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Understanding Readiness and Motivation for Digital Mental Health Support

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Declaration

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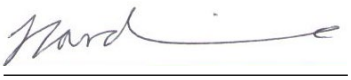

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Abstract

Psychological therapy is an effective and acceptable form of care for distress, however, there is a vast disparity between the number of people who are suffering and those receiving support. Digital mental health interventions (DMHIs) have been developed as a way to address this escalating care gap, providing accessible, scalable, and immediately available support. When accompanied by human guidance, DMHIs show consistent clinical effectiveness in improving client outcomes. However, while they are being successfully implemented in many real-world settings, low client uptake and engagement rates are seen as an issue undermining the potential reach and utility of these interventions.

A lack of readiness or motivation for DMHIs has been proposed as a core client factor leading to low uptake and engagement. There are a wide range of frameworks and models currently being used to understand readiness and motivation for digital mental health support, however none of these have been developed specifically for this unique context. There is also a dearth of research directly with clients who have difficulties engaging with DMHIs, as they are inherently hard to reach. Despite these significant gaps in our knowledge and theory, digital interventions and strategies aimed at increasing client readiness and motivation have been developed and deployed as a means of tackling *the engagement problem*. It is unclear how effective these interventions are and if this is where design efforts should be directed when addressing low uptake and engagement with DMHIs.

This thesis examines the role of readiness and motivation in relation to uptake and engagement with digital mental health support. First, it contributes to our knowledge on how readiness and motivation are framed in terms of existing theory and research practice. It then explores the landscape of digital interventions aimed at enhancing client readiness for therapy, to outline the current practices being used and their feasibility. Findings from this review indicated that while digital readiness interventions do show potential as a means of increasing uptake and engagement with therapy, there are risks involved (e.g., a potential decline in engagement or outcomes). Thus, further in-depth research is needed to deepen our understanding of this space before additional design efforts can be made.

This thesis then presents an observational, mixed-methods inquiry into the barriers that prevent uptake and early engagement with DMHIs. The aim of this study was to understand the lived experiences of real, non-engaging clients from a broad, context aware perspective; hence the study was conducted across four different healthcare ecosystems in the UK and US. Findings revealed that client needs and motivation for mental health support are multifaceted, fluctuating and impacted by contextual factors and self-stigma. The problem of low uptake and engagement with DMHIs can therefore be addressed by reconsidering the design, context, framing, delivery and goals of these interventions.

Building on these findings, this thesis finally describes a complementary, temporal analysis of the interview data from the previous study. This analysis explored the mental health journeys of individual participants, examining the role of readiness and motivation in more detail and incorporating service-level perspectives from four expert stakeholders. Findings indicated that when it comes to DMHIs, motivation is a more useful construct than readiness because it more adequately represents the nuanced, contextual instances wherein clients decide or are driven to engage. Furthermore, this study indicated that low engagement with DMHIs is not necessarily a problem when viewed from the long-term, system-level perspective of ongoing client mental health journeys.

This thesis enriches the HCI field with a better understanding of readiness and motivation for digital mental health support, as well as shedding light on the issue of low client uptake and engagement more broadly. Hence, this thesis helps those researching and designing DMHIs to make more informed decisions when navigating this complex design space.

Associated Publications

Journal Papers

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Conference Papers

Jacinta Jardine, Camille Nadal and Sarah Robinson. 2023. Staying with the Trouble of Developing Mental Health Technology and Policy. In Proceedings of CHI '23 Workshop: *Design Policy: Designing Platform Technology and Policy Simultaneously*. Hamburg, Germany.

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Jacinta Jardine, Marcus Hanratty and Gavin Doherty. 2022. Real world barriers to uptake in digital mental health interventions: A mixed methods, exploratory study. In Proceedings of CHI '22 Workshop: *Designing Ecosystems for Complex Health Needs*. New Orleans, USA.

Ethics Submissions

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1 Introduction

This thesis examines the role of readiness and motivation in relation to uptake and engagement with digital mental health support. It reviews existing theories and practices, identifies associated challenges and opportunities, and attempts to bridge the gap between theory and practice. This chapter will introduce the central concepts in the thesis and map out the journey it will take. Firstly, an overview of readiness and motivation for digital mental health support will be provided, along with a description of the associated challenges and opportunities which motivate this PhD work. Then the core objectives of this research will be presented, the remaining structure of the thesis will be outlined and the principal contributions of this body of work will be described. Finally, the context within which this research was conducted will be explained, along with the overall methodological and epistemological approaches taken and how they adapted to suit the progressing direction of the research.

1.1 Overview of the Problem Space

The global mental health crisis is of substantial concern to researchers and practitioners across a number of different disciplines, including both the health and social sciences [338,353,380,427,443]. Psychological therapy has shown to be both an effective and acceptable form of care for common types of distress, such as anxiety and depression [85,256], however, there is an alarming separation between the number of people who are suffering, and the quantity of these people who are receiving support, often referred to as the *mental health care gap* [214,309]. Sitting at the bridge between psychology and human-computer interaction (HCI), digital mental health interventions (DMHIs) have been developed as a way to address this escalating care gap, providing scalable care for the huge numbers of people around the world who are experiencing distress and in need of mental health support [10,309,343].

