i knew how to use it it was fine.

I really like this game i just wish it was longer and more developed. i would definitely use something like this to stay calm and to learn ways to make myself feel better. i really like how the game gives you advice without forcing you to do things.

More variety of activities needed and make it a little easier to use at the start. Once I understood what I was meant to do it was interesting and I would have liked there to be more for me to do. I would definitely

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consider using this as I was starting to enjoy it and learn about things I could do to make my wellbeing better which is really valuable. For someone who does not play video games or know much about them I enjoyed this a lot more than I thought I would.

Would be good to see a few more activities in this game and to see how it develops, maybe with some quests or adventures to do outside of the village to keep it interesting and to make players practice what they learn about wellbeing.

Feedback for this game was not only obtained in greater number, but was also generally more expansive and detailed, perhaps reflecting the extent to which the game had captured the attention of the audience.

Discussion

The present chapter has reported the findings of two studies conducted in order to enhance the development of an educational game for adult wellbeing. Firstly, a potential end-user survey was presented with the aim of establishing interest and preferences/requirements among the demographic. Subsequently, the development of two prototype games was outlined followed by a user-feedback study conducted to establish their acceptability and to outline directions for further development.

Findings from the first study revealed that the general acceptability and interest in using a game designed to improve wellbeing was good. Previous research has indicated good acceptability for gamified interventions for health purposes, including for smoking cessation (Raiff, Jarvis & Rapoza, 2012) and for exercise promotion (Nawaz, Skjæret, Lægdheim Helbostad, Vereijken, Boulton & Svanaes, 2016) including for exercise as a means of improving wellbeing (Cruz, Kugel, Hewitt & Salamat, 2018). While videogaming as an activity might be associated with younger audiences, older adults are increasingly active in using technology (Duggan, 2015) and are increasingly engaged in gaming. Despite this, respondents in our study typically reported playing videogames relatively infrequently, with a large number of respondents reporting that they did not play videogames at all, increasing with age. Furthermore, eHEALS scores revealed that a notable number of respondents in the current study scored relatively lowly in terms of digital health literacy, both regardless of their current exposure to videogaming and increasingly with age. This serves to highlight the diverse needs of older demographics, for instance the need for any gamified intervention to be easily accessible and simple to use and navigate.

Additionally, respondents were keen to be able to record their progress in the game to enable them to track the progress in their wellbeing over time. While gaming has been shown to satisfy adult individual needs for useful health outcomes (Kaufman, 2017), the use of health tracking systems requires users to be able to navigate to, access and understand the data produced (Yang & Silverman, 2014; Ginossar et al., 2017). As previously mentioned, scores for electronic health literacy were low in our sample. Therefore, the design and implementation of health tracking systems must consider usability and accessibility for end-users in order for this data to be meaningful. Research in the field suggests that use of plain language, simplicity in design and affording the opportunity to review material is of value in increasing the impact of health data in digital applications (Broderick, Devine, Langhans, Lemerise, Lier & Harris, 2013).

Finally respondents also indicated a preference in free-response feedback for prompts and reminders to use the game on a regular basis. Due to time constraints, we were unfortunately not able to include this feature in the prototype games, hence at this stage it is not possible to ascertain the extent or manner in which our respondents would have responded. Literature does however confirm that alerts and

reminders can positively drive engagement with health applications (Consolvo et al., 2008) providing these find an appropriate balance between persistency and not being too obtrusive (Holtz & Whitten, 2009; Anhøj & Møldrup, 2004), and respect the privacy of the user (Curioso, 2009).

Participants also reported a preference for in-game activities to be relatable to real-world wellbeing, e.g. by encouraging real-world activity. Adult Learning Theory proposes that older adults in particular seek to learn information which has a practical application to their everyday life (Knowles, 1980; Seah, Kaufman, Sauvé & Zhang, 2018) and are accepting of technological means of doing so when their benefits outweigh any effort required to adapt and use them (McLaughlin, Gandy, Allaire & Whitlock, 2012; Melenhorst, Rogers & Bouwhuis, 2006; de Schutter and Malliet, 2014). Models of acceptance of technology also confirm that perceived usefulness and the ease with which a technology can be used and implemented are significant predictors of its adoption (Davis, Bagozzi & Warshaw, 1989).

Findings from the second study also reinforced those of the pre-development survey. Respondents again indicated a relatively low amount of time spent playing videogames in an average week, with a large proportion of the demographic not playing videogames at all. While this does not necessarily imply a lack of interest among older players (interest in the option for a game for wellbeing was good), these findings are a reminder of the need for accessibility and simple and intuitive design in a demographic which may be either inexperienced with the mechanics and design attributes of videogames, possess lower electronic health literacy, or both (Gamberini et al., 2006; Gerling et al., 2012). To this end, our prototype game ‘Piece of Mind’ received positive user feedback in terms of how accessible and intuitive its simplistic design was.

Despite the preference for the simplistic design of ‘Piece of Mind’ however, it quickly became apparent that ‘Wellbeing Town’ was more favourably reviewed overall. While respondents acknowledged the benefits of a game which could be easily navigated and where task-requirements were clearly established, ‘Piece of Mind’ was rated as less enjoyable and rewarding. Despite there being an established need for serious games to be accessible, there is nonetheless a need for them to be challenging, thought provoking, provide a good variety of in-game tasks and objectives, and to be enjoyable. (Csikzentmihalyi, 1990; Belchior, Marsiske, Sisco, Yam & Mann, 2012). Participants frequently cited the non-linearity of ‘Wellbeing Town’ and the freedom to complete the game in the manner they wished (or to deviate from the game storyline and explore the environment at will) as a positive feature. These findings are in keeping with theories of motivation such as Self-Determination Theory, which point to autonomy and markers of competency as proponents of intrinsic drive and the manner in which games can achieve them (Ryan & Deci, 2000, Ryan, Deci & Przybylski, 2006). In extending either of the two prototypes outlined in this chapter, this is a vital consideration to ensure the games’ sustained reach.

Limitations

While the present findings hold value in providing further insight into the needs and requirements of adults when developing a serious game for wellbeing, they are not without limitation. Firstly, while we attempted to ensure that all respondents were offered a fair amount of time to engage with the prototype games before reviewing, we were unable to control for the precise amount of time players spent engaging with the games before review. Consequently, it is likely that players engaged with the games for differing amounts of time. Furthermore, while the relaxing of COVID-19 restrictions enabled some data toward the end of the second study to be collected at the MhIST centre, ongoing restrictions meant that the vast majority of data was collected online. Given the lower electronic health literacy reported by the

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demographic in the first study, this presented a number of challenges. Unsurprisingly, some participants experienced difficulties in accessing and running the games independently, therefore limiting the data they could provide in review. Nonetheless, while this negatively affected the number of participants able to take part in the active review of the prototypes, the interest and acceptability for a game for wellbeing remained. This therefore serves as a reminder of the need to make serious and informative games accessible and easy to use.

Additionally, the present findings must be considered in relation to the relatively small sample sizes, which may leave some analyses underpowered. Furthermore, while some participants were recruited from the general public, a large number of responses, including all participants in the first study, were drawn from users of the MhIST charity in Bolton, UK. Consequently, while the present findings appear to complement as well as build on the existing literature, it is likely that our findings do not fully represent adults who nonetheless may benefit from a digitised intervention for adult wellbeing. For example, given the voluntary nature of recruitment and the active nature of participation in the second study (participants were required to play the games before review), it is possible that the present sample is more representative of adults actively involved in their health and wellbeing. As lower wellbeing is associated with higher avoidance (Briki, 2018), the present sample is less likely to encompass the needs and requirements of adults with more significant wellbeing intervention needs.

As the games reviewed in the present chapter were prototypes, they were consequently not at a sophisticated enough stage of development for more complex analytical features such as detailed remote data capturing, or social features such as online multiplayer modes to be included. It is therefore currently not possible to ascertain how acceptable these features may have been to users, or the extent to which they might drive continued engagement. Data capturing methods which automatically detect psychological events and respond by prompting the user or passing data to a professional may represent an opportunity to proactively drive engagement with therapeutic tools. This potentially preventative or early-intervention technique is in contrast to the typically reactive ‘disease oriented’ approach which is characteristic of the medical model (Riva, Banos, Botella, Wiederhold & Gaggioli, 2012). However, understanding the factors which drive user-acceptability or may arouse user suspicion are critical in ensuring the adoption of remote data collection protocols (LaMonica, Davenport, Roberts & Hickie (2021). With regard to social interaction, the benefits of gaming for loneliness, depression and social support are noted in the literature, and are particularly associated with existing enjoyment of relationships and quality of play in an online community or guild (Zhang & Kaufman, 2016). Furthermore, many adult players develop meaningful online relationships in online play (Zhang & Kaufman, 2017). Of note, these were both features which participants in our first study reported to be of value in using a game for wellbeing, and as such would be a development priority in future iterations of the games.

Finally, in order to appropriately assess the extent to which the game achieved its aims in educating users regarding the Five Ways to Wellbeing Framework, further evaluation is required to assess changes to wellbeing and acquisition of the educational content. While the present findings provide valuable insight into the acceptability of two prototype games and suggestions for further development, further investigation and iterative development is required via controlled trials to determine the game’s efficacy in improving user wellbeing, capacity to encourage longitudinal engagement, and the extent to which user-feedback is addressed in future versions of the games.

CONCLUSION

In this chapter we have presented the findings of two studies conducted with volunteering service-users from MhIST and the general public to develop two prototype videogames for adult wellbeing. Findings determined that adults were receptive towards the development of a game to improve their wellbeing and offered insight into their preferences. Prototype reviews revealed the need for clarity in design and accessibility which recognises the lower electronic health literacy of the population and the lack of gaming experience among a number of respondents. However, while acceptability of a game for wellbeing is good, such interventions are not without their challenges.

Previous literature suggests that the design of videogames must consider the needs of the demographic in order to maintain play (Salmon et al., 2017). While the present findings indicate that a desire to engage with digital interventions for wellbeing exists among our respondents, and that the general acceptability of a gamified intervention is good, there is a need to consider the specific needs of the demographic (for instance in relation to digital health literacy) when designing serious and informative games. Sustained engagement is of significant importance in ensuring that the valuable learning material contained within such interventions is delivered effectively (HEFCE, 2015; Wiles et al., 2015; Cartwright-Hatton, 2004), particularly in a demographic where the potential value of using games as a learning tool may be less apparent (Charlier, Ott, Remmele & Whitton, 2012). It is therefore imperative that developers of games for health and wellbeing understand the interests and abilities of their target players to create games with low barrier to entry and recognition of prior experience of videogaming (or lack thereof), while preserving the essence and challenge of what makes gaming engaging and entertaining.

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APPENDIX 1

Copy of User-Preferences Survey (Study One)

Please begin the survey by creating a code for yourself. This is so you can be identified later if you wish to withdraw (see below). You will create this code using your year of birth, your initials, and the date on which you complete the questionnaire, for example:

Year of Birth: 1972

Name: John Smith

Date when John Completed the Questionnaire: 15 November 2020

Code: 1972JS15112020

1. What is your age: _____
2. How would you describe your gender?
 - a. Male
 - b. Female
 - c. Non-binary
 - d. Other
3. How many hours per week on average would you say you play video games?
4. Would you be interested in using an informative game designed to improve your wellbeing?
 - a. Yes
 - b. Maybe
 - c. No

If you answered no to question 4 here, please scroll to the bottom of the survey now and click ‘submit’. Otherwise, please continue.

5. How many hours per week do you think you would use a game to improve wellbeing?
6. When playing, for how long would you like an individual play session to be in minutes?
7. Rank in order of importance (1-5, where 1 is ‘not at all important’, and 5 is ‘very important’):
 - a. Ease of use
 - b. Detailed health information (e.g. ...)
 - c. Simple health information (e.g. ...)
 - d. Info regarding how to contact other services
 - e. Ways to track your wellbeing (e.g. charts)
 - f. Available on mobile device
 - g. Available online
 - h. Customisable in-game avatar
 - i. Option to replay already completed levels/mini-games.
 - j. Option to export your in-game data to send to doctor/external agency.

eHEALS

Next, this scale will ask for your opinion and experiences using the Internet for health information. For each statement, please state which response best reflects your opinion and experience right now.

8. How useful do you feel the Internet is in helping you in making decisions about your health?
 - a. Not useful at all
 - b. Not useful
 - c. Unsure
 - d. Useful
 - e. Very useful
9. How important is it for you to be able to access health resources on the Internet?
 - a. Not important at all
 - b. Not important
 - c. Unsure
 - d. Important
 - e. Very important
10. I know what health resources are available on the Internet.
 - a. Strongly disagree
 - b. Disagree
 - c. Undecided
 - d. Agree
 - e. Strongly agree
11. I know where to find helpful health resources on the Internet.
 - a. Strongly disagree
 - b. Disagree
 - c. Undecided
 - d. Agree
 - e. Strongly agree
12. I know how to find helpful health resources on the Internet.
 - a. Strongly disagree
 - b. Disagree
 - c. Undecided
 - d. Agree
 - e. Strongly agree
13. I know how to use the Internet to answer questions about my health.
 - a. Strongly disagree
 - b. Disagree
 - c. Undecided
 - d. Agree
 - e. Strongly agree
14. I know how to use the health information I find on the Internet to help me.
 - a. Strongly disagree

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- b. Disagree
 - c. Undecided
 - d. Agree
 - e. Strongly agree
15. I have the skills I need to evaluate the health resources I find on the Internet.
- a. Strongly disagree
 - b. Disagree
 - c. Undecided
 - d. Agree
 - e. Strongly agree
16. I can tell high quality health resources from low quality health resources on the Internet.
- a. Strongly disagree
 - b. Disagree
 - c. Undecided
 - d. Agree
 - e. Strongly agree
17. I feel confident in using information from the Internet to make health decision.
- a. Strongly disagree
 - b. Disagree
 - c. Undecided
 - d. Agree
 - e. Strongly agree

APPENDIX 2

Copy of User-Feedback Survey (Study Two)

MhIST Adult Wellbeing Game: Concept Games - User Review (‘Wellbeing Town’)

Introduction and Participant Information

Thank you for your interest in this research.

This study forms the secondary stages of a wider project, whereby we aim to develop a mobile videogame for adult wellbeing. Following on from feedback obtained from MhIST clients recently, two prototype games have been developed in a collaborative partnership between MhIST, and the Psychology Department and Centre for Games Design at the University of Bolton.

Before completing this survey, you will have been asked to trial the prototype version of the game:

Figure 5.



‘Wellbeing Town’

The following survey will ask you a number of questions to ascertain your perception of the game and your suggestions for future improvements. The survey takes approximately 20-30mins to complete.

You will begin the survey by creating a code for yourself. This is so you can be identified later if you wish to withdraw (see below). You will create this code using your year of birth, your initials, and the date on which you complete the questionnaire, for example:

Year of Birth: 1972

Name: John Smith

Date when John completed the questionnaire: 15 November 2020

Code: 1972JS15112020

Your consent to take part in this survey is implied by you completing the questionnaire. If you wish to withdraw at any point, you can do so by closing the questionnaire. Any data collected will not be used unless you fully complete the survey. If you wish to withdraw at a later date, you may do so up until 31 March 2021. Please email S.Barnes@bolton.ac.uk quoting the code you created as detailed above.

If you are happy to take part, please proceed to the next page.

Create a unique identification code

Code-Entry

Please begin the survey by creating a code for yourself. This is so you can be identified later if you wish to withdraw (see below). You will create this code using your year of birth, your initials, and the date on which you complete the questionnaire, for example:

Year of Birth: 1972

Name: John Smith

Date when John completed the questionnaire: 15 November 2020

Code: 1972JS15112020

Demographic Information

Q1

Q2

How would you describe your gender?

“Piece of Mind” and “Wellbeing Town”

Table 4. What is your age in years?

Please select your age in years.	010	20	30	40	50	60	70	80	90	100
----------------------------------	-----	----	----	----	----	----	----	----	----	-----

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Q3

On average, how many hours a week do you normally spend playing video-games (on any device)?

GAME TITLE: NOTE TO PARTICIPANT

G2-NOTE

The following questions relate to the concept game “Wellbeing Town”.

Figure 6.



Wellbeing Town: Evaluation Questions

WT-Q1

The menus and in-game tasks were easy to navigate.

- Strongly disagree
- Somewhat disagree

- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q2

The game made it clear to me what I was expected to do.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q3

I was able to understand the game and how to use it without assistance.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q4

The types of activities in the game were appropriate.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q5

Playing the game would help me to understand ways to improve my wellbeing.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q6

Playing the game would help to improve my wellbeing.

“Piece of Mind” and “Wellbeing Town”

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q7

The game contained enough variety of activities.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q8

The activities in the game were enjoyable and rewarding.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q9

The activities in the game were sufficiently challenging to keep my interest.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-Q10

I would be motivated to play this game often to help improve my wellbeing.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

WT-OTHER

Do you have any further comments or suggestions regarding the game ‘Wellbeing Town’?

MhIST Adult Wellbeing Game: Concept Games - User Review (‘Piece of Mind’)

Introduction and Participant Information

Figure 7.



Thank you for your interest in this research.

This study forms the secondary stages of a wider project, whereby we aim to develop a mobile videogame for adult wellbeing. Following on from feedback obtained from MhIST clients recently, two prototype games have been developed in a collaborative partnership between MhIST, and the Psychology Department and Centre for Games Design at the University of Bolton.

Before completing this survey, you will have been asked to trial the prototype game:

‘Piece of Mind’

The following survey will ask you a number of questions to ascertain your perception of the game and your suggestions for future improvements. The survey takes approximately 20-30mins to complete.

You will begin the survey by creating a code for yourself. This is so you can be identified later if you wish to withdraw (see below). You will create this code using your year of birth, your initials, and the date on which you complete the questionnaire, for example:

Year of Birth: 1972

Name: John Smith

Date when John completed the questionnaire: 15 November 2020

Code: 1972JS15112020

Your consent to take part in this survey is implied by you completing the questionnaire. If you wish to withdraw at any point, you can do so by closing the questionnaire. Any data collected will not be used unless you fully complete the survey. If you wish to withdraw at a later date, you may do so up until 31 March 2021. Please email S.Barnes@bolton.ac.uk quoting the code you created as detailed above.

If you are happy to take part, please proceed to the next page.

Create a unique identification code

“Piece of Mind” and “Wellbeing Town”

Code-Entry

Please begin the survey by creating a code for yourself. This is so you can be identified later if you wish to withdraw (see below). You will create this code using your year of birth, your initials, and the date on which you complete the questionnaire, for example:

Year of Birth: 1972

Name: John Smith

Date when John Completed the Questionnaire: 15 November 2020

Code: 1972JS15112020

Demographic Information

Q1

Table 5. What is your age in years?

Please select your age in years.	010	20	30	40	50	60	70	80	90	100
----------------------------------	-----	----	----	----	----	----	----	----	----	-----

Q2

How would you describe your gender?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Q3

On average, how many hours a week do you normally spend playing video-games (on any device)?

GAME 1: NOTE TO PARTICIPANT

G1-NOTE

The following questions relate to the concept game “Piece of Mind”.

Please complete this section if you trialled this game, otherwise please skip to the next page.

Piece of Mind: Evaluation Questions

PoM-Q1

The menus and in-game tasks were easy to navigate.

- Strongly disagree

Figure 8.



- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q2

The game made it clear to me what I was expected to do.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q3

I was able to understand the game and how to use it without assistance.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q4

The types of activities in the game were appropriate.

- Strongly disagree

“Piece of Mind” and “Wellbeing Town”

- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q5

Playing the game would help me to understand ways to improve my wellbeing.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q6

Playing the game would help to improve my wellbeing.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q7

The game contained enough variety of activities.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q8

The activities in the game were enjoyable and rewarding.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q9

The activities in the game were sufficiently challenging to keep my interest.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-Q10

I would be motivated to play this game often to help improve my wellbeing.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

PoM-OTHER

Do you have any further comments or suggestions regarding the game ‘Piece of Mind’?

Chapter 9

Therapeutic Gaming for Adolescent Anxiety: Development and Evaluation of a Mobile Intervention

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ABSTRACT

Anxiety disorders (AD) are the most prevalent of the mental health conditions and are associated with significant and long-lasting burden of disease both for affected individuals and healthcare systems designed to support them. Despite this, barriers to traditional interventions mean less than half of adolescents experiencing ADs seek-treatment, with less than 20% of treatment-seekers ultimately receiving a scientifically validated intervention. Therapeutic games show significant potential to help reduce AD in adolescents, with some concerns remaining over their abilities to engage users, particularly over time. The chapter presents two studies relating to the development of a new mobile gamified intervention for adolescents with AD. This includes a user-feedback study on currently available games for anxiety and depression, followed by a user-feedback, acceptability, and intention-to-use study of a development version of the new intervention.

INTRODUCTION

Background

Anxiety Disorders (AD) are the most prevalent of the mental health conditions and are the sixth-leading

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cause of disability worldwide (Baxter, Scott, Vos & Whiteford, 2014). ADs are associated with significant and long-lasting burden of disease both for affected individuals and the healthcare systems designed to support them (Bandelow & Michaelis, 2015). Among children and adolescents, AD prevalence ranges from 4-20% (Bhatia & Goyal, 2018).

The extant evidence indicates that the proportion of adolescents suffering from AD has increased by up to 70% since the mid-1980s, and that there are now approximately 300,000 young people in the UK with an AD meeting the criteria for diagnosis (Hagell, 2012), making AD the most common disorder of this life-stage (Rapee, Schniering & Hudson, 2009). Prevalence studies show that at any given time, between 3- and 12% of children and adolescents meet the diagnostic criteria for an AD (Rice & Thapar, 2009). As is the case with other psychological disorders including depression, the development of AD increases significantly during adolescent years (Costello & Angold, 1995; Grant, 2013).

A noteworthy heterogeneity in evidence demonstrates that while the initial development of an AD may occur in adulthood, the majority of ADs begin during adolescence, such as social phobia (Kessler, 2005; Beesdo, Knappe & Pine, 2009; Wittchen & Fehm 2003) (where few cases are documented as first instances after adolescent years), and Generalised Anxiety Disorders (Kessler, 2005; de Graaf et al., 2003). At least 50% of adults aged 32-years and meeting the diagnostic criteria for AD show evidence that they would also have met the diagnostic criteria between the ages of 11- and 15-years (Gregory et al., 2007). Therefore, it has been argued that adolescence may be a ‘critical period’ for AD and future mental health and wellbeing, as the existential identities formed during adolescent years become consolidated as this stage of life closes and adulthood begins (Berman, Weems & Stickle, 2006).

Despite the prevalence of ADs, the short- and long-term implications of AD experience, and the evidence-base demonstrating the efficacy of a range of psychiatric and psychotherapeutic interventions, less than half of adolescents experiencing ADs seek-treatment, with fewer than 20% of treatment-seekers ultimately receiving a scientifically validated intervention (Kessler et al., 2008; Collins, Westra, Dozois & Burns, 2004). Considerable under-recognition, and subsequent under-treatment of anxiety disorders is well-documented, an issue documented by existing literature to be further complicated by a range of social, clinical, and pathological factors including non-disclosure (Corrigan, Druss & Perlick, 2014), the availability of therapeutic provision (Andlin-Sobocki & Wittchen, 2005), and drop-out from existing clinical interventions.

The Role of Digital Interventions and Serious Games in the Therapeutic Process

Electronic Health (eHealth) is defined as “an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies” (Eysenbach, 2001). First noted by Abt (1970), serious and therapeutic video games (STVGs) are video games which are designed with a primary purpose other than entertainment, usually to educate or inform the player (Djaouti et al., 2011). Games are increasingly popular and pervasive among adolescents in modern society, with up to 97% of teenagers engaging in some degree of gaming activity (Lenhart et al., 2008). In recent years, a growing focus has been placed on how serious games can be utilised to make positive changes across a range of physical and psychological health-related conditions (Huang & Johnson, 2008).

By harnessing the immersive and entertaining principles of video games, serious games aim to deliver educational material in a gamified context (Thom, Millen & di Micco, 2012). Research has suggested

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that the fantasy and virtual elements of serious games may enhance learning experiences (Huang & Johnson, 2008) by allowing for multi-sensory hypothesis testing, immediate feedback opportunities, and absence of real-life repercussions of the player's actions (Oblinger, 2004), within a personalisable and adaptable environment (Cannon-Bowers, Bowers & Procci, 2011; Buszewicz, 2006). By affording players ownership over the learning environment, STVGs also provide a critical bridge between access to educational materials and motivating contexts for their delivery (de Smet et al., 2014).

Extant data demonstrates the efficacy of serious games in producing significant and clinically measurable improvements across a diverse range of psychological conditions (Baranowski et al., 2013), for example as tools for reducing psychopathological symptoms associated with gambling disorders (Tárrega et al., 2015), and as a preliminary treatment to cognitive behavioural therapy (CBT) for bulimia nervosa (Giner-Bartolomé et al., 2015). A 2012 review of 38 publications regarding STVG use across a variety of therapeutic frameworks and psychological conditions concluded that game-engagement improved user understanding of their condition, self-management strategy awareness and use, and overall wellbeing, and were in addition a positive distraction-technique from immediate symptom experience (Primack et al., 2012), demonstrating improvement in 69% of cases.

A recent systematic review regarding the use of serious and therapeutic games for adolescent anxiety disorders found that while research into this field appears at present to be extremely limited, as demonstrated by the small number of papers eligible for inclusion in the review, early findings from these studies suggest that therapeutic games have significant potential to help reduce anxiety levels in adolescents (Barnes & Prescott, 2018). However, some concerns remain regarding the capacities of existing protocols to engage users in continued use. Furthermore, digital mental health interventions more widely have been associated with high attrition rates, including rejection after only a single use (Consumer Health Information Corporation, 2011). Participants have also been found to describe learning modules as 'tiring' (Gerrits, van der Zanden, Visscher, & Conjin, 2007) or 'tedious' (Burckhardt, Manicavasgar, Batterham, Miller, Talbot & Lum, 2015).

It has been argued that engaging end users in the development and early testing of eHealth products provides valuable data for their improvement (Ware et al., 2017), with iterative prototyping acting as a form of risk analysis and a requirement for the development of compelling game experiences (Schell, 2008). Despite this, a recent review identified 20 serious games developed for the treatment of anxiety and/or depression, finding half (50%) were developed with some degree of input from intended end-users, with 45% involving users only in the testing phase (Dekker & Williams, 2017). This may explain that, while existing games have shown promise in reducing anxiety symptoms in adolescents (Barnes & Prescott, 2018), their anxiolytic capabilities and capacity to motivate continued play are not always maintained beyond short intervention periods (Schuurmans et al., 2015; Scholten et al., 2016). Consequently, further investigation into how digital interventions, such as therapeutic games, are received by anxious adolescents may help to enhance the continued viability of gamified interventions. The following studies therefore aimed to improve not only the reach of STVGs in terms of better engaging potential users, but also their longitudinal viability, in maintaining user-interest and facilitating the continued practice and maintenance behaviours associated with, and essential for, prolonged remission (HEFCE, 2015; Wiles et al., 2014; Cartwright-Hatton, 2004; James, Soler & Weatherall, 2005).

MAIN FOCUS AND AIMS OF THE CHAPTER

According to Salen and Zimmerman (2004), game design is “the process by which a game designer creates a game to be encountered by a player, from which meaningful play emerges.” In this sense, a game cannot be dissociated from its player, as it is the player who constructs narrative and meaning from their experience of play. In this sense, the involvement of potential end-users in the development and review of gamified interventions is essential in understanding the factors which contribute to the emergence of meaningful play.

The present investigations aimed to address the aforementioned shortcomings of existing therapeutic games for adolescent anxiety disorders, by employing potential end-users from the early stages of the development process. User perceptions of existing protocols in terms of platform and game-mechanics, along with their relationships with intention to use, would be utilised in the development of a new intervention. Subsequently, the resulting intervention would also be evaluated on the same basis, in order to maximise its acceptability, and promote prolonged engagement.

Consequently, the first empirical investigation presented in this chapter represents a pre-development exploration of adolescent expectations and requirements of therapeutic games. To this end, user perceptions of game-quality regarding a number of existing and freely available games for anxiety and depression (utilising a number of game-mechanics and therapeutic frameworks) were assessed, along with each game’s capability in reducing self-reported anxiety symptoms. Furthermore, given the importance of continued commitment to the development and maintenance of therapeutic gains (HEFCE, 2015; Wiles et al., 2014; Cartwright-Hatton, 2004; James, Soler & Weatherall, 2005), and the value of games in motivating sustained engagement (Sitzmann, 2011), an exploration of user-perceptions of game-quality will be presented in terms of their relationships with intention to use over a subsequent 12-month period.

Further to these findings and drawing on the principles of self-determination theory (Ryan & Deci, 2000), a mobile gamified anxiolytic intervention for adolescents utilising a combination of tasks derived from CBT and attention-bias modification (ABM) will be described. The second empirical study to be discussed in this chapter consisted of a user-evaluation of a developmental pre-release version of the game. Utilising a similar methodology as the first study, the new development game is therefore compared like-for-like with games previously investigated. User-perceptions of quality and intention to use will be discussed, along with an evaluation of the game’s anxiolytic capabilities. Finally, the findings of these investigations will be discussed in terms of the next stages for evaluation of the new intervention.

STUDY ONE

Aims

The first study had three primary aims: (1) to establish existing preferences towards specific game-mechanics (e.g. psychoeducation, attention-bias modification, distraction) in adolescents; (2) to assess the relationship between perception of game impact and anxiolytic impact; (3) to establish if measures of objective quality and player expectations (i.e. the perceived impact of a game on the health condition) may be predictive to intention to use over the following 12-month period.

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Table 1. Summary of included games, principle game mechanic and mode of delivery.

Game Title	Principle Mechanic	Mode of Delivery
'Mood Mint'	Attention-bias modification	Mobile*
'Guppy'	Distraction	Mobile*
'PsychMeUp'	Attention-bias modification	Mobile*
'Depression Quest'	Psychoeducation	Browser
'Elude'	Psychoeducation	Browser
'Fireboy & Watergirl'	Exposure	Browser
'Echogenesis'	Distraction	Browser
'Drifting Afternoon'	Distraction	Browser

* All mobile games were available on either the Apple iOS or Google Android operating systems at the time of the study being conducted.

Method

Design

The present study assumed a pragmatist approach employing a convergent mixed design, in order to maximise the usefulness of the findings later in enhancing the implementations of a subsequently developed intervention (Laver, George, Thomas, Deutsch, & Crotty, 2015). Quantitative feedback was collected regarding quality and satisfaction ratings of the games selected for review. Data were supplemented with qualitative data to provide additional support and detail for the numerical ratings, and to offer further insight into the motivations and reasonings underlying them.

A total of eight games purporting to be 'educational', 'informative', 'relaxing' or 'anxiety-reducing' and covering a range of game-mechanics were selected for review. In order to maximise the accessibility of the study to participants, and due to licensing costs and lack of public availability of some existing games for anxiety (e.g. 'Dojo', 'MindLight') or specific hardwares required (e.g. 'PlayMotion'), a convenience sample of games readily available on the public market were selected. As both the development of applications for anxiety and depression (Mohr et al., 2017), and the study of their acceptability/efficacy (Dekker & Williams, 2017; Garrido et al., 2019) is commonplace in this field, and to widen the number of accessible applications for evaluation, games intended for both conditions were used. A summary of the games reviewed can be seen in *Table 1*.

Participants

Participants were recruited on a voluntary basis primarily from two academic institutions: a sixth-form college and a university technical college in the North-West of England. Additionally, a small number of participants were recruited via word-of-mouth. Once provided with a full briefing on of the aims of the study, participants gave consent and were allocated a unique anonymous identification code (e.g. S1-001). For participants aged under 16, or not responsible for paying for app-downloads on their mobile device, parental/guardian and/or bill-payer consent was also obtained.

A total of 60 participants were recruited initially. Of these, seven withdrew voluntarily, and twelve were removed by the experimenter as they did not submit any feedback relating to their games, leaving a final sample of $N=41$, including 17 males (41.5%) and 24 females (58.5%). Ages ranged between 13 and 19 years, with the majority of participants aged between 14 and 18 (85.1%).

Materials and Procedure

Following recruitment and consent, participants were randomly allocated two of the candidate games, and were instructed to use these games for a minimum of one-hour over the following seven days, which could be completed in separate play sessions as required. Following the seven-day testing period, data were collected using the User-Version of the Mobile Application Rating Scale (uMARS) (Stoyanov, Hides, Kavanagh & Wilson, 2016). The uMARS is a 20-item, six-point inventory consisting of four objective quality subscales (engagement, functionality, aesthetics and quality of information provided), one subjective quality subscale, and one subscale designed to measure the respondent's perceptions of an application's impact on the health condition. Mean scores can be calculated by averaging the subscale responses, and an overall total quality score can be generated by calculating a mean of the average scores for the four objective quality subscales. In order to supplement and provide further context to the data obtained by the uMARS, a qualitative version was developed.

The uMARS has strong overall internal consistency ($\alpha=.90$) with high internal consistencies across the subscales, as well as good test-retest reliability at .66 at 1- and 2-month intervals and .70 at 3-months (Stoyanov *et al.*, 2016). Additionally, the uMARS does not need respondents to have any relevant formal training in either the health condition, or the virtual health intervention designed to alleviate its symptoms and is therefore accessible to and suitable for a wide number of audiences. For the purposes of this research, references to 'app' were changed to 'game'. For the purposes of the present research, the uMARS would allow not only for an assessment of user enjoyment of the games played, but also their perceptions of the game's ability to make a positive impact on the health condition. Thus, the uMARS would enable the present study to determine the extent to which preferred game-features of adolescents corresponded with features reported to have an impact on health awareness and behaviour.

Participants were also requested to complete the short-form of the Spielberger State-Trait Anxiety Inventory both before and after their trial period (STAI-Y6) (Martean & Bekker, 1992); a six-item version of the Spielberger State-Trait Anxiety Inventory (Spielberger, Gorsuch & Lushene, 1970; Spielberger, 1983). The STAI-Y6 produces state-anxiety scores comparable to those of the full 20-item variant, and authors of the scale stipulate that 'normal' anxiety scores range between 34 and 36 (Bekker *et al.*, 2003).

Data were obtained via paper printed document or via Google Forms. Social Presence Theory (Short, Williams & Christie, 1976) posits that computer-mediated communications reduce the salience of individuals in online communications without impeding the salience of the ideas under discussion. Moreover, Internet-facilitated de-individuation increases the extent to which an individual will engage in self-disclosure (McKenna & Bargh, 2000) with increased task-focus and reduced self-awareness and self-regulation (Prentice-Dunn & Rogers, 1982).

Following the one-week trial period, participants were given a further week to finalise and submit feedback and were fully debriefed upon completion. Once this period had elapsed, quantitative data were entered and analysed using IBM SPSS (v25.0), while qualitative data were analysed using NVivo (v12).

Results

Quantitative Findings

Of the 41 participants remaining in the study after withdrawals, 21 (51.2%) provided feedback for two games, and 20 (48.8%) provided feedback for one game, leaving 62 total instances of feedback for analysis. The number of instances of feedback per game and per primary game-mechanic can be found in *Table 2* and *Table 3*.

Table 2. Instances of quantitative feedback per game.

Game	Primary Mechanic	Frequency (%)
<i>MoodMint</i>	Attention-bias modification	5 (8.1%)
<i>Guppy</i>	Distraction	13 (21.0%)
<i>PsychMeUp</i>	Attention-bias modification	7 (11.3%)
<i>Depression Quest</i>	Psychoeducation	13 (21.0%)
<i>Elude</i>	Psychoeducation	13 (21.0%)
<i>Fireboy & Watergirl</i>	Exposure	5 (8.1%)
<i>Echogenesis</i>	Distraction	4 (6.5%)
<i>Drifting Afternoon</i>	Distraction	2 (3.2%)

Table 3. Instances of quantitative feedback per mechanic.

Game Mechanic	Games Included	Frequency (%)
Attention-bias modification	MoodMint, PsychMeUp	18 (29.0%)
Psychoeducation	Depression Quest, Elude	26 (42.0%)
Distraction	Guppy, Echogenesis, Drifting Afternoon	13 (21.0%)
Exposure	Fireboy & Watergirl	5 (8.1%)

Average subscale ratings for each game-mechanic were calculated along with a total quality score to assess user-preferences. An overview of the raw data in this regard can be observed in *Table 4*.

The above scores indicated that all games under review scored a moderate overall total quality rating of between 2 and 3. While comparable in terms of total quality score, a number of differences in preferences emerged at subscale level. While exposure games were reported as the most engaging of games (followed by ABM, distraction, and psychoeducation), quality of health information was rated most favourably for games utilising ABM.

Psychoeducational games were most favoured in terms of subjective quality and most likely to be perceived to be impactful on the health behaviour (although it is worth noting that no mechanic scored higher than ‘3’ in this regard). While some differences emerged when considering functionality and aesthetics, these were more minor.

Table 4. Average total and subscale quality ratings by game mechanic.

Game Mechanic (N Ratings)	Total Quality Mean (SD)	ENG Mean (SD)	FUNC Mean (SD)	AES Mean (SD)	INF Mean (SD)	SUBJ-QU Mean (SD)	PI Mean (SD)
ABM (N=18)	2.98 (.81)	2.52 (.90)	3.43 (.87)	3.00 (1.09)	2.96 (.93)	2.39 (.83)	2.67 (1.06)
Distraction (N=13)	2.96 (.75)	2.65 (.80)	3.65 (1.16)	2.97 (1.19)	2.33 (1.58)	1.92 (.87)	1.68 (.79)
Psycho-education (N=26)	3.03 (.84)	2.48 (.85)	3.55 (1.03)	3.16 (.78)	2.94 (1.24)	2.14 (.94)	2.81 (1.15)
Exposure (N=5)	3.15 (.91)	3.00 (.40)	3.60 (1.01)	3.20 (1.26)	2.80 (1.73)	3.20 (1.41)	1.97 (1.25)

* EN (Engagement); FUNC (Functionality); AES (Aesthetics); INF (Quality of Information); SUBJ-QU (Subjective Quality); PI (Perceived Impact)

In terms of their relative abilities to reduce anxiety among players, STAI-Y6 scores were analysed. This analysis was however complicated by high levels of non-compliance in reporting, or incomplete reports. Of the participants who submitted game reviews using the uMARS, 32 (51.60%) also submitted pre- and post-play anxiety ratings. An overview of this data can be found in Table 5.

Table 5. Comparison of pre- vs post-play STAI-Y6 state-anxiety scores by game mechanic.

Mechanic	Mean Pre-Play STAI-Y6 Score	Mean Post-Play STAI-Y6 Score	Mean Pre- vs Post-Play Difference (Sig.)
ABM (N=8)	40.00 (8.36)	43.74 (8.25)	+3.74 (p=.426)
Distraction (N=6)	36.67 (10.54)	38.33 (7.53)	+1.67 (p=.415)
Psychoeducation (N=13)	35.64 (13.01)	34.35 (12.43)	-1.28 (p=.594)
Exposure (N=5)	38.67 (11.93)	38.67 (11.93)	0.00 (N/A)

Data were screened for normality across the six domains of the uMARS and the STAI-Y6 using Shapiro-Wilk tests. With regards to the uMARS, while the engagement domain (p=.181), the aesthetics domain (p=.081) and the total quality mean score (p=.096) of the uMARS were normally distributed, the remaining domains were not: functionality (p=.008), information quality (p=.009), subjective quality (p=.003) and perceived impact (p=.001). Of note, the latter two variables demonstrated a notable partial positive skew, with a large number of ratings of ‘1’. While particular games rated on average notably lower in these domains than others, a notable number of ‘1’ ratings was present across all games and mechanics, suggesting low perceived quality. Both pre- and post-play STAI-Y6 scores emerged as normally distributed. While a number of fractional-power and logarithmic transformations, as recommended by Clark-Carter (1997), were computed, including \sqrt{x} , $\sqrt[3]{x}$, $x/3$ and $\log_{10}(x)$, the data for these variables remained non-normal.

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Table 6. Instances of qualitative feedback per mechanic.

Game Mechanic	Games Included	Frequency (%)
Attention-bias modification	MoodMint, PsychMeUp	13 (36.11%)
Psychoeducation	Depression Quest, Elude	14 (38.89%)
Distraction	Guppy, Echogenesis, Drifting Afternoon	5 (13.89%)
Exposure	Fireboy & Watergirl	4 (11.11%)

* Figures may not sum to 100% due to rounding.

Initially, a significant moderate positive correlation was found between the total objective quality (OQ) score and intention to use over the following 12 months ($r_s = .56$, $p < .001$). When controlling for perceived impact, the correlation between OQ score and intention to use remained and remained moderate ($r_s = .43$, $p < .001$), albeit with reduced effect ($-.122$). A moderate significant correlation was also found between the perceived impact of a game and the participant's intention to use it over the following 12-month period ($r_s = .44$, $p < .001$).