1.1.1 Uptake and Engagement with Digital Mental Health Interventions

Under the newly emerging field of digital therapeutics, DMHIs usually take the form of interactive, online programs that include psychoeducational content and tools to help clients develop awareness and self-management skills [106]. The pervasiveness of global smartphone use puts digital interventions in a unique position for positive impact because they are accessible, immediately available and able to assimilate non-intrusively into everyday routines [308,312,439]. When accompanied by human guidance or support, DMHIs show consistent clinical effectiveness via randomised controlled trials (RCTs), in reducing symptoms and improving client outcomes [64,199,398,444]. Qualitative studies have also indicated that clients can find solace, support and empowerment via these digital tools [118,123,184,314].

DMHIs have been adopted in practice as a way to overcome traditional barriers to care such as long waiting lists and high costs [214,273,448], delivering more treatment with available staff and increasing overall access to care [106,444]. Due to this ability to ease pressure on overburdened services, DMHIs are becoming a core element of mainstream mental healthcare services in countries such as the UK and Australia [84,278,343]. While these interventions are being successfully implemented and used by millions of people in many real-world settings, low client uptake and engagement rates are seen as an issue undermining their potential reach [412]. Despite having actively sought help, many clients do not sign up for DMHIs or dropout after their first use [28,134,237,261]; Fleming et al.'s meta-analysis of self-help interventions for depression, low mood and anxiety found that only 0.5% to 28.6% of those who signed up for an intervention engaged in sustained use [134].

Research and design efforts have sought to address this issue for more than a decade, and substantial design improvements (e.g., the now widespread inclusion of human support) have advanced the state of DMHI engagement considerably [106,343]. Low engagement is still seen as the core obstacle limiting the widespread adoption and effectiveness of DMHIs in practice however, and as such, the *engagement problem* remains a key focus area for the digital therapeutics [236,405] and broader HCI communities [61,104,394].

Naturalistic studies indicate that initial experiences with DMHIs are key to ongoing positive interactions [184], however much of the existing research focuses on quantitative predictors of dropout, rather than investigating the lived experiences of clients who do not sign up or disengage early [6,26,31,122,198,373]. A core reason for this could be that non-engagers are, by their nature, difficult to recruit, and even if reached might not be able to fully understand or express their own reasons for not engaging [23,373]. Consequently, little is known about what these non-engagers want or need, what prevents them from engaging [412], or what role dissatisfaction plays in disengagement; research shows that many clients who drop out of therapy early do so because they feel better and no longer perceive the need for it [221,390].

Understanding these early non-engagement experiences is a crucial step in making sense of and addressing issues that clients might be facing, and making more effective use of digital tools in the mental health space.

1.1.2 Readiness and Motivation

Research on the various factors that hinder uptake and engagement with DMHIs tends to center on the client and their attitudes, rather than the implementation of the intervention or the wider care environment it is situated within [45]. Attitudinal barriers are frequently reported as the main source of engagement issues with digital interventions [10,121,230,257], and commonly include a lack of perceived need, self-stigma, and a belief that the intervention will not be useful or effective [31,33,45,185,261,279,326,374].

Readiness is a term used to encompass the attitudinal conditions that make someone prepared and motivated to engage in a certain behaviour [149,227], and theoretical models of readiness to change health behaviours (e.g., the Transtheoretical Model (TTM) [328]) have been used to understand and address low engagement with DMHIs [397]. Other theoretical frameworks used in this area include those focused on motivation and behaviour change in general (e.g., Self Determination Theory (SDT) [100]), those explaining technology acceptance (e.g., Technology Acceptance Model (TAM) [97]), and those more specifically exploring help-seeking for mental health (e.g., Seeking Mental Health Care Model (SMHC) [257]).

Readiness and motivation for digitally delivered mental health support is a complex subject, without any single unifying or dominating theoretical position [209,236]; none of the existing frameworks used in this area pertain specifically to readiness for or engagement with *digitally* delivered *mental* health support [236]. When compared to physical health, mental health involves additional complexities such as a lack of observability, stigma and social determinants, and the digital delivery of DMHIs necessitates the integration of technology related factors [60,149,217,287]. In addition, many of the present models isolate a client's readiness and motivation from the context of their distress and the various temporal, social and environmental factors that can impact upon their fluctuating experiences [60,185,264]. Attitudes towards DMHIs do not occur in isolation, they are shaped by dominant cultural narratives about health and wellbeing and the social and economic systems we exist within [53,63,178]. They are also often intertwined with more circumstantial or structural barriers, (e.g., lack of free time is a commonly reported barrier to engagement with DMHIs [31,45,261,326,360,430], which highlights both external *structural* pressures (e.g. work and childcare schedules) and internal *attitudinal* evaluations around the importance and urgency assigned to the task of self-care [187]).

Despite the above concerns, these approximate models are being used in the research and design of novel mental health technologies [286,325], and in guiding efforts to address the engagement issue (e.g., in the design of digital interventions aimed at improving client motivation and readiness for digital support [119,397,434]). Digital 'readiness' interventions are becoming more common, but little is known about what effects they have and whether this is where design efforts should be directed when addressing the prevalent, real-world challenge of low uptake and engagement with DMHIs. There is also a dearth of research from the client's perspective on the wider healthcare ecosystem of DMHIs and the many structural barriers that can effect their uptake and engagement [90,154,279,350]. In light of this, there have been calls for further temporal, idiographic and contextualised research in this area [98,168,266,293], in order to understand readiness for digital mental health support in a more systemic sense.

1.1.3 Summary of the Problem

Low uptake and engagement with DMHIs is seen as an obstacle undermining their potential to address the ever widening *mental health care gap*. Efforts are being made to increase uptake and engagement by targeting the readiness and motivation of clients, increasingly with digital strategies and solutions. However little is known about:

- The range of theories being used to understand readiness and motivation for DMHIs and their appropriateness for use in this space.
- The interventions being used to increase motivation and readiness for DMHIs and the impact these interventions can have.
- What is actually going on for clients when they don't engage with DMHIs.
- Whether client readiness and motivation is a useful area in which to focus design efforts, or if attempts to increase uptake and engagement should be directed elsewhere.

Exploring this problem space can help us to better understand the widely discussed issue of low uptake and engagement with DMHIs, and clarify where future design and research efforts would be best placed.

1.2 Research Objectives

The overall aim of this thesis is to understand readiness and motivation for DMHIs, from both a theoretical and lived experience perspective. Specifically, this thesis aims to address the following objectives:

1. What is the theoretical and practical landscape of readiness and motivation for therapy in a digital context?

2. What are the experiences of people who have difficulties engaging with digital mental health interventions?

3. What role should readiness and motivation play when addressing low uptake and engagement with digital mental health interventions?

1.3 Thesis Structure

The remainder of this thesis is organised as follows:

Chapter 2 *— Literature Review*

This chapter examines the theoretical landscape of readiness and motivation for digital mental health support. First it explores different perspectives on mental health and the pressing need for accessible, population level mental health support, which led to the development of DMHIs. Then, the issue of low uptake and early engagement with DMHIs is described, and the literature on the most common barriers that prevent people using these interventions is outlined. Finally, the theoretical landscape of models and frameworks currently used to understand readiness and motivation for DMHIs is explored, along with a more detailed examination of the constructs of readiness and motivation.

Chapter 3 *— Scoping Review of Digital Interventions to Enhance Readiness for Psychological Therapy*

This chapter aims to map the landscape of how readiness is addressed in practice, because little is known about the range of interventions currently being used and their feasibility as a means of increasing engagement with therapy. It presents a scoping review of digitally delivered interventions aimed at enhancing client readiness for and engagement with psychological therapy. This review reveals that a large range of varied interventions are being used to prepare people for therapy, however they are not without risks. This chapter exposes the need for further qualitative, naturalistic, and temporal research, to deepen our knowledge in this area.

Chapter 4 *— Mixed-methods Study of Real-world Barriers to Uptake and Early Engagement*

This chapter explores the lived experiences of real, non-engaging clients of a DMHI, focusing on the barriers that prevent uptake and early engagement with the digital intervention and the reasons why clients showed initial interest in it. An observational, mixed-methods study across four different healthcare ecosystems is presented. This study, which involved 205 online

questionnaire and 20 interview participants, indicated that client needs and motivation for mental health support are multifaceted, fluctuating and impacted by contextual factors and self-stigma. Results are discussed in relation to implications for design and implementation, for further research with non-engagers, and in terms of transdisciplinary opportunities.

Chapter 5 *— Qualitative Exploration of Client Mental Health Journeys*

This chapter describes a complementary analysis of the interview data of a subset (15) of the participants from the previous study. A temporal approach was taken to understanding the unique mental health journeys of participants, and the role of readiness and motivation in these journeys. This chapter describes a refinement of the framework analysis method, and incorporated service-level perspectives from four expert stakeholders. Findings from this study indicated that when it comes to DMHIs, motivation is a more useful theoretical construct than readiness, and that motivation is relational and rooted in concrete situations. Finally, this chapter discusses the utility of exploring transferable journeys, the framing and design of DMHIs, and shifting focus from engagement as a client-centered problem to the integration of digital support within care systems.

Chapter 6 *— Discussion*

This chapter concludes the thesis by revisiting the research objectives and reflecting on the contributions of this body of work. The application of this research in practice is explored, and some overarching implications for the design and delivery of DMHIs are presented. This chapter then explores some critical reflections on the use of technology in the mental health space, and finally calls for further qualitative research to revise and advance theory on engagement and motivation for DMHI use, and the future evolvement of digitally enhanced mental health support as a truly transdisciplinary practice.

Chapter 7 *— Conclusion*

This final chapter restates the contributions of this thesis to the field of HCI.