Additionally, no significant correlation was found between the perceived-impact of a game, and its actual effect on STAI-Y6 score ($r_s = .14$, $p = .441$). Additionally, the correlation between reduction in STAI-Y6 score and intention to use was on the cusp of significance ($r_s = .33$, $p = .054$), as was the correlation between total OQ score and anxiety reduction ($r_s = .33$, $p = .056$).

Paired-samples *t*-tests revealed no significant differences overall between pre- and post-play anxiety scores. Furthermore, no specific game-mechanic produced a significant change to anxiety rating. This analysis was not extended to exposure-based games owing to the low sample size. Of note, ABM and distraction-based games appeared in fact to increase anxiety scores. While exposure games had been anticipated to increase psychological arousal at least over a short period, no change to anxiety rating was noted.

Qualitative Findings

Thematic analysis was conducted in order to assess the qualitative data collected from the uMARS questionnaire. A total of 36 instances of qualitative feedback was collected from 24 participants, with 12 participants providing qualitative feedback for both of their games, and 12 participants providing feedback for one of their games. The number of instances of qualitative feedback per game and per mechanic can be found in *Table 6*.

The analysis of the qualitative data was conducted using the thematic analysis technique as outlined by Braun & Clarke (2006) in order to assess any occurrence or co-occurrence of themes. An overview of the super- and sub-ordinate themes can be found in *Table 7*.

Clarity of Use

One of the major themes to emerge from the analysis was a general preference for clarity when using a therapeutic game. Participants frequently reported favourably about games when clear in-game instructions were provided, when control systems were instinctive and produced the anticipated response, and when the nature of the gameplay was, in this sense, predictable.

Table 7. Super- and sub-ordinate themes.

	Superordinate Theme	Subordinate Themes	Example Quote
1	Clarity of Use	a) Intuitive nature of game (e.g. instructions on how to use). b) Ease of use (vs anxiety-inducing).	"...the game appeared to work in the way it was intended to and therefore I liked the game more." (S1-022 – game 'Elude') "i do think it did work well however at some points where it told me to select the smiling faces no smiling faces were a option to press which made you lose out on points, this was frustrating [SIC]." (S1-003 – game 'MoodMint')
2	Variety	a) Important to maintain challenge. b) Customisable and interactive.	"after a while the game becomes very dull because nothing changes so the player may stop using the game." (S1-002 – game 'Guppy') "The game was not very customisable, and this limited how much I liked the game." (S1-022 – game 'PsychMeUp')
3	Perceived value	a) Anxiolytic value of game (scientific support) and quality health information. b) Need to clearly mark achievement.	"A how to play page accessible from the start screen to explain what parts of the game are for. How the game helps with anxiety." (S1-007 – game 'Guppy') "You don't get much out of the game, when the character reaches the point there are no rewards you just have to keep going. That made me unengaged because I had the attitude of what's the point if there is no reward to the game." (S1-015 – Elude)
4	Colour & Environment	a) Impact on perception of game usefulness. b) Need for colour to be fitting to the medium.	"i do think it looked professional but i think if the game wants to be intriguing more colours should be used to make it look less professional and more like a game" (S1-003 – game 'MoodMint') [Aspects of the game you found engaging] "the plain colour white mixed with the mint green make it appealing and it also quite a calm combination" (S1-006 – game 'MoodMint')

Participants also frequently commented that games which were perceived to be easier to use were more likely to be anxiety reducing. Contrastingly, and regardless of game-mechanic, games which were perceived to be difficult to use, or were unclear in instructing the player how to navigate the in-game tasks were perceived to be less effective, or in some cases, anxiety provoking. One such example related to the control trials in the game 'MoodMint' where participants on occasions did not realise that, in the absence of a positive stimulus, the correct response was to not select any of the faces. Additionally, participants expressed a preference for in-game instructions to be simple, clear and effective. Explanations deemed too extensive by the player may result in disengagement.

That the participants in this study demonstrated a preference for games which were intuitive and clear in both their instruction and operation is reflective of wider theory regarding acceptance of technology. The Technology Acceptance Model (Davis, Bagozzi & Warshaw, 1989) highlights the importance user perceptions of ease of use, and its subsequent predictive power when considering player-engagement. Furthermore, such attributes may take on further relevance when considering the context in which therapeutic games operate. When considering the development of games and applications for AD, the simplicity and intuitive nature of the game is likely to take on additional significance, as anxiety condi-

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tions are associated with impairments to concentration (Boschloo, Borkulo, Borsboom & Schoevers, 2016), as well as large reductions in motivation (Loonen & Ivanova, 2016). Accordingly, one of the major considerations of therapeutic game development is ensuring that the provision of the game's therapeutic content is done so in a sufficiently clear manner as not to be perceived to be too difficult for the user to comprehend, or in a way which might negatively affect their motivation to engage.

Variety

In addition to the clear and easily navigable nature of a game, participants in this study also expressed a preference towards having the opportunity to engage in a variety of in-game tasks. Furthermore, participants reported that the provision of in-game task-diversity was not only more enjoyable than when games employed a more repetitive style, but that it was also more likely to maintain the game's challenge, and therefore be more effective in retaining their interest over time. However, this was not to say that any repetition was perceived as negative. Providing those recurring elements were not perceived to be too repetitive; some task-recurrence was viewed positively.

The diversifiable and malleable nature of games affords an opportunity for personalising the experience of mental health provision, and the availability of environments which afford and promote user autonomy has been considered to be one of the most important facets of increased motivation (Ryan, Scott Rigby & Przybylski, 2006), allowing users a degree of control over their learning experience. Direct control over the game environment can instil players with a sense of control over their experience and may increase their positive affect while playing the game (Hefner, Klimmt & Vorderer, 2007), enjoyment (Schmierbach, Limperos & Woolley, 2012), and the emotional impact and relevance of the learning material (Mantovani & Castelnuovo, 2003).

Another favourably reported means by which games were able to retain changeability beyond varying the tasks assigned to the player was the provision of customisability options. Effective personalisation of healthcare provision has shown to have positive benefits for individual autonomy and the capacity to self-regulate wellbeing (Schmitt diel *et al.*, 2008). The opportunity for avatar-customisation is another means by which the visual traits and in-game abilities of an avatar present an opportunity for identity-expression or extended identity formation (Turkle, 1995), and have been linked with increased positive identification with the game (Turkay & Kinzer, 2016). Recent research has also demonstrated that motivation for gameplay in young people often involves stress-reduction or a drive to increase autonomy. This is a feature more pronounced in young people with mental health symptoms (Ferguson & Olson, 2013). The present data supports previous investigations into therapeutic apps (Garrido *et al.*, 2019), suggesting that young people place value on autonomy and the capacity of an intervention to afford opportunities for personalisation. Further, in line with Self-Determination Theory, variation in delivery, such as that provided by narrative features (e.g. storylines) provide not only context for gameplay and learning (Kapp, 2012), but may also enhance motivation to learn by fostering relatedness (Baranowski *et al.*, 2008).

However, not all customisability may be of value in designing an effective therapeutic game, particularly when opportunities for individualisation may compromise the validity of the therapeutic delivery, as indicated by one participant playing the game '*MoodMint*', which allows users to customise the faces used in the attention-bias modification task. Despite this, the present findings mirror wider literature for app research, where poor customisability has been raised frequently as a barrier to engagement (Nicholas, Fogarty, Boydell & Christensen, 2017; Tong, Coiera & Laranjo, 2018). Successful management of the

game's presentation (e.g. through varying the in-game tasks to maintain the game's challenge) may help to encourage continued engagement by successfully manipulating the flow state (Csikszentmihályi, 1975). Effective therapeutic game design for AD however must also balance the need to effectively motivate the player through varying task-delivery, with the need for sufficient repetition as to promote cognitive and behavioural change (Roemer & Orsillo, 2002), such as the continued functional exposure to feared stimuli (Foa & Kozak, 1986). Consequently, balancing simplicity and consistency, with opportunities for individual variation is an important design consideration.

Perceived Value

While participants showed a good overall acceptance of the use of games for the delivery of therapeutic content, and their potential in reducing symptom experience, they frequently reported a preference for such games to be explicit in terms of the benefits and value of their engagement for their wellbeing. In this sense, it was not sufficient for games to simply be enjoyable to play, rather participants reported a preference for games to be explicit in such a way the purpose of the game in terms of its health-related benefits could be noticeably and easily extrapolated. Where such information was not provided, or perceived to be insufficient, this was also reported by participants as a negative aspect of their game, and something raised when they were asked about which features should be included in future developments.

The Technology Acceptance Model (Davis, Bagozzi & Warshaw, 1989) highlights the importance user perceptions of usefulness when predicting a user's engagement with an eHealth intervention. In this case also, these findings mirror and inform the quantitative analysis, providing further insight into the underlying perceptions behind the significant moderate correlation between perceived impact and intention to use. Consequently, a further consideration when designing a therapeutic game for this audience, is to consider how the delivery of therapeutic content can be managed in an intuitive and easily discernible manner, without any simplifications in design (such as reductions in long sections of health-related text-information) being of detriment to the perceived usefulness of the intervention.

One means of indicating a player's positive progress is the use of reward and feedback mechanisms. Participants often referred in their feedback to the benefits of using clear feedback mechanisms as a means of indicating where they were making positive progress in the game. However, some participants also noted that such grading mechanisms needed to operate in a manner conscious of the context in which the game was operating. Competitive elements and feedback mechanisms were perceived to be beneficial in driving motivation to engage but may also be detrimental to the benefits of games for health purposes if they were perceived to be too competitive, or when the possibility of loss was perceived too high.

Perceptions of competency can be derived from a number of game-elements. Effective target-setting, along with feedback which recognises the successful completion of incremental steps towards goal satisfaction, has been shown to motivate continued engagement, even as task-difficulty increases (Baranowski *et al.*, 2008). However, incremental increases in the demands placed on the user must be carefully balanced with ability, as repetitive failure, or early task-mastery may reduce motivation, resulting ultimately in player disengagement (Mishra & Gazzaley, 2014). Successful maintenance of this delicate balance is often attributed to preservation of the flow state (Csikszentmihályi, 1975). The extant evidence has pointed to a range of factors responsible for influencing the extent to which STVGs can generate flow, including; competition (Staiano, Abraham & Calvert, 2012), opportunity for co-operative play (Peng & Hsieh, 2012), clear goals (Huang, Johnson & Seung-Hyun, 2013), and clear reward structures (King, Delfabbro & Griffiths, 2010).

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As noted by participants in this study however, competency in STVGs however must also be considered in the context of the game's function. Morschheuser *et al.* (2017) advise that games designed for the purpose of psychological intervention (such as therapeutic games) must go beyond basic token economies and player leaderboards (Hamari, Koivisto & Sarsa, 2014) in order to engage the audience. The present findings indicate that beyond the expectation of an engaging play experience, audiences for STVGs hold an additional anticipation that their experiences with the game will exert a perceptible therapeutic effect.

Colour and Environment

The final theme emerging from the data related to the aesthetics of the game, where specific reference was made consistently to the value of colour and game-environment. The colour of the in-game world and avatars, as well as supplementary and functional items such as menus was perceived by many participants to be a key motivating or demotivating factor in determining their continued engagement with the game. Less colourful game-worlds conferred either a sense of game-simplicity and ease of use, or if greyscale, were perceived to have a detrimental effect on the game's potential usefulness. Specifically, participants preferred the in-game environment to be colourful, yet calming, with responses split on preferences towards colour brightness. Of note, while participants preferred games which they perceived to have anxiolytic value, colour and professional appearance was referred as potentially less engaging if it reduced the 'gamified' appearance of a game.

Predicted upon research showing that colours are perceived independently of objects (Siple & Springer, 1983), and that colour such as blue and green are associated with lower state-anxiety than colours such as yellow or red (Jacobs & Suess, 1975), colour psychology suggests that a strong correlation exists between colour properties of objects and the viewer's perceived feelings of joy, sadness, fear and serenity (Geslin, Jégou & Beaudoin, 2016). It suggests that specific colours (such as green) may be associated with positive emotional experiences (such as relaxation and comfort) (Kaya & Epps, 2004). Certain colour combinations may also evoke more favourable perceptions, with research on web-design finding cool colour-combinations to be preferable to warm combinations in this regard (Coursaris, Swierenga & Watrall, 2008). Of note, the games generally commented on most favourably in terms of their use of colour utilised cool colour-combinations, with high prevalence of greens and blues. Games utilising high amounts of dark colours were generally reported on less favourably.

A recent study by Roohi and Forouzandeh (2019) investigated principles of colour psychology when designing an adventure game '*TikTak*'. Two versions of the game were developed: one using colour psychology principles ('*TikTakImmersive*'), alongside a second version developed intuitively and without influence of colour-psychology by the game designer alone ('*TikTakArbit*'). Participants with normal trichromatic colour vision were then assessed, with findings revealing that '*TikTakImmersive*' produced significantly higher perceived immersion, and significantly fewer in-game task-failures. While participants did spend significantly longer on '*TikTakArbit*', they completed significantly more tasks on '*TikTakImmersive*', suggesting that effective use of in-game colour may influence player-performance and immersion, and that game-design may benefit from utilising principles from colour research in order to maximise these outcomes.

Discussion

Principal Findings

The aims of the present study were threefold:

1. To establish any existing preferences towards specific game-mechanics (exposure, psychoeducation, attention-bias modification, distraction) in adolescents when developing a therapeutic game for ADs.
2. To establish if a relationship existed between the perceived impact of a game mechanic, and its actual impact on the health condition.
3. To establish if objective quality measures, and non-specific game-factors such as player expectations (e.g. the perceived impacts of specific game-mechanics on the health condition), may be predictive of an individual's subsequent intention to use the game over a prolonged period (e.g. 12-months).

In relation to hypothesis 1, findings from the quantitative data indicated that, in terms of overall quality scores, the four game-mechanics investigated produced similar overall scores, with all games scoring moderately. More notable differences were however observed at a sub-scale level, with exposure games being rated as most engaging and scoring highest in terms of their perceived subjective quality. Games using ABM and psychoeducation performed well in terms of perceived impact and perceived quality of health information, and distraction games worst, although it is worthwhile noting that no ratings in the present study were 3 or above in this domain. No notable differences between the mechanics were found with regards to functionality or aesthetics, indicating that while not all mechanics were viewed as engaging or impactful as each other, participants found them equally useable and visually appealing. The study therefore reflects the value of surveying potential end-users when designing games for therapeutic purposes.

Regarding hypothesis 2, no significant relationship was found between the perceived impact of a game and its actual effect on STAI-Y6 score. A Of note, psychoeducation games scored highest in terms of PI, and also recorded the largest reduction in STAI score. However, while the games included in this study varied in terms of their perceived impact, none of the reductions made to state anxiety reached statistical significance. The present study therefore suggests that a player's perceptions of a STVGs impact may have no relation to its actual anxiolytic effect. Games also did not always perform as expected with regards to state-anxiety; while ABM games increased state-anxiety as expected, exposure games did not. Distraction games, expected to have an anxiolytic effect in the short-term, also recorded an increase in state-anxiety.

Regarding hypothesis 3, and in light of the positive correlations observed between OQ score, and STAI reduction, with intention to use over the following 12 months, the present study indicates that initial player perceptions and experiences of a game's quality are important variables to consider when predicting engagement. While perceived game impact correlated positively with intention to use at a bivariate level, this was only the case when OQ was not considered. Furthermore, while only included on a speculative basis, regression analyses also appear to highlight the predictive power of OQ when predicting intention to use. Therefore, the present study suggests that while the intention to use a therapeutic game may be predicted from a player's perception of the game's objective quality (engagement

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value, functionality, aesthetics, information quality), the same cannot be said of the extent to which players perceive the game to have an impact on the health condition.

Qualitative feedback concurred that a game's clarity and intuitive nature (functionality), in-game task variety, and environmental design (aesthetics) were all variables which players considered important in determining a game's quality. While participants in this study frequently cited the need to feel that their use of the game would be beneficial, they often referred to clear demarcation of achievement and objective quality components, such as the provision of quality health information, as ways that this value could be determined. The present data therefore would suggest that, while perceptions of impact are not unimportant, objective quality measures may be important variables to consider when predicting engagement, despite these factors appearing to have no direct significant effects on actual anxiety reductions.

Davis, Bagozzi & Warshaw (1989) found in a study of 107 computer users, that intention to use positively correlated with actual use after 14 weeks, and that perceived usefulness explained approximately half of the variance in an individual's intention to use a program after the same time period. While the present study did not monitor the participants' continued usage of the games included in the present study (if indeed, there was continued usage), and therefore cannot validate or contradict these findings in relation to therapeutic games, both previous research and the present data highlight the importance of user-perceptions for end-product engagement.

Limitations

Despite the contributions of the present study as outlined above, it is not without limitation. Firstly, the relatively small sample size leaves would leave advanced statistical analyses underpowered. Thus, the regression analyses presented are included purely on a speculative and exploratory basis, and caution is required in their interpretation in terms of any predictive value. While the data in the present study did not meet the distribution requirements of a regression analysis, Central Limit Theorem (Cochran, 1947) stipulates that in some situations, the properly normalised sum of independent variables tends toward a normal distribution, even if the individual variables themselves are non-normal. Research investigating the implications of sample size for normal distribution has found that as a sample size grows, sample means become estimators of population means, with distribution curves becoming more normal (Islam, 2018). With specific regard to the present study, Underwood (1997) and Elliot & Woodward (2007) assert that due to regression analysis being one of the most flexible and powerful tests, it is robust against some violations of parametric assumption such as unequal variances with some areas of the dataset. It is in this context, that while the regression analyses for the present study are underpowered, the findings may still provide valuable insight when making key considerations regarding therapeutic game design for this cohort.

The small numbers of participants also providing feedback (of both quantitative and qualitative variety) for specific games (e.g. *Drifting Afternoon*), or game-mechanics (e.g. exposure) also means that the conclusions drawn in relation to these are somewhat limited. Further exploration of the exposure mechanic is warranted in order to fully ascertain its acceptability, as well as perceived and measured anxiolytic properties in this context.

While efforts were made to recruit across a diverse group of adolescents, the sample is also a notable for its lack of participants at the very young end of the adolescent age range. All participants were also recruited from educational establishments, and thus the participants may not be reflective of individuals

at the more severe end of the clinical spectrum, whose needs and preferences may differ from those of adolescents experiencing anxiety, yet still functioning in a mainstream environment.

Additionally, participants only tested a subset of the available games, meaning cross-game comparisons may be somewhat affected by individual differences, unlike in some similar prior investigations (Garrido et al., 2019). Therefore, and in addition to the aforementioned small sample size, the potential exists for the comparisons made in the present study to be partially reflective of such individual differences. This does not however mean that the feedback obtained by such a design does not provide value. In contrast, owing to the increased focus on a small subset of review items, participants did have significantly longer than in previous studies to become familiar with their allocated games, and all played their respective games independently for a minimum of one hour over the one-week period. Some participants reported having used their game(s) every day and for longer in total than the one-hour requirement. The feedback obtained in this study is therefore likely to be further enriched by this increased exposure. Nonetheless, while some anxiolytic measures are of immediate value (such as breathing-control exercises to reduce the immediate physiological aspects of anxiety), even this extended play-period is likely still not sufficient for therapeutic frameworks such as psychoeducation and attention-bias modification to begin exerting their effect. As the present study indicated that expectations and experiences of effect had implications for future intention to use, the acceptability levels of particular mechanics are likely to change as a consequence of further exposure. Future research would benefit therefore from assessing the responses of young people to such games over an extended time period. Assessment may also benefit from focusing solely on games for anxiety, in order for their anxiolytic value to be consistently and fairly compared.

Thirdly, the method of data collection for game-quality relied on the uMARS. The uMARS has proven to be an effective tool for the evaluation of electronic health tools, with good internal consistency and test-retest reliability (Stoyanov, 2016), and is an accessible inventory requiring no training for its use. The use of a consistent measure also allows for easy comparison between games and mechanics and is thus well-suited to the aims of the present study. However, the nature of the questions assessed by the uMARS may also encourage responses regarding the ‘low-hanging fruit’ of game design (such as graphics and appearance), which may be to the detriment of obtaining valuable feedback regarding the therapeutic aspects of the game. In this sense, further flexibility in data-acquisition, such as using semi-structured interviews, or ‘think-aloud’ sessions (such as those used by Crane et al., 2017) may allow for clearer focus on the responses of young people to the therapeutic elements of games.

Conclusions

The present study firstly aimed to investigate the preferences of adolescents towards a range of game-mechanics in therapeutic games. Findings indicated that the four mechanics under investigation all similarly produced moderate scores, with some differences emerging at sub-scale level (e.g. perceived impact). Despite the varying expectations of different mechanics in producing beneficial effects for the health condition, no significant correlation however was found between perceptions of a game’s impact and its actual effect on STAI-Y6 score. Further analysis also indicated that initial player impressions of objective quality appear important in predicting intention to use over the following 12-month period. Qualitative feedback concurred that young people viewed objective quality variables as important when considering a game’s quality, in addition to opportunities for autonomy.

Motivation to change and expectations of outcome are among the biggest predictors of engagement with psychological interventions, and of their outcome (Stice, Rohde, Seeley & Gau, 2010; Lewis, Simons

& Kim, 2012). The present study provides insight into the initial factors considered important by young people when deciding whether to use a therapeutic game and is of value when designing therapeutic games for young people in order to maximise initial engagement.

STUDY TWO

Aims

The second study consisted of a user-evaluation of a developmental pre-release version of the game. Utilising a similar methodology as the first study, the game is therefore compared like-for-like with games previously investigated. User-perceptions of quality and intention to use are explored, along with an evaluation of the game's anxiolytic capabilities.

Development of the New Intervention Game

The principal purpose of this project was to apply end-user-input, to develop and implement an innovative intervention which was effective in reducing symptoms of state- and trait-anxiety in adolescents. In addition, and following from the findings of the previous chapter, the development of the intervention aimed to address some of the primary concerns associated with perceptions of therapeutic games amongst the demographic. By addressing these concerns, a secondary aim of the project was to ensure that player expectations and perceptions of quality were met, in order to facilitate continued engagement with the protocol, thereby affording the best opportunity for its anxiolytic properties to take effect.

The application of clinically verified treatment protocols via electronic games has been shown to elicit significant improvements in health-behaviours including for anxiety conditions in adolescents (Schoneveld et al., 2016; Schuurmans et al., 2015; Li, Chung & Ho, 2011). Secondly, the administration of health-interventions via electronic means, specifically mobile devices, can improve accessibility to treatment over the traditional clinical modes of delivery (Ben-Zeev et al., 2012), which is of additional value considering the avoidance behaviours associated with ADs, the practical and social barriers to treatment faced by anxious adolescents (Kazdin & Rabbitt, 2013; Kaltenthaler, Parry, Beverley & Ferriter, 2008) and the resulting high number of adolescents with ADs who do not receive any form of intervention (Merikangas et al., 2011).

Furthermore, one of the primary advantages of using mobile devices for the administration of health interventions is the ease of delivery, requiring little effort on the part of the recipient (Klasnja & Pratt, 2012). The intervention can be 'pushed' to the user's device, enabling the provision of reminders and motivational messages to further drive engagement, and maintain awareness of current progress and future goals (Bargh, Gollwitzer, Lee-Chai, Barndollar & Trötschel, 2001). Mobile interventions, therefore, compared to traditional desktop computers, make the consistent management of health conditions easier for the user. For these reasons, a mobile game was determined to be the most appropriate medium to achieve the aims of the project.

Game Structure and Design

The game organises a series of tasks and learning exercises into a collection of ‘mini-games’, which are designed to guide the player gradually through the intervention. Players, irrespective of their current anxiety-status or in-game task-ability, are always presented with the fundamentals of the task itself before the difficulty level is incrementally increased, manipulating the game to adjust to the player’s increasing skills and abilities but without providing a challenge so great that it may be overwhelming (Csikszentmihályi, 1975).

Due to the nature and aims of the intervention, the potential exists for the game to be anxiety-provoking in places. Thus, considering the sensitivity of anxious participants towards the potential for, or experiences of, failure, overly challenging tasks may lead to avoidance and reluctance to continue play. The structured design and gradual progression of the game therefore provides a safe and manageable environment for the payer, while providing sufficient repetition as to promote cognitive and behavioural change (Roemer & Orsillo, 2002), such as the continued functional exposure to feared stimuli (Foa & Kozak, 1986).

The game utilises a number of different tasks derived from cognitive-behavioural therapy and attention-bias modification, which are organised into clearly defined spaces in the game and increase in difficulty as the game progresses. The game operates over 31 separate levels contained in a space environment, within which a number of CBT/ABM tasks are delivered as ‘mini-games’, presented as planets in the in-game world. Progress in the game is saved automatically after the completion of each task, allowing players to pick up where they left previously, and while levels progression occurs in a serial manner, players may return to earlier levels if they so wish. New planets are also introduced gradually over the initial levels as not to be too overwhelming to the player, and to allow for the successful practice and completion of earlier tasks before the introduction of additional ones (see Figure 1). This ensures that more demanding activities are only presented once there has been sufficient opportunity for learning in easier levels to have been demonstrated.

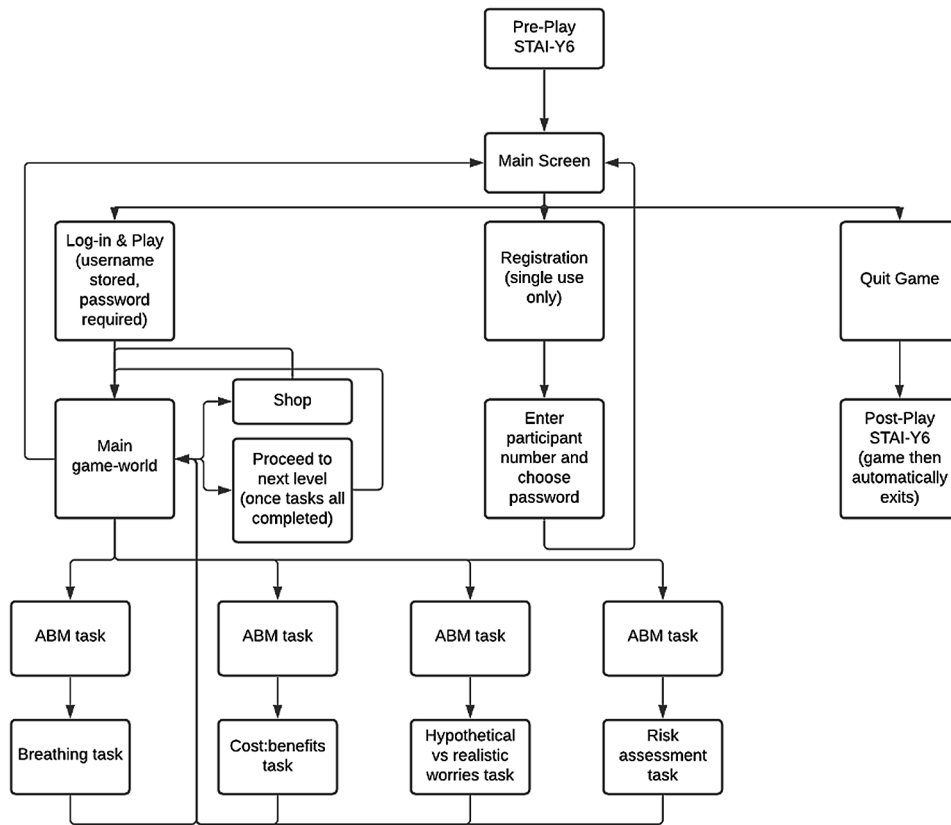
An overview of the mini-games is presented in Table 8, with screenshots of the individual exercises provided in Figure 2.

In-Game Data Acquisition

An additional benefit of modern smartphones is their ability to maintain a constant connection to the Internet. This has enabled the deployment of mobile health interventions to not only become passive providers of health information, but active monitors of engagement and change in parameters relevant to the health condition such as physiological state, or psychological self-reports. The tracking of health information has numerous benefits. Research has suggested that the process of self-monitoring a health condition may in itself be beneficial in reducing the prevalence of undesired behaviours, while increasing the prevalence of desirable behaviours (Kopp, 1988; Gasser et al., 2006), and improve understanding of a health condition and the individual’s own behavioural patterns (Consolvo et al., 2008). In mobile applications, self-monitoring can be deployed via self-report measures (such as note-taking) (Mattila et al., 2008), via SMS, or via automated recording systems.

The present game deploys the STAI-Y6 (Marteau & Bekker, 1992) to the user both at the beginning and end of a single play-session, enabling the capture of real-time changes to state anxiety. Performance

Figure 1. Structural map of the game



on the various in-game tasks is also collected by the game and uploaded to a secure server via Amazon Web Services.

Users are identified by a unique anonymised log-in code (e.g. S2-0xx) and the game does not offer any opportunity for identifying information to be uploaded. Therefore, the present intervention makes a unique contribution to the field in being the first of its kind to collect real-time ‘performance’-data from users. While this feature was developed for use from a research perspective only, enabling the tracking of a number of measures to evaluate the game’s efficacy, such acquisitions hold additional value to health-care providers in that they afford a real-time means of tracking users in an outpatient context. In this sense, not only can the efficacy of the game be evaluated by a research team or healthcare provider, but users for whom the game is not operating sufficiently, or who are not using the intervention, can then be directed to additional or alternative support mechanisms as deemed necessary by a qualified professional.

Coins and Reminders


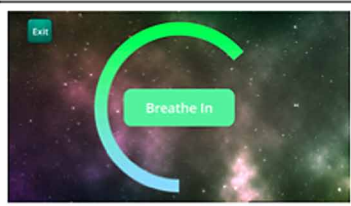
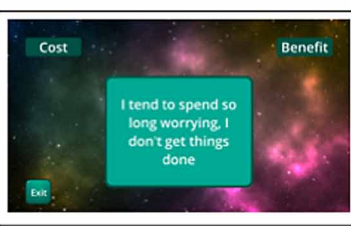
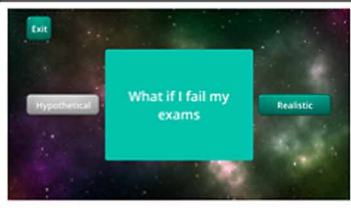
The provision of feedback, reinforcement and reminder structures is a key tenet of serious game design, to foster sufficient intrinsic motivation for further play, particularly as the difficulty of in-game tasks increases (Habgood & Ainsworth, 2011; Kapp, 2012) and the likelihood of avoidance of anxiety-

Table 8. Overview of mini-games, aims, and objectives.

Name of Game	Therapeutic Foundation	Objectives	Determinant of Successful Completion
The Happy-Face Task	Attention-bias modification	<ol style="list-style-type: none"> 1. Reduce manifestation of automatic cognitions associated with autonomic arousal and experience of anxiety (Wells & Mathews, 1994) by addressing the subconscious association of neutral stimuli with negative or threatening outcomes (Haddad, Lissek, Pine & Lau, 2011). 2. Provide an easily repeatable method of reducing the manifestation of anxious symptoms through the use of a method shown to exert beneficial effects in a relatively short period of time (Dennis & O'Toole, 2014). 3. Provide a simple and easily accessible method for addressing symptom manifestation, allowing for easy maintenance of treatment gains and relapse reduction (MacLeod et al., 2009). 	Successful identification of a positive stimulus within a matrix containing negative stimuli.
Breathing task	CBT	<ol style="list-style-type: none"> 1. Reduce immediate physiological experience of state-anxious symptoms by utilising respiratory patterns, which are closely related to autonomic arousal states (Boiten, Frijda & Wientjes, 1994). 2. Begin engagement with a simple and easily learned technique which requires little cognitive effort yet can provide a sense of accomplishment and progress. 	Players are guided through a slow, deep-breathing exercise. Completion of the exercise is determined once the allocated time for the exercise elapses.
Cost vs. benefit analysis	CBT	<ol style="list-style-type: none"> 1. Provide opportunity to engage players in task to exert longer-term changes to trait-anxiety. 2. Encourage engagement with functional/pragmatic disputing with anxiety-provoking ideas and thoughts. 3. Provide a safe and non-threatening environment in which to begin the process of challenging anxiety-provoking cognitions, in the absence of real-world consequences for engagement and failure, and with the benefit of providing an indication of the reality of the therapeutic process, to reduce concern with attending real-world support. 	Allocation of stimulus items to either 'cost' or 'benefit' box. Accuracy of answers is reviewed at the end of the exercise.
Hypothetical vs. realistic worrying	CBT	<ol style="list-style-type: none"> 1. Provide opportunity to engage in task designed to exert longer-term changes to trait-anxiety. 2. To expand on the cost:benefits analysis task with more specific functional/pragmatic disputing, considering specific thoughts as opposed to general views on the costs and benefits of the anxiety experience. 3. To provide a safe and non-threatening environment in which to continue the process of challenging anxiety-provoking cognitions without real-world consequence for failure. 	Allocation of the stimulus items to either 'hypothetical' or 'realistic' worry. Accuracy of answers is reviewed at the end of the exercise.
Risk-assessment (Iowa Gambling Task)	CBT	<ol style="list-style-type: none"> 1. To practice assessing risk in the absence of real-world consequences. 2. To provide an autonomous decision-making task without clear and specific rules and guidance, to encourage independent decision-making. 	Players are provided with a 'loan' of coins. Completion of the exercise is determined once the allocated time for the exercise elapses or if the player runs out of coins. Any remaining coins are awarded as reward.

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Figure 2. Screenshots of in-game tasks

	<p><i>Attention-bias modification task</i></p>
	<p><i>Breathing exercise</i></p>
	<p><i>Cost vs. benefits analysis</i></p>
	<p><i>Hypothetical vs. realistic worrying</i></p>

provocation or failure increases. Players were awarded in-game coins for the successful completion of tasks, which initially could be exchanged for badges or medals.

Literature suggests that prompts can be well received by users (Consolvo et al., 2008), providing those reminders are not too obtrusive (e.g. do not contain sound and remain undetectable until the user next picks up their device). While more-obtrusive alerts may also be likeable by some users (Holtz & Whitten, 2009), users often object to alerts which are considered unnecessarily frequent (Anhøj & Møldrup, 2004). Reminder content should also be motivational (in providing a rationale for continued engagement), direct, and subtle in their content, for instance not referring directly to health conditions in case another person was to see the alert (Curioso, 2009). Well considered and implemented reminders with minimal disruption therefore can drive engagement and motivation, increasing the therapeutic properties of an intervention. For this reason, the game deploys a background reminder to users, though only when considered necessary: (1) when users have missed completing the post-play questionnaire upon leaving the game; (2) if users have not played the game for a near 24-hour period.

In order to determine the game's acceptability to players and their intention to use the game, ability to produce statistically significant reductions to state-anxiety, and to assess any further changes which players may recommend which may improve their engagement, the game underwent an initial evaluation presented below.

Method

Design

The present study assumed a pragmatist approach employing a convergent mixed design, to maximise the usefulness of the findings both in terms of improving the development version of the game (DVG), as well as allowing for comparisons between the new intervention and the games trialled in the first study. Quantitative feedback was again collected via the uMARS and was supplemented with data from a qualitative version to provide additional support and detail to the numerical ratings, and to offer further insight into the motivations and reasonings underlying them.

Participants

Participants were again recruited on a voluntary basis primarily from two academic institutions: a sixth-form college and a university technical college in the North-West of England. Additionally, a small number of participants were recruited via word-of-mouth. Once provided with a full brief of the aims of the study, participants gave consent and allocated a unique anonymous identification code (e.g. S2-001). For participants aged under 16, consent was also obtained from a parent or legal guardian.

A total of 23 participants were recruited initially. Of these, four withdrew voluntarily, leaving a final sample of $N=19$, including 9 males (47.4%) and 10 females (52.6%). Ages ranged between 13 and 19 years, with the majority of participants aged between 14 and 16 ($N=14$, 73.7%).

Materials and Procedure

Following recruitment and consent, participants were given access to the DVG and played this for one hour. In order to determine the ease of use of the DVG and also to control for expectancy effects, participants were only instructed how to use the game in terms of using controls – further instruction or guidance regarding the structure of the game or aims of the tasks was not provided.

As with the previous study, once the one-hour allocated play time had been reached, participants were asked to complete the quantitative and qualitative versions of the uMARS. In addition to the self-report methods, the analysis for the present study also extended to utilising the in-game data capturing systems. At this point, the game was not connected to Amazon Web-Services, and so data captured were saved as a file directly to the file managing software on the device. This allowed for data to be captured regarding play information, including pre- and post-play anxiety STAI-Y6 scores and additionally reaction time to attention-bias modification tasks, overall score on individual mini-games, and time spent playing.

Upon the completion of the trial period, the data obtained by the game was saved and harvested for analysis, and participants were directed to complete the feedback questionnaires. As previously, data were collected online to preserve anonymity, and to reduce the potential for participants to feel overwhelmed in an interview context. Participants were also instructed to keep a log of any issues (e.g. bugs, crashes, unexpected game-behaviour) which occurred during the trial period.

All participants were reassured that all data supplied in the online questionnaires would be kept strictly confidential, and it was made clear both at the start and end of the study that participants were free to withdraw, up until one week after the trial period, without having to provide a reason.

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Table 9. Average quality ratings (total and subscale)

Game	Total Quality	ENG	FUNC	AES	INF	SUBJ-QU	PI
Dev. Version (N=19)	3.19 (.64)	2.89 (.85)	3.50 (.72)	3.12 (1.18)	3.22 (1.03)	2.97 (.71)	3.71 (0.57)
ABM (N=18)	2.98 (.81)	2.52 (.90)	3.43 (.87)	3.00 (1.09)	2.96 (.93)	2.39 (.83)	2.67 (1.06)
Distraction (N=13)	2.96 (.75)	2.65 (.80)	3.65 (1.16)	2.97 (1.19)	2.33 (1.58)	1.92 (.87)	1.68 (.79)
Psycho-education (N=26)	3.03 (.84)	2.48 (.85)	3.55 (1.03)	3.16 (.78)	2.94 (1.24)	2.14 (.94)	2.81 (1.15)
Exposure (N=5)	3.15 (.91)	3.00 (.40)	3.60 (1.01)	3.20 (1.26)	2.80 (1.73)	3.20 (1.41)	1.97 (1.25)

* EN (Engagement); FUNC (Functionality); AES (Aesthetics); INF (Quality of Information); SUBJ-QU (Subjective Quality); PI (Perceived Impact)

* All figures rounded to 2d.p.

Results

Quantitative Findings

After withdrawals, the final sample size consisted of 19 participants. Initially, average quality ratings for uMARS subscales were calculated along with total quality score, in order to examine the performance of the game in relation to the existing games trialled in the previous study.

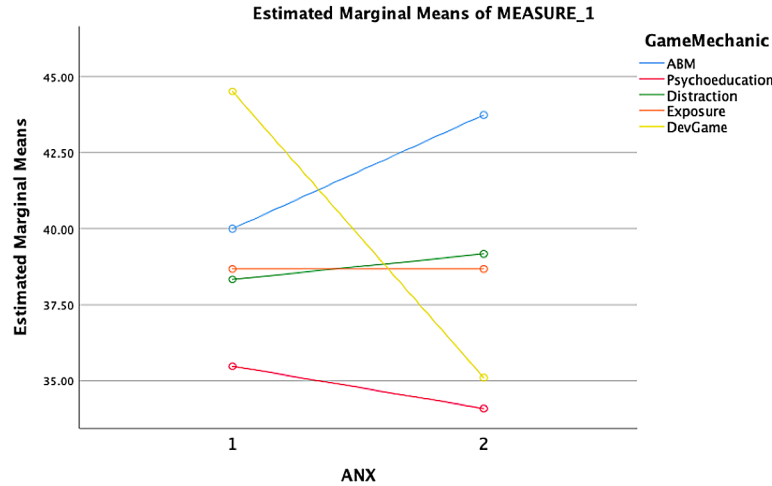
As can be observed in the values in the above table, the DVG performed comparably to existing games, marginally scoring highest in terms of overall quality rating ($M=3.19$, $SD=.64$). However, when analysed further, the DVG did not perform significantly better than existing games ($F(4,78)=.086$, $p=.987$). Additionally, Bonferroni comparisons revealed that no individual comparison reached statistical significance. The game also performed comparably against its predecessors in terms of objective quality measures and scored highest for the quality of health information provided ($M=3.22$, $SD=1.03$). Similarly, the average perceived impact score for the DVG was considerably higher than in previously assessed games, and distribution of scores lower ($M=3.71$, $SD=.57$), than the scores previously attained. When questioned regarding their intention to use the game over the following 12-month period, participants reported a moderate probability of using the game ($M=3.37$, $SD=.68$), which compares favourably with previous ABM games ($M=2.28$, $SD=1.02$) and Psychoeducation games ($M=1.92$, $SD=1.09$).