1.4 Contributions

This thesis contributes to the field of HCI, and bears relevance to the associated fields of psychology and digital therapeutics, both on a theoretical and practical level. The contributions of this PhD work include:

- A review of the landscape of digital interventions to enhance readiness for therapy. This thesis extends existing knowledge by describing the variety of readiness interventions currently being used, outlining the therapeutic components they are comprised of,

revealing the design strategies used to develop them, and exploring their feasibility. Findings from this review indicate that the effects of these interventions are difficult to measure and there is a risk of them worsening engagement or subsequent outcomes. Hence, this study highlights the need for further real-world, qualitative research to deepen our understanding, before additional design efforts are made in this space. This work has been published in the Journal of Medical Internet Research [182].

- An exploration of the real-world barriers that prevent uptake and early engagement with DMHIs. This thesis describes a mixed-methods, observational study with non-engaging clients across four different healthcare ecosystems. This work provided the opportunity to uncover the most common barriers experienced by clients, along with delving deeper into lived experiences. Findings reveal that client needs and motivation for mental health support are multifaceted, fluctuating and impacted by contextual factors and self-stigma. The problem of low uptake and engagement with DMHIs could therefore be addressed by reconsidering the design, context, framing, delivery and goals of these interventions, as an alternative to introducing new and potentially problematic readiness interventions. This work has been published in ACM Transactions on Computer Human Interaction [185].

- An in-depth, qualitative investigation of the mental health journeys of clients who experienced difficulties engaging with a DMHI. This study takes a more nuanced, temporal approach to understanding the individual trajectories of participants, exploring the role of readiness and motivation in more detail and incorporating service-level perspectives from four expert stakeholders. Findings indicate that motivation is a more useful construct than readiness in this space, and low engagement with DMHIs is not necessarily a problem when viewed from a long-term, system-level perspective. Instead of instrumentalising motivation in the pursuit of higher engagement with DMHIs, design efforts should focus on adapting these interventions and the systems surrounding them to better suit the relational, contextual nature of client need and motivation. This thesis also contributes a refinement of the framework analysis method, where visualised timelines were used as a means of presenting client mental health journeys as condensed, accessible case studies; the transferable knowledge generated through this method is suggested as a means of complementing more generalisable theoretical models. This work is being submitted for publication.

- Overall, this thesis contributes a more nuanced understanding of readiness and motivation in relation to uptake and engagement with digital mental health support. DMHIs function within multiple complex systems (i.e., the client's life, the service setting, wider society) which effect how they are perceived, delivered and used. By

mapping some of these complexities, this thesis helps those researching and designing DMHIs to make more informed decisions when navigating this complex design space.

1.5 Research Context and Positionality

This section will contextualise this PhD work by describing the setting within which it was undertaken, and my personal context as a researcher. Due to the reflexive, qualitative sensibilities of this research (i.e., coming from the perspective that knowledge and truth are relative and not absolute), my subjectivity was an important resource used to develop the insights presented in this thesis [49]. Hence an outline of my positionality will help to situate the work in light of my background and experiences. Position statements for my collaborators on each of the studies presented in this thesis can be found in Appendix A.

This research was undertaken as part of an employment-based partnership between the Irish Research Council (IRC) and the digital therapeutics company SilverCloud Health (acquired by the American Well Corporation (Amwell) in 2021, 10 months after the start of the PhD), and was co-funded by the same. I had been working for SilverCloud for three years before beginning the PhD, first as a research assistant, then writing and designing program content. In my role as research assistant, I conducted diagnostic interviews for a large-scale clinical trial with the NHS, and analysed qualitative data collected as part of this trial (this research was published in the 2020 ACM Computer Human Interaction Conference Proceedings [184]). I was an employee of SilverCloud/Amwell for the duration of this PhD research, with the role of user experience researcher, however my time was almost exclusively spent on the PhD project. My supervisor, Gavin Doherty, is a co-founder of SilverCloud. Prior to my employment with SilverCloud, I volunteered for over three years with the Irish charity Aware as an online supporter, helping adults experiencing distress to work through SilverCloud. Thus, I have extensive knowledge of how the SilverCloud platform functions and the real-world benefits it can have for clients.

In terms of my background, I have a degree in Fine Art, a higher diploma in Psychology, a postgraduate certificate in Design Thinking and a professional diploma in Creativity, Innovation and Leadership. I have experience working in many diverse creative roles, from running community art workshops to model making and costume design for film. I have always been drawn to qualitative methods because of their creativity and fluidity; I recognise and value the complexity of humans, and the fundamental subjectivity of all research undertaken by humans.

In terms of my own help-seeking for mental health, I would personally not be interested in using a digital intervention for my mental health because I am generally reluctant to spend time using technology. As such, I have a preference for in-person interactions over digital. I have

previously been to, and at various times during the course of this PhD project, I attended regular in-person psychotherapy sessions, with predominantly positive experiences. I recognise the considerable privilege I hold in this regard, as private support of this kind was not an option for many of the participants in this research.

1.6 Methodological Approach

This section provides a brief overview of the epistemological orientation and methodological approaches of this research. Details of the particular methodologies employed for each study (e.g., study design, participants, recruitment, analysis methods etc.) are described in more depth within each chapter.

The interdisciplinary nature of this thesis, which brings together the fields of HCI, psychology, sociology and digital therapeutics, has necessitated a fundamentally pluralist approach regarding methods and philosophical stance. A broad epistemological distinction can be noted between the fields of psychology and digital therapeutics, which tend to take a more positivist approach, valuing objective, generalisable (predominantly quantitative) research, and the fields of HCI and sociology, which lean towards interpretivist perspectives that favour more in-depth, qualitative methods [49,252].

Initially, due to my background in psychology and the positioning of this thesis as a partnership with the digital therapeutics company SilverCloud Health, the design of this research came from a more clinical, positivist standpoint. This can be seen in the scoping review in Chapter 3, where language aligning with biomedical or psychiatric models of mental health (e.g., condition, treatment, symptoms) was used, as the literature covered by this review was predominantly clinical in nature [250,337]. The scoping review method was chosen due to the exploratory aim of the review and the heterogeneity of the interventions in question [225,421].

Mixed methods were chosen for the study in Chapter 4 for the purposes of triangulation (i.e., seeking convergence and corroboration of results from different methods studying the same phenomenon), and complementarity (i.e., seeking elaboration and clarification of the results from one method with results from the other method) [155,191]. This method embodies the pluralist approach taken, however, as the driving force behind this study was to recruit the difficult to access cohort of non-engagers, a short, purpose made, multiple-choice questionnaire was used over standardised measures. The quantitative data were therefore examined descriptively, without statistical tests. Furthermore, as the core aim of this piece of work was to understand the lived experiences of clients, the qualitative aspect of this study was paramount. A critical realist stance was adopted for this work, because it resonates with the

inner and outer worlds of mental health – there are outwardly objective truths at play (people die by suicide), yet mental distress is primarily a reality felt individually, and deeply entwined with a world construed socially. Critical realism proposes that the world exists independent of human perception, but this objective world is of little importance to us in light of the more compelling (individually and socially) knowledge-constructed realities we live within [320,321].

Despite this philosophical standpoint and the qualitative focus of this work, the study was designed from the same clinically informed, biomedical perspective on mental health that was held during the scoping review in Chapter 3. It was during the process of analysing the qualitative data in this study that my perspective on mental health shifted to a broader, more socially engaged stance [53,353]. The reflexive thematic analysis method I employed allowed for a deep immersion in the data [49], which helped me to recognise the influence of established mental health paradigms on my participants' experiences, and my own. The team collaborating on this study represented both these clinical and social positions, perspectives which are often seen as incongruent with each other [40]. As a team, we acknowledged that the tensions between our perspectives were representative of challenges faced more broadly in mental health research, and as such decided to balance these positions by taking a pluralist approach when describing the findings of this research [35,53,76,132].

As the thesis became increasingly pluralistic, I felt that pragmatism was the most appropriate epistemological fit moving forward. Pragmatism is a pluralist, critical and action-oriented stance, which asserts that human experience is our primary source for building knowledge about the world [251,357]. It focuses on how knowledge can be used as a tool for action and questions whose interests are being served with the knowledge [7,76]. Pragmatism values both clinical and cultural knowledge as useful versions of reality, and differs to critical realism in its action-orientation; this direction stimulates questions (e.g., around hierarchies of knowledge, the consequences of different forms of knowledge, who is being served with the knowledge) which might otherwise go unanswered [76].

Adopting this pragmatic approach allowed me to embed pluralism and transdisciplinarity, which were strong implications from the study in Chapter 4, into the fundamental structure and design of the final study in Chapter 5. This stance helped me to decide on a complementary analysis as the final study, because I recognised the rare nature of the non-engager interview data, the depth of experiential information held within it, and the value of revisiting it to focus on aspects which were underexplored in the initial study [166,415]. This complementary analysis was a form of secondary analysis termed an 'auto-data' analysis (i.e., where the researcher revisits their own data), and an analytic expansion was conducted, where new and extended questions were asked of the existing data [165,416]. The focus on pragmatism also

led to my decision to use a framework analysis method for this study, which included collaboration with expert stakeholders, as their input helped me to focus the outcomes of this work on the delivery and implementation of DMHIs in practice [145,151].

2 Literature Review

Readiness and motivation for digital mental health support is a complex, many layered area of study. In this chapter, these concepts are explored and situated within the broader context of uptake and early engagement. First, different perspectives on mental health are outlined, to make clear the paradigms that underpin research and practice in this area. Then, digital mental health interventions (DMHIs) are described, so that their evolution as an accessible, scalable form of support can be understood, along with their placement within wider systems of care. Next, the pressing problem of low uptake and early engagement with DMHIs is explained, as this forms the fundamental challenge motivating this thesis.

The literature on the most common barriers that prevent people using DMHIs is then explored, to establish the existing state of knowledge in this area and identify gaps in the literature, which this thesis will go on to address. Subsequently, this chapter examines the theoretical landscape of models and frameworks currently used to understand readiness and motivation for DMHIs, and delves into some critical perspectives on these models. The aim of this section is to ascertain the relevance of these models for use in tackling low uptake and engagement with DMHIs. Finally, the constructs of readiness and motivation are considered in more depth, consolidating the aforementioned theories and incorporating broader perspectives. Thus, this chapter provides a comprehensive understanding of the current literature on readiness and motivation as they relate to uptake and engagement with DMHIs.