As the variables of aesthetics and information-quality were not normally distributed ($p=.043$ and $p=.011$ respectively) and therefore did not satisfy the demands of parametric testing, no further evaluation in terms of the uMARS sub-domains was pursued.

Data were then analysed to determine the effects of gameplay on STAI-Y6 scores, for which all participants in the present study provided responses. Once more, the data from the present study are presented alongside those from the previous study. Comparisons between the DVG and previous games (grouped by primary mechanic), as well as a full breakdown of the pre- vs post-play anxiety scores can be found in Figure 3 and Table 10 below:

When compared to previous games, the DVG did not significantly outperform existing games in terms of its anxiolytic power ($F(1,42)=.365$, $p=.549$). Bonferroni comparisons again revealed that

Figure 3. Pre-vs post-play STAI-Y6 anxiety ratings for development game vs. existing games (grouped by primary game-mechanic)



the DVG did not significantly outperform ABM, Distraction, Psychoeducation or Exposure games. However, while previously tested games had produced no significant differences between state-anxiety scores before versus after gameplay, a paired-samples t-test comparison revealed that the DVG did result in a significant reduction in state-anxiety (pre-play M=45.44, SD=17.47 vs. post-play M=36.14, SD=11.82; $t(18)=2.251$, $p=.037$). While the large distributions must be noted, both pre- and post-play anxiety scores satisfied the requirements of normal distribution tests for further analysis (Shapiro Wilk pre-play: $p=.216$, and post-play: $p=.140$).

Qualitative Findings

Twelve of the participants (63.16%) provided qualitative feedback for the game. As with the previous study, the analysis of the qualitative data was conducted using thematic analysis, adopting the process

Table 10. Comparison of pre- vs post-play STAI-Y6 state-anxiety scores

Mechanic	Mean Pre-Play STAI-Y6 Score	Mean Post-Play STAI-Y6 Score	Mean Pre- vs Post-Play Difference (Sig.)
Dev. Version (N=19)	45.44 (17.47)	36.14 (11.82)	-9.30 ($p=.037$)
ABM (N=8)	40.00 (8.36)	43.74 (8.25)	+3.74 ($p=.426$)
Distraction (N=6)	36.67 (10.54)	38.33 (7.53)	+1.67 ($p=.415$)
Psychoeducation (N=13)	35.64 (13.01)	34.35 (12.43)	-1.28 ($p=.594$)
Exposure (N=5)	38.67 (11.93)	38.67 (11.93)	0.00 (N/A)

* All figures rounded to 2d.p.

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Table 11. Super- and sub-ordinate themes.

	Superordinate Theme	Subordinate Themes	Example Quote
1	Accessibility	a) Availability and autonomy b) Ease of use	<i>“Teenagers spend most of there time hiding behind there phones any ways, so having something that could actually make you feel better and be portable would be a life saver“ (S2-015). “yes because ist easier and you dont need to talk with someone straight away which might cause anxiety and make you not do it“ (S2-012).</i>
2	Game as a learning experience	a) As anxiolytic for state-anxiety b) Teaching coping techniques	<i>“good game which is relaying and easy to play so it helped calm me down and learn a few things to cope with anxiety“ (S2-005). “yes because i learned some ways to control my anxiety that i could use when im worried“ (S2-007).</i>
3	Suggestions for further development	a) Further customisability b) Presentation of health information/ game aims	<i>“Would be good to change the spaceship or something“ (S2-003). “the information was clear but it would be good to have clearer description of tasks“ (S2-005).</i>

outlined by Braun and Clarke (2006). The occurrence or co-occurrence of themes was sought, with data initially scanned to generate preliminary codes, which were then re-reviewed and assessed/re-assessed into emerging themes. The outcomes of this procedure are detailed below:

The outcomes of the coding and analysis produced several super- and sub-ordinate themes, which are detailed below with supporting quotes. An overview of the super- and sub-ordinate themes can be found in Table 11.

Accessibility

Similarly to the previous study, the value of a game’s accessibility was raised frequently in the responses. Feedback focused primarily on two ways in which the game’s accessibility was beneficial to the user. Firstly, users commented positively on the platform of delivery, remarking that the game would be readily available at the point of symptom experience. Users also remarked on the health information and tasks in the game, and the ease with which these could be chosen and accessed, including during period of symptom experience when other forms of helpful intervention may be deemed too challenging or difficult. Secondly, respondents commented that the game and tasks were easy to use and to understand, making it suitable for use during periods of heightened anxiety. Finally, and consolidating the quantitative feedback, when asked if they would use the game in the future, the accessibility and ease of use of the game was cited as a factor in determining players’ future intention to use:

These findings corroborate those of the previous study and, in line with the assumptions of the Technology Acceptance Model (Davis, Bagozzi & Warshaw, 1989), affirm that user-perceptions of the accessibility of a game are a good indication of their intention to continue engaging with it over time. Therapeutic interventions such as ABM and CBT often rely on repetitive training and consolidation activities, with gamified interventions also required to operate in an ‘outpatient’ context, despite the

deficits in concentration and motivation often found in anxiety conditions (Boschloo, Borkulo, Borsboom & Schoevers, 2016; Loonen & Ivanova, 2016). Therefore, the approachability and extent to which games can effectively harness a player's intrinsic motivation to engage is key in determining their ability to exert positive change on anxious symptoms and behaviours.

The Game as a Learning Experience

Confirming the findings of the STAI-Y6 analysis, users commented that they felt that the game had been effective in reducing the level of anxiety that they were experiencing in the moment. Users cited various aspects of the game's design and structure which had created this feeling. The ease of use and accessibility of the game was also raised as a contributing factor to the success of the game as a learning tool. Additionally, users commented that the game had been effective not only as a tool for reducing any anxiety experienced in the moment, but that the tasks had served their educational purpose, i.e. that users' awareness and ability in managing their anxiety had improved.

Finally, and perhaps most significantly, the experience of playing the game was cited not only as being beneficial as a tool for reducing state- and trait-anxiety, but participants suggested that gameplay may also be an educational tool for the therapeutic process itself, a viewpoint which had not been raised with previous games.

The value of the users' positive perceptions of the game's efficacy must be seen in the context of their future engagement with the therapeutic process. CBT is an active treatment which compels clients to challenge enduring and habituated maladaptive beliefs, in a process that can often be perceived by clients as frustrating and discouraging (Becker & Zayfert, 2001). Client satisfaction with the design of their treatment (and failure to account for this) can also result in premature termination and poor treatment outcomes (Swift & Callahan, 2009; Donovan, Kadden, DiClemente & Carroll, 2002). Additionally, a client with positive expectations about the effectiveness and benefits of their treatment has been shown to be more likely to continue their programme (Callahan, Aubuchon-Endsley, Borja & Swift, 2009) and ultimately improve (Borkovec, Echmendia, Ragusea & Ruiz, 2001).

Consequently, and further confirming the findings of the previous study, one of the most important functions of therapeutic game design is to instil in the player a belief that the game makes a valuable contribution to the health behaviour, i.e. that the game reduces feelings of anxiety, while leaving the player feeling better able to cope with future symptom experiences. That the game also resulted in some initial discussion regarding wider engagement with the therapeutic process, suggests that therapeutic games may act as a 'gateway treatment', serving to counteract myths and assumptions about the therapeutic process which may otherwise prevent individuals from seeking further treatment.

Suggestions for Further Development

While the DVG demonstrated its ability to significantly reduce symptoms of state-anxiety and received generally positive feedback, it was not without its initial limitations. Participants also cited a number of areas where they felt the game could be further improved, either in terms of its function, accessibility, or capacity to engage users. These ranged from minor formatting to areas where players requested more meaningful changes, such as access to the app via an official app store or clearer explanation of the in-game tasks.

Following on from the findings of the first study, the initial design of the game had intended to provide players with freedom, choice and autonomy in how they approached the game. While this was

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commented on positively, users also made frequent request to be able to personalise the game further, referring often to small alterations to the game avatar that could make the game feel more ‘their own’. Garrido *et al.* (2019) posited that young people place value on autonomy and the capacity of an intervention to afford opportunities for personalisation. Moreover, the opportunity to personalise healthcare provision is associated with improved individual autonomy and capacity to self-regulate wellbeing (Schmitt diel *et al.*, 2008). The opportunity for avatar-customisation is another means by which the visual traits and in-game abilities of an avatar present an opportunity for identity-expression or extended identity formation (Turkle, 1995), and has been linked with increased positive identification with the game (Turkay & Kinzer, 2016), improving its relatability – a key driver for intrinsic motivation (Ryan & Deci, 2000). Furthermore, the visual traits and in-game abilities of an avatar represents an opening for identity-expression or extended identity formation (Turkle, 1995), and have been linked with increased positive identification with the game (Turkay & Kinzer, 2016).

Finally, participants were asked to provide any experiences of bugs, issues or crashes that they had experienced while testing the DVG. No participants reported encountering any bugs or errors were during the study and all controls, functions and features of the game performed as expected.

Discussion

Principal Findings

The aims of the present study were threefold:

1. To assess the usability of the game in terms of its functionality (e.g. usability of game-mechanics, controls, and to ensure the game operated as expected without the occurrence of bugs or crashes).
2. To assess the acceptability of the game among the target demographic, and to ensure the game addressed feedback obtained in the previous study (e.g. appropriate health-content, feedback structures, difficulty-level, aesthetics, task-variety).
3. To assess whether the game effected significant reductions to state-anxiety when played.

In relation to hypothesis 1, the feedback from the game indicated that users experienced no bugs or errors while using the game and no issues relating to the controls, functions and features of the game were reported. The game operated as expected and all systems including in-game tasks, level progression and coin collection worked as intended. Additionally, the remote data-collection via AWS functioned as anticipated and STAI-Y6 data were successfully collected both pre- and post-play using this mechanism. In this sense, the game performed as expected and satisfied basic pre-rollout checks.

In relation to hypothesis 2, the game received generally very encouraging feedback from users, who commented positively on the game’s accessibility, ease of use, quality of health information, task-difficulty, performance as an anxiolytic tool during moments of symptom experience, and ability to provide educational material to assist with the development of coping skills to enable the reduction of anxiety over extended periods. The game scored either comparatively or better when compared to data from the previous study and overall quality ratings were higher. Intention to use scores were also improved, and participants commented positively in qualitative data on the prospect of using the game again. As therapeutic protocols such as ABM and CBT depend on repetitive practice and the continued consolidation of learned material, the improvements made to user-perceptions and the subsequent progress in intention

to use data suggest that the DVG is a valuable advancement in providing a gamified intervention for anxiety which users will continue to engage with. These findings are of significant value in the context of the low number of adolescents currently in receipt of a scientifically validated intervention (Kessler et al., 2008; Collins, Westra, Dozois & Burns, 2004), high levels of non-disclosure (Corrigan, Druss & Perlick, 2014), barriers relating to the availability of therapeutic provision (Andlin-Sobocki & Wittchen, 2005), and drop-out from existing clinical interventions.

Finally in relation to hypothesis 3, STAI-Y6 data indicated that the DVG was able to make significant reductions to state-anxiety. This represented an advancement over previously tested games, which had either failed to reduce state-anxiety significantly, made no change, or had increased reported symptoms.

Subsequent Game-Development

To ensure that the final version of the game maximised the value of the user-feedback data collected thus far, a number of minor additional improvements and changes were made to the game to respond to feedback collected in the present study. In order to ensure that any changes made to the game did not impact on the findings above, these changes were kept as minimal as possible, however did intend to address the comments provided by the participants. A summary of the changes made to the game are presented below.

Clearer Description of In-Game Tasks

In the present study, participants indicated that they felt the in-game tasks were not always sufficiently explained and that a lack of clarity may impact on their willingness to engage with the game. Therefore, the descriptions for the in-game tasks were revisited and, where possible, made more concise and direct. Where players however were encouraged to learn about the tasks as the game progressed (e.g. in the risk-assessment task), the descriptions of the tasks centred more on explaining the controls and basic premise of the game, without revealing too much about the main aim.

Visual Appeal

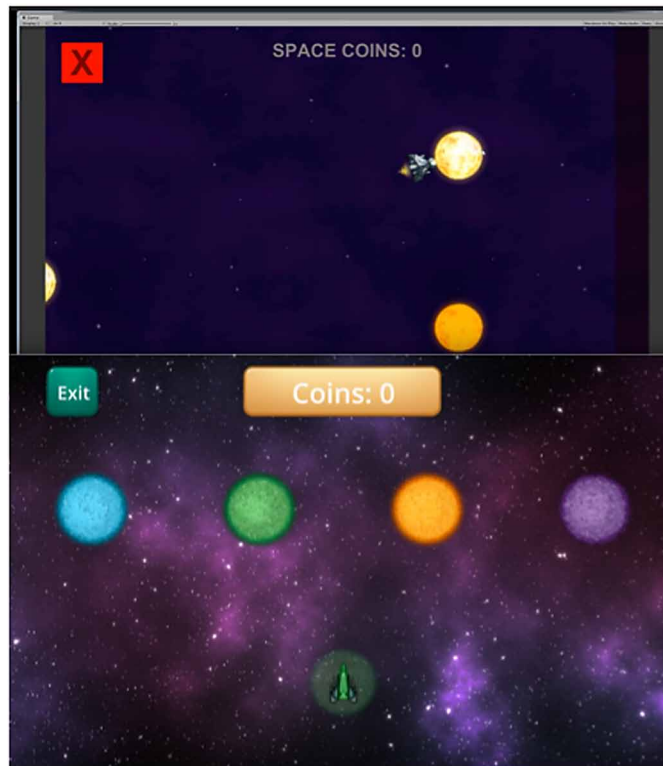
Some of the participants also indicated that, while the general theme of the game was appropriate and relaxing to play, the plain backgrounds and game-environments could be made more visually appealing. In order to address this, the in-game background was changed for a more colourful variant. In addition, the planets were lined up in a more organised manner to ensure that while players could be free to roam around the map as they wished, the main aim of the game (to approach the planets and complete the tasks) was clear (see Figure 4).

Avatar Customisation

Finally, participants frequently stated while playing the game that they would have liked to have seen more opportunity to customise the game. A number of participants made specific reference to a wish to change the in-game avatar. As the value of the in-game reward coins had also been cited as an area for improved clarity, the in-game store was modified to allow players to change their avatar once they had accrued sufficient coins. The option to accrue badges and medals was removed as this appeared to be less personal to players than avatar customisation and was not cited by any players as an area of interest.

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Figure 4. Screenshots of game-environment (main screen) before and after player feedback.



A number of alternative spacecrafts were made available to the player for purchase, with the increasing complexity and visual appeal of each craft reflected with increasing cost. Screenshots of the in-game store can be seen in Figure 5 below.

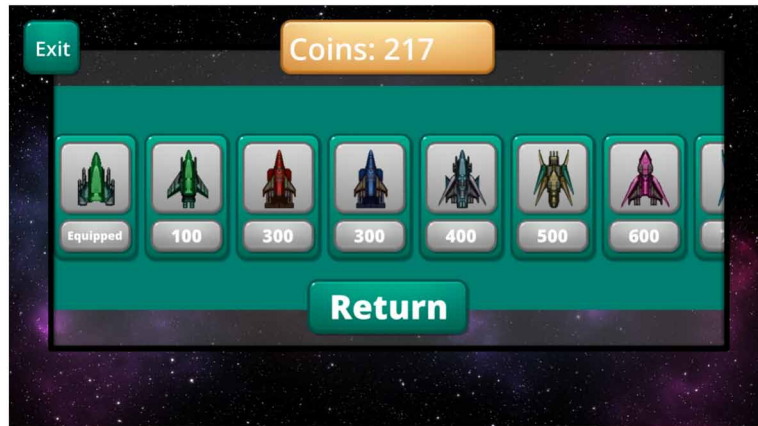
The modifications which players could make to the ship were purely cosmetic, as not to have any impact on the therapeutic aspects of the game. The ability to modify aspects of the game, even if only on a cosmetic level, also addresses the themes of autonomy and customisability emerging from the previous study and is informed by Self-Determination Theory (Ryan & Deci, 2000).

Limitations

While the study was successful in meeting its objectives, there are nonetheless limitations which ought to be considered. Firstly, while the game did achieve significant reductions to state-anxiety, its efficacy with regards to trait-anxiety cannot yet be determined. Players did however provide positive feedback regarding their intention to use the game over a prolonged period, which was supported by intention to use scores from the uMARS. Additionally, while the game was capable of eliciting significant reductions to state-anxiety measures in a controlled environment, it was not possible during the current study to determine the extent to which players would use the game and benefit from it when in a particularly heightened state of arousal. Consequently, further study in relation to these issues is required.

Secondly, the feedback was valuable in determining player intention to use and therefore predicting the future acceptability of the game. However, the present study utilised a sample of both relatively low

Figure 5. Screenshot of in-game avatar customisation store.



size. Additionally, the homogeneity of the sample participants (all participants were engaged in full-time mainstream education), means that while the acceptability of the game in this cohort is established, its acceptability in more clinically severe samples is yet to be determined. As individuals with particularly severe cases of anxiety conditions are less likely to be engaging in full-time mainstream education (Patel, Knapp, Henderson, & Baldwin, 2002; Beidel & Turner, 2007), this demographic is likely under-represented in the current study. Future research may determine that while the game was suitable for the present cohort, participants with a more severe symptom presentation may find aspects of the game particularly challenging, such as the risk-assessment tasks which can only be successfully completed by persevering by learning as a product of initial task-failure.

Conclusions

The present study aimed to evaluate a development version of a new gamified intervention for adolescents with anxiety conditions. The findings indicated that the game performed well both in functionality and acceptability; equalling or outperforming previously tested games and producing significant reductions to state anxiety when played. A combination of quantitative and qualitative data were obtained, which in addition to assessing the objectives of the study, also aided in making minor upgrades and modifications to the game to address player comments and suggestions.

Summary

According to Salen and Zimmerman (2004), game design is “the process by which a game designer creates a game to be encountered by a player, from which meaningful play emerges.” In this sense, a game cannot be dissociated from its player, as it is the player who constructs narrative and meaning from their experience of play. In this sense, the involvement of potential end-users in the development and review of gamified interventions is essential in understanding the factors which contribute to the emergence of meaningful play.

This chapter has presented the reader with a summary of two investigations which addressed the development of a mobile therapeutic game for adolescents with anxiety disorders. The first empirical

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investigation represented a pre-development exploration of adolescent expectations and requirements of therapeutic games. To this end, user perceptions of game-quality regarding a number of existing and freely available games for anxiety and depression (utilising a number of game-mechanics and therapeutic frameworks) were assessed, along with each game's capability in reducing self-reported anxiety symptoms. Furthermore, given the importance of continued commitment to the development and maintenance of therapeutic gains (HEFCE, 2015; Wiles et al., 2014; Cartwright-Hatton, 2004; James, Soler & Weatherall, 2005), and the value of games in motivating sustained engagement (Sitzmann, 2011), user-perceptions of game-quality were also assessed in terms of their relationship with intention to use over a subsequent 12-month period.

The second study represented a user-evaluation of a developmental pre-release version of the game. Utilising a similar methodology as the first study, the game was compared like-for-like with those previously reviewed. User-perceptions of quality and intention to use were explored, along with an evaluation of the game's anxiolytic capabilities. Findings revealed the game was both acceptable to the target audience and produced significant reductions to state-anxiety when played. The game also functioned as expected without bugs or crashes. These value of these findings has been discussed in relation to the low number of adolescents currently in receipt of a scientifically validated intervention (Kessler et al., 2008; Collins, Westra, Dozois & Burns, 2004), high levels of non-disclosure (Corrigan, Druss & Perlick, 2014), barriers relating to the availability of therapeutic provision (Andlin-Sobocki & Wittchen, 2005), and drop-out from existing clinical interventions. Additionally, the user-feedback obtained during the study was used to enhance the game's appeal, prior to further longitudinal assessment to determine the extent to which players will continue to engage over time, and the game's capabilities therefore in reducing trait-anxiety in a meaningful and sustained manner in a population often difficult to reach.

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Chapter 10

Understanding the Effect of Social Media Use on Psychological Stress During the COVID-19 Pandemic

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ABSTRACT

This study examines the effect of the modern technology of social media on psychological stress during Irish COVID-19 quarantine restrictions. Literature indicates mixed findings regarding social media usage and psychological stress. Acknowledging its multifaceted nature, social media use in this study is examined through the category usage motivators of consuming, participating, and producing. Usage motivators significantly indicate variations in terms of impact on stress. Social media use for the purpose of consuming is moderately correlated with increased levels of psychological stress. Social media use for the purpose of participating exhibits a weak correlation with decreasing levels of psychological stress. Social media use for the purpose of producing exhibits no significant relationship with psychological stress during quarantine. Findings of this study are valuable for government and corporate policy makers and mental health and marketing professionals, with implications in psychological wellbeing practices and mindful social media use during quarantine.

INTRODUCTION

On December 31st 2019, Chinese officials reported the first case of a pneumonia of unknown cause to the World Health Organisation (WHO). One month later, WHO announced a Public Health Emergency

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of International Concern. Officially named COVID-19, the virus outbreak gained pandemic status on March 13th. 2020. The WHO released critical preparedness and response guidelines following major outbreaks in Japan, Singapore, Hong Kong, South Korea, Iran, and northern Italy (WHO, 2019, 2020a). The Republic of Ireland recorded its first case of COVID-19 on February 29th. 2020. By March 27th, in line with WHO guidelines, the country began enforcing temporary restrictions, including nationwide home quarantine and travel limitations (Department of Health, 2020). To contain the spread of the disease, gatherings from different households were forbidden. A two-kilometre limit (later revised to five kilometres) was allowed for exercise and essential travel. ‘Cocooning’ measures were introduced for over 70-year-olds and those in vulnerable health categories. All citizens who could work from home were to do so, and all non-essential businesses and services unable to comply with new guidelines were temporarily closed. International travel was heavily restricted.

Since its first known practice in the 14th century, a consensus in the literature finds quarantine, whether alone or in combination with other public health measures, an effective method of disease-outbreak control (Center for Disease Control and Prevention, 2017; Nussbaumer-Streit et al., 2020). Its use is cited in every major disease outbreak of the last century, with the literature showing its effectiveness in limiting the spread of Ebola virus disease, SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome) (Tognotti, 2013; Nussbaumer-Streit et al., 2020). However, only since the turn of the last millennium have the adverse effects of imposed quarantine have become a topic of concern. Quarantine has been shown to carry a heavy psychological cost (Brooks et al., 2020). Post-traumatic stress (PTS), is just one of many resulting negative psychological responses. The success of quarantine relies on the efficient mitigation of such responses and the limiting of potential physical and mental harm.

The COVID-19 pandemic comes in an era of near complete physical and digital connectivity. As of 2019, global online penetration sits at 53.6%, with the average in the developed world rising to 86.9% (Clement, 2020a). Internet Communication Technologies (ICTs), such as social media platforms, all free to use and widely available, have been cited as potentially revolutionary quarantine stress mitigators (Brooks et al., 2020; O’Brien et al., 2020). Digital technology may aid our ability to withdraw from primitive desires of togetherness, in favour of measures of caution and social distancing. While our physical connection has led to the rapid spread of disease, if utilised correctly, our digital connection may aid in mitigating the psychological cost. However, no direct empirical research has been conducted to determine theoretical validity. Furthermore, modern social media platforms are vast, their purpose, content and utility uniquely dependant on and influenced by the individual user (Pantic, 2014; O’Reilly et al., 2018).

An understanding of why and how we use technology is essential in determining the effect of social media on psychological and emotional quarantine responses. To fill the research gaps described above, this study examines the relationship between psychological stress and social media use, accounting for various usage motivators. The next section presents the theoretical background of the study. The following subsection presents the research methodology used in this study, in the form of research hypotheses, data collection, and analysis methods. This is followed by a discussion on the findings in relation to extant literature. The implications of findings are noted in the form of solutions and recommendations. The penultimate section notes the limitations of the study and outlines future research opportunities, followed by a conclusion.

BACKGROUND

Psychological Impact of Mass Quarantine

Increased stress can have a substantial negative effect on the musculoskeletal, respiratory, cardiovascular, endocrine, gastrointestinal and nervous systems (American Psychological Association, 2019). Stressful events have been aligned with symptoms of depression (Hammen, 2004), eating disorders (Greeno & Wing, 1994) and addiction (Goeders, 2003), as well as influencing the pathogenesis of disease (McEwen, 1998). During outbreaks, fear of infection alone can result in anxiety, depression, and anger (Kim & Su, 2020). A review funded by the National Institute for Health Research in the UK, found a consensus pertaining to quarantine stress, reporting salience in psychological effects including Post traumatic stress (PTS) symptoms, confusion, and anger (Brooks et al., 2020). Other studies note high levels of acute stress disorder (Bai et al., 2004), anxiety and insomnia (Desclaux et al., 2017). Psychological responses of fear (Caleo et al., 2018; Desclaux et al., 2017; Pellicchia et al., 2015) and numbness (Pan et al., 2005), were also noted. Quarantine related symptoms of depression and alcohol abuse or dependency symptoms, are also identified in participants up to three years following release (Liu et al., 2012; Wu et al., 2008). Brooks et al., (2020), identify prominent quarantine stressors including duration, inadequate information, fear, frustration, boredom, and a loss of freedom resulting from the disruption of routine activities and reduced social and physical contact. Fear of infection or the infection of others are significant indicators of increased levels of stress (Brooks et al., 2020). Fear is found to continue influencing psychological well-being, six months following release from quarantine (Jeong et al., 2016). Quarantine measures limit social interaction, which in turn may limit access to emotional support networks (Folkman & Lazarus, 1984; Cutrona, 1990). As the death toll grows, so too does the prevalence of grief and distress. Research shows routine support from families and communities may result in increased psychological resilience (Kim & Su, 2020). Recent works note social media's value in facilitating the organisation of structured support networks (O'Brien et al., 2020). Studies have shown a positive correlation between the intensity of social media use and increased perceptions of social support and enhanced community life (Hampton et al., 2011; Wellman et al., 2002, 2003). As strong ties migrate to online communities, contact may take an increasingly emotionally supportive role. The next section explores this in more detail.

Social Media and Social Support

In 2019, there were an estimated 2.95 billion active social media users (Clement, 2020b). Since the outbreak, social network usage has spiked. Twitter reported first-quarter increases of 23% (Twitter, 2020), whilst Facebook reported a 70% increase in time spent across their platforms (Schultz, 2020). The month of March saw a 50% increase in messaging and a 1,000% increase in-group calling (Schultz, 2020). Major usage increases have also been noted by video chat social platforms such as Houseparty and Google Duo, with daily session increases of 79.4% and 12.4% respectively (Koeze & Popper, 2020). The increase has been met with positivity from the WHO. The organisation believes social media may play a critical role in facilitating peer-to-peer communication (WHO, 2017). Growth patterns appear to support such speculation, indicating users are seeking new ways to maintain existing social relationships.

The functionality of social media is expanding. Platforms can no longer be considered for a single purpose, but must be acknowledged as multifunctional tools, with the psychological effect depending upon the type of use (Pantic, 2014; O'Reilly et al., 2018). Despite some contradictions within the

literature (Cummings et al., 2002), there is a general consensus that increased usage and social capital are positively correlated (Boase et al., 2004; Ellison et al., 2007; Haythornthwaite & Kendall, 2010; Steinfield et al., 2008, 2009; Steinfield et al., 2009; Wang & Wellman, 2010). Such social capital is valuable to society. A series of catastrophe studies following various earthquake and tsunami events, identified social capital as a positive indicator of psychological resilience (Aldrich & Meyer, 2015; Aldrich, 2012). The literature further indicates the bond-building capability of social media use, when implemented additionally rather than in place of face-to-face contact. Through a supplementary process of implementation, ICT use has been shown to increase both strong and weak tie social capital (Cummings et al., 2002; Haythornthwaite, 2002).

In discussing stress mitigation, Brooks et al., (2020), emphasise the importance of social media for network maintenance, suggesting possible reductions in feelings of isolation, boredom and frustration. One study of 2,200 adult Americans found that ICTs enabled the upkeep of sizable networks of distant connections (Boase et al., 2006). Examining social wellbeing and social media activity through user survey and server log reviews, researchers found social network use positively reinforced distant relationships (Burke et al., 2010). The normality induced by network contact may also return feelings of routine and structure, leading to further reductions in psychological stress.

Multiple studies conducted through the social networking site, Facebook, have similarly illustrated the contagious nature of emotional expression (Coviello et al., 2014; Kramer et al., 2014). Analysing data from millions of Facebook users, Coviello et al., (2014), mapped the mood-altering effects of rainfall to the emotional expression of network connections, suggesting that social networks may intensify global emotional synchrony. A controversial experiment conducted by Kramer et al., (2014), found that a reduction in exposure to positive expression resulted in the production of fewer positive posts, as did negative expressions and negative posts. The authors suggest longer lasting moods, such as depression, may also be contagious, spreading without the need for direct interaction (Kramer et al., 2014). Social media content may also be responsible for the transfer of positive emotions. Expressions of positivity and solidarity have spread across social media amidst the COVID-19 outbreak, including 'viral applauds' for healthcare workers, window concerts and community acts of kindness (BBC, 2020). Gloria and Steinhardt (2016), suggest positive emotions may enhance resilience both directly and indirectly through the mediating role of coping strategies. However, they also note that stress, in this context, is unavoidable and that exposure to positive emotions will likely only reduce the probability of trait anxiety and depressive symptoms (Gloria & Steinhardt, 2016).

As increased levels of quarantine-induced boredom result in increased activity, the subsequently increased exposure to the direct and indirect stress and stress inducing emotions of others, may result in increased psychological stress. The question is raised as to whether boredom-alleviating social media use, may outweigh the potentially stressful nature of content exposure. The use of mobile technology has been shown to successfully alleviate boredom and to be a good predictor of perceived levels of stress (Leung, 2015). However, acute stress resulting from exposure may lead to a vicious circle, whereby those seeking boredom alleviation become increasingly frustrated, seeking further distraction, spreading further contagious emotions, resulting in further increases in stress levels. The same process applies to theories of mood management, which acknowledge the desired use of social media to mask feelings of anxiety, enhance mediocre feelings and to alter dysphoric moods (Zillmann, 1988; Dillman, Carpentier et al., 2008). Those seeking an escape from their current mood or emotional state may, through exposure, find their current mood negatively enhanced.

Social Media Usage and Quarantine Stress

Understanding why people use social media is crucial to understanding its effect on quarantine stress. Motivators of use are examined in an attempt to predict usage patterns and the nature of consumed content. The literature features numerous models attempting to rationalise social media use, most prominent amongst them being the Uses and Gratifications Model (UGM) (Palmgreen and Rayburn, 1979). Following a basic concept of need fulfilment, multiple studies have applied various versions of the UGM framework to social media use (Alhabash and Ma, 2017; Liu et al., 2010; Whiting and Williams, 2013). This study draws from Shao (2009), who presents a UGM consisting of three interdependent categories of social media use – consumption, participation, and production.

Consumption refers to motivators of content consumption, where there is no desire to interact with other users or with the content itself (Shao, 2009). Information seeking and entertainment comes within this category. The same motivators are identified within the social media UGMs of Whiting and Williams (2013), Liu et al. (2010), and Alhabash and Ma (2017). Consuming is driven by a desire for mood alteration, indicating motivators of time-passing, relaxation and escapism also apply (Shao, 2009). Such motivators are enhanced by quarantine-induced emotions of fear, frustration and boredom.

Participation maps a desire for social interaction and community development (Shao, 2009). The Internet has become a hub of connectivity and communication, enabling the development of strong online and offline connections within communities of like-minded individuals (Rheingold, 2000; Ellison et al., 2007). Its utility in the creation and maintenance of social capital has become increasingly powerful through its growing popularity, in turn increasing the societal motivation for its use (Burke et al., 2010; Clement, 2020a). Interaction with user-generated content promotes community development and bonds reinforcement (Wellman et al., 2003, Wellman et al., 2002).

The third, and final category, *Production*, is based on self-actualisation and self-expression. Self-actualisation stems from an innate human need to express one's own identity and to favourably alter the impressions of others (Shao, 2009). Self-expression details an unconscious urge for recognition (Mook, 1996) and status seeking (Krems et al., 2017), often leading to unrealistic, flattering depictions of self (Livingstone, 2008). Content creation allows for a curated image of self. Communication, both online and offline, supports a process of self-verification, through which the user confirms their self-concepts, adding to their communal and personal development (Swann Jr & Read, 1981; Hogan, 2010). Social interaction and psychological need fulfilment may lessen feelings of connection loss and resulting emotional responses.

THE EFFECT OF SOCIAL MEDIA USE ON PSYCHOLOGICAL STRESS

Research Methodology

Hypotheses

Based on the literature review presented earlier, this study seeks to investigate the following four hypotheses:

H1: During quarantine, there is no significant relationship between psychological stress and social media use.

H2: During quarantine, there is a significant positive relationship between psychological stress and social media use for the purpose of Consuming.

H3: During quarantine, there is a significant negative relationship between psychological stress and social media use for the purpose of Participating.

H4: During quarantine, there is a significant negative relationship between psychological stress and social media use for the purpose of Producing.

Data Collection

To examine the hypotheses, a cross-sectional study was conducted in the form of an online survey, consisting of 14 questions. The survey was distributed on the 20th of May across various social media channels including Facebook, Instagram, Twitter, LinkedIn and Pinterest. Release followed the transition into the initial phase of relieving quarantine restrictions (Citizens Information Board, 2020). Residency within the Republic of Ireland from the date of implementation of initial restrictions (24th March 2020), until the survey release date, was required in order to participate. The estimated time for completion was seven minutes. The survey remained open for 19 days, until the 8th of June 2020. This coincided with the beginning of phase two of quarantine relief, marking a substantial change in enforced restrictions (Citizens Information Board, 2020). Questions were broken into five blocks, four of which contained a specific point of examination. This excluded block one, which consisted of a basic consent form, listing survey requirements and providing a study summary.

Block two contained the Impact of Event Scale – Revised (IES-R), a short, easily administered self-report questionnaire, consisting of 22 questions, designed to measure subjective responses to specific traumatic events (Christianson & Marren, 2012). In the context of this study, the tool measured the impact of the Irish COVID-19 outbreak and resulting quarantine procedure. The IES-R has three subscales sets of intrusion, avoidance and hyperarousal, and a total subjective stress score. Questions feature a five-point Likert rating, giving a maximum score of 88. Higher scores indicate greater concern for Post-Traumatic Stress Disorder (PTSD) and associated health and well-being issues. Instrument authors advise its use as a scaling measure, however, scores of 20 or higher have been shown through psychiatric interviews to correspond with symptoms of PTSD (Hawryluck et al., 2004; Feinstein et al., 2002). The IES-R is not a comprehensive test, nor does it have a clinical focus. It is intended only as a screening tool (Christianson & Marren, 2012). The IES-R has been used in numerous quarantine-stress-related studies to indicate the psychological impact of quarantine (Hawryluck et al., 2004; Liu et al., 2012; Wu et al., 2008, 2009). A single optional, open-ended, qualitative question was also used to capture any further insights or additional comments respondents may have had.

Block three was designed to capture time spent on social media. Primary text encouraged respondents to access screen time management services commonly available by default on most Android devices (Google, 2020). These services were to guide more accurate responses. Open-ended questions, restricted to numerical responses, requested average daily usage in minutes. The five most popular individual social media platforms in Ireland were listed separately for further insight (Johnson, 2020a). A single optional, open-ended question captured any further insights or additional comments.

Block four addressed usage motivators based on the UGM put forth by Shao (2009). Initial text briefly described each of the three categories of Consuming, Participating and Producing, giving examples of each. Self-reported measures of prevalence were recorded through a five-point Likert scale. An optional open-ended question was implemented to capture any additional motivators-related comments that re-

spondents may have felt were noteworthy. Excluding the optional open-ended questions, responses to blocks one-four were forced. This assured all complete responses were applicable to the research questions. Block five, designed to collect demographic information, featured optional responses.

Data Analysis

A total of 205 survey responses were collected. Incomplete and consent omitting responses were removed, bringing the total examinable response to 174. A series of analysis tests were conducted through SPSS Statistics software. Frequency and descriptive analyses were carried out to determine mean and proportionate values for continuous and group variables. The relationship between demographic variables and IES-R scores were examined using analysis of variance (ANOVA) testing. The prevalence of PTSD symptoms were estimated through an IES-R score greater than 20. This score has been shown to indicate PTSD in war journalists and used as an indicator in other quarantine-stress related studies (Hawryluck et al., 2004; Feinstein et al., 2002). Motivator category values (0-4) were analysed as a percentage of total motivator scores (0-12). Category motivator percentages were multiplied by total social media usage values, to give the time spent per category.

As shown in Figure 1, a two-step model of hierarchical multiple regression analysis with the dependent variable IES-R score was conducted to examine the relationship between separate variable groupings and psychological stress. The enter method of analysis was used. Model one included demographic and descriptive variables, whilst usage time was added in the first instance of model two to test the significance of the relationship between social media usage (Time) and psychological stress (IES-R, H1, Model 2a). A second two-step model of hierarchical multiple regression was conducted to determine the significance of the relationship between social media use for the purpose of each category motivator and psychological stress (H2-H4, Model 2b). The first model was repeated, followed by the addition of the three variables of time spent per category motivator in the second model (Producing_time, Participating_time, Consuming_time). The adjusted R^2 of the addition of the three variables was used to determine group significance, whilst individual variable significance was determined through coefficient analysis and individual p-values. In all cases, a p-value of 0.05 or lower indicated test significance. A correlation coefficient of 0.3 or lower was considered weak, between 0.3 and 0.7 was considered moderate, and 0.7 or greater was considered strong.

Findings

Descriptive Analysis

75% of respondents were below the age of 35, with 8% in the over 50 range (n=174). Male and female respondents accounted for 43% and 57% respectively. Students accounted for 31% of respondents, while unemployed and retired respondents accounted for 5%. 14% of the examined population quarantined alone, while 56% quarantined in households of four or more residents. IES-R scores were normally distributed, with a mean value of 51 recorded. All respondents exceeded the score associated with PTSD symptoms (20), with 75.3% of respondents reporting more than doubling the figure. An average daily social media usage of 168 minutes was recorded, ranging from 3 to 580 minutes. Respondent times were positively skewed. Consuming, Participating and Producing respectively accounted for 45%, 36% and

19% of total motivation per user. When examined motivator percentages per unit time, the categories accounted for 44%, 37% and 19% respectively.

Figure 1. Hierarchical multiple regression

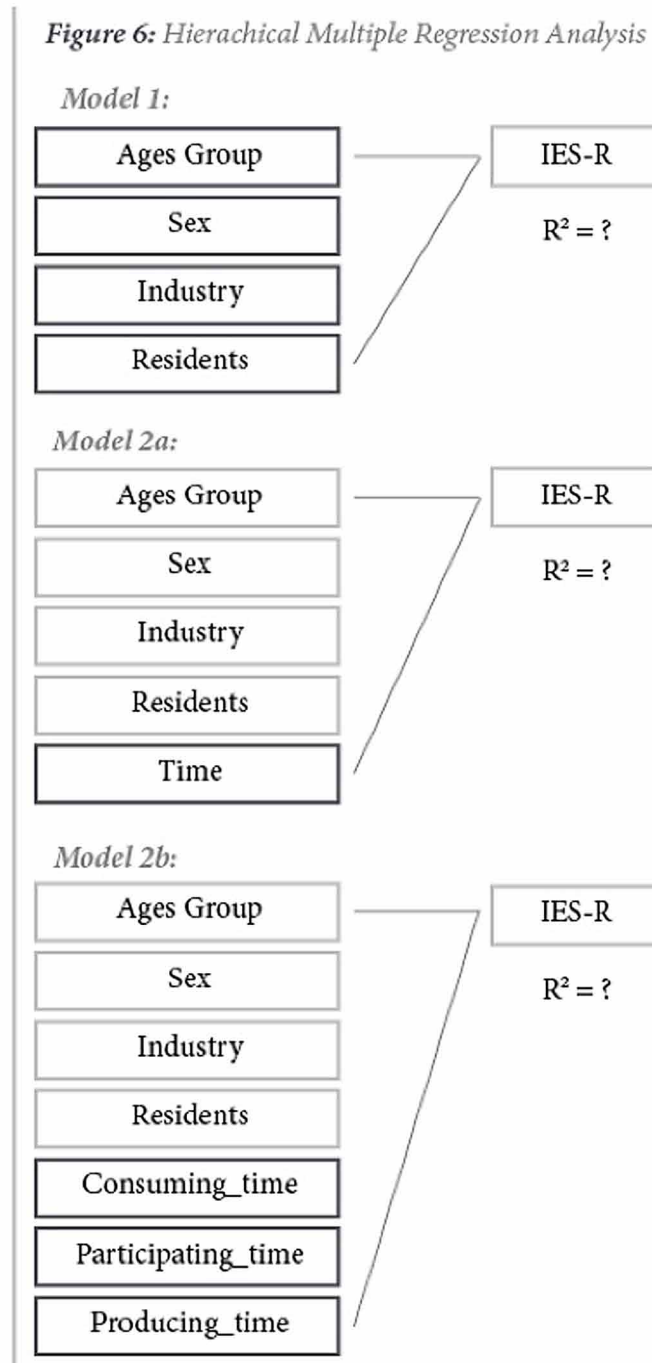
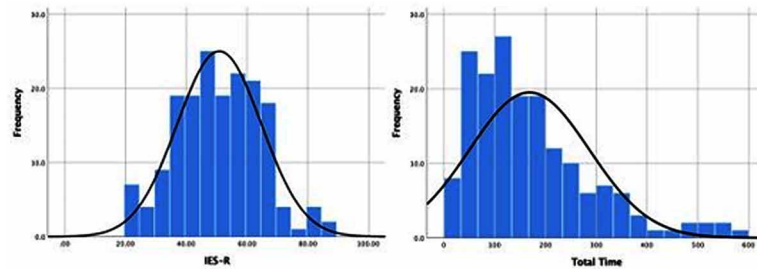


Figure 2. Distribution of IES-R Scores (left) and social media usage (right)



Regression Analysis

In the first hierarchical regression model, testing the first hypothesis, no significant variations in IES-R scores were explained through the sociodemographic variables of age, gender, profession or number of household residents ($F(4, 160) = .316, p=.867$). The first instance of the second model (Model 2a), adding the usage time variable, also failed to significantly explain variations in IES-R scores ($F(5, 159) = .487, p=.785$). Therefore, analysis supports the hypothesis H1 that during quarantine, there is no significant relationship between psychological stress and social media use.