These subjects are fundamentally interdisciplinary, combining elements from the fields of human-computer Interaction (HCI), digital therapeutics, psychology, and sociology. Gaps in the existing literature are highlighted, as well as potential opportunities for further research. This chapter therefore contributes to answering Research Objective 1: What is the theoretical and practical landscape of readiness and motivation for therapy in a digital context?

2.1 Mental Health Support

Mental health and mental illness are subjects of significant global concern [338,427]. Even before the recent COVID-19 pandemic, which had an unprecedented impact on the wellbeing of entire populations [173,233], mental illness was estimated to be the second most prominent cause of the global burden of disease, surpassed only by cardiovascular disease [427]. Despite their global recognition, mental health and illness are contested and normative constructs that can be understood differently across cultures and generations [53,213,313]. The prevailing paradigm used to understand mental health around the world is the biomedical or psychiatric model, which views mental illness as an "*illness like any other*" [336]. Originating in Western psychiatry, this way of framing distress includes the categorisation and diagnosis of mental disorders via the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM) and standardised diagnostic measures such as the Patient Health Questionnaire (PHQ-9) for depression [41].

The biomedical model has dominated discourse, service provision and scientific research in the field of mental health for many years [53,337,427], and has thus become a metanarrative which governs how the general public understand and even experience distress [250]. There are other ways to understand mental health and distress however, such as sociological or cultural perspectives which contextualise distress in terms of its social, political and environmental determinants [53,353]. These critical approaches highlight the complex value systems at play in both the framing and management of psychological distress [3,8,83,213]. Due to the ubiquity of the biomedical model, mental distress has traditionally been addressed on an individual, rather than a societal level (i.e., with medication or psychological interventions aimed at improving a person's mood or behaviour [53,83,353]).

Psychological therapy has shown to be both an effective and acceptable treatment for common types of distress, such as anxiety and depression [85,256]. While there are many different approaches to psychotherapy (i.e., Cognitive Behavioural Therapy (CBT), psychodynamic, person-centred etc.), a qualitative meta-analysis of client perceived impacts of helpful events in therapy indicated that the main effects of therapy are comparable across all approaches [417]. Despite the demonstrated effectiveness of psychotherapy, there still remains a vast disparity between the number of people who are suffering, and the quantity of these people who are receiving support, often referred to as the *mental health care gap* [214]. This gap is substantial and ever expanding, as prevalence rises without a corresponding rise in care outreach or provision [214]. Digital mental health interventions (DMHIs) have been developed as a way to address this escalating care gap, aiming to bridge the divide between the vast number of people in need of support and those receiving it [10,309,343].

2.1.1 Digital Mental Health Interventions

Digital therapeutics as a field draws on concepts from psychotherapeutic practice in an attempt to bring some of the therapeutic qualities of traditional therapy into the digital sphere [341]. DMHIs usually take the form of interactive, online programs where clients read or watch psychoeducational content and use tools to develop awareness and self-management skills [106]. DMHIs can be delivered via desktop platform, mobile app, or a combination of the two, and sometimes also integrate wearable devices [286]. The pervasiveness of global smartphone use puts digital interventions in a unique position for positive impact because they are accessible, scalable, immediately available and able to assimilate non-intrusively into everyday routines [308,312,439]. The convenience and flexibility of DMHIs is particularly significant when compared with traditional face-to-face therapies, which consist of structured, time-bound appointments [341]. DMHIs can be delivered independently as self-help, or with guidance provided by automated reminders, chatbots, or human supporters; evidence indicates that human support (i.e., from therapists, clinicians or even trained volunteers) has a significant impact on client engagement [45,345,444].

Many DMHIs are based on CBT, due to its structured format and the abundance of clinical data demonstrating its effectiveness in addressing common forms of distress, such as depression and anxiety [67,444,450]. CBT has been critiqued for promoting a singular, neoliberal view of distress as contained within individuals, which can decontextualise and depoliticise emotional responses and sometimes amplify distress [88,175,329,330,392]. CBT remains a dominant therapeutic method, however, due to its accessibility and ability to relatively quickly bring people out of clinical ranges of distress, an effect that is easily quantifiable through standardised outcome measures and randomised controlled trials (RCTs) [175,450]. When accompanied by human guidance or support, the RCT evidence for digitally delivered CBT is substantial [64,199,304,398,444]. Combined with their cost-effectiveness and ability to reduce waiting lists and ease pressure on overburdened services [278,343], DMHIs are becoming a core element of mainstream mental healthcare services in countries such as the UK and Australia [84,343]. These interventions are being used by millions of people, yet one crucial factor which undermines their potential to alleviate distress is whether clients actually begin and continue to use them [134].

2.1.2 Uptake and Early Engagement

Terms like *uptake* and *engagement* are both widely used and disputed in the digital therapeutics and broader HCI spheres [107,412]. Uptake usually refers to whether clients begin an intervention (for the purposes of this thesis, **uptake** will be used to describe signing up or creating an account for an intervention). Despite clients having actively sought help, uptake

rates are generally low when it comes to DMHIs [134,430], and research indicates that uptake can vary widely between different groups of people [84].