Table 1. Hierarchical regression (model 1 and model 2a)

Model Summary									
Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.116	0.013	-0.011	14.02197	0.013	0.552	4	163	0.698
2a	.148	0.022	-0.008	14.00415	0.009	1.415	1	162	0.236
ANOVA									
Model		Sum of Squares	df	Mean Square	F	Sig.			
1	Regression	433.917	4	108.479	0.552	.698			
	Residual	32048.362	163	196.616					
	Total	32482.28	167						
2a	Regression	711.45	5	142.29	0.726	.605			
	Residual	31770.83	162	196.116					
	Total	32482.28	167						

In the second instance of the second hierarchical regression model (Model 2b), introducing category motivator times, showed statistical significance ($F(7, 157) = 2.928, p=.007$). The model accounts for an additional 10.8% of the variation in IES-R scores ($R^2=.115, R^2_{\text{Adjusted}} = .076, R^2_{\text{Change}} = .108$). Findings indicate that during quarantine, category motivators significantly predicted psychological stress.

Coefficient analysis (Table 3) suggests that Consuming_time and Participating_time both showed statistical significance ($p<.001; p=.011$). A moderate positive relationship was observed between Con-

Table 2. Hierarchical regression (model 1 and model 2b)

MODEL SUMMARY									
Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.089	0.008	-0.017	13.74464	0.008	0.316	4	160	0.867
2b	.340	0.115	0.076	13.10116	0.108	6.368	3	157	0
ANOVA									
Model		Sum of Squares	df	Mean Square	F	Sig.			
1	Regression	238.963	4	59.741	0.316	.867			
	Residual	30226.431	160	188.915					
	Total	30465.394	164						
2b	Regression	3517.85	7	502.55	2.928	.007			
	Residual	26947.544	157	171.64					
	Total	30465.394	164						

suming_time and IES-R scores ($r = .316$). This relationship supports the hypothesis H2 that during quarantine, there is a significant positive relationship between psychological stress and social media use for the purpose of Consuming. A weak negative relationship was observed between Participating_time and IES-R scores ($r = -.201$). This supports the hypothesis H3 that during quarantine, there is a significant negative relationship between psychological stress and social media use for the purpose of Participating. Furthermore, Coefficient analysis suggests that Producing_time is not statistically significant ($p = .959$). Thus, hypothesis H4 was not supported.

Therefore, an initial framework of social media uses and psychological stress during quarantine can be established as shown in Figure 3.

Discussion

Psychological Stress and Social Media Use

In line with prior findings, elevated levels of psychological stress and social media use were recorded during quarantine. All respondent IES-R scores exceed 20, indicating the presence of PTSD symptoms (Hawryluck et al., 2004; Feinstein et al., 2002). Over three-quarters of respondents reported more than doubled levels, further emphasizing the traumatic nature of events. This supports the findings of Brooks et al. (2020), noting the stress-inducing nature of quarantine measures and disease outbreak. Moreover, average IES-R scores exceeded those recorded in all previous quarantine stress related studies, using the same instrument (Hawryluck et al., 2004; Liu et al., 2012; Wu et al., 2008, 2009). Supported by the literature, we surmise that the global risk posed by the pandemic, coupled with widespread media exposure, global uncertainty, extensive Government involvement, and the ongoing nature of the outbreak, have contributed to elevated perceptions of risk and traumatic responses (Holman et al., 2014; Kim and Su, 2020; O'Brien et al., 2020), resulting in greater psychological stress.

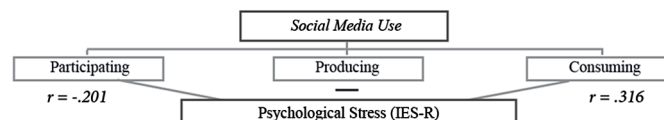
Table 3. Hierarchical regression (model 1 & model 2b) coefficient analysis

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
		B		Beta		
1	(Constant)	50.218	7.172		7.002	0
	Age	-0.341	1.731	-0.017	-0.197	0.844
	Sex	-0.342	2.189	-0.012	-0.156	0.876
	Residents	0.797	0.743	0.086	1.073	0.285
	Profession	-0.023	0.121	-0.016	-0.193	0.847
2b	(Constant)	50.796	7.109		7.145	0
	Age	-0.984	1.679	-0.048	-0.586	0.559
	Sex	-0.458	2.093	-0.017	-0.219	0.827
	Residents	0.571	0.719	0.061	0.795	0.428
	Profession	-0.056	0.116	-0.039	-0.487	0.627
	Consuming Time	0.067	0.017	0.316	4.035	0
	Participating Time	-0.039	0.015	-0.203	-2.575	0.011
Producing Time	0.001	0.023	0.004	0.051	0.959	

High levels of social media use were also recorded. An increase in average usage of more than 50% was found when comparing with 2019 pre-COVID-19 levels (Johnson, 2020b). The increase in usage correlated with first-quarter 2020 levels reported by social media platforms Twitter and Facebook (Twitter, 2020; Schultz, 2020). Solitude in quarantine was found to further influence social media use. Respondents quarantining alone recorded significant marginal increases in social media use in comparison to other categories. Findings support the relationship between the two variables suggested by Wang et al. (2012).

In line with hypothesis H1, results indicate that during quarantine, psychological stress and social media use were not significantly related. This suggests that the psychological effect of social media varies greatly depending on its multifaceted use (O’Reilly et al., 2018; Pantic, 2014). Findings are coherent with the conflicting predictions of positive and negative psychological responses defined by independently identified theories of user psychology, usage patterns and unique content exposure (Jarvenpaa & Lang, 2005; Hampton et al., 2015; O’Brien et al., 2020; WHO, 2020b). The insignificance of sociodemographic control variables in predicting psychological stress indicate an equal societal experience of such positive and negative responses amongst social media users.

Figure 3. Social media use and psychological stress during quarantine



Consuming as a Psychological Stressor

The significance of hierarchical regression (Model 2b) suggests that category motivators significantly predicted psychological stress, illustrating the varying psychological effect of social media use (O'Reilly et al., 2018; Pantic, 2014). In line with the Hypothesis H2, analysis indicates a significant, moderate, positive correlation between psychological stress and social media use for the purpose of Consuming. Findings support the theorised relationship between Consuming and the established theories of exposure stress and emotional contagion (Hampton et al., 2015; Kramer et al., 2014; Lyons et al., 1998; Smith and Rose, 2011). Findings relating to the negative effects of excessive and/or false media consumption are also supported (Holman et al., 2014; Kim & Su, 2020; O'Brien et al., 2020). Results give further merit to WHO warnings pertaining to the dangers of exposure stress and excessive media consumption (WHO, 2017, 2020b).

Qualitative responses referenced theorised stress-inducing practices, citing social media use for the purpose of procrastination, escapism and news updates. Records indicate that for some respondents, Consuming for boredom alleviation, led to increased levels of boredom. This indicates the existence of further underlying issues. Discrepancies may arise from differences in habitual and intentional consuming, as was indicated through further qualitative data referencing a lack of control (Rubin, 2006). UGMs rely on a theory of planned behaviour to achieve expected gratification (Palmgreen and Rayburn, 1979), however habitual use does not necessarily coincide with expected gratifications (Ajzen, 2011; Wang et al., 2012). Existing habits of Consuming-based social media use may be unintentionally extrapolated, when entering a period of low stimulation such as experienced during quarantine. The resulting leisure boredom is associated with a negative psychological effect, resulting from perceptions of insufficient excitement, novelty or involvement (Iso-Ahola and Weissinger, 1990).

However, the strength of the observed relationship between the two variables gives rise to speculation. The moderate correlation strength may be a result of the partially entertaining nature of Consuming-based social media use, with a potential for quarantine stress reduction. The moderate correlation may also result from varying psychological responses experienced due to unique user psychology or content exposure. According to Liu et al., (2012), subjective perceptions can vary greatly among individuals with objectively similar levels of disaster exposure. The authors suggest, based on the finding of Marshall et al., (2007), that subjective perceptions may be more strongly associated with an individual's subsequent psychological morbidity than more objective measures. A weak correlation may be a result of such variations. A larger population size may help bridge data variances by further generalisation.

Participating as a Stress Mitigator

In line with Hypothesis H2, a significant negative relationship was observed between Participating_time and IES-R scores. The results support the theorised connection between social media use for the purpose of Participating, and various theories of social support and loss alleviation identified within the literature (Burke et al., 2010; Hampton et al., 2011; Kim & Su, 2020; Wellman et al., 2002, 2003). Additional qualitative responses further support the theorised connection, noting the utility of social media in maintaining connectivity with friends and family. Results indicate the capability of social media platform communication in partially replacing face-to-face interaction lost during quarantine. Findings support the growing consensus within the literature that ICT use nurtures support-giving strong tie relationships

(Boase et al., 2004; Ellison et al., 2007; Haythornthwaite & Kendall, 2010; Steinfield et al., 2008, 2009; Wang and Wellman, 2010).

Three possible explanations are offered for the recorded weak correlation between psychological stress and Participating. Similar to Consuming, the strength of the relationship may be the result of subjective psychological responses (Liu et al., 2012). However, an alternative explanation may stem from unique human interaction and social media content exposure. A high level of interaction is involved in social media use for the purpose of Participating. This leaves the user exposed to varying levels of empathy stress and emotional contagion (Hampton et al., 2011; Kramer et al., 2014). Differences in exposure may result in varying responses. Further research controlling for specific human and user content interaction is needed to further explain the strength of the relationship. Additionally, the weak correlation may result from unidentified alternative sources of social support such as telephonic conversations. Such support may limit the benefit of social interaction through social media.

To test the hypothesised sources of weak correlation, future research may wish to examine the processes of human and content interaction separately, so as to differentiate between their psychological effects. This may help to identify causes of weak correlation, as well as to test the independent nature of each process. A model similar to the eight-point UGM put forth by Liu et al., (2010), could be used to separately examine each process. Researchers may also wish to identify, record the psychological effect of alternative processes of social support in future research, so as to control for their effect in statistical models. Larger sample sizes may reduce the likelihood of subjective response ambiguity. The data indicating the salience of identified social support processes is promising, however, further research is needed to confirm causality.

Producing Motivator Insignificance

As a result of the statistically insignificant relationship observed between Producing_time and IES-R scores, the hypothesised relationship between psychological stress and social media use for the purpose of Producing, is not supported. Revisiting the literature, the hypothesised association, established through theories of self-expression and self-actualisation was reconsidered (Shao, 2009). It is likely that existing behavioural norms and innate psychological needs are the source of the resulting discrepancy. The hypothesis was drawn without consideration of respondents' existing habitual use of social media platforms. Insignificance may be the result of pre-existing processes of social need fulfilment through social media (Hogan, 2010; Livingstone, 2008). It is likely that social media interaction during quarantine may have resulted in a marginal change in beneficial processes of Producing. In turn, further use may have resulted in a marginally insignificant change in need fulfilment.

Additionally, the validity and effectiveness of such processes are highly subjective, as is individual need and measures of achievement (Krems et al., 2017). The varying need and capability to further invest in such processes, may result in incoherent psychological responses to Producing-based social media use. The resulting change in psychological stress would therefore be unpredictable, dependant on many unmeasured variables, unique to the individual user. However, for the purpose of general population guidance on stress mitigation during quarantine, the impact of Producing is insignificant and can therefore be regarded as neither stress inducing nor stress mitigating.

SOLUTIONS AND RECOMMENDATIONS

Findings are valuable for policy makers, mental health and marketing professionals alike. As the likelihood of infectious disease outbreaks increase, so too does concern for the psychological cost of containment measures. Policy makers may wish to proceed cautiously, knowing the extent of exhibited PTSD symptoms during nationwide quarantine. Social media and marketing professionals should consider the ethical dilemma presented by the findings. Since there is a positive relationship between Consuming and psychological stress, the ethicality of social media advertising and content creation during such periods of distress and excessive use should be questioned. Similarly, a negative relationship between Participation use and psychological stress suggests that social media should fulfil their original claim of 'connecting' people and communities. Recording significantly greater social media use, it should be taken into account that citizens quarantining alone, are particularly vulnerable in this regard. Thus, social media platform management may wish to consider the further implementation of ethical, emotional and news-based content screening and censorship, embedded newsfeed scroll-time warnings, and the promotion of interaction and social support orientated usage. This research forms a foundation from which future testing can establish pragmatic guidance. At present, findings can be taken as recommendations for mindful social media use and the necessary consideration of psychological state during quarantine.

FUTURE RESEARCH DIRECTIONS

Due to time and COVID-19 related restraints, this study was limited to a cross-sectional implementation at a single point in time. No causal relation between motivators and psychological stress can therefore be extrapolated. It is recommended that the next steps of research into quarantine stress and social media use the longitudinal element and include the analysis of individual motivator elements using experimental hypothesis testing. Since the sample size of this study is relatively small ($n=174$), it is expected that larger sample sizes may provide an opportunity to assess subjective response variances by further populating values within extremes, possibly increasing correlation strength (Marshall et al., 2007). However, it may also be necessary to divide motivator categories into their separate processes for individual assessment. This should be done based on existing social media UGM literature (Liu et al., 2010; Whiting & Williams, 2013). Identifying which motivator elements are most influential and the nature of the relationship should be of primary concern for future researchers. Given innate differences in subjective perceptions, responses and the unique nature of user specific content, it is unlikely that a strong correlation will be observed between social media motivators and psychological stress. Future research should aim to establish significant moderate relationships between motivator variables and psychological stress before moving to establish a causal relationship.

It should not be forgotten that the purpose of this research is to provide pragmatic guidance. Should the opportunity arise, future researchers may wish to conduct longitudinal and/or experimental studies at various stages of quarantine restrictions. This will allow researchers to experimentally change the practice of individuals and to monitor variations in levels of psychological stress. To produce precise records and to avoid self-reported inaccuracy, they may wish to collect individual data logs and/or to conduct psychological analysis with the aid of mental health professionals. Research may be conducted post quarantine using methods of survey alteration, similar to the research conducted by Wu et al. (2009). The study shows the successful assessment of PTS symptoms up to three years post quarantine. Future

post-quarantine studies are necessary in order to build a greater understanding of quarantine stress and social media use before future outbreaks.

CONCLUSION

This study provides an understanding of the relationship between social media and psychological stress during quarantine, a period of intense usage and heightened psychological stress such as experienced during the COVID-19 outbreak and quarantine restrictions. Findings support the hypothesised multifaceted nature of social media use and its resulting psychological effect during quarantine. Based on these findings, no assumptions can be made as to directly correlate usage with levels of psychological stress. However, usage motivators have been shown to significantly indicate variations in the reported psychological impact. Social media use for the purpose of Consuming, moderately correlated with increased levels of psychological stress, supports theories of exposure stress and emotional contagion (Hampton et al., 2015; Holman et al., 2014; Kim and Su, 2020; Kramer et al., 2014; Lyons et al., 1998; O'Brien et al., 2020; Smith & Rose, 2011). Social media use for the purpose of Participating, showed a weak correlation with decreasing levels of psychological stress, supporting theories of social support and loss alleviation through ICTs (Burke et al., 2010; Hampton et al., 2011; Kim & Su, 2020, Wellman et al., 2002, 2003). Whilst social media use for the purpose of Producing, exhibited no significant relationship with psychological stress during quarantine. Insignificance is theorised to stem from society's pre-quarantine adaptation of social media for the purpose of social need fulfilment or the highly subjective nature of processes of self-actualisation and self-expression. The results of all respondent surveys indicated the prevalence of PTSD symptoms, with a vast majority doubling associated levels (Hawryluck et al., 2004; Feinstein et al., 2002). Findings indicate a growing cause for concern, further emphasising the necessity of research into stress-elevating and mental health supporting practices during quarantine.

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KEY TERMS AND DEFINITIONS

Consumption: Content consumption on social media with no desire to interact with other users or with the content itself.

Impact of Event Scale - Revised (IES-R): A self-report questionnaire designed to measure subjective responses to specific traumatic events.

Participation: Use of social media for social interaction and community development.

Post-Traumatic Stress (PTS): Heightened level of stress and anxiety due to being exposed, directly or indirectly, to a traumatic event.

Production: Content creation on social media for creating a curated image of self, driven by self-actualisation and self-expression.

Quarantine: Restrictions imposed on people's movement to contain the spread of a viral disease.

Social Media: Interactive web-based technology and applications that allow users to generate, share and view multimedia content.

Section 3

Digital Support, Counselling, and Therapy Online

Chapter 11

How Online Counselling Is Utilised, Evaluated, and Received

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ABSTRACT

This chapter covers the broad range of online counselling work, using the COVID-19 era as a point of reference. It provides an overview of online applications of counselling and psychotherapy at pre-COVID-19 time and informs the reader of how online counselling provision has been accelerated during the pandemic. A theoretical overview of the key counselling and therapeutic processes as conceptualised in the cyberspace which considers six distinct modes of online communication are provided. An evaluation and the review of the latest efficacy and effectiveness research evidence of online counselling is also provided. The key benefits and challenges of digitalised therapeutic interventions from the clients' and therapists' perspectives covering pre and during COVID-19 are identified. Attention is drawn to existing studies on counselling engagement, adherence, outreach, non-stigmatising counselling practices, power imbalances in the counselling process, and therapy outcomes.

INTRODUCTION

We expect that this “black swan” moment (Blumenstyk, 2020) - an unforeseen event that changes everything - will lead to a partly, though robust, shift in mental health care provision towards online prevention, treatment, and care in the near future. We also need to consider the role of psychological processes and fear that may cause further harm on top of the pandemic (Asmundson and Taylor, 2020). Wind et al., 2020, p. 1

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The COVID-19 pandemic has accelerated what may be described as the digital-turn in mental health counselling provision. In their recent article Wind et al. (2020) characterised the COVID-19 period as the ‘black swan’ of mental health provision as it has accelerated the adoption of digitalised interventions, thus overcoming the barriers of hesitation, scepticism and resistance that have been at play over the last two decades. These authors have noted the lack of acceptance, limited knowledge of the effectiveness and myths around the possibility of a therapeutic alliance for digitalised intervention (Wind et al. 2020). Historically, literature has highlighted that a large proportion of service providers (both in the private and public sectors) have viewed the possibility of offering counselling online as a critical dilemma based on the concerns around its effectiveness and especially, the viability of the process in comparison to Face to Face (FtF) delivery (Wind et al., 2020; Hanley & Wyatt, 2021). Others, however, have been able to override this dilemma and derived motivation from the commonly cited key benefits of online counselling associated with flexibility, accessibility, client empowerment, non-stigmatising access to therapy, disinhibited communication and space for reflection. At the dawn of the ‘black swan’ era of COVID-19, clients and therapists alike found themselves with the need to transit into the digital world and today seem to appreciate the unique benefits and challenges that digital technology has to offer. For instance, the National Health System (NHS) in England, United Kingdom has focused its resources and efforts in pursuing a swift digitalisation of its services across mental health provision and by August 2020 reported that 95% of IAPT services were delivered online yielding a steady increase in recovery rate and accessibility of service. While this initial statistic is tentative it shows that, indeed digital interventions can make a positive contribution to traditional FtF mental health services. In the current chapter we aim to explore this position in greater detail exploring how online counselling and digitised inventions are utilised, evaluated and received by clinicians and clients alike.

Scope of the Chapter

The current chapter aims at reviewing current and future directions in online counselling and the changes the digital turn is expected to bring in the profession of counselling and psychotherapy. It also takes a critical stance on the key theoretical and practical considerations that govern online counselling provision. On this basis, a comprehensive review of the theoretical and research developments in the field of online therapy is provided, drawing on chronological synthesis spanning from pre to post COVID-19 periods as points of reference. The discussion is structured around three main topics, exploring how online counselling is utilised from a theoretical and practical standpoint, accounting for guided and non-guided approaches, digitalised approaches of interventions, as well as relational psychotherapeutic and online counselling interventions. The evidence supporting the effectiveness and efficacy of digitalised interventions are then presented. Finally, an in-depth account of how online counselling has been received by clients and therapists alike is provided. The chapter ends with the discussion of relevant theoretical frameworks and research findings and concludes with key recommendations for mental health professionals on how to maximise the prospect of their counselling practice online.

The Origins of Online Counselling

The online counselling and psychotherapy prevalence traced from the early 1960s to the current technological advances in the field (Hanley, 2020) has highlighted some changes towards online practices and service provision. Over the last 30 years, mental health professionals and academics have explored

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and experimented (both at practice and research-based level) with delivering mental health interventions through the cyberspace (Amichai-Hamburger et al., 2014; Andersson, 2018). During this time, interest in using the internet to deliver remote intervention has fluctuated with some embracing the potential benefits of this emerging modality, while others held a sceptical stance based on potential limitations. This line of research and practice-based activity, however, has led to the accumulation of valuable and well-documented evidence-basis and knowledge which has shaped the framework of what is known today as “online counselling/ therapy”, “internet (mediated) interventions”, “cyber-therapy” and “e-therapy or tele-therapy” (Amichai-Hamburger et al., 2014; Mallen & Vogel, 2005; Mallen, Jenkins, Vogel & Day, 2011). This chapter aims to bring together this body of knowledge through a synthesis of classic psychological theory, cyber-psychology theory and research-based observation and findings to provide a comprehensive overview of digitalised mental health intervention. It is intended for a broad range of mental health professionals who as part of their role provide psychological or mental health services at individual or group level within the private or public sector.

Definitions

The diversity in the terms used to describe the endeavour of providing mental health interventions online can be attributed largely to the diverse nature and possibilities afforded by the cyberspace. This signifies the starting point in understanding how online-based work differs (in its potential and outlook) from traditional, FtF ways of working therapeutically. For instance, Mallen & Vogel (2005) define online therapy as

Any delivery of mental or behavioural health services, including but not limited to therapy, consultation, and psychoeducation, by a licensed practitioner to a client in a non- face-to-face setting through distance communication technologies such as the telephone, asynchronous email, synchronous chat, and videoconference. (p. 764).

Weinberg & Rolnick (2020) provided a dichotomy between relational and technique-based approaches in online therapy providing a useful categorisation which encompasses various modalities of intervention based on a given framework of practice. The terms, online counselling / online therapy will be used interchangeably and viewed as umbrella terms that capture the broad spectrum of digital interventions in this chapter. This will include psychoeducation and self-help resources, guided and non-guided behavioural interventions and relational counselling and psychotherapeutic interventions. These interventions vary in terms of their communicational framework; adopting modes of communication such as video, audio, and text-based such as instant chat and email.

Beyond the above practical categorisation, Suler (2016) has proposed a theoretical conceptualisation of counselling and therapeutic processes as those could be adopted in the cyberspace. The author implied that the traditional FtF processes could remain intact, and they would be simply transferred to the online space. This approach appeared to have been quite popular among clinicians who are trained and practicing primarily in FtF contexts but occasionally are interested in expanding their client base to the online space with minimal costs (due to no added expenses to rent a therapy room, travel to work, etc). This approach also provides some geographical flexibility of continuing therapy in cases where therapists or clients have moved to a different country or location but still chose to continue working together. Beyond these advantages, this approach does not consider the broad spectrum of online communicational context and

modalities. This limitation presents two key issues. Firstly, some well-established and effective interventions in the FtF context can be less effective in the online context. Also, this approach appears limited in exploiting some of the key benefits such as flexibility, empowering, diverse, reflective, stigma-free and disinhibited environments that the cyberspace can lend to counselling. On this basis, the cyberspace does not provide only a platform within which FtF interventions can simply be replicated, rather is viewed as a unique space of human interaction that is governed by varying principles of communication. It is a place for human interaction which provides a gateway towards mental health care and transformation (Barak, 2011; Suler, 2016, Weitz, Antony, 2015).

On this basis Suler (2016) points towards a more sensitive approach to the unique features of cyberspace-based communication, suggesting that online modalities of counselling are developed based on the communicational premises of various online modes of communication such as text-based therapies via email or instant chat. This conceptualisation of online counselling is based on an integrative framework of online communication which incorporates the broad variety of modalities of communication online (i.e. video, audio, text). This enables a new approach to therapy online where each intervention can be modified and adapted in such a way to better meet the client's needs by taking into consideration the key principles underpinning cyberspace-based communication. In addition, this approach is based on the theoretical position that various aspects of personality and therapeutic change can be facilitated by different modes of communication. For instance, a given aspect of oneself may be inhibited and not expressed through live communication but could be given voice and expression through text-based asynchronous communication. For therapy purposes, the key question has always been about how communication between therapist and client is established so that it can have therapeutic effects. It is crucial therefore to recognise the different types of communicational interaction online and associated benefits to the process of healing in therapy. The diverse nature of the various pathways of communication in the cyberspace calls for an adapted conceptualisation of counselling processes online that enables expression of the self in an integrative way, without being limited to single modalities of communication. On this basis this chapter will be grounded primarily around such theoretical ideas that encompass the diversity of online communication, associated flexibility and diversity which the cyberspace affords in counselling terms.

Historical Overview of the Emergence of Online Counselling Interventions

The use of distant counselling interventions has a notable record and has featured in the literature over the last 30 years (Mallen et al., 2011). The earliest record, however, of an intervention offered outside the traditional FtF context is represented by Freud's (1909) letter correspondence with little Hans' father. From 1970 the gradual emergence and rise of computerised digital technologies unsurprisingly coincided with an increasing interest as to its potential uses for counselling purposes. During that time the Massachusetts Institute of Technology (MIT) has developed an early computerised counselling software called Eliza. This was a milestone in the development of online therapies as for the first-time counselling was attempted by an automated software that operated on the principles of person-centred therapy (Rogers, 1951).

Since the second half of the 20th century counselling practitioners have shown an interest in providing counselling services through telephone technology. For instance, services such as the Samaritans in the UK have used telephone as their only way of providing 24/7 emergency counselling for suicidal ideation and self-harm. Using telephone technology, the Samaritans have reached more than a million individuals in need and are currently developing an instant messaging service alongside their already

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existing email service. Mallen & Vogel (2005, p. 821) reported that 98% of 600 doctoral-level practicing psychologists who were members of the American Psychological Association (APA), reported providing services by telephone. In 2011 Mallen et al., reported that 69% of the time telephone is used for individual psychotherapy and 58% of the time for clinical supervision. More frequently however, Mallen et al. (2011) suggested that the telephone is used to facilitate referrals (91%), emergency care interventions (79%) and for consultation and education purposes (71%). This movement, using telephone for mental health care intervention, marks the onset of the possibility of remote working in the modern world of counselling and mental health services. It demonstrates how digitalised means of communication can indeed help make mental health services more immediate and readily accessible, how they can support and complement FtF care increasing outreach to the hard-to-reach or notably vulnerable clients that may be unable to leave their home to visit a mental health practitioner.

The decade of 1990-2000 has seen a notable movement in the online arena with theorists and researchers developing practical and theoretical frameworks to support the use of digitised technologies for counselling purposes. Anthony & Nagel (2010) published their book providing a theoretical framework that explains how various modes of online communication map onto different therapeutic processes, highlighting also how the online therapeutic context differs to the FtF. In the early 2000, theoretical concepts such as online disinhibition (Suler, 2004), synchronicity of online communication (Anthony & Nagel, 2010) as well as Suler's (2016) cyber-therapy theory provided an alternative way of conceptualising online therapeutic interaction and processes. On this basis, since 2000 there has been a rising interest in the use of various modes of online communication in forms of videoconferencing, text-based and telephone communications. However, at that time, online counselling operated within a largely unregulated context lacking official guidelines for practice, and prerequisite qualification to serve as safeguards of online counselling. It has been observed that clinicians that were not trained in online therapy tend to restrict their online provision to one single mode of communication, typically videoconferencing, as this resembled closely to FtF interaction (Agathokleous, 2020). Central figures in the area (e.g. Anthony et al., 2014; Weitz, 2014) have highlighted the ethical and practical considerations that are applicable to online counselling, but they have been a lone voice in the vast landscapes of counselling and psychotherapy. Others have considered online counselling with scepticism, expressing concerns about its effectiveness and questioning the possibility of a relational depth between therapist and client online. On this basis, the use of online interventions varied considerably in their application and have been influenced by various factors including awareness, as well as knowledge of key theoretical, communicational and ethical considerations underpinning online work (Agathokleous, 2020).

During the same time, the National Health System (NHS) UK has attempted to use digital technologies for low-level interventions in line with the associated National Institute for Health and Clinical Excellence guidelines (NICE, 2009). This endeavour was underpinned by an increasing stream of research in the applications of internet-based Cognitive Behavioural therapy iCBT (Andersson & Hedman, 2013; Andersson, 2016; 2018). Several iCBT platforms sprang up over the last two decades.

The global outbreak of the coronavirus in 2019 represents the next major milestone in the evolution of online therapies. The social distancing rules enforced during this time affected many professional fields including mental health, with services at least, temporarily moving fully online. The pandemic appears to have impacted the evolution of online therapies positively in two major ways. Firstly, online interventions have become widely available, providing an opportunity for clinicians and clients to experience what it feels like to do counselling online. This also resulted in the availability of large amounts of data collected to aid ongoing evaluative research in online interventions. At the same time major

professional bodies signed official waivers allowing their registrants to practice online while raising caution at the same time as to the key safety and ethical considerations that are necessary for safe online service provision. On this basis, main professional regulatory bodies such as the British Association for Counselling and Psychotherapy (BACP) and British Psychological Society (BPS) in the UK, have revised their online working guidance, updating and clarifying the necessary pre-requisites of knowledge and training for working online. This is a crucial step in addressing the lack of clear regulatory procedures in the field of online counselling (e.g. Harrad & Banks, 2015). It is on this basis that the year 2020 has been characterised as the year of holistic transformation of mental health provision, paving the way for online therapies to take a more prominent role in mental health services.

HOW ONLINE COUNSELLING IS UTILISED

Online therapies have been associated with a series of unique benefits afforded in cyberspace such as improved accessibility to care, flexibility of communication, increased outreach, cost-effective and efficient methods of intervention (Andersson, 2016; Berry, Bucci & Lobban, 2017; Topooco et al., 2017). Cyberspace-based communication opens new possibilities for disinhibited and stigma-free environments, which can empower people who otherwise would not seek psychological support (Richards et al., 2018; Suler, 2004; 2016). Additionally, online interventions have been consistently reported to produce moderate effect sizes, and in many cases as good outcomes as face-to-face (FTF) interventions, across mental health conditions, clinical settings and populations (Andersson et al., 2014; Barak, Hen, Boniel-Nissim & Shapira, 2008; Olthuis, Watt, Bailey, Hayden & Stewart, 2016; Richards & Richardson, 2012). Due to their benefits and evidence-based effectiveness, online interventions seem to hold a key potential complementing (Wentzel, van der Vaart, Bohlmeijer, & van Gemert-Pijnen, 2016) and expanding the possibilities for outreach and accessibility in the overall delivery of mental health care (Anthony, 2015; van der Vaart et al., 2014).

On this basis, online counselling provides an exciting prospect and gives way to an exciting opportunity to review and deepen our understanding of counselling and psychotherapy. Due to its diverse, physically distant (between therapist and client) and flexible nature, online counselling appears to challenge many of the fundamental principles of counselling as we traditionally know it in the offline context. One main criticism has been that the distance that separates the therapist and client can create barriers in the enactment of key psychological processes such as transmission of nonverbal cues, limited levels of empathic connection and an overall concern that the process becomes dehumanised as it is filled with technological aids (Hanley, 2009; Amichai-Hamburger et al., 2014). Also, at times concerns have been raised as to the privacy and confidentiality considerations underpinning the process of counselling (e.g. Hanley, 2009). Finally, arguments have been made as to the unsuitability of online interventions in managing and containing risk. Although, we still have some way to go in terms of contesting some of these arguments on a long-term basis, existing literature within online therapy itself and the field of cyber psychology provide a reasonable basis of research and theoretical evidence counteracting some of these concerns.

One of the more unique ways therapeutic interventions have been adopted and delivered online emanates from the area of internet-based CBT and technology-assisted /guided or non-guided interventions. Guided and non-guided interventions based on the iCBT framework of practice enable individuals to undertake technology-mediated courses of intervention. Such interventions have been incorporated in the IAPT programme and recommended by NICE (2009) guidelines for low-intensity Step 2 interven-

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tion for mild to moderate symptoms of depression and/or anxiety. Such interventions can be provided in a non-guided, totally computerised, and automated way where the client interacts solely with the software. Non-guided courses are recognised as to their cost-effectiveness in reaching masses of individuals in a time and resource-effective way. Their effectiveness is reliant to the number of people reached as at the same time they have been evidenced to produce a low effect and high dropout rates. Guided programmes on the other side incorporate human-aided guidance which is delivered by psychological wellbeing practitioners and through electronic or telephone communication. Guided interventions appear to be superior to non-guided ones as to their completion rates, cost-effectiveness compared to unguided interventions, waiting list controls, and treatment as usual, group CBT, and telephone counselling (e.g. Richards et al., 2018).

Theoretical Considerations in the Use of Online Counselling Interventions

These developments are essential in helping to see the potential online interventions hold in improving the general healthcare system. From a theoretical perspective however, there are additional key considerations that regard the diverse nature of online communication. This diversity plays a central role towards the actualisation of the earlier mentioned benefits that online counselling affords (that is, flexibility, accessibility, client empowerment, non-stigmatising access to therapy, disinhibited communication and space for reflection). Understanding the theoretical underpinnings of the various modes of communication online is key in informing current and future applications of online counselling. Suler (2016) highlights the communicational dimensions of the cyberspace which encompass real-time and non-real-time episodes of communication. These are also known as synchronous or asynchronous modes of communication and include text-based, sensory-based, automated group and individual-based interactions. Suler (2016), explains that each mode of communication such as video, audio or text-based incorporates more than one dimension of communication in varying degrees. On this basis, the online therapist's role would be to identify and combine those modes of communication that could facilitate a better expression of the various aspects of the client's self.

This entails a key consideration in terms of cyber-therapeutic theory, which could enable the online therapist to recognise the therapeutic functions and usefulness of each mode of online communication. For example, visual cues (sensory-based) are absent in email communication while the text-based dimension is prominent. This implies that processes typically associated with asynchronous episodes of communication will play a prominent role in therapist's and client's communication. For instance, the therapist could be mindful of the fact that fantasies would be heightened because of disinhibition (Suler, 2004) both on therapist and client's part. A sense of immersive flow (e.g. Voiskounsky, 2008) would also be heightened and an increasing space for reflection (e.g. Dunn, 2018; Harrad & Banks, 2015) and fantasy-based interplay would be facilitated due to the absence of image and non-verbal cues. This awareness is essential as it helps the therapist better understand the unique characteristics and process that are enacted in email communication and adjust their therapeutic approach to account for those in their attempt to meet the client's needs in the best way possible.

On the other side, Suler (2016) suggests that the client's clinical needs, as well as their ability to express themselves online, are also to be aligned with the therapeutic environment and the degree to which each of the above communicational dimensions operate. As such, the therapist would most likely need to adjust the input from each dimension to better match the client's needs for self-expression and digital competence too. Thus, while the text-based medium is primarily at play, it is possible that emojis,

pictures, video-clips or gifs can be used to increase the input of previously lost non-verbal cues and the sensory dimension of communication. The same line of thought could be applied about the use of video or audio-based modes of communication depending on the clinical and communicational need of the client.

In consideration of the fact that some verbal and non-verbal cues are filtered-out depending on each mode of communication as noted by Walther & Parks (2002), Anthony & Nagel (2010) suggest that combining various modes of communication would help compensate for such effect. These writers start by the proposition that online interactions can have a therapeutic effect if some key aspects of FtF communication are compensated for or filtered back in (Walther & Parks, 2002). On this basis moving away from single-mode communication (e.g. from video-only to video and text-based combined) appears to be essential in the pursuit of effective interventions online. In addition, Suler (2016) also seems to align with the benefits of a joint integration of various modes of communication online as this facilitates better expression of the various aspects of oneself. In practical terms, some examples of such joint online interventions are using saved transcripts to promote future reflection as an adjunct to ongoing video-conferencing sessions or/and utilising email to further reflect on interventions offered via instant chat.

In addition, to facilitating self-expression and the cues filter-out/ filter-in effects, Anthony & Nagel (2010) propose that online diversified communication also attends to the unique cyberspace therapeutic processes. This proposition attends to six interpersonal processes within the therapeutic dyad: Rapport which resembles the notion of therapeutic alliance, online presence and openness which point to an increasingly disinhibited self-expression through multi-modal communication in the context of the therapeutic relationship. Also, the lack of bodily proximity which can be compensated for through text-based interaction and heightened perception of intrapersonal and interpersonal fantasies about the therapeutic relationship. Finally, the aspect of perceived anonymity online which is enacted through the remote communication and the notion of invisibility or 'protection of the screen'. On this basis, online therapeutic interventions could be aiming to attend to all the six dimensions above through a multimodal framework of communication, so that associated therapeutic processes can be effectively attended to. The central differences between FtF and online counselling, in line with Antony & Nagel's model, lie in how fantasy processes are managed online, and the level of synchronicity adopted in the therapeutic encounter. Both processes are tied to the use of text-based communication primarily as well as audio-based interactions.

These processes are known to be underpinned by the concept of online disinhibition. Suler (2016) explains that the sense of perceived anonymity and/or invisibility (due to protection of the screen) would tend to activate two types of disinhibitions: toxic (such as online bullying) and benign disinhibition (such as seeking compassionate relationships online). This concept overlaps with the earlier one developed by Berger's (1986) uncertainty reduction theory (URT). Berger (1986) explains that when communication happens in a context of reduced non-verbal cues (such as email), individuals will naturally be inclined to compensate for the lack thereof to restore certainty of communication. As such, the individual would typically engage in accelerated self-disclosure or disinhibited self-expression. Essentially, they would try to be more active and engaging in their communicational style in order to establish a connection with the other person. It is on a similar basis that a psychodynamic therapist would sit behind their client. In this FtF context the therapist reduces non-verbal cues deliberately to active the reduction of uncertainty mechanism and disinhibition which in turn support the core technique of free association.

From an online therapist's perspective, the process of disinhibition underlies central therapeutic functions that enable a person-to-person connection, and this is something that online clients recognise and are appealed to (e.g. Baumeister et al., 2014). In this sense, the online therapist would seek to utilise

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different levels of disinhibition (through the various modes of communication) in the pursuit of less defensive expression of the isolated, rigid and dysfunctional aspects of one's online and offline self (Suler, 2004; 2016). On the other side it is interesting to consider what does it take for a clinician who is trained in FtF interventions to shift towards utilising online counselling interventions as presented above. Currently these considerations appear to be more relevant to the work of private practitioners and perhaps some counselling services that specialise in the delivery of online interventions. In the case of bigger organisations and health systems these considerations would naturally take more time to be implemented as they would require changes of an even more radical change that takes place gradually and in time.

The issue of training in counselling and psychological therapies for online work consists of a more pressing issue, especially after those lessons learnt during the COVID-19 pandemic. Agathokleous (2020) suggests that the degree to which online practicing clinicians are aware of the above process and theoretical consideration is linked to the degree to which associated practices are adopted in their practice (see also Feijt, Bongers & IJsselsteijn, 2018). As such, it appears crucial now that training providers educate and prepare newly developed practitioners to understand and navigate the theoretical underpinnings of online communicational processes in the context of therapy. This knowledge seems to be largely absent from current practicing programs which are based on the traditional FtF paradigm of practice at a time when increased practitioners are expected to provide some (if not all) services online. Several researchers and theorists (e.g., Agathokleous 2020; Weitz, 2014) seem to align with the suggestion that clinicians who are not trained in online working are unlikely to be able to anticipate or navigate key interpersonal and communicational processes that are known to be at play in cyberspace. Some crucial developments have been observed in the last few months in this direction as professional regulatory bodies such as BACP in the UK revised their guidance for online counselling, highlighting prerequisite skills, knowledge, and training in the field.

HOW ONLINE COUNSELLING IS EVALUATED

iCBT Interventions

The evaluation literature of guided iCBT protocol interventions counts a series randomised controlled trial (RCT) studies since the 1990s (Andersson et al 2017). These studies evaluated guided iCBT's effectiveness in relation to several psychological conditions such as panic disorders, anxiety disorders, low mood and depression, eating disorders, season affective disorder, PTSD, insomnia, substance and internet addiction, self-harm and suicidal ideation and somatic conditions (Andersson & Carlbring, 2011; Andersson, 2018). The overall trend in this body of literature indicates that guided internet treatments tend to be more effective than totally automated or non-guided interventions. They also reported repeatedly that guided interventions demonstrated comparable or equivalent effectiveness to offline CBT (Andersson, 2016.) This protocol of intervention is delivered using a secure digital platform, is based on standardised assessment procedures and they encompass a variety of modes of communication including text-based (Andersson, 2018). These aspects of it are to be expected as they are essential in providing a foundation of a digitally secure, ethically, and clinically sound framework of practice online. However, this body of research indicates that the factor of the therapeutic alliance, which is universally accepted as the most crucial predictor of therapeutic outcomes in FtF therapy (e.g. Wampold, 2015), in this case does not account for the same effect (e.g. Lewis et al., 2011; Andersson et al., 2012). As such, the therapist's role

also seems to differ from that in FtF. It is typically constrained within a standardised therapeutic framework and is primarily aimed at technical and supportive rather than a direct therapeutic role. The client interacts primarily with the computerised program, with the therapist guidance and support throughout the process and tasks of the computerised treatment plan (Andersson & Hedman, 2013). It is therefore safe to say that the degree of therapeutic movement (in iCBT terms) depends primarily on the client's interaction with the iCBT software, and not on the therapist's therapeutic input itself. It is useful to draw attention to the fact that despite its limited effects therapeutic alliance has been consistently rated as satisfactory in iCBT (Lewis et al., 2011; Andersson et al., 2012b). This finding coupled with the fact that guided interventions seem to have better completion rates than non-guided intervention point to a recognition that nonetheless the ability to connect and interact with the therapist (another human being) within the cyberspace seem to remain the central factor linked to therapy completion and potentially indirectly a supportive factor of therapy outcomes.

Research in non-guided interventions has also been conducted over the last decade (e.g. Karyotaki et al., 2017). The main advantage of non-guided interventions is that it allows increasing access to therapy and holds a promising prospect of helping to reach out to large numbers of individuals (in a cost-effective way) that otherwise fail to access therapy (due to stigma, expenses or waiting lists) (e.g. Karyotaki et al., 2017). The non-guided protocol seems to hold a notable potential at low level or entry level psychoeducational interventions, typically providing a useful tool for medical practitioners to provide a quick and cost-effective resource of support to clients. Evaluation findings emanating from RCT in this area paint a somewhat inconsistent picture of effectiveness for non-guided iCBT reporting low effect sizes and high dropout rates. A meta-analysis study of this body of literature pointed to a small but significant effect size of non-guided iCBT interventions compared with control conditions (Andersson, 2009). On the other hand, more recent RCT's found a range of effects, varying from small or moderate to no effect (Meyer et al., 2015; Philips et al., 2014). The inconsistent nature of these findings calls for more research in this area to help clarify the picture. Nonetheless, it appears that the outright benefit of such interventions lies in their cost-effective distribution to large populations where their seemingly low effects become more accountable and noteworthy (e.g., Karyotaki et al., 2017).

The observed difference in the dropout rates between guided and non-guided interventions raised the issue of therapist input. In more technical terms, Agathokleous (2020) noted that clients seem more prone to disengage from therapies that prioritise the computer-human connection (non-guided programs) in comparison to those enabling at least some human (therapist)-to-human connection online (guided interventions). Other research showed that therapist's input such as feedback giving, support, encouragement, alliance bolstering, and empathetic utterances are indicators for client engagement and better treatment completion rates (e.g. Baumeister, et.al, 2014; Berger, 2017; Hadjistavropoulos et al., 2018). As such, the dropout rates observed in the non-guided interventions in real-life clinical applications of computerised protocol approaches could to some degree, be explained by the lack of the above therapist-based inputs known for its facilitating sense of therapeutic alliance (Wampold, 2015).

Andersson (2018) accepted that though the therapists input varies from 1–15 minutes per week, this human input appears to be typically beneficial for a client outcome (see also Baumeister et al., 2014). Andersson (2018) however pointed to an additional direction suggesting that human guidance can possibly be, to some extent, replaced by smart computer-generated responses and automated personalized feedback (Titov et al., 2013). This proposition enables new directions of research in digitalising human interaction for therapeutic purposes. Along the same stream of thought, novel digitalised approaches have emerged with an attempt to blended non-guided and therapist-guided interactions, integrating FtF, video,

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email, or instant chat input (Topooco et al., 2017; 2019). At first instance, these approaches emerged as a response to online clients' (young people and adults) expressed preferences about their need for active therapist input (e.g. Topooco et al., 2018). In a recent controlled trial, Topooco et al. (2020) reported that ICBT interventions that included therapist administered live chat (average of 47 minutes per week) yielded a significant decrease in depressive symptoms and a significant increase in client's sense of self-efficacy in comparison to non-guided interventions. These findings suggest that human-to-human interaction plays a crucial role in therapy engagement and facilitates better therapy outcomes. Importantly these findings indicated that chat-based communication provides a valid framework for therapist/client connection. Existing literature showed that this type of alliance may encourage feelings of safety, autonomy, reduced stigma-based pressures, as well as an accelerated rate of self-disclosure of sensitive issues. Since these crucial features of therapeutic elements are more restricted in non-guided approaches, these findings provide an insight into the centrality of therapists' input in online interventions.

Online Counselling

A review of available literature reveals three main strands of focus to online counselling evaluation: a) effectiveness in terms of therapeutic alliance; b) outcome effectiveness compared to other online and c) FtF modalities. Although there is variation in the findings reported, a seminal meta-analytic study by Barak et al. 2008 showed that an overall medium effect size of 0.53 for the online interventions is comparable to that of traditional face-to-face interventions. Further evidence has consistently suggested that online interventions perform just as well as FtF (Barak et al., 2008; Barney et al., 2006; Newman, Szkodny, Llera, & Przeworski, 2011). Qualitative studies provide a deeper insight as to the elements responsible for such effectiveness. Hanley & Wyatt, (2021) published a systematic review of qualitative studies targeting higher education students. They reported that engagement with online interventions is underpinned by a sense of increased autonomy, it enables a degree of anonymity (which can be utilised when FtF contact is not desirable) and overall enhances the quality of the therapeutic relationship. Findings from these studies provide the main foundation for further discussion within this section.

Online Text-Based Counselling

Several randomized controlled trials that have included a treatment condition using synchronous or asynchronous online counselling have reported significant post-treatment and follow-up effects (Kessler et al., 2009; van der Vaart et al., 2014). Other studies demonstrates the efficacy of delivering structured online CBT treatments for depression (Richards & Richardson, 2012). Similarly, a broad range of mental health issues has been addressed through various online interventions, for instance, interventions for panic disorder (Carlbring et al., 2005; Carlbring, Ekselius, & Andersson, 2018), insomnia (Strom, Patterson, & Andersson, 2004), and smoking cessation (Strecher, Shiffman, & West, 2005) to name a few. Interventions included therapist support and counselling delivered through a range of technologies and communication modes, synchronously and asynchronously (Newman, et al., 2011).

Instant chat interventions can be used as stand-alone or complementary or blended to other approaches. Available research investigated the effectiveness of such interventions in relation to mental health conditions such as anxiety and depression (e.g. Dowling & Rickwood, 2014). Cohen & Kerr (1998) presented one of the first studies to compare instant chat counselling to FtF. This study reported that both experimental groups yielded a decrease in depressive symptoms and no differences were found on

ratings of depth, smoothness, or positivity between instant chat online and FtF groups. A subsequent study investigated the effect of a group chat intervention, 1-hour weekly sessions, for the prevention of eating disorders in four students (Zabinski et al., 2001; Zabinski, Wilfley, Calfas, Winzelberg, & Taylor, 2004). A series of self-report questionnaires were used including the Body Shape Questionnaire finding small to medium effect sizes of chat-based interventions in eating behaviour and body image attitudes (Zabinski et al., 2001). A follow-up by the same researchers adopted a RCT design comparing chat interventions to waiting list control group reporting significant effect sizes. These initial significant effects have attracted attention and sparked additional research interest in relation to the interpersonal process involved in terms of the therapeutic alliance in instant chat counselling. In a seminal study investigating the strength of therapeutic alliance in email and chat-based interventions Cook & Doyle (2002) reported equivalent scores between the two modes. McKenna and Bargh (2000) through their own study suggested that text-based modes can be especially valuable to socially anxious individuals who would typically feel unable to reach out for FtF or even video-based support.

The above highlighted one key advantage of text-based online therapies which enables meaningful and deep connections, as well as conversational exchanges between therapists and client. Barak & Bloch (2006) analysed 140 transcripts of clients' perceived helpfulness of emotional support. They recorded no significant difference comparing these ratings to FtF and reported positive outcomes. A key finding in this study was also that perceived helpfulness was correlated highly with clients and therapists' perspectives of deep and smooth conversations which, in this study, were rated as helpful. In a study of similar focus Leibert et al. (2006) found that client satisfaction played a key predictive role in the strength of therapeutic alliance. These findings indicate that it is possible for clients to establish a working alliance and to feel satisfied with one-to-one services delivered in an online setting via instant messaging. Hanley (2009) reports findings that align with this proposition. In this study, a sample of 46 young people therapists rated the therapeutic alliance of medium to high quality (see also Bambling, King Reid, & Thomas, 2006).

Based on these studies, it appears that indeed a therapeutic alliance is possible via text despite previous concerns that the lack of non-verbal cues would have a detrimental effect on associated processes. At times, text-based therapeutic alliance was found to be stronger than FtF sessions. (Cook & Doyle, 2002; Wagner, Horn, & Maercker, 2014). This observation can be attributed to various reasons. As pointed earlier, the lack of non-verbal cues could prompt accelerated self-disclosure by clients which is activated through the disinhibition effect (Suler, 2004). Additionally, it may be that the additional space for reflection enabling a process of write-reflect-rewrite process encourages a deeper emotional connection between therapist and the client which is also infused by sub-conscious interpersonal fantasies that are activated in a heightened manner. Finally, Abbott et al., (2008) suggest that text-based interventions seem to promote a sense of continuity of care enabling more flexible connection within the therapeutic dyad. For Reynolds, Stiles, Bailer, & Hughes (2013), this added flexibility, which also incorporates an increasing sense of control to the client, serves in making clients feel more comfortable and less threatened opening and engaging in their sessions.

Therapeutic alliance via email has received considerable attention within online counselling evaluative literature due to long-standing concerns expressed that a comparable to FtF therapeutic relationship would not be possible via text (Harrad & Banks, 2015). These concerns seem to have been gradually dispelled as available research suggests that a therapeutic alliance is indeed possible to an equal depth as FtF and in some studies this has been cited to be superior with an accelerated rate of self-disclosure and sense of safety within the therapeutic process (Reynolds et al., 2006). For instance, in their review

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Hanley & Reynolds (2009) considered 5 quantitative studies with cumulative data from 161 participants who used the Working Alliance Inventory (WAI) and showed similar ratings in text-based therapy to face-to-face studies (Dunn, 2018). These findings point to the unique possibilities of empowerment, flexibility and choice (such as not fixed time appointments of a certain duration). On this basis, it may be said that while the therapeutic alliance via email has comparable outcome effects to FtF, the processes and factors involved in it seem to be different (similar to instant chat interventions). In the case of email work, these processes are underpinned by the asynchronous nature of this mode of communication and the additional space for reflection that is enabled between each non-instantaneous exchange between therapist and the client. This has also been depicted by Roy & Gillett's (2008) case study where email communication enabled a severely depressed client to experience a connection and form an alliance with their online therapist, something that had not been possible previously with FtF therapists. These writers suggest that this was possibly due to the time and control gained by the client in asynchronous exchanges.

Synchronous Modes of Communication in Online Counselling

Video-based communication has been observed to be the first choice of therapists that are at the first stages of their transition to online work. This is because many (clients and therapists) would already be quite familiar with the mode of communication due to its widespread use in social and workplace contexts (e.g. Békés & Aafjes-van Doorn, 2020). This mode of communication is also considered quite practical and easy to use, encompassing a sensory-rich environment that resembles FtF communication to the highest degree of all online modes of communication (Rochlen, Zack, & Speyer, 2004). Client and therapist are visible to one another and interact in live/ synchronous time. A series of RCTs, observational and qualitative studies have been conducted over the last two decades reporting relatively coherent findings. Overall, it is suggested that a good therapeutic alliance is possible through online modes of communication, with therapists and clients reporting that video-based sessions are experienced as quite similar in effectiveness to FtF sessions (e.g. Simpson & Reid, 2014; Backhaus et al., 2012; Simpson, 2009).

In a randomised trial of 80 clients, Day & Schneider (2002) found a statistically significant difference in the level of participation in telephone and video-based counselling as opposed to FtF. This effect may be due to the possibility that in remote interpersonal connections via the cyberspace individuals are naturally inclined to put more effort in establishing a human connection as a way of compensating the missing communicational cues that are filtered out. On this basis, Day & Schneider (2002) speculated that in the video-based mode, as well as telephone/audio, clients were more active in seeking responsibility with the interactions or even perhaps felt safer because of disinhibition (Suler, 2004). Researchers speculated that the clients in the distance modes perhaps made more effort to communicate or take more responsibility for the interaction because the distance made them feel safer (Dowling & Rickwood, 2013). A systematic review which assesses series of research questions focused on the usage and evaluation of video-based counselling, Backhaus et al., 2012. These researchers reported that the video-based counselling modality has been used to deliver a variety of treatments for varied psychological problems. These include trauma and acute stress-related disorders, eating disorders, general or mixed presenting problems, mood disorders, anxiety, panic disorders, agoraphobia, obsessive-compulsive disorder, addiction issues, pain/ psychophysiological issues, adjustment to cancer family issues, gender reassignment, caregiver stress and mixed depression (Backhaus et al., 2012).

HOW ONLINE COUNSELLING IS RECEIVED

The issue of therapeutic alliance and client engagement online is inherently related to client and therapist acceptance of online therapy. Research in therapeutic alliance clearly suggests that identifying and working toward meeting the client's expectations, preferences and goals of therapy as well as attending to key interpersonal processes such as empathy, non-judgmental, rupture repair and a safe environment are essential therapeutic processes. This section explores how online therapy is received by therapists and clients alike. We will consider client preferences and expectations of online work, the role of the uptake and engagement with online work and highlight the key processes influencing clients in their acceptance of online work. These processes are encapsulated in the notion of perceived credibility of treatment (Alfonsson et al., 2016) and perceived therapeutic alliance from the client perspective. Then we will review existing theoretical models that have been used to explain the process of uptake of online intervention by clinicians and highlight how key factors in this process influence how such interventions are received by clinicians. We will also consider how the COVID-19 period has impacted this process, making online therapies more acceptable to clinicians.

How Clients Receive Online Counselling

It is unclear from existing literature (primarily pre-COVID) about the perceptions of the public on online counselling. There are anecdotal indications of a slight scepticism and questioning of the effectiveness of online intervention and whether the relationship and the warmth between therapist and the client would be comparable to the FtF interventions. Over the last few years, many people have used digital technology for social networking or to connect with friends and family remotely. These experiences have led many to recognise some of the key benefits of online communication including disinhibited communication, openness, flexibility of communication and accelerated self-disclosure (depending on the context). At the same time, some additional challenges that come with the digital package have also emerged such as toxic interactions and communication, a difference (to FtF) in interpersonal dynamics and connection and equipment challenges. On this basis, anecdotal indication points to a shift of public attitudes and their perceptions of online counselling and its possibilities. This shift implies a more informed scepticism or acceptance based on in vivo experience of online communication.

On the other side, during the same period researchers have studied perceptions and individuals' experience of online counselling through its various interactions such as individual video/ audio sessions, email or instant chat as well as iCBT provision. In a recent qualitative study of such focus, Berry, Lobban & Bucci (2019) reported that clients' who received online interventions for self-management of severe mental health issues appreciate the increased flexibility of communication, and accessibility to mental health support through cyberspace. Additionally, participants reported a sense of perceived empowerment, increasing space for self-reflection and a sense of increased control over one's online treatment. These themes can map closely to some benefits afforded by the cyberspace as highlighted earlier. In a study of similar focus with a sample of young people, Kauer, Mangan & Sanci (2014) noted that the centrality of the sense of control was associated with the opportunity to make a 'choice' over the modes of intervention employed in their treatment plan and the flexibility of the available support (see also van der Vaart et al., 2014; [Hanley & Wyatt, 2021](#)). In this study, participants valued text-based communication due to the increasing flexibility of being able to reach out to the therapist. The findings from these studies suggest that clients would tend to be more content and experience a sense of credibility of their

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online interventions, if those are designed to promote flexibility of communication, diversity of modes and a sense of control over the design and delivery. It can also be said that text-based communication takes a prominent role in promoting flexible, accessible, disinhibiting, and diversified interpersonal communication online (see also Topococ; 2018; Dunn, 2014; Berry et al., (2017).

On this basis, and in alignment with Hanley & Wyatt (2021), it is suggested that online interventions that are designed to exploit the above characteristics would be received positively by prospective clients, thus increasing the chance of better engagement and adherence to the course of treatment. In more specific terms online clients are likely to perceive such interventions as more credible. Existing research confirmed this position as encapsulating a key aspect of client expectations and highlighted perceived credibility as predictive factors of therapy dropouts (e.g. Alfonsson et al., 2016; Donkin & Glozier, 2012; Wentzel et al., 2016). On this basis perceived credibility can be defined as the client's belief and trust that the chosen intervention(s) can effectively help them achieve their therapy goals (e.g. Alfonsson et al., 2016; Wentzel et al., 2016). Thus, it appears that therapy design plays an equally important role online as well as offline. Therefore, when these expectations are met, online intervention can be well received by clients, whereas, when the design is not attuned to these expectations, the risk of dropouts and negative reception increases.

This debate is directly linked to the notion of online therapeutic alliance found to be the most consistent predictor of positive experiences, engagement, and therapeutic outcomes in offline therapies. Thus, the notion of therapeutic alliance is crucial for the online counselling practice, and it also takes a technical outlook. Meeting the client's expectations and preferences of therapy is a central process in establishing a sense of trust and sound therapeutic alliance which is interlinked with positive receptions of therapy. More specifically, Prescott, Hanley & Gomez (2019) pursued a qualitative exploration of the thematic factors that underpin clients' use of online forums for mental health and emotional support. This study suggested that the role and input of the therapists are important in maintaining engagement within therapy. This finding reinforces earlier points in this chapter about the significance of human-to-human connection online in ensuring satisfactory engagement. The therapist skills, input and abilities communicated online through various modes are the essential components indirectly linked to fostering practice perceptions and client experience of therapeutic alliance. An empathic communication online will produce warmth, rupture repair, as well as negotiate client expectations, preferences and therapy goals that could foster trust and a sense of credible therapeutic alliance. The underpinning notion of trust is central towards client positive reception of online interventions as it facilitates the creation of a safe, contained, professional and reliable space for therapy to take place in. On this basis, it appears logical that the therapist's input is inextricably linked to the formation of client perceptions of therapy.

We will now discuss how online counselling is received by therapists, building upon our discussion about the therapeutic alliance and credibility of treatment presented above.

How Online Counselling Is Received by Therapists

Available literature indicates that it can be challenging for therapists to match client expectations (Mallen et al., 2005a). Gun et al. (2011) however indicated that this challenge lies in the therapist's preference for single-mode interventions such as video-based only, and lack of clarity about how diverse communication online can be synthesised into a coherent treatment plan (see also Berger, 2017; van der Vaart et al., 2014). This limited understanding of the potential usefulness of diversified online therapeutic communication acts as a key agent of hesitation in adopting associated interventions in routine prac-

tice. Based on this proposition, online therapy reception is characterised by a fragmented picture that is largely disconnected with the unique communicational characterisation of the cyberspace but more tied to the techniques that resemble FtF communication. As such, therapists could be inclined to use video-based interventions only as these have similar outlook FtF work. According to Vis et al. (2018) therapists' understanding of the usefulness of the range of various online interventions and their level of online communicational therapeutic skills were indeed the most consistent predictors underpinning the decisions to adopt associated interventions, (see also van der Vaart et al., 2014; Wentzel et al., 2016).

In addition, Anthony (2015) highlights the importance of understanding (or at least being familiar with) the governing principles of online behaviour in the cyberspace. Without an understanding of these online principles which are usually addressed in specialist training, therapists could be more inclined to perceive online intervention with a vague understanding and view it from a FtF rather than cyberspace lenses. This issue has also been highlighted by Wilson, White & Hamilton (2013) and Armitage & Conner (2001). These researchers investigated the underpinning factors of the uptake of complementary and alternative therapies in routine psychological practice using a motivational theoretical model of Theory of Planned Behaviour (TPB). In simple terms this model implies that perceived behavioural control, attitudes, subjective norms, and level of understanding of the risks associated with the online working are key factors predicting the uptake or intentions to take on online working. The factor of awareness of risk has been added to the model by Wilson et al 2013 confirming also that this factor improved the predictive ability of this model up to 51% in the uptake phase and 49% of the intentions (to take on) phase. These findings, indicate that knowledge of the risk factors related to a given complementary or alternative therapy (that is, an advanced understanding of its expected usefulness), play a central role in the adoption of new interventions in routine care. Following the same line of thought, Wilson et al's (2013) work also pointed to a deeper understanding of the original concept of Perceived Behavioural Control (PBC) as crucial in how therapists receive and take on online interventions. This concept speaks to the therapist's sense of competence and confidence in endorsing online therapies, which is rooted in their level of skills and knowledge about such interventions.

Davis (1989) developed the Technology Acceptance Model (TAM) based on TPB principles. This model was aimed at explaining the process of uptake and acceptance of a new technology. Its key aspects (replacing the notion of PBC) are *perceived usefulness* which refers to a person's belief that the adoption of a technological system would improve their job performance and outcomes; and *perceived ease of use* referring to the belief that adopting the system in routine practice would require minimum effort. Lazuras & Dokou (2016) used TAM to investigate 63 psychiatric practitioners' intentions of accepting new technology in routine practice. Their findings reinforced the idea that if a clinician is sufficiently skilled in certain key aspects of the technology, and if they can see how using these improves outcomes (*perceived usefulness*) they will be more likely to put them into practice (see also Vis et al., 2018).

In terms of online counselling, these theoretical premises represent the professional growth and specialist training an offline therapist would need to undergo to meet the unique demands of online therapeutic practice. The reviewed literature confirmed that this aspect is central to the understanding of the process of uptake and how online counselling specialist interventions are received by therapists. Feijt et al. (2018) suggest that this process follows a gradual trend moving through various stages of uptake, ranging from limited/ no use to innovative and expert uses of online interventions (for instance, utilising the full range of available modes of communication) (see also Rogers, 2002, 2003, 2010). Based on this study, Feijt et al. (2018) presented a five-level model of adoption of eMental Health (LAMH) underpinned by two main factors: 1) therapists' awareness of what online therapy implies and 2) therapists' intrinsic motiva-

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tion to adopt online interventions. These factors are interdependent and determine whether one's use of online interventions would be limited and constrained or diversified and expanded being underpinned by a level of online expertise and experience. In simple terms, one's awareness of the various aspects of online therapy would bring additional interest and a sense of perceived competence, which in turn would precipitate increased intrinsic motivation and an interest to further invest in the endorsement of specialist online therapy provision.

Some research suggests that at some level, clinicians are aware of the need for additional training when working online, but so far (and especially before the COVID-19 period) there seems to be a consistent tendency to hesitate to take up such training. Perle et al. (2013) reported in their study that only 21% of practitioners (out of a sample of 717 participants), had sufficient training in online interventions despite 75% recognition of its practical importance. These clinicians also reported being concerned about the safety and effectiveness of online therapy, leading to their hesitation to adopt online interventions in routine practice. According to the LAMH model this hesitation can be interpreted as lack of awareness of the key aspects and potential effectiveness of online therapies. Such awareness would typically be developed within training courses or through intrinsic independent learning by the therapist. In addition, Du et al. (2013) add another layer of interpretation of this observation suggesting that therapists hesitate to take on multimodal communicational frameworks online because they remain attached to their FtF communicational patterns when working online (see also Andersson & Hedman, 2013). This way of working online is primarily attributed to an insufficient understanding of the key considerations and therapeutic applications of online communication, which links back to the need for additional training (see also Anthony, 2015 and Weitz, 2014).

As it follows, limited understanding of the potential usefulness and uses of the full range of online interventions would lead therapists to receive those in limited and even negative ways. This proposition seems to be confirmed by Hennemann, Beutel & Zwerenz (2017) who explore uptake patterns in a sample of 128 mental health professionals. A percentage of 88% of these participants expressed rather low intentions to accept and adopt online interventions. This study also highlighted that these professionals had limited experience of using online interventions. In line with the technology acceptance model (Davies, 1989) one's level of experience in a certain technology would also be linked to their perceived confidence and competence in adopting associated interventions.

Access to Online Counselling and Therapy by Different Demographics

Despite the increasing use of online therapy, variations in demographic characteristics have been observed in the accessing and the utilisation of the online counselling and therapy in comparison to the face-to-face counselling (Yeung, Wong & Law, 2001; DuBois, 2004; Hanley, 2012; Novotney, 2017; Hanley, Prescott & Gomez, 2019, Hanley, 2020). Specifically, when gender was considered in relation to the access of the online counselling and therapy services for psychosocial problems, Yeung et al. (2001) and Lifeline Ipswich and West Moreton (LIWM, 2001) reported almost as many males as females in their study. In contrast, DuBois (2004) reported 85% of women in comparison to only 15% men found accessing online counselling in their study. Inconsistent and sometimes non-conclusive findings such as above characterise the exploration of demographic factors in the usage or accessing of the online counselling. Technically, samples included in the reviewed studies also varied widely, though, the discrepancies might be difficult to explain sometimes, thus implying the need for further studies. For example, participants for Yeung's et al (2001) study were youths (with majority aged 19-22), whereas DuBois (2004) and the

LIWM study (2001) samples were of wider age range (13-69 years). Also, majority of the UK study participants were within 22-44 years age bracket, while Dubois' participants were within 25-50 years. Findings from a more recent study (Do et al., 2019) also introduced developmental dimension by suggesting the need to consider gender when providing computer based therapeutic intervention for the adolescents, as male adolescents were found reporting more positive perceptions for computer-based therapy than female adolescents.

Age factor has been explored in online counselling and therapy research over the last decade. For example, Sweeney et al., (2019) noted that 72% of the adolescents in their study would rather access an online therapy if they need supports. These adolescents valued the benefits of stigma reduction and accessibility that online counselling and therapy provide. Results from a systematic review by Hanley, Prescott & Gomez (2019) also supported the idea that young people are increasingly looking towards the online forums for supports. It was observed that young people felt that they could readily receive information, as well as emotional and infomotional supports through online forums rather than f2f (Hanley, et al., 2019). In the contrary, Wong, et al. (2019) concluded from their study that age (that is, whether older or younger) did not matter in the way clients (age 16-35 years) accessed online counselling services. More recent rapid review of literature showed that remote interventions were an effective way of supporting young people who might find it difficult to access f2f counselling (James, 2020). The systematic review by Hanley, et al (2019) and Wong et al.'s (2019) study both highlighted the potential for young people to prefer and access online counselling services that is dynamic and responsive above or with f2f counselling. Reasons for preference include its flexible nature. The recognition of the need to increase the accessibility of counselling and therapeutic services to the children and young people (BACP, 2018) has bolstered the provisioning of online counselling and therapeutic services for this client group as they continue to engage with counselling and therapeutic help online.

CONCLUSION

This chapter showed that the recent happenings have drastically changed the initial reluctance and slowness of counsellors and therapist to adopt online technological tools for counselling. The outbreak of COVID-19 has necessitated the drastic move of counsellors and therapists to online counselling and therapy practices, leading to more flexible practices and the combination of both online and FtF services. It is clear from the various reviewed literature that the use of online as a mode of delivering counselling and therapeutic services will remain within the field due to some identified advantages. However, while some studies recognised that users are not restricted by age or gender, others showed that the online mode of service delivery might be more beneficial for children and young people who are already spending significant time online. This is more so as the standard FtF counselling and therapy provision for this group is limited at meeting the ever-increasing needs of the young people. This chapter implicated the need for more studies that would explore the impact of various demographic factors on the accessibility, utility and outcomes of online counselling and therapy. The inclusion of the online counselling training in the counselling and therapy programmes is also implied, and this could support the counsellors and therapist's utilisation and acceptance of the reality of digital innovations ramping up within the field.

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Chapter 12

Digital Mental Health Support for Students in Higher Institutions in Nigeria During Pandemics

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ABSTRACT

This chapter examined the challenges associated with students' mental health in a pandemic period like the COVID-19 era and the expected coordinated response measures that should be in place to mitigate such challenges with focus on the mental health of students in institutions of higher learning in Nigeria, the most populous nation on the continent of Africa. Specifically, the review strengthened the need for school counselors' going back to the drawing board to come up with modalities that could keep students psychologically and emotionally healthy. Students normally enjoy school community life but would have to adjust their patterns of social interactions during an outbreak of an infectious disease. The review explored and applied the assumptions of social support theory which laid emphasis on supportive relationships within social contexts. School counselors were charged in this chapter to engage their students' community with digital mental health support to help them remain mentally healthy in spite of the adverse events usually provoked by the presence of a pandemic.

INTRODUCTION

Impacts of pandemics have dominated research discourse since the outbreak of Covid-19, with varying emphases depending on research interests or concerns. Multidisciplinary and interdisciplinary researches bringing researchers from different areas of specializations are inevitable to address some of the challenges posed to humanity as a result of an outbreak of a contagious disease like Covid-19. Pandemics could pose considerable mental health challenges to many students in Nigeria, as a result of increased

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cases of robberies and violent crimes (Kalu, 2020), boredom, loneliness, poverty and anxiety which could come as aftermaths. Appropriate counselling therapeutic intervention is necessary to curb or flatten the curve of rising cases of psychological distresses among students, especially those in the higher institutions of learning, as consequences of a pandemic could be devastating. Following experts' observation, the ongoing Covid-19 pandemic will generate considerable stress throughout the world (WHO, 2020; CDC, 2020; UNICEF, 2020). Generally, mental health problems among students are on the increase with a number of them requiring therapeutic interventions (Macaskil, 2012; Lambie, Haugen, Borland, & Campbell, 2019; Christian, & Brown, 2018). Mental health could have negative statistical association with high morbidity rate that is capable of putting families and societies in a turmoil (Oostenbrink, Batelaan, De Graaf, & Beekman, 2006). As the world is battling with one of the most devastating pandemic- Covid-19, digitalization has to be extended to the counseling domain in order to help people, particularly, Nigerian students in institutions of higher learning for them to benefit from digital therapeutics. Mental health support to students is critical, drawing upon the claim of Starling Minds (2021) which stressed that over 90% of support and resources were provided for physical ailments with mental illness receiving little attention, and thereby increasing the number of mental health challenges among individuals as a result of lack of trained professionals to attend to them. This means that during a period of a pandemic, many students are likely to face a lot of mental health problems if therapists do not rise to help with an appropriate approach. Considerably, tertiary students' community life is crucial for their overall socialization processes, but when there is an outbreak of an infectious disease, this pattern would be altered. Thus, school counselors have the duty of facilitating a virtual community life among tertiary students to reduce boredom, isolation, depression, frustration and even suicide thoughts that may be threatening their mental wellbeing. The Nigerian Policy on Education (FRN, 2004; 2013) stipulated the need for counseling services in Nigerian schools to support students' career, education and emotional wellbeing. This makes it important for school counselors to wake up to render mental health services to students in the higher institutions of learning for the students to remain emotional healthy during a pandemic like Covid-19.

The world has consistently witnessed pandemics at various times. Huremović (2019) in a brief history of pandemics noted the Athenian plague of 430–26 B.C.; the Antonine plague of 161–180 A.D. believed to have been caused by smallpox; the Justinian plague of mid-6th century AD pandemic thought to have been caused by *Yersinia Pestis*; The Black Death, a bubonic pandemic which originated in China in 1334, with 60% fatalities in Europe; the Spanish Flu Pandemic of 1918–1920, adjudged to be the first real global pandemic; the Smallpox outbreak in former Yugoslavia in 1972; the SARS outbreak, Severe Acute Respiratory Syndrome, which occurred in 21st century with origin in China; the Swine Flu or H1N1/09 Pandemic in 2009; the Ebola Outbreak of 2014–2016, caused by Ebola virus; and the ZIKA outbreak in 2015–2016. All these pandemics made their negative impacts on lives of people at various points in history. However, the Covid-19 pandemic which started in China in 2019 seems to be the most devastating global pandemic in recent time. This has made Covid-19, which was still prevalent as at the time of writing this chapter, to attract research multidisciplinary and interdisciplinary attention, perhaps more than any other pandemic so far.

Counseling practice during pandemics, specifically, Covid-19 era in Nigeria should showcase the reality of the day, in terms of aligning philosophical inclinations or therapeutic models with the peculiarities birthed by the arrival of the Covid-19 pandemic. It could be possible that school counselors and other mental health professionals did not prepare for the situation they find themselves in now in terms of the prevalence of Covid-19. Therefore, there is a need for urgent adjustments from different dimensions

to put school counselors in a vantage position to address with fervor issues of emotionality and mental wellness of Nigerian students, especially those in tertiary institutions that have been affected by the pandemic. The pandemic should definitely change the face of counseling trajectory to create adaptation that could mitigate its negative consequences. The counseling climate of tertiary institutions in Nigeria needs to embrace a remarkable digital transformation for it to remain a formidable force in fostering emotional stability of students. Digitalization has emerged in all sectors, and counseling cannot afford to be an exception. Therefore, Nigerian school counselors in the higher institutions should adapt to the digital world by providing counseling services to students using e-platforms. Social connectedness is usually the wish of individuals in order to establish and maintain relationships fabrics of bonding, attachment and a sense of belongingness (Messaoudene & Belmahi, 2020), even among counselors and clients, but a change in approach is inevitable during a pandemic. Students' campus community sense can still be maintained through a digital world which could be facilitated by school counselors. Drawing on Nwachukw, Ugwuegbulam, and Ijeoma, (2014, P.374), "the application of computer technology to counselling procedures is gradually creeping into every society and resisting change in Nigeria, will leave us behind." The conclusion of Nwachukwu and colleagues (2014) shows that digital therapy as a means of fostering Nigerian students' mental health is very important as a part of counseling processes in Nigeria.

Digital counseling which could refer to direct interactions between the client and the therapist through the internet or mobile app for the treatment of a variety of mental health like anxiety, PTSD, and depression (Baker, n.d.), marks a new normal in counseling services, especially as a response strategy to mitigate the spread of a pandemic and still maintain counseling and psychotherapy services. E-counseling, though not totally a new thing, Covid-19 pandemic necessitates its speedy perfection and utilization to help students to maintain their mental health and emotional stability. Mallen, Vogel, Rochlen, and Day, (2005), as cited in Richards and Vigan, (2013) opined that the goal of counseling was to alleviate distress, anxiety, and concerns that clients presented for counseling interventions in order to return them to proper functioning. This goal of counseling has to be embedded in an e-counseling or an online counseling practice. Many Nigerian students going through mental health challenges during the Covid-19 era are unlikely to have access to conventional counseling interventions as a result of the ongoing social distancing policy. Therefore, school counseling has to be repositioned through online innovations to meet the need of its consumers who are predominantly students. Thus, counseling services emanating from Nigerian school counselors must put students, the target population at the center; and in line with Sink and Dice, (2020), be oriented toward the promotion of students' sense of selfhood or personhood within their social contexts

Considering all that have been said so far, this chapter critically examined the effects of pandemics, with greater emphasis on impacts of Covid-19 on students' mental health in tertiary institutions in Nigeria with a view to assessing the efficacy of digital therapy in providing an alternative therapeutic route to face to face counseling. In attempting, to achieve this goal, the social support theory was adopted to provide a theoretical torchlight. Thus, digital therapy was recommended as a therapeutic tool for mental health through the lens of social support assumptions. Furthermore, this review effort was domiciled majorly within the domain of counseling psychology with emphasis on school counseling. It is important to note that 'students' in this chapter refers basically to learners in Nigerian tertiary institutions which include universities, Polytechnics, Colleges of Education, and similar Institutions, and are usually aged 16 and above. Students of higher institutions of learning were the target population for this review because majority of them have smart phones or other computer devices that could aid digital

therapy. Computer literacy is equally high among this target population, thereby increasing the potential success of e-therapy among them if it is implemented. However, this review has a universal application to students, even though the chapter laid emphasis on digital mental health wellbeing of students in higher institutions in Nigeria as a microcosmic domain to address the subject matter.

METHODOLOGY

This chapter adopted a theoretical approach to showcase therapeutic potentials of digital therapy in addressing students' mental health challenges in a pandemic era. The work aligned with secondary data harvested from the internet. The social support theory provided the theoretical framework upon which the review was built. The narrative review approach was also deployed for the execution of this effort. Charles Sturt University Library (2021) defined narrative review as "a comprehensive, critical and objective analysis of the current knowledge on a topic." Thus, related literatures on the subject matter were carefully evaluated and synthesized; and thereafter, critically and objectively applied to the chapter. The scope of this chapter was delimited to digital therapeutic intervention with focus on Nigerian students in the higher institutions who are usually 16 years and above. 'School counselors', as operationally used in this work, refers to counselors who are based in higher institutions to help students. They also include psychologists, and social workers who may offer counseling services to students in the same category of schools. In addition the term 'therapist' and 'counselor' were used interchangeably throughout in this chapter.

THEORETICAL FRAMEWORK

This review was theoretically anchored to social support theory, a middle range theory with emphasis on relationships and interactivities that are embedded within social relational contexts. Leahy-Warren, (2014) opined that social support was usually used in a general sense in connection to processes of social relationships that could foster health and well-being, and delineated further that the concept was yet to attract a unified definition. According to Butler (2017), social support theory emanated from the writings of Don Drennon-Gala and Francis Cullen, who themselves were inspired by other theoretical frameworks. Butler further stressed that the theory was based on the proposition that instrumental, informational, and emotional supports could decrease the tendency of delinquent and criminal acts through supportive societies and supportive relationships. The definitional position of Butler (2017) is another way of attempting to conceptualize social support, confirming the diversity of applicability of the term in various social contexts. Wikipedia (n.d.) believed "social support is the perception and actuality that one is cared for, has assistance available from other people, and most popularly, that one is part of a supportive social network." Lakey, and Cohen, (2000) proposed three theoretical perspectives of social support namely: the stress and coping perspective, which supports healthiness in relation to protecting individuals from negative effects of stress; the social constructionist perspective which believes that social support positively impacts wellness in terms of raising self-esteem and self-regulation, in spite of stress; and the relationship perspective which holds that social support and relationship processes like: companionship, intimacy, and low social conflict are interwoven. Based on these perspectives proposed by Lakey and colleague (2000), it could be established that social support as a therapeutic strategy has

three important components that could help therapists to address students' mental health in times of pandemics like Covid-19. In keeping with Wikipedia (n.d.), students in a pandemic era could benefit from supportive emotional resources that could help them to be emotionally stable and resilient to maintain functional and adaptive lifestyle.

In this chapter, social support was operationally perceived as the digital psychosocial support given by therapists to students to help them to maintain sound mental health, so they could cope with their studies, and maintain family and peer adaptive relationships. The application of social support theory as a therapeutic model in this review was also guided by the three theoretical perspectives postulated by Lakey and colleague (2000).