Engagement on the other hand typically represents active, ongoing participation with the therapeutic content of the intervention [107,412]. Engagement is primarily an internal, cognitive state, which makes it difficult to measure; it is therefore often inferred from observing more easily quantifiable metrics like adherence, dropout, and in the digital realm, usage [107]. Research shows that higher usage of digital treatments is generally related to better outcomes [127,201,295] and users who have higher usage in the first week of intervention use are more likely to reach better outcomes overall [127]. Yet early engagement is historically low with DMHIs, with many clients disengaging after their first use [28,69,134,261]. For the purposes of this thesis, **early engagement** will be used to refer to a second use of the intervention after the initial signup process [107,412]. This early engagement issue is not exclusive to the digital realm, as high early dropout rates are also present in FTF (face-to-face) psychotherapy [73,148], however research indicates that clients could be twice as likely to drop out of a DMHI compared to other therapies [430]. While Fleming et al.'s meta-analysis found that only 0.5% to 28.6% of those who registered for self-help interventions engaged in sustained use (i.e., completed the intervention or used it for more than 6 weeks), they also found that 12% to 79% of those who signed up for an intervention did not use it even once [134]. An analysis of the Intellicare suite of self-guided health and wellbeing apps reported that on average only 13% of those who downloaded the apps actively used them (i.e., had 10 or more app sessions [220]), and the analysis by Baumel et al. found that the median 15-day retention rate for mental health apps was just 3.9% [28].

The highly autonomous nature of online interventions places increased motivational and self-regulatory demands on clients and the potential reach of DMHIs could be said to magnify the problem of low uptake and engagement [109]. What's more, uptake and engagement rates are generally lower in real-world contexts than the structured research settings typically used to evaluate DMHIs [45,69,134,232,412]. Naturalistic studies indicate that initial experiences with DMHIs are key to ongoing positive interactions [184], however much of the existing research focuses on quantitative predictors of dropout, rather than investigating the lived experiences of clients who do not sign up or disengage early [6,26,31,122,198,373]. Non-use and non-engagement are related constructs, and non-users or non-engagers are terms typically used to represent clients who experience difficulties across the spectrum of uptake and engagement. For the purposes of this thesis, **non-engagement** will be used as a general term to cover both uptake and engagement issues.

In HCI, non-use is usually understood through the frame of *lagging adoption* (i.e., non-users are potential clients who are just not using the technology *yet*), which implies that non-use is

temporary and rooted in individual clients, and therefore a *problem to be solved* [371]. Satchell and Dourish explain that other forms of non-use can include *active resistance* (those who make a positive, intentional effort not to engage) and *disenchantment* (those reluctant to engage due to nostalgia for past realities) [371]. Keeping these pluralities of non-use in mind while exploring the perspectives of non-users can help us to broaden our understanding of non-use in the context of DMHIs. Calls have been made for HCI researchers to listen and attend to negative feelings at the sites of technology use, and to consider not only how we might improve a technology to better suit those *lagging adoption*, but also where, how and why that technology might not be suitable [29,231]. Understanding these early non-engagement experiences is a crucial step in making sense of and addressing issues that clients might be facing, and making more effective use of digital tools in the mental health space.

2.1.3 In Summary

DMHIs have the potential to help vast numbers of people who are experiencing distress. The accessibility and flexibility of these interventions forms a significant benefit for clients, and their scalability and cost-effectiveness helps services to reach more clients with less. Despite their latent capacity, low uptake and early engagement with DMHIs seriously impedes their performance at scale. As non-engagement with DMHIs has predominantly been explored via narrow, quantitative, experimental studies, there is a dearth of naturalistic, qualitative research on the lived experiences of non-engagers. This is consequently an area this thesis sought to explore with the mixed-methods study in Chapter 4.

2.2 Barriers to Uptake and Early Engagement

DMHIs circumvent some of the structural barriers that impede access to traditional forms of therapy, such as prohibitive costs and long waiting lists [278], however new structural barriers include lack of reliable internet access, a personal technology device, and a basic level of computer literacy [278]. These structural barriers disproportionately affect those with lower education levels, lower socioeconomic status and those living in rural areas, factors that intersect with other personal characteristics such as ethnicity and age [334]. Across all therapy types, it has been widely identified that those in minoritised or marginalised groups face additional barriers to seeking help and receiving psychological care, both in terms of access and attitudes towards therapy [326,334,381].

Attitudinal barriers play a crucial role in uptake and engagement with therapy, and are often reported as the most impactful obstacles experienced by clients [10,121,370]. Two of the most common attitudinal barriers reported are low perceived need for support and a preference to deal with the problem on one's own [10,33,279,326,374]. Being mediated through technology,

DMHIs face additional attitudinal barriers, such as technology acceptance [287]. Attitudes are shaped by dominant cultural narratives about health and wellbeing and the social and economic systems we exist within [53,63,178], and thus intersect with gender, class and other social factors [206]. For example, the clinical literature consistently demonstrates that women are more likely than men to perceive a need for support, to seek help, and to stay engaged with DMHIs [10,26,45,198,350], a finding intricately linked with how gender is culturally formulated [9]. Some of these common barriers will now be explored in more detail, along with the implementation factors that impact the delivery of DMHIs [278].