PANDEMICS AND THE MENTAL HEALTH OF STUDENTS IN HIGHER INSTITUTIONS IN NIGERIA

Pandemics like the Covid-19 come with consequences on people including students. For instance, the Covid-19 pandemic has affected economy, education, business activities and more. Ogunode, Abigeal, and Lydia (2020) citing Ogunode (2020) observed that the academic calendar in Nigeria was disrupted as a result Covid-19; and predicted that the situation would affect students' academic plans and programs. Indeed, school activities were grounded, making students to be physically severed from peers, lecturers, school counselors and significant others who could play crucial roles in their emotional stabilization processes. The challenge of mental health could increase among Nigerian students as a result of these disruptions (Chukwuorji & Iorfa, 2020). The UNO (2020), postulated that "Mental health is a state of mental well-being in which people cope well with the many stresses of life, can realize their own potential, can function productively and fruitfully, and are able to contribute to their communities." Considering this definition, it is obvious that the pandemic could have altered many people's mental wellbeing, and students will be among them. The impact of the pandemic has led to increased aggressiveness and post-traumatic stress symptoms as psychological effects on people in many parts of the world (Sharma, & Subramanyam, 2020; WHO, 2020; Rajkumar, 2020; Bao, Sun, Meng, Shi, & Lu 2020; Zandifar, & Badrfam, 2020). Restriction of access to neighborhood activities and physical distancing have far reaching negative effects on individual's mental health (Thompson, Garfin, Holman, & Silver, 2017). Students during pandemics experience social isolation which could affect their academic performance and increase chances of psychological maladjustment. Aristovnik, Keržič , Ravšelj, Tomažević ,and Ume, (2020), conducted an empirical research in early 2020 with a sample of 30,383 students from 62 countries to investigate the impacts of the Covid-19 Pandemic on the lives of students of higher learning and found that students were affected by lack of computer skills, difficulty adapting to a 'new normal'; namely, education from a distance; boredom, anxiety, and frustration. The study further revealed that students had to cope with hygienic behaviors like wearing of masks, washing of hands, and social isolation. The study also confirmed that migration from onsite to online lectures had a stronger effect on males, part-time students, undergraduate students, applied sciences students, and students with a lower living standard. These empirical findings as portrayed in this report, show that many students were generally affected negatively as a result of the Covid-19 pandemic globally, including the Nigerian tertiary students. Psychosocial disruptions resulting in anxiety, boredom and frustration are critical to students' mental and social processes. It could be deduced from the findings that students' socialization and interactivity were restricted with some corresponding psychosocial maladjustments as aftermaths. Olawuyi

and Nwadioke (2020) in a study examined the burden of the psychological problems associated with Covid-19 pandemic and coping strategies among students at Bowen University, Iwo (BUI), Nigeria, used cross-sectional survey and multistage sampling technique consisting of 433 participants with mean age as 20.11 ± 2.9 years, with 72.7% of them as females. The researchers presented online self-administered, semi-structured questionnaire to respondents to obtain relevant information for the study. Binary logistic regression tool was used to observe risk factors of decreased mental wellness among the participants; and it was confirmed that 55.0% of the participants experienced decreased psychological wellbeing as a consequence of the lock down in the country. They further stated that the odds of decreased mental health was significantly higher in students who indicated a need for substance use as coping strategy (OR=1.50, 95%CI=0.55-4.05), and for those who were not comfortable with online teaching method (OR=5.34, 95%CI=4.13-9.18). It was concluded that the effects of Covid-19 on mental health of Nigerian students in the university was high. The study of Olawuyi and colleague (2020) confirmed negative impacts of a pandemic on students in institutions of higher learning in Nigeria. Covid-19 also created major teaching disruptions in students' academic activities; and even private universities which conducted online teaching activities with their students could not embark on assessment of their students' academic performances as trust on online assessment was weak as a result of some perceived major setbacks with virtual learning environments (Wang, 2014; cited in Agbele, & Oyelade, 2020).

Consequent upon the emotionally tortuous situation birthed by the Covid-19 pandemic, some students may need urgent preventive measures which can be delivered and supervised by professional counselors to survive the psychological threats or pressures around them (Loewenstein, 2018; Ogden, 2019, Chukwuorji & Iorfa, 2020). Students experiencing mental health challenges need psychopathological assessment and help from counselors to be able to develop and maintain coping skills that can keep them mentally healthy (Armstrong, Ogg, Sundman-Wheat & Walsh, 2014). Students under this prevailing circumstances need to be helped by school counselors to search for meaningfulness in the midst of a seemingly meaningless world (Frankl, 1984, Van Deurzen, 2002); to be optimistic, hopeful and teleological in pursuing their ideal selves (Adler, 1959; Bitter, Roberts, & Sonstegard, 2002); to cognitively restructure maladaptive thoughts capable of making them sad or depressed (Ellis, 2001, 2002); to pursue survival, love and a sense of belonging, power, freedom, fun in order to maintain fruitful relationships that can promote mental health (Glasser, 1998); to accept the unconditional regards of parents and significant others around them so as to turn on their positive emotions (Rogers, 1980; Moss, 2015); and to construct a positive view of life from a personalized standpoint (Chiari & Nuzzo 2010), while they await an end of the pandemic in the near future. School counselors or therapists have a fundamental role to play to foster emotional stability of students during a critical period, as counselling is a therapeutic approach that can grant students the privilege of being listened to and helped as they navigate through challenges associated with pandemics like Covid-19.

DIGITAL MENTAL HEALTH SUPPORT FOR STUDENTS IN HIGHER INSTITUTIONS IN NIGERIA

According to Kaplan, Tarvydas, and Gladding (2014), 29 counseling associations endorsed a consensus or unified definition of counseling which postulated that "Counseling is a professional relationship that empowers diverse individuals, families, and groups to accomplish mental health, wellness, education, and career goals." This definition underpins the place of counseling in promoting mental health. Fur-

thermore, in line with the social support theory which guided this chapter, mental health therapists in tertiary institutions should provide mental health supports for students as processes of social relationships that could foster health and well-being (Leahy-Warren, 2014), keeping in mind the tripartite theoretical perspectives of Lakey, and colleague (2000) which centered on stress and coping (dealing with stress); social constructionism (raising of self-esteem and self-regulation); and relationship (companionship, intimacy, and low social conflict). Aligning with this theoretical foundation and these tripartite perspectives, school counselors and other therapists have the responsibility of ensuring that students' emotional stability is guaranteed amidst psychosocial disruptions that could result from the impacts of a pandemic. Students' self-esteem and self-regulation are needed to ward off fear and anxiety that are usually part of a pandemic psychological distresses. Therapists should ensure companionship, intimacy and low social conflicts in their therapeutic relationships with students. In doing all these, and in line with the tenets of social support postulations, the therapists must keep the boundaries of a pandemic health guidelines or precautions. Social relationships and support are important psychosocial resources for alleviating pandemic distresses as voluntary helping could be essential to both the helper and the receiver of help (Bowe et al, 2021). Provision of mental health opportunities to students at critical times is a social responsibility of school counselors who are saddled with the task of helping students' emotional wellness. Thus, mental health service delivery to students should be repositioned to align with digital therapeutics which should in turn be garnished with the social support dynamics. Apart from a pandemic like Covid-19 outbreak, necessitating a shift from conventional counseling to digital therapy, researchers have also considered the approach to be productive and predicted a future high demand for it by clients (Barak & Grohol 2011; Schmidt & Wykes 2012; Mattison 2012; Mishna, Bogo & Sawyer, 2013). Although online counseling is not totally a new therapeutic approach, the need for it has become very necessary as a result of the ongoing Covid-19 pandemic (Liu, Yang, Zhang, Xiang, Liu, Hu, & Zhang, 2020). Hence, there is a need for a change of approach to counseling in order to align with the present realities to keep pace with the mental wellbeing of students who have limited physical access to their school therapists as a result of the social distancing policy. E-counseling is an online counseling process through the medium of telecommunication technologies, which include: telephone, internet, and tele-conferencing (American Psychology Association, 2010). Counseling interactions are done by the therapist and the client through telephone, e-mail, chat, social media platforms like WhatsApp, Facebook etc. or videoconferencing. The internet has a lot of resources which can enhance therapeutic interactions between the counselor and the client to make counselling interventions transcend face to face to include online therapy. As a result of technological advancement, digital therapy is becoming more innovative as artificial intelligence is transforming therapeutic processes within the sector. Starling Minds (2021) noted that chatbots, video and written content, gamification and digital cognitive behavioral therapy (CBT) could provide 24/7 access to therapy for individual with mild mental health challenges. School mental health therapists like counselors should put structures in place where students can receive mental services without face to face encounter, unless when it is very necessary.

Digital Counseling has a lot of advantages which include: accessibility, flexibility, cost and time savings (Andersson & Titov, 2014,). Researches have also confirmed client's favorable attitude towards web based therapeutic interventions (Schröder et al, 2017; Vigerland, et al, 2014; Gun, Titov, & Andrews, 2011). It has also been reported that online therapy helps client to enter therapy anonymously (Andersson, & Titov, 2014). Anonymous therapy can help to reduce the fear and social stigma a client may feel in a face to face counseling situation. Some clients may be more comfortable to communicate with therapists through online platforms like emails, text messages and chats than face to face interactions where they

may feel insecure to express certain aspects of their lives. This is in line with the observation of White and Doman (2001) which revealed that digital therapy could increase self-disclosure, and through its asynchronous mode, individualized pacing of therapy is possible. In addition, Fu, Burger, Arjadi, Claudi and Bockting (2020) conducted a systematic review of 22 eligible studies in a meta-analysis, consisting of 4,104 participants, with 2,351 in the treatment group and 1,753 in the control group. The study mainly focused on young adults with mean age of 20–35 years living with depression or substance misuse. Results of the study confirmed that digital psychological therapy were moderately successful. All these point to the fact that school counselors are likely to make therapeutic success when they deplore e-counseling to reach out to students during a pandemic era. Digital therapy has also received a boost in terms of therapeutic effectiveness according to studies as observed by Starling Minds (2021) which postulated that telepsychiatry, video telepsychotherapy ; telephonic therapy, animated and/or human video instruction, digital CBT programs, chatbot and meQuilibrium were all therapeutically effective as face to face therapy. Olawuyi and colleague (2020) observed in their study that Students of Bowen University in Nigeria, adopted online chatting with friends and watching of films (OR=0.22, 95%CI=1.37-3.59), and participation in virtual vocational training (OR=0.25, 95%CI=0.25-0.61) as coping measures to stabilize their mental health. This study provides evidence that e-therapy could be effective on Nigerian students if effectively managed by school therapists.

The effectiveness of digital therapy as revealed in studies gives hope of successful digital counseling processes between students and school counselors. Therefore, school counselors, keeping in mind, the philosophy of social support should endeavor to reach out to students who may be facing or likely to face psychological distresses as a result of pandemics, like Covid-19. Constant interactions with students through digital means could provide soothing psychological wellness to them, making them more adaptive to learning, and to increase daily functioning in other areas of their lives. In another development, Pappas (2020) reported that consumers turned their smartphones to pocket therapists as there were up to 20,000 mental health apps for users. The report further stressed that a free sleep app that could aid mental wellness had been downloaded by nearly 60 million people, confirming the high rate of usage of mental health digital tools by people around the world. This finding shows that school counselors can install a number of mental health resources on computer or smartphone devices for students to help them to receive mental wellbeing. Artificial intelligence has also found its way into the counseling space and has consistently impacted on counseling processes. For instance, through the chatbot, students can access asynchronous individualized mental health support any time they want. Video and audio devices that could help in facilitating mental health could be effectively deployed to help during counseling processes between therapists and clients.

The social media platforms could be used by therapists to fulfil the goal of counseling or mental health support in a crisis period like a pandemic. Kaplan and Haenlein (2010, p. 61), opined that “Social Media is a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content.” Via the social media platforms, school counselors can be in touch with students to support them psychotherapeutically. Through the social media platform again, group counseling processes could be put in place where students could synchronically interact with one another and the counselor. Videos and audio contents that could boost psychological health could be sent through the social media platforms to reach students to be accessed asynchronously, thereby enhancing individualized and self-paced mental health care. The social media were classified by Kaplan and colleague (2010) into six: blogs; collaborative projects (e.g. Wikipedia); Social networking sites (e.g. Facebook); content communities (e.g. YouTube); virtual second worlds (e.g.

Second Life); and virtual game worlds (e.g. World of Warcraft). School counselors or therapists could support students' mental health in a pandemic period by creating appropriate social media platforms that would have therapeutic contents. An understanding of this classification by Kaplan and colleague (2010) could help therapists to structure their social media mental health therapy in ways that can suit their circumstances. Therapists can create blogs where they can post therapeutic contents; make use of collaborative projects which could allow end-users (students) to add their inputs to enhance therapeutic satisfaction or effectiveness; create groups on social networking sites like Facebook to enhance group and collaborative therapeutic interactivity which could provide psychological healing to participants. Interestingly, most students of higher institutions of learning are on social media platforms, making it easy for school therapists to reach them easily.

In spite of the benefits inherent in e-counseling, there are some challenges that can hinder its effectiveness. Some of the challenges are client centered, some therapist centered and a few others are external to both clients and therapists. Certain counseling procedures and techniques can be affected during an online counseling. Some of these include: non-verbal cues, confidentiality, legal and ethical issues, and technological hitches. A study carried out in Australia showed that inexperienced therapists seemed to lack knowledge on how to benefit from technology-supported therapy (Schuster, Pokorny, Berger, Topooco, & Laireiter, 2018). White and colleague (2001) found communication difficulties, poverty, and internet connectivity problems among others as problems confronting online therapy support programs. These challenges show that counselors and other therapists need to step up their internet based skills to be able to make e-counseling successful. Speyer and Zack (2003) recommended that therapists should "assess the suitability of clients and work within ethical parameters; educate clients and provide informed consent; advise clients regarding limitations; and have back-up resources in place to address urgent issues." The sum of these recommendations is that therapists have to be proactive so as to respond swiftly to hitches during digital counseling or mental health delivery processes. Similarly, in Nigeria where many students are poverty stricken it may be difficult for some of them to afford online facilities like phones, computers and internet data to be part of an online counseling experiences (Stephen & Olusegun 2014, Chukwuorji & Iorfa). Furthermore, in Africa, research findings suggested that the number of people living in extreme poverty still increased by more than 100 million as a result of surging population (World Bank, 2016). This development can pose a great deal of challenges to some Nigerian tertiary students and counselors who may wish to embark on e-therapy. Again, survey of Internet World Stats (2009; cited in Adeola, 2012) reported that Africa had a population of 991,002,342 and 4,514,400 of the said population had access to the internet connectivity in 2001, and the number of the people rose to about 65,903,900 in 2009, representing 6.7% of the population. The report further stated that North America which had about 340,831,831 population in 2001, 108,096,800 had access to the internet connectivity, with the number rising to about 251,735,500 in 2009, representing approximately 73.9% of its population, showing clearly that internet connectivity of users in Africa was low compared to those of North America. In addition, the report showed that Nigeria had a population of about 149,229,090, and about 11,000,000 internet users representing approximately 7.4% of the population. Comparing the report of the two continents, the percentage of internet users was very low in developing countries compared to developed countries (Adeola, 2012), which may affect the effectiveness of e-therapy. However, the cheering news is that students of higher institutions of learning in Nigeria are likely to have high level of internet connectivity, considering Omeje and colleagues (2016), who found high rate of utilization of e-counseling among students and counselors in higher institutions in the country.

CONCLUSION

This chapter considered digital therapeutic intervention approach for students in institutions of higher learning in Nigeria during pandemics leaning on the social support theory. Therapists, especially school counselors were perceived as major potential drivers of social support digital therapies that are tailored towards enhancing students' emotional or psychological wellbeing during pandemics. Pandemics could have negative consequences on students. The ongoing Covid-19 which has impacts on students of higher learning would require post-Covid-19 national rebuilding strategies (Olawuyi et al), in addition to an immediate psychological response measures to curtail mental health problem as the pandemic prevails.

A brief prevalence history of pandemics was presented as a proof that pandemics have been co-existing with mankind. Studies showed therapeutic effectiveness of digital counseling or therapy, making it worth a place of relevance in counseling services. Drawing on the findings of a systematic review and meta-analysis by Fu and colleagues (2020), it could be deduced that digital therapy in mental health delivery services has the potential relevance in making mental health available and accessible to students within the scope of this review. On the basis of this assumption, students' mental health during pandemics seem to have solutions, since digital counseling could successfully provide psychosocial help for them. With the breakthrough in digital therapy, School counselors or therapists are expected to put machinery in place to commence e-therapy aligning with social support principles that could be beneficial to counseling relationships. This means that school counselors should see social support as instrumental, informational, and emotional supports that could decrease delinquent behavior of students (Butler, 2017); as a means of fostering students' health and wellbeing (Leahy-Warren, 2014); and as an avenue to reduce stress and increase coping, to improve self-esteem and self-regulation, and to enhance companionship, intimacy, and low social conflict among students (Lakey and colleague, 2000). By incorporating the social support tenets into counseling relationships, school counselors should create e-platforms to complement physical interactions among students to reduce the spread of contagious diseases during pandemics- like the Covid-19 that was still raging in the world, including Nigeria as at the time of writing this chapter. Students in higher institutions of learning in Nigeria could gain coping strategies against negative impacts of pandemics. This assumption could be buttressed with the findings of Omeje and colleagues (2016) which confirmed effective utilization of e-counseling in career information dissemination among undergraduates of federal universities in South East, Nigeria. The study had a population of 36 guidance counselors and 64,997 undergraduates of federal universities in South East, Nigeria; and a sample size of 1,036 respondents. The result of the study showed that the universities in South Eastern part of Nigeria had e-counseling facilities and that students' awareness of e-counseling potentials was satisfactory. Omeje and colleagues (2016, P.2) also claimed that "Nigeria is fast growing into a computerized nation in recent years. This is seen in the rate at which students and counselors embark on utilization of e-counseling." It is therefore incumbent on school therapists from all the sections of the country to adopt e-therapy mode since its workability could be established from empirical studies.

Considering the future of digital counseling as a tool for providing mental health to students, especially during pandemics, it is important to consider the future of the practice. Based on available literature, it could be established that though e-therapy could be helpful in equipping individuals emotionally to maintain adaptive dispositions in a pandemic period, there are still needs for improvement in terms of e-counseling technological tools. Aguilera (2015) suggested therapy technological design should involve the collective inputs of key stakeholders and take into cognizance specific individual users of digital technology. Kraft, Schjelderup-Lund, and Brendryen, (2007), revealed three stages for an effective digital

technology: selection of psychological theories and relevant research details; selection of general psychological intervention techniques, therapies and procedures; and a set of processes and predictors that are related to successful change. Since digital technology determines the success of therapies, therapists and researchers have to be fully involved in the manufacturing processes of mental health technological devices. School counselors, particularly, should be concerned about the configuration of the digital devices available for use to meet students' psychological needs and maintain feedback loops that could help in improving such devices to make them more student friendly during counseling processes. The social media platforms have been found to be effective for digital therapy. However, there are reports of their negative effects on clients. Naslund, Bondre, Torous, and Aschbrenner (2020) noted that social media could have negative effects on mental health of clients; expose them to harmful contents and harmful interactions; and could create dysfunctional daily life, including impairment of relationships. This suggests that therapists, especially school counselors need to guide students properly, so they could benefit maximally from digital tools without getting hooked up in the negativities that could come with them.

In concluding this review, it is important to reiterate the need for school mental health therapists to see their services to students as a community building mechanism to foster psychosocial wellness. Taking it further, school counselors are therapists for the students' community and should ensure that their services are rendered, keeping the overall mental wellbeing of students in view. This position is in line with the report of Bowe and colleagues (2021) which revealed that a June 2020 survey in the UK proved that community helping resulted in psychological bonding and community identification, leading to reduced depression and anxiety among community members. School counselors could lead the students' community in their various Nigerian tertiary institutions through digital platforms to create a sense of belonging and identification among students to boost their mental health. Since emotional or mental health of students is necessary, especially during a pandemic era like the ongoing Covid-19 era, group platforms that could bring students together digitally should be explored. School administrators and the entire school community members should be involved in creating a digital family where students could relate with one another and members of staff as much as possible.

Furthermore, school counselors in Nigeria should be specifically trained to deliver e-therapy that would be contextually suitable to students as part of response measures to curtail the emotional or mental health challenges of students, especially during pandemics. This is because school counselors are close to students and the stigmatization that may go with treatment with non-school counselors or therapists could be eliminated (Bringewatt & Gershoff, 2010). Digital training programs could help therapists to be familiar with therapeutic sessions (Fairburn, & Patel, 2017), making it necessary for school counselors to acquire the right training for effective service delivery. In addition, supports from the Nigerian governments could strengthen digital counseling. Thus, internet facilities like phones, computers and data should be provided by the governments at various levels to students who may not be able to afford them for an effective operation of e-counseling during the period of a pandemic. This is necessary because mental health of students of higher institutions could determine the quality of graduates that would determine the future of the nation. Nigerian leaders should consider the urgency of e-counseling and put structures in place for its effectiveness. Appropriate legislations to guide ethical practice of e-therapy should be put in place by the Nigerian government in conjunction with counseling bodies.

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KEY TERMS AND DEFINITIONS

Counseling: Counseling refers to a professional therapeutic relationship aimed at helping individuals, families, and groups to have access to mental health to able to boost their resilience to cope with life's challenges. The term, like many other psychological constructs, does not have a consensus definition. However, the overall aim of counseling is to help individuals to realize themselves, so that they can take appropriate decisions that enhance emotional and psychological adjustments.

Digital Therapy: Digital therapy could be called by various names like online counseling, e-therapy, and e-counseling. It simply refers to mental health delivery through electronic devices which may involve the internet. Digital therapy involves text messaging, telephonic interaction, video conferencing, emails and so on. With the advancement in the digital world, artificial intelligence has tremendously impacted on digital therapy.

Mental Health: Mental health refers to one's emotional, psychological, and social well-being. It involves one's feelings and reasoning. Mental health determines individual's ability to cope with stress in order to maintain an adaptive lifestyle amidst life stressors. Absence of substantial mental health could lead to impairment of daily functioning. Student mental health is very important for them to cope with their studies and interact adaptively with their peers, family members and significant others.

Pandemic: A pandemic refers to an outbreak of a disease that spreads from the area it originated to other countries or continents, usually creating high fatalities and many other consequences. One of the most dangerous pandemics of the recent time is the Covid-19 which originated from Wuhan Province in China and spread to other parts of world, creating unprecedented pandemonium in all spheres of life, including prolong lockdowns that is still having consequences on people, including students.

School Counselors: Counselors are trained Professionals who could help individuals, including students to understand themselves, their challenges, and possible solutions to those challenges to enhance emotional stability. School counselors are specifically counselors who work with students, providing professional helps in education, career, and mental health through counseling processes. The term was used in this review exclusively for counselors, psychologists, and social workers who are involved in counseling students in tertiary institutions.

Social Media: Social media refers to a computer and internet-based means of interacting and sharing of information with others through networking sites. Social media platforms have helped immensely with fast dissemination of information through text, audio, and video modes.

Social Support: Social support refers to support that people receive to help them to cope with adversities of life. Social support could be emotional support which could help people to cope with stress, instrumental support, which involves tangible or physical support like monetary or food support; and informational support, which involves giving of information that could help others in need of such information.

Students: The term 'students' refers to individuals registered and recognized as learners in educational institutions like colleges and universities for the purpose of acquiring knowledge and skills that could enhance personal developments to prepare them for the world of work. In this review, the term, 'students', was used with exclusivity to students in institutions of higher learning.

Therapists: Therapists refer to different professionals that are found in the helping profession. They are involved in providing psychological help to people. Therapists include psychotherapists, social workers, and counselors. In this review the term is used interchangeably with counselors.

Chapter 13

Artificial Intelligence in Mental Health: The Novel Use of Chatbots to Support Trainee Counsellors and Recovering Addicts

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ABSTRACT

Chatbots are programmed conversational agents that emulate communication systematically using natural language processing. They can be programmed to assume a range of roles where regular human interaction occurs. Within mental health services, they are not as well represented as in other areas of healthcare, with research suggesting that uptake has been hindered by concerns over the accuracy of the information they provide, undeveloped technology, lack of adherence to an ethical framework, and the unconvincing portrayal of human authenticity. Technological improvements have addressed some of these concerns, and as the resultant solution choice increases, the potential for chatbots within mental health is receiving greater attention. In this chapter, two novel uses for chatbots are showcased. Foxbot, a recovery friend, accessible at the point of need to help mitigate some of the common risk factors to sustaining addiction recovery; and ERIC, a counselling client who allows trainee counsellors to practise their counselling skills without having to enlist an actual client.

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INTRODUCTION

In 1956, artificial intelligence (AI), as a scientific concept was first studied. It was the subject of a progressive research project, speculating that all facets of learning and intelligence, could in theory be described with the precision necessary for a machine to simulate them (McCarthy, Minsky, Rochester & Shannon, 1955). The foresight within the study was remarkably accurate, into what AI would become over five decades later. This was an extraordinary result considering computing technology was in its infancy (Carlson, Burgess, Miller, & Bauer, 2012), and the human capacity to program such envisioned technology was entirely hypothetical (McCarthy, Minsky, Rochester & Shannon, 1955). In deference to this, this chapter looks at two innovative and diverse uses of AI, with the aim of disseminating new and ingenious ways of applying today's AI technology, to support mental health education and services.

Background

Chatbots form a distinct branch of AI which includes the familiar conversational agents seen on websites and messenger platforms, as well as the market leading virtual assistants such as Apple Siri, Amazon Alexa, Google assistant and Microsoft Cortana. They have undergone rapid technological advancement in recent years, primarily driven by investment from big technology companies, and demonstrated in the proliferation of chatbot devices in the home, integration with smartphone and smartwatch user interfaces, and the changing nature of website interaction (Patel, 2021; Insider Intelligence, 2021).

Chatbots are programmed conversational agents that emulate communication systematically, using natural language processing (Adamopoulou & Moussiades, 2020). Natural language processing takes a normal language input and evaluates it using sophisticated algorithms, to offer an intelligent response (Singh & Thakur, 2020). This is a complex process, which is itself continually evolving as consumer expectations of the semantic intelligence of chatbots grows in line with the output, of what is now a technologically competitive industry (Cambria & White, 2014; Adamopoulou & Moussiades, 2020; Singh & Thakur, 2020).

In 2016, the use of chatbots accelerated following their integration within the Facebook messenger platform (Taylor, 2016). Organisations soon realised that by systemising repetitive and low-level tasks commonly performed by humans, they were able to offer consumers a service agent with endless patience and unlimited availability (Følstad & Brandtzæg, 2017). This proliferation has seen chatbots enter the digital strategy for organisations across multiple sectors, including education and mental health services (Adamopoulou & Moussiades, 2020; Díaz & Pereira, 2019).

Chatbots in Mental Health

In mental healthcare, chatbots have been used to screen, provide training, and offer therapeutic support for people with mental health conditions (Abd-Alrazaq, Alajlan, Ali & Bewick, 2019). At the forefront are chatbots for depressive disorders. A previous review looking at the application of chatbots in mental health, showed that those focusing on depression significantly outnumber chatbots targeted at other disorders, such as anxiety, post-traumatic stress, and autism (Abd-Alrazaq, Asma, Alajlani, Bewick & Househ, 2020). Overall, however, the corpus of work looking at the efficacy of chatbots in mental health is underdeveloped, in comparison with alternative areas of application, such as physical health, entertainment, customer services and engineering (Adamopoulou & Moussiades, 2020; Vaidyam, Wisniewski,

Halamka, Kashavan & Torous, 2019; Díaz & Pereira, 2019). Reasons cited for this are the rapidly changing technological landscape, disparate regional and demographic factors in solution implementation, and a lack of understanding of how they are being used to affect mental health services (Abd-Alrazaq, Alajlan, Ali & Bewick, 2019; Vaidyam, Wisniewski, Halamka, Kashavan & Torous, 2019). Research has also shown that serious ethical concerns exist that are specific to mental health. For example, where the safety of replacing a human with a systemised agent, and the potential this has to do harm, has already been demonstrated, with unsuitable responses presented to the users of existing chatbot solutions (Abd-Alrazaq, Asma, Alajlani, Bewick & Househ, 2020; Ogilvie, Carson & Prescott, 2021a).

The present deficit in the available literature does however suggest that the conditions are favourable for developing new and innovative uses for chatbots within mental health services, providing the design, including the bank of data the chatbot draws from, is based on specialist knowledge and the analysis of user needs (Vaidyam, Wisniewski, Halamka, Kashavan & Torous, 2019). Furthermore, the classification of chatbots in the literature that does exist, is generally broad, for example, depression, dementia, anxiety, and stress (Abd-Alrazaq, Asma, Alajlani, Bewick & Househ, 2020; Díaz & Pereira, 2019). There is a level of refinement yet to be appreciated in mental health services, one that will contribute to the efficacy of targeted care provision and support (Abd-Alrazaq, Asma, Alajlani, Bewick & Househ, 2020; Díaz & Pereira, 2019; Adamopoulou & Moussiades, 2020). One such example is the use of chatbots to support people with a history of addiction (Ogilvie, Carson & Prescott, 2021a), specifically in helping people in addiction recovery to mitigate the risk of relapse to sustain their ongoing recovery.

Chatbots in Education

Previous research has found that chatbots in education take one of three definable pedagogical roles. These are learning, assisting, and mentoring. In the learning role the chatbot is the educator. In the assisting role they simplify student life, and in a mentoring role, they support the learning process (Wollny et al., 2021). This corroborates the findings from an alternative study suggesting that chatbots in education act as either an educational agent or a service assistant (Quiroga Pérez, Daradoumis & Marquès Puig, 2020). These roles have been applied to chatbots to deliver content covering a range of educational objectives and core subject areas, with recent research finding a partiality in delivering information to students without an associated academic subject. This is followed by chatbots targeting the teaching of languages and economics, and with less frequency, maths, literature, history, programming, and psychology (Smutney & Schreiberova, 2020). The range of subjects covered, along with the ability to assume the role of teacher, assistant, or mentor, demonstrates how flexible chatbots can be in providing educational tools to students.

In education however, chatbots have been criticised for exhibiting a cognitive and emotional capability driven by technology and not educational role (Wollny et al., 2021). Furthermore, they have been observed to have a machine-like style that lacks personality (Smutney & Schreiberova, 2020). They have also received disparaging feedback on the content they present being tied to the creator and the development process, instead of the analysis of actual student needs (Wollny et al., 2021; Bahja, Hammad & Butt, 2020). These criticisms received further gravitas in a recent review looking at the opportunities and challenges faced with chatbots in education, when it was reported that there is inadequate empirical evidence on the efficacy of the design and the strategy used to promote learning (Hwang & Chang, 2021). This finding has been further validated in the limited evidence available on the effect that chatbot adaptation has had on education (Wollny et al., 2021). By implication, it is reasonable to assume there

is untapped potential for innovation using chatbot technology to improve learning outcomes, through a better-informed design.

THE NEW CHATBOTS

We now introduce two new chatbots, one called Foxbot and the other ERIC. Foxbot provides support for people who are in addiction recovery and ERIC (Emotionally Responsive Interactive Client), helps students develop their counselling skills.

Foxbot, a Recovery Friend

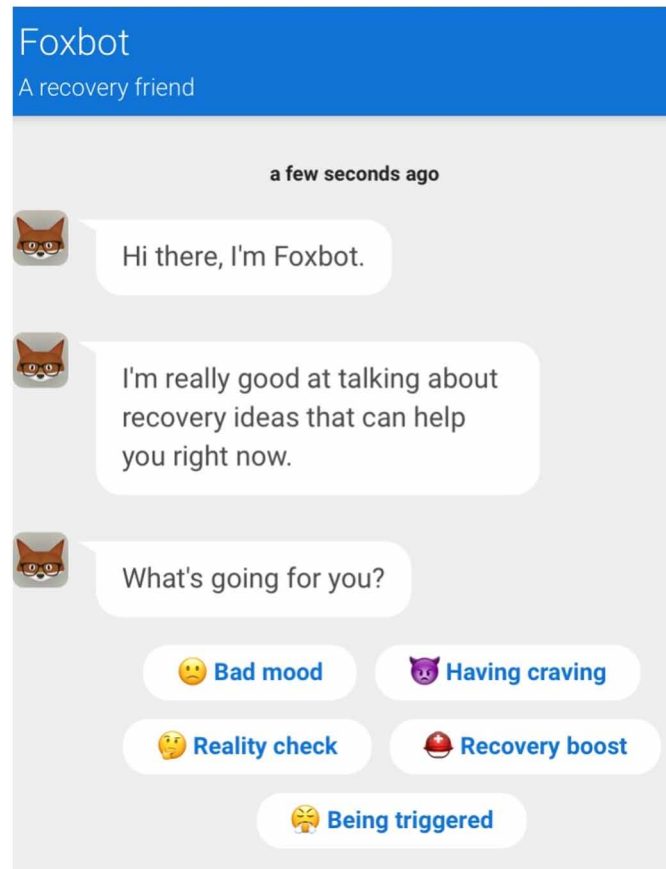
Concept

The idea behind Foxbot was to provide people in addiction recovery with a recovery friend, who is always available. A friend who understands addiction and recovery and can offer ‘just in time’ positive interventions for some of the common challenges faced (Ogilvie, Prescott & Carson, 2021b). The basis for this originated in research showing that social connection, empathy and understanding in addiction recovery are necessary components to wellbeing (Ogilvie & Carson, 2021). The importance of this, along with the risk presented in not having this support available when needed, have never been clearer than during the COVID-19 lockdown. The subsequent figures from this period show alcohol related deaths in England and Wales reaching a new high (Limb, 2021; Public Health England, 2021), with alcoholic liver disease being a major factor. The statistics for drug related deaths across the UK are just as bleak, with mortality rates from drug poisoning reaching their highest level since records began (Office for National Statistics, 2020; Scottish Government, 2021). The grim reality of these figures is perhaps unsurprising, given the evidence advocating social connection and the use of counteractive techniques in mitigating the risk of relapse and a return to addictive behaviour (DiClemente, 2018). Using the chatbot platform, Foxbot is available 24/7 to talk to. He understands some of the challenges faced in recovery and can provide targeted and counteractive interventions at the point of need, in a bid to reduce the immediate risk of relapse.

System Design

The design of Foxbot was informed by those who have experience of being in addiction and the transition to recovery. User led experience was considered necessary for Foxbot to be accepted as a friendly voice, capable of offering addiction recovery support. This is reinforced by research advocating that chatbot content, along with its nuanced delivery, should be informed by user directed material, rather than solely relying on the often detached content, of the professional community (Morris, Kouddous, Kshirsagar & Schueller, 2018). When implemented well, this design approach offers convincing and relevant engagement to the targeted user base.

Figure 1. Foxbot greeting and topic selection.



Personality

Foxbot interacts as an equal with the intention of not projecting an air of superiority in the facilitation of interventions. This decision was based on advice from prospective users saying that being considered equal, without feeling demeaned by the historical events of addiction, is important to seeking and maintaining recovery connection. Moreover, this has evidential backing in the long-established efficacy of mutual support, and the recognised necessity of embracing more positive connection for sustained recovery (DiClemente, 2018; Ogilvie & Carson, 2021; Mokhtari et al., 2019). To this effect Foxbot is presented as a recovery friend, with a personable style of communication. This starts with a laid-back greeting using emojis for emotional cues at the initial point of contact, (see Figure 1), and continues throughout the user's encounter, up to the conclusion of the conversation.

Previous research looking at the advancement of more refined anthropomorphic social characteristics in chatbot human computer interaction, suggests that it significantly influences the way people accept chatbots, shaping their perception and even behaviour towards them (Chaves Steinmacher & Gerosa, 2020; Quiroga Pérez, Daradoumis & Marquès Puig, 2020; Feine, Gnewuch, Morana & Maedche, 2019). Consequently, a friendly and amenable approach, has been used to establish the persona of a recovery friend (Schuetzler, Giboney, Grimes & Nunamaker Jr., 2018). For example, there are many opportuni-

ties for users to extend their dialogue with Foxbot, who in turn expresses appreciation for wanting to be conversed with, by responding with statements such as “*It’s always a good time to talk to be about recovery*” and “*Talking to you brightens my day*”.

Whilst the content and message conveyed by Foxbot is often serious, a convivial tone is used. This characteristic was ascribed to Foxbot at the request of prospective users, who overwhelmingly felt it important to endorse a positive and upbeat stance on what recovery means, notwithstanding its challenges. Furthermore, this design decision accommodated some of what has been learned about recovery as a long-term endeavour. This body of knowledge demonstrates the necessity to change and grow beyond the constraints of addiction and develop a renewed and positive appreciation of, and behaviour toward, life in recovery (DiClemente, 2018; Mokhtari et al., 2019; O’Connor, 2016; Ogilvie & Carson, 2021). To achieve this, Foxbot’s communication processes were programmed to exhibit character strengths.

In positive psychology, character strengths describe the aspects of self that an individual is good at, strengths that can be used to reframe the negative and maximise the positive in life’s encounters (Niemiec, 2018; VIA Institute on Character, 2021). The strengths assigned to Foxbot were social intelligence, self-regulation, gratitude, humour, and creativity. Social intelligence for the fluent social function in the chatbot dialogue. Self-regulation for the endless patience and satisfaction with user relationships, inherent to chatbots if programmed that way. Gratitude to express positive emotions and optimistic prosocial behaviour. Humour to promote positive mood and endurance, and creativity for the novel delivery of recovery interventions. This original approach of developing a chatbot that exhibits its own character strengths, is intended to draw users into a positive encounter, so that in contrast to the start of their interaction, they leave in a favourable position.

Addiction Recovery Driven Content

Foxbot has been programmed with conversational support for users who wish to engage in a discussion on one of five topics. (1) Experiencing a craving. (2) Being in a bad mood. (3) Needing a reality check. (4) Being triggered, and (5) Looking for a recovery boost, (see Figure 1). These topics are delivered as separate interventions and were decided on through consultation with prospective users about the experience of sustained addiction recovery. They are also backed by findings from research showing successful recovery is related to quality of life, happiness, self-esteem and personal recovery resources, with a negative correlation to prolonged psychological distress (Kelly, Greene, Bergman, White & Hoepfner, 2019). Consequently, the topics, which are common subjects of discourse in addiction recovery literature (Laudet, 2008), were selected with the intention of reducing psychological distress and boosting personal recovery reserves.

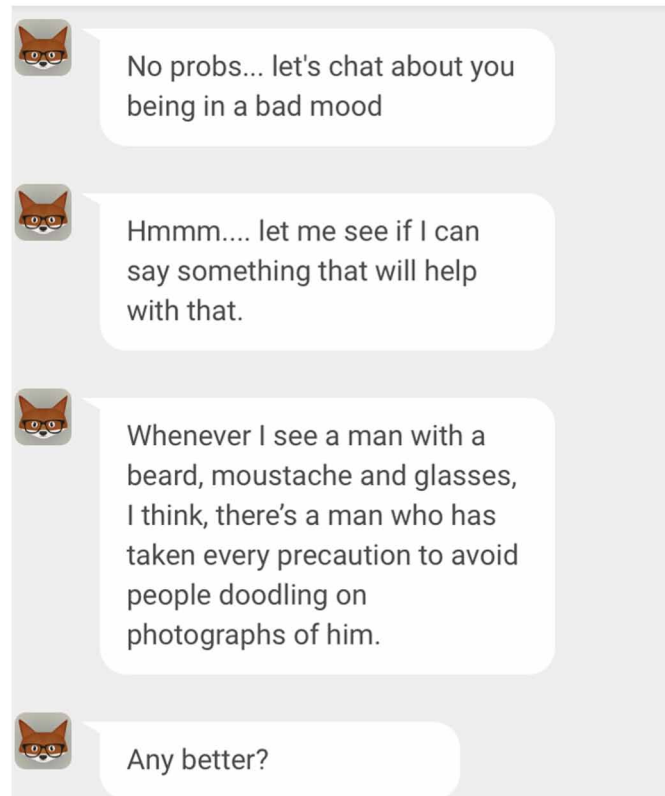
Interventions

Bad Mood

Experiencing protracted negative emotions poses a risk to those in addiction recovery, as it correlates with reduced quality of life (Kelly, Greene, Bergman, White & Hoepfner, 2019). Where people have reached a level of wellbeing through curtailing active addiction, simple interventions can be attempted that will challenge negativity with a competing emotion (Niemiec, 2018). In this case, humour. Here

Foxbot tries to raise a smile by guiding the user through a series of jokes, from a bank of jokes that are selected based on the user's response, see Figure 2.

Figure 2. Bad mood intervention.

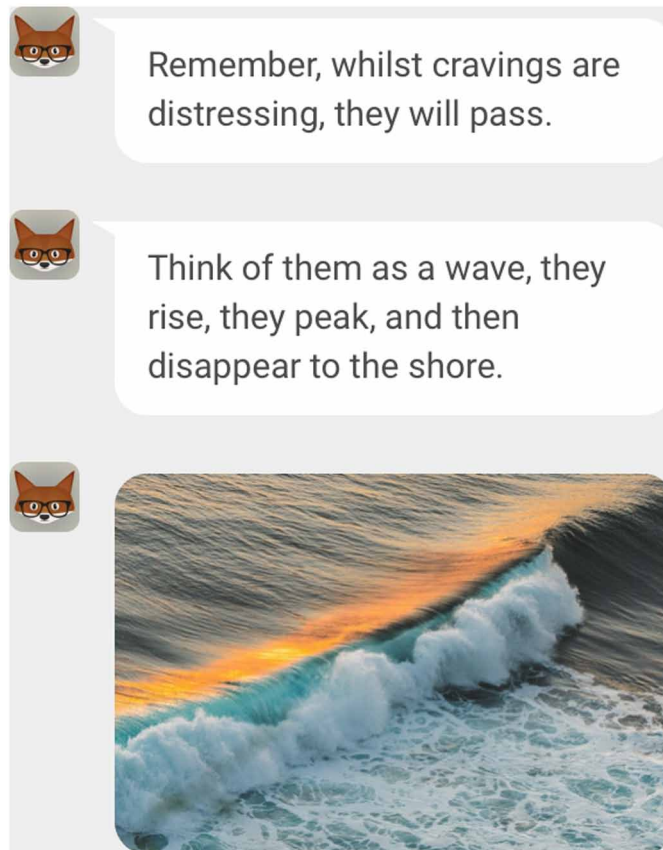


Having Cravings

Experiencing cravings for alcohol or drugs is a common occurrence in early recovery. In fact, whilst the frequency may diminish, it can happen at any time in recovery. It is generally attributed to altered function in the brain's reward circuits, brought about by chronic substance use. Here the addict seeks the initial reward felt from taking the substance, a feeling that over time with tolerance becomes relief from withdrawal of the substance (O'Connor, 2016; Kelly, Greene, Bergman, White & Hoeppe, 2019; DiClemente, 2018). At this point, the individual is stuck in an addictive cycle of use, relief, withdraw, use (DiClemente, 2018). Whilst cravings are recognised in recovery as something that is transient, they are still distressing. This intervention uses positive imagery and distraction to help the user work through the craving, see Figure 3. Positive imagery has been shown to improve mood and invoke feelings of compassion (Calvo & Peters, 2017).

Once the user has been given a positive way to visualise the craving passing, they are encouraged to participate in an online game to distract them. Here Foxbot challenges them to a game of join the dots, where they can attempt to beat a high score. If they achieve this, Foxbot congratulates them, if not, the

Figure 3. Positive imagery of addiction craving.

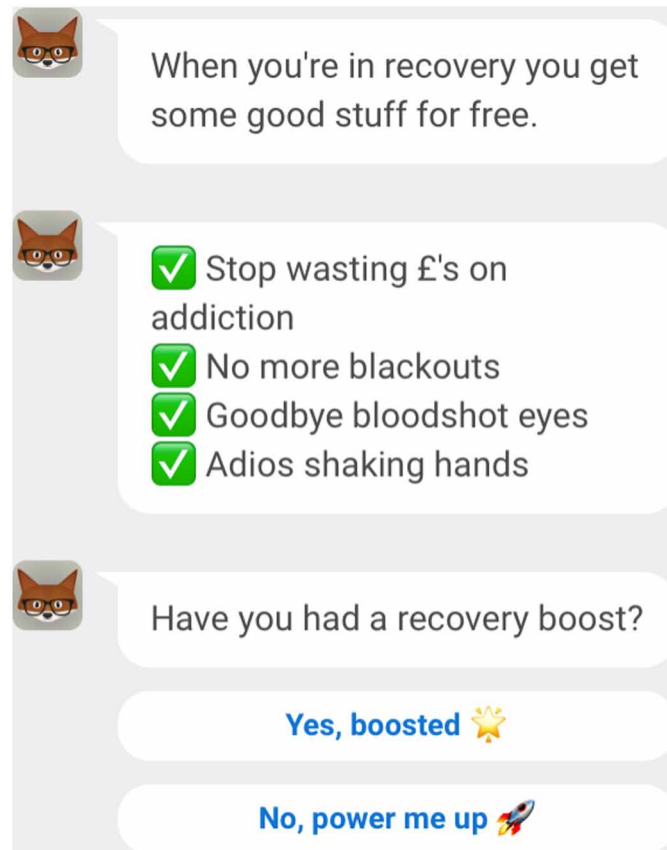


challenge is reissued. This uses gamification, which not only acts as a distraction to the craving, but it also promotes wellbeing in the moment of interaction, through enjoyment of the game (Calvo & Peters, 2017).

Reality Check

In addiction recovery, complacency is considered a risk to long-term recovery. It is an example of memory extinction, where the consequences of addiction are not recalled, with the impact and precision they once were. This can lead to past cues activating a maladaptive thought pattern such as, “*This time will be different*” or “*I’ll only have one*” (Rafei, Rezapour, Bickel & Ekhtiari, 2021). To counteract this, the reality check intervention allows users to ask Foxbot to provide them with a reminder, that will confront the complacency they are feeling. The response given is intended to be relatable to those who understand the lived experience of addiction. For example, Foxbot will respond with statements such as, “*Remember when if you were seen with a water bottle, there was probably vodka in it*”, “*Remember sobering up when you patted your pockets and couldn’t find your phone*” or “*Dear alcohol, we had a deal where you would make me funnier, smarter, and more popular... I saw the video... you lied*”.

Figure 4. Recovery boost intervention.



Recovery Boost

Recovery capital is the sum of the assets an individual has to sustain their recovery. It includes internal resources such as resilience, personal wellbeing, and self-awareness, as well as external assets such as social connections and mutual support (White & Cloud, 2008). It is not fixed, assets can be continually acquired and strengthened, effectively boosting recovery. Users can boost their recovery capital by connecting to Foxbot and asking for a recovery boost. The response given is intended to provide a clear reminder of the inherent benefits of living in recovery, see Figure 4.

This intervention works as a gratitude list, capitalising on the fact that most addicts in recovery will be able to identify with some, or all of the content on the list. Gratitude has been linked with improved wellbeing and increased life satisfaction (Niemiec, 2018; Carr, 2020), and using technology as a conduit for disseminating this to the wider audience, has significant potential in increasing the wellbeing of larger recovery populations (Calvo & Peters, 2017).

Being Triggered

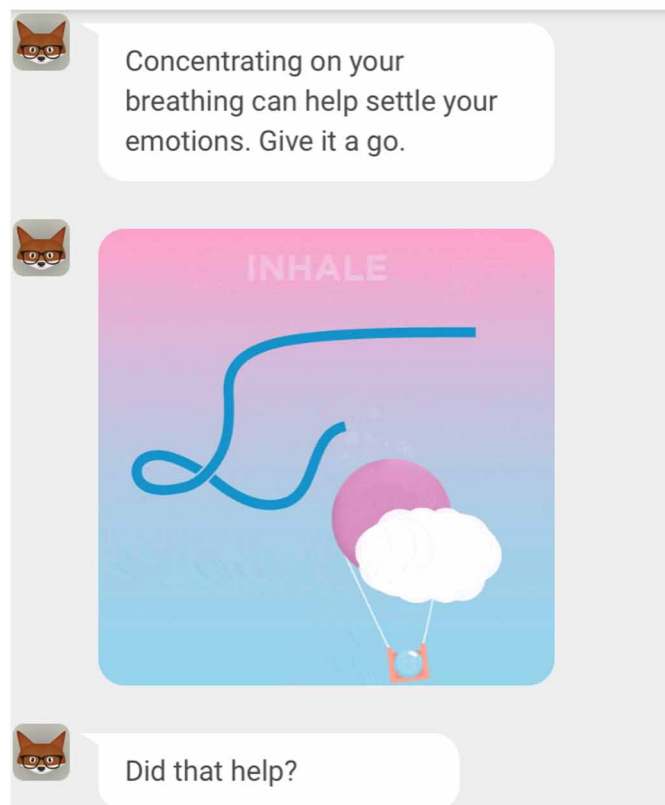
Being triggered presents a risk to those in addiction recovery. Moments of vulnerability, that can result from unexpected and adverse events or situations, can tempt those in recovery to return to addiction as a coping strategy (Kelly, Greene, Bergman, White & Hoepfner, 2019; DiClemente, 2018). To help

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with this, users can tell Foxbot they are being triggered, when they will be reminded that it is ok to feel sad, scared, or angry because of something upsetting happening to them. Prospective users felt this was an important message to convey, to quell feelings of guilt brought on by the contemplation of addictive behaviour.

Mindful breathing is known to settle heightened emotion (Carr, 2020). In positive computing, supporting mindfulness through technology mediated support encourages what is termed embodied experience, where reassuring sensory guidance is presented through technology (Calvo & Peters, 2017). Foxbot does this by displaying an animated breathing exercise within the chat session, (see Figure 5). A delay is programmed into the dialogue to ensure the user has had sufficient time to work through an inhale and exhale cycle.

Figure 5. Breathing exercise.



Once the user has completed the breathing exercise Foxbot suggests how to help deal with future triggers by reframing negative situations using positive reappraisal, to understand what has and can be learnt from previous discomfort (Niemic, 2018).

Emotionally Responsive Interactive Client (ERIC)

Concept

ERIC is an interactive counselling client who conveys emotion. The idea behind ERIC was to use the chatbot platform to respond to trainee counsellors, as if they were engaged in a counselling session. The decisions they make based on their counselling skill, determines how their interaction with ERIC progresses. Research looking at the anthropomorphic characteristics of conversational agents, describe chatbots as social actors capable of eliciting a response from users comparable to interpersonal communication (Feine, Gnewuch, Morana & Maedche, 2019). ERIC uses this capability to simulate a counselling session in attempt to convincingly test the trainee's skills, without the need to enlist an actual client. This realises an approach to learning that promotes self-study (Neumann et al., 2021), further enriching it with systemised components to practically study counselling. A further novelty to this implementation, is in the role that ERIC assumes. Unlike more conventional chatbots designed to impart and collect information (Adamopoulou & Moussiades, 2020), ERIC offers information in the form of a response with a nuanced reaction based on the trainee interaction.

Chatbots can be programmed to assume different personas (Almahri, Bell, & Arzoky, 2019). As previously discussed this can be in their rendering of a role, for example, mentor or educator (Wollny et al., 2021; Quiroga Pérez, Daradoumis & Marquès Puig, 2020), or in their portrayal of certain characteristics (Chaves Steinmacher & Gerosa, 2020), such as verbal style or visual appearance (Feine, Gnewuch, Morana & Maedche, 2019). The ability to develop chatbots to interact in the context of different personas led to the the idea to introduce a third system agent or tutor to the application; meaning ERIC is the client, the trainee is the counsellor, and the third agent is the tutor. In educational settings trainee counsellors are encouraged to practise their skills in a triad comprising a counsellor, client, and observer. The observer offers feedback on the use of skills demonstrated by the counsellor in the session (Smith, 2016). In accordance with this, in this implementation the tutor observes the session and offers feedback, also taking responsibility for facilitating the training.

System Design

Learning from prior evaluation of chatbots in education (Wollny et al., 2021; Bahja, Hammad & Butt, 2020; Smutney & Schreiberova, 2020), the system design was directed by people who have recently studied counselling and met the level of proficiency set out by the British Association for Counselling and Psychotherapy (BACP). This ensured it was sensitive to the needs of trainee counsellors and relevant to the expected professional standards that trainee counsellors should reach. Furthermore, educators conversant with teaching counselling to the level necessary to practise in the UK, were also consulted. From this a prototype educational chatbot was developed.

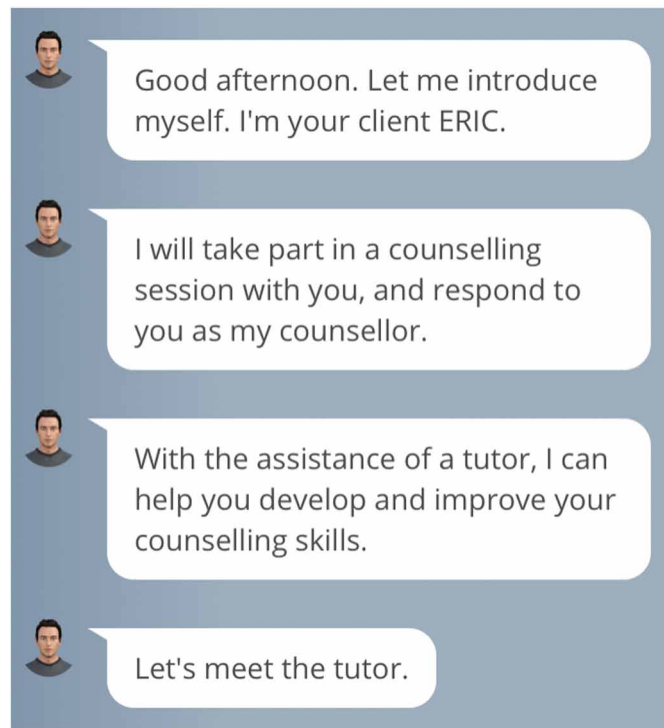
The Presenting Client

Programming a chatbot to employ a suitable persona for the objective of the implementation makes the user encounter more convincing (Almahri, Bell & Arzoky, 2019). For this reason, a credible identity was created for the client, one cognisant of the importance of raising awareness of mental health among men, where research has shown they are less likely to engage with mental health services, also having

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a disproportionately higher risk of suicide (Sagar-Ouriaghli, Godfrey, Bridge, Meade & Brown, 2019). The chosen persona was a young man who is experiencing problems in his personal and work life. The client is married, in employment, and has children, (see Figure 6).

Figure 6. The client ERIC



The Triad Method of Interaction

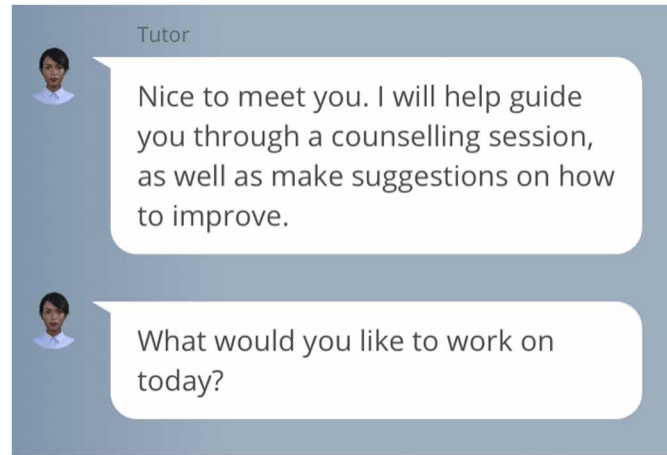
To facilitate the counselling triad, the tutor persona was introduced to the chatbot prototype, see Figure 7, completing the counsellor (trainee), client, observer triad.

Control of the dialogue in the session is passed between ERIC, the tutor, and the trainee. This method of interaction operates such that the tutor has the responsibility of inviting the trainee counsellor to begin the session, also emerging in the session to indicate when ERIC has finished talking and is waiting for a counsellor response. The tutor also presents herself at the end of the session to offer feedback as the observer or enable the trainee to begin a new session to refine their skills.

Session Funnels

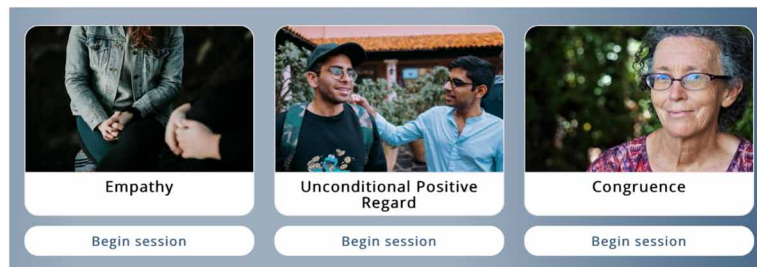
Two approaches for the format and delivery of sessions were considered. Skills based and emotion based. With trainee counsellors selecting either the area of skill they would like to practise, or the type of client emotion they want to work with. In line with humanistic modalities of therapy, where the skills necessary to facilitate the therapeutic relationship are fundamental to the effectiveness of the counselling

Figure 7. The Tutor persona



process (McLeod & McLeod, 2011), a skills-based approach was adopted. Central to the therapeutic relationship, are the core conditions of empathy, unconditional positive regard (UPR), and congruence. Identified by Carl Rogers in his seminal work on the necessary and sufficient conditions of personality change (Rogers, 1957), they are now considered the building blocks of the facilitative counselling relationship (McLeod, 2019). Because of their importance to the counselling profession, the sessions have been funnelled by these 3 core conditions, (see Figure 8).

Figure 8. Counselling sessions based on core conditions



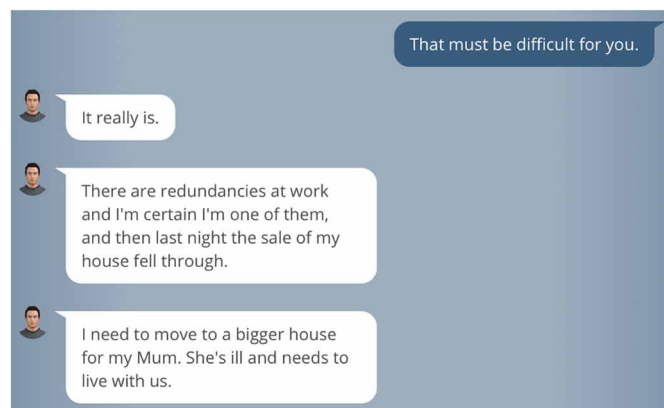
In addition to this, session funnels were used due to the level of algorithmic complexity necessary to deliver a chatbot, whose communication patterns are driven by emotion without a structured decision-making procedure in place. Consequently, a chatbot modelled on the core conditions, that can express emotion within a structured framework, was gauged as feasible for the delivery of a prototype system. Whilst each funnel has the primary focus of a core condition, it does not mean it is the only skill that feedback will be given on. Trainees are also offered the opportunity to consider other skills within the remit of the counselling session.

Counselling Sessions

Empathy

When a counsellor shows empathy toward a client, they are letting them know they are understood and that they can appreciate their perspective. It is necessary for counsellors to recognise the client perspective to authentically provide a helpful relationship. If a client does not believe they are understood, they will not feel secure in the counselling process (Egan, 2014). This session offers the trainee the opportunity to demonstrate empathy. It is initiated by the trainee choosing what to first say to ERIC, for example “Tell me about your problems”, “How do you feel today”, or “What do your family think about you being here?”. From this point, the dialogue is open, and a reply can be given. The reaction ERIC gives affords the trainee the opportunity to respond with empathy through choice selection. For example, if the trainee responds to ERIC with an empathetic response of “That must be difficult for you”, ERIC feels able to talk about what is troubling him and responds accordingly, (see Figure 9).

Figure 9. Client response to use of empathy



If, however, the trainee responded to ERIC in a less empathetic such as “I would say you’re not thinking clearly,” the reply from ERIC looks different, reflecting this interaction and the poor demonstration of the core condition.

Unconditional Positive Regard

In counselling, Unconditional Positive Regard (UPR), refers to fully accepting the client, their way of thinking and their beliefs, without placing conditions or judgement on it. For a client to feel secure in the counselling process they must feel accepted by the counsellor (Sommers-Flanagan & Sommers-Flanagan, 2004; Egan, 2014). For the trainee to practise UPR, ERIC talks of a scenario where he has hurt his family by having an extramarital relationship. The response given to ERIC by the trainee will determine how he perceives their UPR, for example, “I think your behaviour is selfish, it has hurt your wife” or “It sounds to me like your choices have hurt your children” evoke a different response to “Why do you think you feel like that?”. The trainee will see that based on their use of UPR, ERIC will disclose more to them if

a non-judgemental dialogue is used, whereas if ERIC does not perceive UPR, the dialogue narrows and an emotive reply is given based on the trainee response and not the client situation.

Congruence

Congruence can be considered as the authenticity displayed by a counsellor in the relationship with their client. A congruent counsellor is open and honest about their feelings, which in turn helps the client feel grounded by the genuine relationship (Sommers-Flanagan & Sommers-Flanagan, 2004; Egan, 2014). In this session the trainee is presented with an opportunity to respond congruently toward ERIC, through a situation he shares about feeling demeaned by his colleagues in the workplace. A selected response of *“That’s not a nice way to feel. I would like to help you find a way to change that,”* shows ERIC the trainee is being genuine by sharing their own view on it not being a pleasant way to feel, in addition to them voicing their desire to help. Other responses that do not demonstrate congruence, for example *“You need to be more confident,”* will elicit a less desirable reaction from ERIC such as, *“That seems like an easy thing for you to say“.*

Other Counselling Skills

During each session, trainees are given the chance to use additional counselling skills. For example, where a trainee offers a response such as *“Tell me more,”* they demonstrate the use of minimal encouragement, when a counsellor subtly prompts the client to continue talking. When they respond with a question like *“Why do you think you feel like that?”* they are using an open-ended question, where the client is encouraged to continue a dialogue that cannot end with *“Yes”* or *“No”* (Egan, 2014). There are also lessons on good practice embedded within each session that the trainee can learn from. These are drawn from the expected level of professional competency a counselling professional in the UK should demonstrate (BACP, 2020). Examples of this are when a trainee seeks information from ERIC that is not pertinent to the counselling process, or when they offer their opinion and direct the client.

Emotive Discourse

Counselling is an emotional process. When a client begins, they are in a vulnerable state. They are incongruent, meaning there is a difference in how they are, and how they wish to be (Sommers-Flanagan & Sommers-Flanagan, 2004). The material they bring will have an emotional aspect to it, born from the hurt and discomfort they are feeling. To convey this reality in the chatbot counselling sessions, emotive responses have been programmed into the communication logic used. The databank that can be drawn on, includes statements that express how ERIC is feeling, such as, *“I feel demeaned”, “I’m feeling scared,” “I think I’m losing control”, “I feel responsible and ashamed”* or *“It makes me angry with myself”*. Furthermore, ERIC can show irritation and frustration, if the process is not conducted in line with good practice (BACP, 2020). For example, ill-judged responses from the trainee can result in responses such as, *“I didn’t come here for you to make me feel worse than I already do”, “You would look upset too if you had to deal with the things I do”* or *“Not you as well. People look at me with pity and I don’t like it”*.

Feedback

Feedback is derived from the decisions made by the trainee throughout the counselling session. This is presented by the tutor, who as previously discussed, is the observer to the process. There are different options open to the trainee during each session, some of which offer a suitable demonstration of the core condition and good practice, with others not meeting the standard expected within the competency framework (BACP, 2020).

The feedback itself is presented in a collated form for the trainee to reflect on. It is constructive, affirming where the trainee has successfully used counselling skills, as well as where there are areas for improvement. Observation on the cumulative use of skills throughout the session is also presented.

The following statements are examples of feedback given when areas for improvement have been observed:

You started by asking ERIC “What do your family think about you being here?”. This question diverts focus from your client and their counselling needs. It is also presumptuous of the counsellor to assume their client has a family they wish to talk about. Requesting information from your client that is not necessary for clarification in the counselling process should be avoided.

Your next response to ERIC was “I would say you’re not thinking clearly”. This caused your client to believe there was a problem. Also, it was counsellor opinion, which may not be accurate.

Your last response to ERIC was “What can I do to make things easier for you?”. The role of a counsellor is not to fix your client but to encourage autonomy so they might find their own solutions.

Examples of feedback affirming when the core condition or other counselling skill have been demonstrated are:

You started by asking ERIC “What brings you here today?”. This was a good opening question, as it invited your client to tell you what they want from counselling.

Your next response to ERIC was “Tell me more”. This shows use of minimal encouragement, where you encourage your client to continue talking.

By asking an unambiguous question such as “What brings you here today?” followed by “Tell me more” you are encouraging your client to direct the conversation toward what matters to them.

Your last response to ERIC was “Why do you think you feel like that?”. This question encourages your client to consider why a situation evokes certain feelings.

You showed unconditional positive regard for your client by responding to them without judgement or opinion on their behaviour.

DISCUSSION

There is a lack of empirical research in the prevailing literature on chatbots and mental health (Abd-Alrazaq, Asma, Alajlani, Bewick, & Househ, 2020; Denecke, Househ, & Abd-alrazaq, 2021; Patel, 2021). A possible reason for this is that chatbots often exist for the life of a specific study or technological window, before they are considered outmoded or redundant. In terms of increasing knowledge this presents a challenge as the chatbots are not always available for follow up work or comparative study (Vaidyam, Wisniewski, Halamka, Kashavan, & Torous, 2019). Furthermore, the swift implementation cycle seen from chatbot development platforms is liable to promote the use of disposable short-term solutions, in turn affecting the standard and quality of the content and solution design. This adds credibility to the argument that targeted system design through user-led experience and subject matter experts, is an important component to successful chatbot implementations, where applied theory can be assessed against understood outcomes (Chaves Steinmacher & Gerosa, 2020; Følstad & Brandtzæg, 2017; Bahja, Hammad, & Butt, 2020).

Chatbots within mental health services are not as well represented as in other areas of healthcare (Mladan, Baez, & Casati, 2021). The reluctance of both professionals and clients to engage has been considered in previous research (Nadarzynski, Miles, Cowie, & Ridge, 2019). This suggests that uptake has been hindered by concerns over perceived accuracy, immature technology, adherence to an ethical framework, and lack of authenticity in HCI (Nadarzynski, Miles, Cowie, & Ridge, 2019; Adamopoulou & Moussiades, 2020; Abd-Alrazaq, Asma, Alajlani, Bewick, & Househ, 2020). Technological improvements have addressed some of these concerns, and as the resultant solution choice increases, the practical potential for chatbots within mental health is receiving greater attention (Denecke, Househ, & Abd-alrazaq, 2021). Moreover, recent usage patterns have changed, partly due to an evolving technological landscape but also due to supporting the health needs of entire populations, during the COVID pandemic (Adamopoulou & Moussiades, 2020). The emerging acceptance of chatbots in mental health is perhaps best reflected by the growing array of condition and situation specific solutions available to users, with examples ranging from chatbots which support those suffering from mental health conditions such as depression and anxiety, to those that help educate and support people achieve behaviour change in a bid to improve mental wellbeing (Díaz & Pereira, 2019; Vaidyam, Wisniewski, Halamka, Kashavan, & Torous, 2019; Abd-Alrazaq, Asma, Alajlani, Bewick, & Househ, 2020).

In this chapter, two new chatbots have been showcased, Foxbot and ERIC. In many cases chatbots such as these do not strictly apply AI, instead working on rule and decision-based logic and the selection of content relevant data (Chaves Steinmacher & Gerosa, 2020; Abd-Alrazaq, Alajlan, Ali, & Bewick, 2019). For example, when Foxbot converses with the end user, it is through a series of questions, to ascertain what they are experiencing, along with the affect the interventions are having on them. This is combined with a data bank of validated content that can be drawn on when generating the dialogue. Similarly, ERIC is driven by trainee decisions in the counselling process, again drawing on content appropriate responses. The implementation of such chatbots is simpler, does not require the chatbot to learn from its userbase and offers a reliable experience accurate to the programmer's intent (Thorat & Jadhav, 2020; Singh & Thakur, 2020). For a chatbot to be a convincing simulation of a human actor, it is necessary to computerise emotional intelligence, giving the chatbot the ability to converse with realistic and appropriate sentiment based on unforeseen user input (Denecke, Househ, & Abd-alrazaq, 2021; Feine, Gnewuch, Morana, & Maedche, 2019). Rule based chatbots do not truly achieve this. Interaction is predetermined by scripted logic which is driven by expected user input (Chaves Steinmacher & Gerosa, 2020).

The quest to anthropomorphise chatbots to relay an ever more convincing and realistic conversation continues. Perhaps the biggest challenge to this, and consequently an area of great interest to chatbot development, is systemising sentiment and empathy (Patel, 2021; Morris, Kouddous, Kshirsagar, & Schueller, 2018), so that the chatbot can learn from and understand what support the user needs and respond appropriately. This is important to mental health services, including counselling and psychotherapy (McLeod & McLeod, 2011; Egan, 2014), and carries the responsibility of the duty of care being afforded to the end user. Previous study has shown ambiguity in the quality of research available on the safety of chatbots in mental health, raising concern that chatbots can adversely impact wellbeing (Abd-Alrazaq, Asma, Alajlani, Bewick, & Househ, 2020), with examples cited of chatbots having caused insult and potential harm (Denecke, Househ, & Abd-alrazaq, 2021; Ogilvie, Carson, & Prescott, 2021a).

A fundamental ethical principle in all healthcare is non-maleficence (McLeod & McLeod, 2011), where the helper should, above all else, do no harm. To safeguard this principle, professionals in mental health services adopt an ethical framework such as the BACP ethical framework (BACP, 2020). To ensconce this responsibility in an AI agent, would require a high degree of confidence in the behaviour of the computerised actor, in relation to their conduct and knowledge of an ethical framework, a confidence currently limited by contemporary technological capability (Denecke, Househ, & Abd-Alrazaq, 2021). This offers reason for the relatively slow uptake of chatbots in healthcare using AI (Adamopoulou & Moussiades, 2020) as opposed to rule based solutions where the chatbot leads the conversation (Abd-Alrazaq, Alajlan, Ali, & Bewick, 2019) and the preference for chatbots such as ERIC and Foxbot to assume more of a coaching or training role, as opposed to one that would require relational depth with the end user.

The delivery medium provides challenges beyond conveying sentiment and empathy. There are other characteristics such as body language, tone of voice and facial expression that support social discourse. In counselling, recognising this is part of a skillset that therapists are expected to possess and develop to better understand their clients (McLeod & McLeod, 2011; Sommers-Flanagan & Sommers-Flanagan, 2004; Egan, 2014). Furthermore, understanding such communication is considered a two-way process, where the counsellor needs to adopt the right manner to congruently underpin what should be a trusting and helpful relationship. This is similarly true for establishing a friendly rapport, where active listening and appearing trustworthy are considered instrumental to the process (Egan, 2014). These distinctly human components to communication are not well represented by chatbots, with Foxbot and ERIC being no exception. Whilst evolving online communication suggests there is potential for the future enhancement of chatbots to improve non-verbal communication, as an example, where emojis and user generated memojis recognise words or phrases and suggest an appropriate animated expression, the level of sophistication is not at the stage where it could be applied to chatbot development to enrich the personas presented to users.

LIMITATIONS

The chatbots in their current state are not finalised end solutions. ERIC is a prototype and Foxbot is the preliminary output of what is intended to be an iterative development process. To evaluate their genuine potential the chatbots have yet to be the subject of quantitative study to measure the efficacy and accuracy of the current functionality to the target population, as well as qualitative analysis to gather stronger empirical data to feed into a more conversant and user-led design process (Bahja, Hammad,

& Butt, 2020). To address this ERIC is scheduled to enter a pilot stage with students enrolled on counselling related courses at the University of Bolton and University of Manchester, and Foxbot is to be made available to users via a bespoke website, where feedback will be sought to refine and enrich the interventions presently offered (Positively Sober, 2021). Awareness of this will be disseminated to users through addiction treatment centres and targeted media publication (Ogilvie, Prescott, & Carson, 2021b). On completion of these research projects, the accomplishments of both chatbots can be discussed with evidential backing, a limitation to the present synopsis.

The current solutions have been created using a generic chatbot development platform and have therefore been limited by the functionality typically available in this development approach. If justified by the findings of the proposed research, a more technically rich development framework can be invested in (Thorat & Jadhav, 2020), along with specialist AI technical expertise to move both solutions forward in their value to the end user and mental health education and services.

FUTURE DIRECTION

As previously discussed, Foxbot and ERIC are in the early stages of their respective implementation life-cycles, with both planned to be the subject of more rigorous study. It is anticipated that this will provide the needed input to enhance the functional offering of both chatbots and improve their future efficacy. The upcoming plans for ERIC are to deliver an enriched training environment, where the session funnels are extended to include a more comprehensive range of options, for example, working with certain mental health conditions, specific emotions, or range of client histories. In addition to this, trainee counsellors will be able to run sessions to better prepare themselves for the diversity they as counsellors will likely encounter. These extensions will also provide more experienced counsellors a platform to refresh their skills, and potentially practise different modalities of therapy.

As has been discussed, in counselling non-verbal communication captured through human expression supports the therapeutic relationship and understanding of the client. Capturing the essence of human expression is an important part of developing virtual reality experiences, and necessary for the future use of virtual actors in experimental psychology (Fysh, et al., 2021). To date, there has been limited work on virtualising clients (Shorey, et al., 2019), however, as the use and sophistication of virtual reality advances, and applied AI begins to display a more convincing level of emotional maturity, it is envisioned that descendants of ERIC will operate on a virtual platform, where the systemised actor plays a more palpable incarnation of the client. Virtualising chatbot personas would also afford Foxbot the ability to personify the character strengths and affable personality, expected in the role of recovery friend.

It is hoped that eventually Foxbot will learn about recovery from the users in a bid to self-develop the role of recovery friend. For example, what support do the users pursue, under what circumstances, and which type of intervention is most effective for them. This will likely require a system overhaul to employ a more sophisticated design framework that benefits from superior AI capability (Patel, 2021; Adamopoulou & Moussiades, 2020; Singh & Thakur, 2020). In addition to using AI to learn user trends it is also hoped that as the technological emotional intelligence of chatbots matures to levels closer to what is expected from human agents in order to foster relational depth (Chaves Steinmacher & Gerosa, 2020; Morris, Kouddous, Kshirsagar, & Schueller, 2018), Foxbot will learn how best to respond to users, so they relate to him as their own friend. In learning about recovery, it is hoped that Foxbot will be identified as a character from within the recovery community, that like others within this community,

possess personal strengths and the ability to develop their own recovery reserves (Ogilvie, Prescott, & Carson, 2021b).

CONCLUSION

In this chapter, two new and innovative chatbots have been showcased. Foxbot, a recovery friend, accessible at the point of need to help mitigate some of the common risk factors to sustaining addiction recovery; and ERIC, a counselling client who allows trainee counsellors to practise their counselling skills in a triad, without having to enlist a client or observer. The importance of developing chatbots to meet the needs of the target population through user-led and subject matter expert consultation has been highlighted, with the resultant informed design process yielding two functionally appropriate resources for counsellors and recovering addicts. The need for greater attention to the empirical study of chatbots within mental health services has been discussed, along with the challenges this presents. The developmental stage of both chatbots has been described; ERIC as a prototype, and Foxbot the first version of an iterative development process. The forthcoming plan for both chatbots has been outlined. Pertinent to this is greater investment in the use of AI along with the completion of a research project evaluating their efficacy in terms of user engagement and measured outcomes.

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Chapter 14

Telepsychology: Does it Bridge the Social Justice Theory and Action Gap?

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ABSTRACT

Telepsychology, until recently, was slow-moving and half-heartedly acknowledged in the mental health profession. There is increasing scholarly discourse on the digital therapeutic space. This shift to a digital paradigm means re-evaluating the profession's identity. This chapter considers telepsychology in relation to social justice. It highlights access for underserved groups and the digital divide that limits a substantial population from accessing online services. It identifies the need to integrate telepsychology in community psychology interventions, a significant framework to challenge systemic inequalities in mental health. It outlines the inadequacy of the profession to support needs of diversity in the field and considers if telehealth is one way to bring a shift in the homogenous identity of the profession. Telepsychology has the potential to amplify adherence to social justice principles; however, this requires evolved responses on individual, institutional, and systemic levels to bring unconventional but substantial changes in training, research, and regulatory guidelines.

AUTHOR'S NOTE

Being a counselling psychologist in training in the United Kingdom and a member of the mental health profession in India for the past several years I've always had an affinity towards in-person work, towards being present in a shared physical space with another individual and working therapeutically with them. The recent global pandemic led to change in circumstances thereby altering ways of offering therapy and receiving training, supervision, and personal therapy. With having always deemed telepsychology as less favourable, having to immediately embrace telepsychology leaving all prior reservations and biases about it aside felt conflicting. At that point, it became essential to reflect and identify how telepsychology helps to adhere to the fundamental principles and values of the profession. Aligning telepsychology

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work with core values can be helpful to identify the value of the work that is being achieved and services that are being offered whilst also considering the implications it may have. In this chapter I consider the ways in which telepsychology commits to values of social justice and the limitations that come along with it. I specifically focus on increased access and digital divide as a result of technology, community psychology which has been cited as an important intervention in challenging systemic injustices, and lastly the considerations of telepsychology and training in the mental health profession.

INTRODUCTION

The British Psychological Society in their Code of Ethics and Conduct (2018) highlight the need to address ethical challenges that may arise as a result of technological changes and innovations as well as dangers that may be caused due to climate change and global conflicts. Established by the British Psychological Society in the 1900s in United Kingdom, counselling psychology is influenced by the humanistic value system and is built on the principle of self-determination wherein individuals have the right and capacity to choose what is best for them. There is focus on adopting collaborative, non-hierarchical, and egalitarian relationships with individuals. The Division of Counselling Psychology Professional Practice Guidelines (2005, p. 2) state that counselling psychologists must ‘recognise social contexts and discrimination and to work always in ways that empower rather than control and also demonstrate the high standards of anti-discriminatory practice appropriate to the pluralistic nature of society today.’ This highlights the need for counselling psychology to identify social context and work using a multicultural lens, however, the profession of counselling psychology has been previously criticised for failing to adopt an explicit multicultural and socially just identity for itself (Moller, 2011; Cutts, 2013). This has shifted in the last several years and there now is growing literature about social justice, diversity, and multiculturalism thereby bringing about a change in the counselling psychology identity (Tribe & Bell, 2018).

SOCIAL JUSTICE

To arrive to a conclusive definition of social justice in the mental health profession has been difficult. Various explanations for social justice exist with emphasis on various factors such as working to address inequalities (Speight & Vera, 2004), equity wherein services, opportunities, and resources are distributed based on need (Kagan, et. al, 2011; Chung & Bemak, 2012; Crethar & Winterowd, 2012;) as well as choice to engage in decision-making (Cutts, 2013). Cutts (2013, pp, 9-10) defines social justice as ‘a goal of action and the process of action itself, which involves an emphasis on equity or equality for individuals in society in terms of access to a number of different resources and opportunities, the right to self-determination or autonomy and participation in decision-making, freedom from oppression, and a balancing of power across society.’ The commitment to social justice in the profession has been growing and there have been manifold attempts to explain and define social justice. However, several concerns have been voiced regarding the translation of social justice theory to action (Speight & Vera, 2004; Cutts, 2013). Several studies outline ways in which professionals can move from a social justice theoretical lens to an action-oriented stance and integrate the same in their work. These involve micro and macro steps that practitioners can adopt to adhere to social justice principles. One can begin to read, learn, and reflect on their own power and privilege (Goodman, et. al, 2004; Winter, 2019). Assuming a non-expert

position, adopting a collaborative approach, addressing socio-political elements of individuals lives and incorporating the same in therapeutic formulations are some of the important steps a practitioner must incorporate while therapeutically working with individuals (Tribe & Bell, 2018; Winter, 2019). Adhering to social justice values in the psychological profession also signifies moving beyond the individual and advocating on a wider scale such as taking a public position and influencing public policy, engaging in preventative and outreach work as well as using larger platforms such as digital media. Further, adopting an active and collaborative community psychology approach to network with larger groups and work with the community to address systemic issues (Winter, 2019; Tribe & Bell, 2018; “Guidance for psychologists on working with community organisations | BPS”, 2018). This is not an exhaustive list and covers some of the broad ways practitioners can engage in work that helps them take a socially just approach in their work. One of the significant missing suggestions in this list in today’s digital age is the use of telepsychology and whether it aids in adhering to social justice work on individual and systemic levels. The year 2020 saw technology being the driving force of the mental health profession globally. Although several strengths and limitations of using the digital space for offering services and carrying out other related activities have been identified and highlighted, telepsychology is missing from the research discourse about the social justice values of the profession. The pandemic saw an exponential increase in the use of technological infrastructure for training, offering therapeutic services, receiving supervision, and personal therapy. Owing to the increase in this use, it has now become essential to consider the implications of telepsychology and its adherence to the counselling profession’s fundamental value of social justice which has been argued as the fifth force of the profession (Ratts, 2009).

TELEPSYCHOLOGY

The growing and fast-moving technological landscape is changing and influencing every aspect of our lives. This was further reinforced by the WHO (2020) declared global pandemic Covid-19 that required us to resort to the digital space for small and big tasks alike. The National Health Service has been working on a long-term plan that focuses on digital health (2019), however, The New York Times (Mueller, 2020) was quick to report how a decade worth of change arrived in a week in the United Kingdom with telemedicine as a result of the pandemic. Prior to the recent global events, telepsychology was being utilised by practitioners on a small scale for purposes such as communication about appointments and sharing resources. With this current rising trend it can be safely assumed telepsychology is an idea whose time has come. Nickelson (1998) defined telehealth as ‘the use of telecommunications to provide health information and care across distance.’ This involves the delivery of psychological services via digital media. These include emails or text messages used for communication or to share information and resources. Psychological therapy offered via digital media is offered either via synchronous modes such as telephone-delivered therapy, videoconferencing, instant chat, or/and asynchronous modes such as email, mental health apps, and internet-based programs (Reay, Looi, & Keightley, 2020; Varker, Brand, & Ward, 2019). This inadvertent shift to the digital paradigm as an interim response to the pandemic has given organisations very little to give up already set technological infrastructure to maintain flexibility and increase accessibility of therapeutic services (Blumenstyk, 2020; Tuerk et al., 2019). The British Psychological Society (2017) highlights the need for practitioners ‘to make adjustments where possible and needed, to enable people to fully participate, e.g. to communication, access to services, adaptation to materials and psychological assessment and interventions; make services accessible in terms of time,

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space, familiarity and comfort; make reasonable adjustments to services to meet individuals' needs; people need to be able to get to places, get into places, feel welcomed to places and feel that they belong in places' whilst adhering to social inclusion tenets. Services and practitioners that adopt telehealth practices must consider its impact on service users, accessibility, influence on relationships with the client, and opportunity for equitable, effective, and quality services (Fleming, Edison, & Pak, 2009). Telepsychology offers counselling psychologists an unmatched possibility to work whilst committing to the profession's core values and principles (Cooper, Campbell, & Barnwell, 2019). Telepsychology is here to stay, and its innumerable benefits have been frequently outlined. However, attached to telehealth are manifold legal and ethical considerations as well as pitfalls. The rapid and interim response to the pandemic has also led to discovering the gaps in offering online psychological services such as the lack of research in the field, minimal funding opportunities as well as the narrow preparedness of the profession to uptake online therapy. Along with the strengths and limitations of the field, it has now also become crucial to identify the elements of telepsychology that help us commit to values of social justice.

TELEHEALTH AND ACCESS

According to the Office for National Statistics (2020), 96% households in United Kingdom have access to the internet, highlighting a substantial increase from the previous years. The current global environment and the increasing reliance on technology highlight the significance of access to technical infrastructure in this shifting landscape. Individuals who don't have access to or choose not to engage with digital platforms are at risk of being left out. These inequalities in access lead to a visible digital divide in the society thereby causing differences in the way individuals acquire information, opportunities, and services. Along with access to technical infrastructure, digital literacy is a crucial aspect to enable individuals to safely navigate digital spaces and software. Although the number of people who have not used the internet previously or in the last three months in the United Kingdom is reducing, there still remains a significant gap with 5.3 million adults falling in the category, thereby leaving them digitally excluded. Some of the reasons an individual may not use the internet include lack of interest or need, inability to use it, and financial costs of accessing the internet. Further, certain communities are more likely to be excluded than others and these are reliant on factors such as age, region, socioeconomic status, and living with disability (Lloyds Bank UK Consumer Digital Index, 2021). The profession of psychology is not exempt from these inequalities, and they are widely prevalent in the field thereby indicating the need to address and challenge them in the work we do (British Psychological Society, 2020).

Telehealth and the accessibility that comes along with it has been widely spoken about (Cooper, Campbell, & Barnwell, 2019; Stoll, Müller, & Trachsel, 2020; Turner, Brown & Carpenter, 2018). However, it is important to note that this accessibility is under the assumption that everyone has access to technological infrastructure, is digitally literate, and has the skills required to safely navigate the online space to access mental health services. Telepsychology has been eminent in amplifying mental health services; however, it is necessary to identify and engage groups that may remain excluded as a result of the current digital divide. The existing discrimination in access to traditional mental health information, training, and psychological services for 'hard-to-reach' communities is widely evident. Various factors may contribute to an individual or group being referred to as hard to reach or engage, these include belonging to an ethnic minority group which may lead to having different cultural needs from services, individuals seeking asylum or experiencing homelessness, person with varied mental health difficul-

ties (Bristow et al., 2011). However, it is important to address the existing power dynamic in the term 'hard-to-reach.' Labelling groups as hard-to-reach does not absolve the profession of the responsibility to develop services and interventions that are accessible by all. Terming groups as hard to reach assumes similarity in contrasting groups for example, ethnic or gender minority communities, groups differentiated based on age, region, etc. thereby indicating limitations of groups to access mental health services rather than highlighting failure of the profession to develop services and interventions that are catered to and can be accessed by all thus enhancing scalability and reach. This further highlights the privilege and exclusion that exists in the profession (Bucci et al., 2019; Kalathil, 2013).

The mental health disparity in the Black, Asian, and minority ethnic population is apparent with lower engagement in services and poor rates of initiation and retention in treatment (Vahdaninia et al., 2020; Dixon et al., 2016). Various factors lead to ethnic minority populations choosing not to access or utilise available mental health services. These could be lack of available mental health services in the vicinity, inadequate funds for travel, mobility concerns for individuals living with physical disability, systemic and cultural factors as well as unfavourable treatment in mental health service environments (Kapke and Gerdes, 2016, Schmitt et al., 2014; Cooper, Corrigan & Watson, 2003; Bansal et al., 2014) thereby suggesting a need for making services more accessible. In a review conducted looking at mental health services for BAME, it was found that most accessible services were setup in communities and schools, thus emphasising the need for services outside the traditional settings (Vahdaninia et al., 2020). Telepsychology services have been so far considered outside the realm of traditional settings and hence it would be essential to identify whether services via the digital media could be employed to increase access and reduce barriers to access services for minority populations.

It has been identified that older adults are less likely to engage with technology (Office for National Statistics, 2020) thereby leaving them at higher risk of not accessing tele psychological services for mental health difficulties. The existing literature looks at experiences of young people seeking online support for psychological difficulties (Beattie, Shaw, Kaur & Kessler, 2009; Hanley, 2009; Dunn, 2017; Fang, Tarshis, McInroy & Mishna, 2017), however, there is a dearth of literature that particularly looks at older people's experiences of accessing technology for online psychological therapy. Owing to this, whether online therapy increases access for older adults or not is a question that fences on scepticism and can be answered by conducting research and opening conversation around it.

It is also essential to consider the role of telepsychology for individuals and groups in low-resourced regions and countries. Select communities and groups are more likely to be excluded from mental health services owing to the region they belong to. Individuals in low- and middle-income countries may experience added difficulty to address and receive support for mental health difficulties as a result of limited or no access to appropriate mental health care services. Most individuals in these areas do not have access to mental health care, however, they do have access to mobile phones. Despite the large-scale accessibility to rural areas, disaster zones, etc, technological interventions may lead to a further divide between individuals and communities who have access to smart phones and those who do not in low-and middle-income countries. These could include individuals living in poverty-stricken regions, women who may not have access to technological devices, people living in areas without electricity or network coverage (Naslund et al., 2017). Adopting a socially just approach in telepsychology would require the profession to address structural and systemic barriers to make services accessible to those who most need it but may not have the means for it.

To discuss every identity or characteristic of individual or groups is outside the scope of this chapter, however, this also highlights the significance of considering intersectionality and the multiple over-

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lapping social systems of power (example, capitalism, heterosexism, racism, sexism, ageism) thereby challenging them when practicing via digital media to truly abide by social justice principles. The term intersectionality was coined by Crenshaw (1989) and refers to the overlapping and interconnected interaction between multiple identities such as race, class, gender and how they are addressed differently by various systems of power and discrimination. It is crucial to consider social group memberships and the structural power inequalities that exists amongst these groups as a result of holding privileged or disadvantaged positions. This leads to individuals experiencing inequalities and discriminations on the individual and structural level (McCormick-Huhn, Warner, Settles, Shields, 2019). Buchanan & Wiklund (2020) outline the increasing need to address and challenge the various forms of marginalisation and oppression that individuals experience as a result of these intersecting identities and the power differences that exists within them. Tribe (2018) highlights how services are usually developed to address a single issue thereby not being adequately favourable for individuals' experiencing oppression or discrimination. When offering mental health services via digital media, it is important to ensure certain individuals are not at higher risk of being disadvantaged owing to their positioning in the society. For example, an older individual experiencing homelessness in a low- and middle-income country is much more likely to be digitally excluded as a result of multiple layers of social oppression.

Lastly, alleged increase in access to services also leads to inaccessibility of various overt and visible cues of differences that may exist between the practitioner and client when using digital media such as chat or audio. These make a significant part of the conversations in therapy and aid in offering culturally sensitive services. Thus, to ensure socially just accessible psychological support, it is important to embed in training how conversations about relatively sensitive subjects can happen safely online. Thereby, along with amplification of access to services, there are various considerations of how telepsychology may put certain individuals and groups at further risk of being excluded or not receiving culturally minded and socially just interventions and services, hence highlighting the need for increase in research and training opportunities in this area.

COMMUNITY PSYCHOLOGY AND TELEHEALTH

The mental health profession has been criticised for its extensive focus on philosophical underpinnings and cultural values of individualism. Its emphasis on therapeutic approaches that solely focus on the individual acts a barrier in acknowledging socio-political reasons that may cause or worsen mental health difficulties experienced by individuals. Individualism places the reasons for psychological difficulties and responsibility of seeking support on the individual thereby dismissing any systemic and institutionalized factors that may have led to this. This leads to offering support to cope with problems that may arise, however, do not necessarily challenge institutionalised oppression and inequalities (Vermes, 2017; Orford, 2008). It is necessary that psychological difficulties be systemically explained thereby highlighting the need for socially just interventions to respond to them.

Community psychology has been one of the significant approaches in responding to and challenging social inequalities that lead to mental health difficulties. It has often been recommended as an actionable way of meeting social justice principles while working in the counselling psychology profession (Chavis & Newbrough, 1986; Tribe & Bell, 2018; Winter, 2019). It drives on the principles of acknowledging and challenging the social context and setting of the individual to fully apprehend their well-being. It identifies injustices and inequalities in structural arrangements of power and capital hence highlighting

the little power that individuals experiencing psychological difficulties may have over systemic inequalities. It prioritises collaborating and working together with groups and communities wherein they have shared opportunity to commission, design, and offer services (“Guidance for psychologists on working with community organisations | BPS”, 2018).

Community psychology interventions have been substantially increasing in Britain. The Community Psychology section (2010) in the British Psychological Society and the Guidance for Psychologists on working with community organisations (2018) are few examples that evidence this. This guidance outlines several examples of successful community interventions along with points of learning carried out within and outside of Britain. The interventions were carried out in non-traditional settings (example: temple), it is worth noticing, however, the minimal to no mention about digital infrastructure or modalities used in these interventions. Community psychology has been relatively silent and absent from academic narratives about the part technological infrastructures play in the ever-changing social environment and in comprehending fundamental human experiences (Stein et al., 2019). Further, the use of digital technologies as a medium of delivery for community psychology interventions has been relatively low to absent.

Telepsychology substantially makes services more accessible for underserved groups and works to cover the healthcare gap, however, this change in modality to offer services still maintains the individualistic focus of counselling psychology. Individual telehealth places the responsibility to seek support and care on the individual experiencing distress, thereby failing to address or challenge larger socio-political and economic disadvantages that contribute to mental health difficulties experienced by service users (Bucci, Schwannauer & Berry, 2019; Lupton, 2014). A remarkable example of such work comes from India, a community group action project *Atmiyata* meaning ‘shared compassion.’ This community led intervention in collaboration with local community volunteers uses digital communication and telehealth to facilitate mental health awareness and advance access to mental health and social care using community-based interventions and evidence-based counselling for underserved groups in the rural communities of India (Shields-Zeeman, Pathare, Walters, Kapadia-Kundu & Joag, 2017; Joag, et. al, 2020; “Atmiyata: A community-led intervention in rural India”, n.d.). It is imminent to adopt such approaches that will work with engaging underreached communities, those who are at risk of being left out due to the digital divide as well as those where there is significant disparity in receiving mental health care.

With the rise in digital psychology as well as community interventions, it has become necessary to identify how telehealth and digital infrastructure can be incorporated in community psychology interventions to amplify accessibility as well as ensuring the use of telepsychology moves beyond individualism and challenges oppression and inequalities as a result of being integrated with community psychology to respond in a socially effective and just manner as part of the mental health profession.

POWER IN THE DIGITAL THERAPEUTIC PROCESS

Power is an important part of the therapeutic relationship shared by practitioner and the client. People experiencing mental health difficulties come to therapy with an intent to seek help from an individual with expertise, thereby placing the practitioner in a position of power. From aspects such as where the therapy takes place, the format, structure, duration, and frequency to client and practitioner roles, societal positions of them, as well as their personal histories all contribute to the power and powerlessness of practitioners and clients in the therapeutic space (Proctor, 2017). Spong (2012) describes power-sensitised counselling outlines a socially just view of equal access to services along with reducing power inequali-

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ties that may exist in the therapeutic relationship. It is important to consider whether telepsychology contributes to this. Several studies have found practitioners experienced a shift in power whilst offering telepsychology services as a result of having a shared digital space between the therapist and client with the client having agency over choosing their own setting and modality for therapy (Fletcher-Tomenius & Vossler, 2009; Mitchell, 2020). This experience of reduced power by therapists' points towards minimising power imbalances, however it is crucial to acknowledge a reduction in power experienced by practitioners does not necessarily imply a similar shift for clients receiving psychological services. To understand whether psychological services using digital media truly lead to a shift in power and adhere to social justice values, we need to identify and understand how client experience this shift in power, academic literature on which is relatively absent. To claim telepsychology leads to increased sharing of power between practitioner and client as a result of listening to the practitioners' voice, an individual with already existing power and privilege, is in itself ironic and fails to truly reflect the social justice nature of the work and profession.

TRAINING FOR ONLINE THERAPEUTIC WORK

Various studies found that practitioners' personal reservations, limited acceptance of telehealth as well as prior experiences of in-person therapy behaved as barriers in becoming comfortable with and offering therapy via digital media. This, however, changed with increased use and obtaining practical experience in offering psychological or therapeutic services via online media (Centore & Milacci, 2008; Paterson, Laajala, Lehtela, 2017; Topooco et al., 2017; Turner, Brown & Carpenter, 2018; Knott, Habota & Mallan, 2020; Springer, Bischoff, Kohel, Taylor & Farero, 2020). The profession has moved online in all capacities such as training, therapeutic work, supervision, and research due to the recent pandemic. This extensive shift in support moving online leaves a huge responsibility on the profession to ensure just and effective support is available to keep up with the growing needs and wants of the profession. There is a need for online training for professionals who may want to offer online therapy. However, to move onto this step, there needs to be research on online training for online therapy on which there is relatively scarce literature (Anthony, 2015). With this ever-changing landscape, there is a need for an update to include technological and digital culture to better understand the needs of the telepsychology world and develop practitioner competence to work at a professional standard (BPS, 2018).

It is essential to consider how online training may support telepsychology in committing to social justice principles of the profession. Buchanan & Wiklund (2020) highlight the unpreparedness of psychology to manage and support the needs of a growingly diverse population. Turner (2018) rightly points the privilege that exists in counselling and psychotherapy trainings wherein an extensive number of trainees are white, middle class, able bodied and heteronormative. It is essential to note that along with making mental health services accessible, a huge part of the dialogue is about making counselling and psychotherapy professional training accessible and open to individuals that belong to groups that experience discrimination and oppression. One of the actionable ways to make training accessible will be to offer it in a modality that can be accessed by individuals or groups who may not be in the advantaged position to access training that is offered via the traditional route. These may include individuals who live in remote locations and have no access to training institutions or people with physical disability and other limitations. Training in mental health professions bring with them a huge financial commitment; offering training via digital media may potentially lead to a reduction in these costs and make training

accessible to individuals belonging to groups that may be economically oppressed. Accessible training and thus leading to access to the profession is another way in which social justice action becomes part of the profession. Addressing diversity at a systemic and institutional level indicates attempting to minimise power differences that may otherwise exist between practitioners and clients as a result of their societal positions. This can be achieved by addressing the training gap that exists in the profession thereby highlighting the need for training in methods different than the conventional route to enable and prepare practitioners to offer quality and effective services. Further, offering training in online therapy may also lead to individuals from disadvantaged communities to access training, thereby leading to a shift and reduction in power dynamics that generally prevail in therapeutic relationships. One of the many fundamental tenets of social justice is equal opportunities and access to resources, however, this must extend beyond access to therapy services or training in the profession and also focus on the right to receive effective interventions and experience favourable outcomes that address difficulties on micro and macro levels. This, thereby, makes it crucial to identify how service users experience telepsychology services and the factors that lead them to finding these services acceptable, efficient, and engaging. Various studies have highlighted barriers to equitable access to telemental health services and groups such as older adults, racial minorities, individuals experiencing psychosis and other cognitive impairments that may be at risk of being excluded from these services (Santesteban-Echarri, Piskulic, Nyman & Addington, 2018, Harerimana, Forchuk & O'Regan, 2019, Vera San Juan et al., 2021). However, very little evidence has been found about ways to address and overcome these barriers and reduce digital exclusion in telepsychology services (Barnett et al., 2020). The research and research-to-practice gap in telepsychology needs to be reduced and ways of overcoming barriers to user-engagement need to be identified to ensure effective, sustainable, and equitable implementation and utilisation of digital mental health services and facilitate inclusion of individuals and groups that may get excluded out of these. Thus, evaluating mental health services accessibility and uptake of the same by service users is another crucial and essential factor in adopting a socially just and inclusive stance in telemental health services.

CONCLUSION

Social justice discourse in the mental health and psychology profession has been increasing and transforming to actionable ways to bridge the theory and action gap and meet the aim to challenge and dismantle systems of oppression that lead to inequalities and mental health difficulties experienced by individuals. Telepsychology is here to stay and has already begun to become the preferred choice of offering and receiving therapeutic services for a vast majority. This chapter, therefore, considered telepsychology and its adherence to social justice values in relation to access, community psychology, and training in the profession. Telepsychology offers varied ways of challenging oppressive power systems within and outside of the therapeutic relationship. Online psychological services amplify access and utilisation, however, it is of utmost importance to ask the question 'Who does telepsychology increase access for?' Addressing the digital divide, ensuring access to technological infrastructure, skills to safely navigate the online space, and access to services are all crucial elements of this telehealth and mental health dialogue. It also considers the need to integrate telehealth in community psychology interventions, thereby collaborating and engaging with hard-to-connect groups, addressing institutionalised discrimination, and using telehealth for the empowerment of the group. Further, there is opportunity to share power and privilege in the profession by altering ways of accessing training and conducting research in the

profession. Thus, to ensure a socially just telepsychology movement that aligns with values of counseling and psychotherapy profession, it is imperative to move into unknown territory, let go of personal reservations and adapt new ways of researching, training, and offering services thereby organising our efforts to bring about transformation at individual, organisational, and systemic levels.

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Conclusion

Technological developments and the recent pandemic have all contributed to an increasing interest and adoption of digital innovations to support people's mental health, from both service providers and service users. It is evident from the chapters included in this edited publication that the Covid-19 pandemic has changed the landscape for digital mental health technologies and online therapeutic applications of support. This chapter will firstly consider the findings and guiding messages from each of the chapters individually. Then the chapter will end the book by providing an overarching conclusion and final thoughts.

GUIDING MESSAGE OF THE RESEARCH

In this section of the conclusion, I would like to consider the main findings and conclusions from each of the individual chapters included in this edition. The section will consider how each chapter adds to the literature and the narrative surrounding the use of digital innovations for the support of peoples' mental health.

In Chapter 1, Farish-Edwards and colleagues consider the adaption of an in-person creative therapy being delivered online. The chapter gives the reader a good insight of the intervention - Arts for the Blues, which is aimed at supporting people with depression and increasing well-being. The chapter provides examples of the creative things they did/do as part of this intervention. The authors identified several issues that arose during the remote delivery including problems related to boundaries, dealing with large groups online, as well as the need for extra time to allow everyone a chance to be heard. The chapter consider solutions to these problems, helping others considering remote delivery of a therapeutic intervention. For instance, they found it was important to have at least two facilitators to manage the online sessions. The authors highlight the need for clients to check in after each activity before moving on to the next activity to be an important timing factor with online delivery. They suggest smaller groups are more manageable and less daunting for clients, allowing clients to share and build connections. The research revealed that it was not always clear when someone needed support online. The authors suggest that there is a need for a facilitator to monitor the chat function so clients could signal if they needed further support, which could be managed through a breakout room. Simplifying tasks and the scaffolding of activities is also important when creative therapy is delivered remotely. The authors also noted the lack of nonverbal cues and a reduced sense of presence with remote delivery. However, despite the difficulties the team faced, the authors acknowledge the exciting possibility online delivery opens, especially in reaching clients who traditionally would not have engaged with the in-person workshops. In the conclusion the research team acknowledge that although online creative therapy is a promising

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new mode of delivery with great potential, further research to maximise this potential is still needed. The pandemic has opened up the opportunity for creative therapy to be delivered remotely, broadening reach. The team discuss future directions for further developing this area and they are working on building a more extensive interactive digital therapy package, with a link to this within the chapter itself.

Chapter 2, by Dubrow-Marshall and Smail, details the online delivery of an Internet Cognitive Behavioural Therapy program, the Ostrich Community which aims at supporting the mental health needs of people in financial debt. The chapter considers the findings from the authors' research which provides the reader some insights on the lived experience of individuals who are in financial debt, and how this situation impacts their mental health. The chapter acknowledges the impact of the Covid-19 pandemic on financial debt and the subsequent impact on mental health. The chapter suggests that an area of further research is needed to understand more fully both the impact of being in debt and the interventions that help to relieve the associated emotional issues. The chapter concludes by recommending more co-ordinated activity between health and financial organisations, which should be addressed by the UK government and this is an area that the authors and the Ostrich Community would like to research further.

In a similar vein as Chapter 1, Chapter 3 also considers a previously in-person intervention, delivered remotely due to the pandemic. Robinson, Sebah and Avram, highlight not only the potential benefits of resilience-based training for HE students, but also the benefits of providing interventions and training online. Overall, participants found many more positives than negatives in the online delivery of the workshop. The benefits of the online delivery reported by participants were around the convenience and accessibility online delivery affords, the comfort, engagement and perceived safety of the online environment, as well as the effective communication and interaction facilitated by online delivery. The authors recognize that due to the Covid-19 pandemic, HE students are now familiar with learning remotely and remote learning technologies and due to this more interventions and training can be, and perhaps should be, delivered online.

Chapter 4, authored by Dugdale and Spencer, provides the reader with an overview of the treatment and support available for the dual diagnosis of mental health and substance use, both through technology and online based interventions, as well as more traditional offline treatment and support. Through consideration of what is currently available, the authors conclude that digital interventions may be as effective as face-to-face therapist support, however the integration between digital and face-to-face interventions appears to provide the best therapeutic outcome. The benefits of online support and digital interventions means people can take control of their own recovery and access support when they feel

Chapter 5, by Rathbone, Cross, and Prescott, provides evidence of the importance of technology to support and connect people, in this case pregnant women, during the Covid-19 pandemic. Due to lockdown restrictions with social distancing and shielding, social media support groups were particularly beneficial for women during their pregnancy. The dual risk-benefits of technological use for support are highlighted throughout this chapter, with many women finding social media use, online groups, and apps beneficial, whereas others found them a source of information overload and triggers for their anxiety in what is already an anxious time. Smartphone applications were viewed as having the least risk, due to the sense of control women have in using such apps for support.

Chapter 6, again by authors Rathbone, Cross, and Prescott, reports the development of an mHealth app to reduce pregnancy specific health anxiety. The chapter provides the reader with a detailed account of the development of the SO-FAR (Skilful Surfing Online for Anxiety Reduction) app. The app's development was guided by previous research and includes several interventions and counselling techniques, all of which are outlined in the chapter. The chapter provides the reader with a good understanding of app

development for mental health support and provides justification for the techniques and interventions included. Building on the findings outlined in chapter five, the app aimed to reduce levels of pregnancy specific health anxiety through several means, including through encouraging women to become adept at navigating through the abundance of online health information. The app also provided women with knowledge and skills to be more self-aware, hopefully enabling them to identify triggers as well as understand when and why, they are experiencing maladaptive cognitions and rumination. Hopefully this chapter adds to the dearth of research on evidenced-based smartphone application development?

Chapter 7, by Henriques da Pinto, looks at mobile app interventions for obsessive-compulsive disorders (OCD). The chapter looks at the gaps in current app interventions available and offers the reader potential solutions to fill these gaps. In general, the author concludes that app development needs to occur in collaboration with mental health providers, as well as service users and patients with different obsessions and compulsions. Usability testing is also required to understand what features and functions within an app people with OCD find useful, and supportive to their needs. The author also recognises the importance of gaining support from organisations that support people with OCD, for them to not only have input into the design and development, but also to promote the app as a support tool for the people they encounter who may benefit from the features of the app. This chapter supports the premise that we need user input at each stage when designing digital innovations to support mental health. Smartphone applications need to be condition specific and user friendly, developed with users and organisations who would recommend the use of the app to clients

In Chapter 8, the authors (Barnes, Bradley, and Williams) present the findings from two studies charting the development of an adult wellbeing therapeutic game. Working with a local (Bolton, Greater Manchester, UK) mental health organization (MhIST) and using feedback from service users and the general population, two prototype games were developed. During the Covid-19 pandemic, demand for the services provided by MhIST increased dramatically and as a result the organization was keen to support and engage adult service users using a digital innovation, which took the form of a therapeutic game. Findings presented in the chapter suggest that the desire to engage with digital interventions for wellbeing exists for adult service users, and that the general acceptability of a gamified intervention is good. Additionally, findings point to the need to consider the specific requirements of the demographic (for instance in relation to digital health literacy), when designing serious and informative games. The chapter posits that mental health providers developing a therapeutic game for health and wellbeing need to understand the interests and abilities of their target players. This will help them to create games with a low barrier to entry and recognition of prior experience of videogaming and confidence using technology for health purposes (or lack thereof), while preserving the essence and challenge of what makes gaming engaging and entertaining.

In Chapter 9, Barnes and Prescott showcase the development of a mobile therapeutic game aimed to reduce anxiety in adolescents. Firstly, the chapter details the findings from the pre-development stage of the game. This stage of the game development involved asking adolescents to assess several games for anxiety and depression that are already freely available. Gaining user feedback on already available games was carried out to find out from potential users of the new game what they liked and did not like, and what they thought would help reduce their anxiety levels. Gaining this feedback from potential users of the game is important when designing a game for a client group. After all the authors of the game want people to use the game once developed and the game to have the desired effects. The chapter then details a user-evaluation of a developmental pre-release version of the game. User-perceptions of quality and intention to use were explored, along with an evaluation of the game's anxiolytic capabili-

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ties. Findings revealed the game was both acceptable to the target audience and produced significant reductions in state-anxiety when played. The game also functioned as expected without bugs or crashes. This user-feedback has enhanced the final version of the game in terms of appeal, potential engagement, and capability in reducing trait-anxiety for this population, which is often difficult to reach in terms of mental health support.

Chapter 10 by Murphy and Saxena provides an understanding of the relationship between social media and psychological stress during quarantine, in the Covid-19 pandemic. The findings report that the motivation for social media usage is directly correlated with levels of psychological stress. Usage for consumption was found to moderately correlate with stress, whereas usage for participating showed a weak correlation. Use for the purpose of producing, exhibited no significant relationship with psychological stress during quarantine. The findings of this study are timely and provide an important insight on the usage of social media during a time when 'physical' social connection is restricted. The research shows the importance of digital support through social media during a potentially stressful period.

Chapter 11 by Georgio and Olubola Taiwo provides readers with a detailed literature review of online counselling. The literature review considers how the recent Covid-19 pandemic has developed online counselling provision in terms of availability and the acceptance from counsellors and therapists previously slow to adopt technological tools. The benefits and challenges of online counselling are detailed and well considered within the chapter. The chapter considers demographic variations in that research suggests online therapy may be particularly appealing to younger people. More research is needed that considers the uptake from other demographics, as well as more research on the acceptance by professionals and the support needed for more uptake of digital innovations within the counselling field.

Chapter 12 by Enokela looked at a digital therapeutic intervention aimed at higher education students in Nigeria. The chapter considers the pandemic and the social support needs of students during this time. Through a review of relevant literature, the chapter found that therapists played an important role in supporting students digitally through the pandemic. The chapter advocates the delivery of support and therapeutic interventions remotely, and suggests therapists and counsellors for a student population should be trained in delivering e-therapy. Training would ensure standardized practice and guarantee therapists are comfortable in providing therapy remotely and are providing the most effective service delivery. The chapter is very much situated in a Nigerian context, with recommendations specifically for Nigerian leaders and government considerations. However, this chapter provides an important insight into online mental health support for students, a need globally recognized.

Chapter 13 by Oglive, Prescott, Hanley, and Carson showcases two new innovative chatbots, Foxbot and ERIC. Both bots highlight the potential of using bots and artificial technology in supporting mental health. The chapter discusses the importance of developing chatbots to meet the needs of the target population through user feedback and consultation with experts in the field. It is recognised by the authors that there is a need for more empirical research into the use of chatbots for mental health support and development within service provision. The two bots discussed within the chapter are currently at a developmental stage, with further research planned for both. However, the chapter does provide readers with a good understanding of the development of the bots, and the further research the team plan in this area.

Chapter 14 by Jain takes a look at social justice and considers how telepsychology could potentially help address any injustice concerns through increased access, community psychology and training in the profession. When considering access author Jain not only highlights the opportunities to access telepsychology but also considers the digital divide. The digital divide is often overlooked when considering online support and digital innovations and we need to think of who does have access and may

Table 1. Chapter key messages

Chapter No., Title, and Author(s)	Key Messages
1. Digitising Creative Psychological Therapy: Arts for the Blues (A4B), by Fleur Farish-Edwards, Ailsa Parsons, Jennifer Starkey, Linda Dubrow-Marshall, Scott Thurston, Joanna Omylinska-Thurston & Vicky Karkou.	<ul style="list-style-type: none"> Remote delivery of a creative therapy intervention broadens the reach of such workshops. Care needs to be taken when delivering a creative intervention, small groups, one-to-one facilitator support being available. A facilitator is required to monitor the online chat and offer one-to-one support in the breakout room function.
2. The Ostrich Community Internet-Cognitive Behavioural Therapy Program for Distress Related to Carrying Debt: A Digital Hand to Help People to Face up to and Cope With Debt, by Linda Dubrow-Marshall & Dawn Rebecca Smail.	<ul style="list-style-type: none"> ICBT can be effective programs for the mental health support of those with financial debt. Collaborative research between health and financial organizations is needed. Covid had a significant impact on financial debt for many and the impact of this on mental health needs to be recognized.
3. The Resilience Enhancement Programme for Students (REP-S): Evaluating an Online Intervention for Boosting Resilience in Students, by Oliver Robinson, Ilham Sebah, & Ana A Avram.	<ul style="list-style-type: none"> Resilience training provides important benefits for HE students. The benefits of online training (i.e. access, safety, comfort, engagement), outweigh the negatives More training for student populations should be delivered online to broaden reach and increase access.
4. Digital Interventions for Dual Diagnosis, by Stephanie L Dugdale & Heather M Semper.	<ul style="list-style-type: none"> Online support and treatment provide clients with control over their treatment as well as proved increased access to support. A blended approach for dual diagnosis with in-person and online treatments being available where considered the most effective forms of treatment and support. Online offers an important, additional avenue of support.
5. The Use of Social Media, Online Support Groups, and Apps for Pregnant Women During COVID-19, by Amy Rathbone, Duncan Cross & Julie Prescott.	<ul style="list-style-type: none"> The dual risk-benefits of digital mental health technologies are highlighted. Technology allows people who cannot connect a way to connect virtually. Smartphone applications offer a good level of control from the research conducted on pregnant women
6. Skillful Surfing Online for Anxiety Reduction (SO-FAR) in Pregnancy: Application Development, by Amy Rathbone, Duncan Cross & Julie Prescott.	<ul style="list-style-type: none"> Considers a theory app-based development and the importance of justifying what is included in an app for mental health support. Reduces health anxiety during pregnancy through skills and knowledge supported by the app. Considers the abundance of online health information and how to navigate this safely (Skillful Surfing Online).
7. Obsessive-Compulsive Disorder and Mobile Technology: A Research for Establishing the Main Features of an App Intervention for OCD Anxiety, by Rita Henriques da Pinto.	<ul style="list-style-type: none"> Recognizes the gaps in the available apps for OCD and considers some recommendations on how to fill these gaps. There is a need to develop apps with OCD service providers and users. User ability testing is important when developing an app and the potential success of the app.
8. 'Piece of Mind' and 'Wellbeing Town': Engaging Service Users in the Development of a Wellbeing Game, by Steven Barnes, Melvin Bradley, & Andrew Williams.	<ul style="list-style-type: none"> When developing a game, the developer need to understand the interests and abilities of their target players. Consider the requirements of the demographic and gain user feedback throughout the development process. Digital innovation can help alleviate some of the pressures on service providers.
9. Therapeutic Gaming for Adolescent Anxiety: Development and Evaluation of a Mobile Intervention, by Steven Barnes & Julie Prescott.	<ul style="list-style-type: none"> Therapeutic games can engage hard to reach groups, such as adolescents in gaining mental health support. Gaining feedback from potential users of the game is paramount when designing a game for a client group. User feedback will increase engagement as well as usage of the game as and increase the efficacy of the game.
10. Understanding the Effect of Social Media Use on Psychological Stress During the COVID-19 Pandemic, by Niall Murphy & Deepak Saxena	<ul style="list-style-type: none"> Social media use correlates with stress levels during quarantine. To understand social media impact, differences in motivations for use are important considerations. Digital support can be important in times when in-person support, in this during quarantine, is not available.
11. How Counselling Online is Utilised, Evaluated, and Received, by Georgios Agathokleous & Abigail Olubola Taiwo.	<ul style="list-style-type: none"> Due to the pandemic there has been more access to, and uptake of, online counselling. Need to consider demographic variations in needs and uptake of online counselling. Need to research professional attitudes and any support needed to enhance and improve online counselling delivery and provision.
12. Digital Mental Health Support for Students in Higher Institutions in Nigeria During Pandemics, by Abel Ebiega Enokela, Ambrose.	<ul style="list-style-type: none"> Counsellors and therapists supported students digitally through the pandemic. Therapist and counsellors for a student population should be trained in delivering e-therapy. Training would allow for the standardization of practice, ensuring counsellors are comfortable in online delivery.
13. Artificial Intelligence in Mental Health: The Novel Use of Chatbots to Support Trainee Counsellors and Recovering Addicts, by Lisa Ogilvie, Julie Prescott, Terry Hanley, & Jerome Carson.	<ul style="list-style-type: none"> Chatbots and AI have a real potential for supporting people with their mental health and emotional needs. User feedback on these digital innovations is important. Digital innovations need to be built in collaboration with service providers and service users to make sure needs are met.
14. Telepsychology: Does It Bridge the Social Justice Theory and Action Gap? by Siddhi Jain.	<ul style="list-style-type: none"> Telepsychology can reach hard to connect groups. Telepsychology has the potential to reduce any social injustice within the counselling psychology profession and support diversity and inclusion. Digital divide needs to be considered when considering online support and digital innovations for mental health.

benefit from online support and services. The chapter also considers telepsychology connecting with hard to reach (connect) groups as well as the future of the counselling psychology profession supporting diversity and a socially just identity through the adoption of telepsychology.

Conclusion

I have composed, what I believe to be, three key messages from each of the chapters (see Table 1).

A COMMON GROUND: CONCLUSION AND FUTURE POSSIBILITIES

As stated in the preface, the overall objective of this book is to present a collection of recent empirical studies, scoping reviews and applications of digital innovations designed for, and often developed with, people who need support with their mental health. The book has brought together fourteen chapters of current research investigating the use of technology and digital innovations to support mental health. The book includes research considering previous in-person interventions delivered remotely due to the pandemic, the impact of the Covid-19 pandemic on digital mental health technologies and online counselling, as well as a number of novel digital innovations including smartphone applications, therapeutic games and chatbots. I hope this book represents a valuable snapshot of the current position in the field. I also aimed to bring together a range of perspectives in the area to spark more debate, future research questions and novel approaches to mental health support. This book has hopefully provided a timely contribution, adding to the literature on digital mental health technologies.

Technologies are often blamed for mental health problems rather than viewed as a potential solution (Twenge, Martin, & Campbell, 2018; Twenge, & Campbell, 2018; Twenge, Joiner, Rogers, & Martin, 2018). There is a dual-use dilemma with technologies in terms of risk and benefit. However, my perspective and the general perspectives of the authors who have contributed to this book, is that technologies can support and positively contribute to mental wellbeing.

When we consider developments in digital mental health technologies in terms of digital phenotyping, we can see the real potential of reach and power technology can have in addressing global mental health. Digital phenotyping allows smartphones to provide us with an objective and ecological source of measurement through data based on sensors (activity and location), voice and speech (sentiment and prosody) and human-computer interaction (Insel, 2018, p276). In 2020, it was estimated that mobile broadband subscription was 75 per 100 inhabitants of the global population, with the highest rate in Europe (99.9%) of people had an active mobile broadband subscription (O'Dea, 2021). Cyber psychology is a growing area of psychology and it now has its own division in the BPS (British Psychological Society). Cyberpsychology is interested in raising and answering questions about the motivations, experiences, and effects surrounding the interactions between humanity and technology (Cyberpsychology Section, BPS). In essence cyberpsychology is interested in human-computer interaction. Human-computer interaction is interested in understanding how we interact with computers and technology. In his insights article, Insel (2018) posits the promise digital phenotyping can have for psychiatry and could provide a revolution for the global mental health problem. Digital phenotyping has the potential to offer mental health professionals objective measures of peoples lived experiences allowing an insight into how an individual functions in his/her world. Insel (2018) argues that the ecological and continuous measurement that digital phenotyping could provide for mental health professionals would address some of the main challenges in the field of psychiatry.

The research and writings within the chapters of this book are from researchers and authors from a number of different backgrounds and disciplines. For instance, there are chapters written by academics in the field of psychology, counselling and counselling psychology. Throughout this book and the issues discussed, it is evident that there is a need for more research in order to both understand the efficacy of digital innovations and technologies used for mental health care and support. The importance of de-

veloping with service users, potential users, target populations and service providers is clear. There is also a need for more evidence-based practice and interventions. I hope this book provides readers with an interesting insight into the area and encourages a multidisciplinary approach to considering how technology can support differing mental health conditions and clients with differing wants and needs.

Although some view the recent and rapid online developments as a ‘temporary’ solution due to the social distancing restrictions enforced by the Covid-19 pandemic (Luiggi-Hernandez & Rivera-Amador, 2020), I argue, as would many others, that digital mental health technologies are here to stay. Attitudes towards working remotely have altered due to the pandemic. Hanley (2020) posits that the pandemic has sped up the acceptance of online therapy and should be ‘viewed as an *‘evolutionary catalyst’ for developments in online counselling and psychotherapy*’ (p2). The majority of chapters within this book acknowledge the importance the pandemic has on speeding up the usage and acceptance of online interventions and digital innovations, from both a service user and a provider perspective.

It would seem that the landscape is changing, there is an increased acceptance of technology in all aspects of our lives, with remote working and remote meetings becoming the norm. Benefits to digital mental health technologies include ease of access, the broadening of access and reach, increased efficiency, decreased costs and the potential to reduce stigma surrounding mental health. However, the digital divide should not be overlooked and the prospect that digital mental health technologies may be more appealing and attractive to certain demographics, such as young people, should be taken into consideration.

A positive virtual ecosystem (Hanley et al., 2019) is how the online counselling and support service Kooth, describe their online environment. This positive virtual ecosystem provides numerous sources for people seeking support to engage with, all on a safe online space. These online resources offered by Kooth include forums, and information and contact with counsellors and psychotherapists. The ecosystem acknowledges the importance of interaction between sources on a credible space providing support. Indeed, a number of chapters included also view the online environment as paramount in providing safe spaces for mental health support. For example, the first chapter, the ‘Arts for Blues’ research team are further developing their online space after witnessing the benefits remote delivery can provide.

It is evident from the chapters that practitioners working in the mental health field as counsellors, therapists and psychologists need to work together to further develop online practices and support via digital innovations. Together, service users, service providers, counsellors, therapists’ psychologists and other mental health professionals, as well as academics and researchers in the field, all need to be part of the technical developments that are taking place. I hope that the chapters in this edition stimulate ideas for future digital innovations from an interdisciplinary approach to supporting mental health. Research investigating what works and what does not, is vital for the growth of the field and the efficacy of the innovations and interventions being developed and engaged with.

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* * *

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