2.2.1 Perceived Need

Research indicates that the primary reason clients seek out mental health support is to reduce psychological distress, i.e., to feel better [288,350]. This can be underpinned by a biological, hedonic drive to alleviate pain, but equally by a social drive towards normative conceptions of the ideal *healthy, happy* self [2,104,400]. Medically framed research on the link between need and engagement has usually focused on objective need, or symptom severity, as assessed by standardised outcome measures; these studies have shown that the more severe a person's symptoms, the more likely they are to seek support in general [350] and stay engaged in a DMHI [26,159,261], despite DMHIs being recommended by the National Institute for Health and Care Excellence (NICE) for those with mild to moderate symptoms [291]. Conversely, other research has indicated that baseline symptoms do not predict adherence to DMHIs [198], or that only certain symptom measures predict dropout [122].

There is clearly a difference between *objective* need as evaluated by standardised measures and *perceived* or *subjective* understandings of need. Perceived need can be multifaceted and is deeply enmeshed with a person's life and circumstances, as research suggests that distress is as much a product of social, contextual factors as it is an individual emotional response [8,213,313]. A recent qualitative study of dropout from a DMHI found that clients' motivations to seek treatment were clustered into two categories: symptoms of psychological distress, and stressful life events [221]. In line with this, common reasons for seeking help cited by clients include reference to precipitating stressors, such as interpersonal or relationship problems, productivity in work or study [265,288], and bereavement [221]. Additional stressors such as discrimination and inequality are a core aspect of why women, those who are less privileged and minoritised groups are more likely to experience emotional distress [9,206,277,381].

Other factors at play here include the duration of a person's distress and the extent to which it impairs functioning and impacts relationships [350]. An interesting area linked to perceived need and context is busyness; *lack of free time* is a commonly reported barrier to engagement with DMHIs [31,45,261,326,360,430], which highlights both external pressures (e.g., childcare and work schedules) and internal evaluations around the importance and urgency assigned to

the task of *self-care* [187,400]. In overlooking these patterns of experiences, purely quantitative clinical research often decontextualises and dehumanises distress [313]. Understanding the complex interactions between DMHIs and the context of their use and non-use is a key area for consideration in HCI [29].

2.2.2 Culture and Stigma

Lack of mental health literacy, i.e., knowledge about recognising, managing and preventing mental distress [104], has been suggested as a factor influencing the pervasiveness of low perceived need for mental health support [8,144]. The very concept of mental health literacy however, implies a singular truth that is devoid of cultural context. Understandings of mental health are culturally and historically constructed, culture influences the development of attitudes towards mental distress, perceptions of need and subsequent decisions around help-seeking [53,63,212]. Established ideologies and social norms shape our beliefs about what constitutes normal vs aberrant behaviour; diagnostic definitions are affected by and in turn also affect these judgements [87,228].

Despite advancements since the deinstitutionalisation of asylums, psychiatry's history of systematic oppression, colonialism and social control has left, as its legacy, the *mental illness as societal threat* paradigm [136,313]. Thus, seeking support for mental distress is often attributed with negative characteristics such as helplessness and weakness [401]. Asking for help can be seen as an admittance of failure, an act that signifies the individual is now labelled *someone who needs psychological help* [78]. This effect can be more extreme for men, due to masculinity norms which promote strength and independence [125].

Research in western contexts has shown that mental health stigma is directly related to lower help-seeking in the general population [374], and global research shows that, of those who do express the need for mental health support, *a preference to deal with the problem on one's own* is frequently cited as the main reason for not commencing or engaging with interventions [10,33,121,326,370]. Even when clients reach the stage of being able to acknowledge the need for external help, there are clearly culturally mediated risks associated with obtaining this help that need to be assessed [370]. These risks can be more pertinent among minoritised groups, who have historically been mistreated by coercive healthcare systems and exposed to structural stigma and racism [196,313].

Mental health stigma within individuals (as opposed to structural stigma) has been theorised as consisting of two linked constructs: public stigma, (i.e., prejudice or discrimination against others experiencing mental distress), and self-stigma (i.e., the internalisation of public stigma) [23,77]. Research suggests that these two constructs have different relationships with attitudes towards seeking professional help, with self-stigma playing a more adverse role due to its

impact on self-esteem and self-efficacy [23,279]. There have been calls for further research into the effects of self-stigma on help-seeking [182,374] and little is known, in particular, about the impact of self-stigma on help-seeking via technology. Using a DMHI circumvents some of the barriers associated with public stigma, due to its anonymity and ease of access [325], but the relationship it has with self-stigma is less clear. The complexities inherent in the connection between culture, mental health paradigms, awareness of the need for support, access and engagement with care are intricate and under-researched [4,79,108].

2.2.3 Technology Acceptance

Other factors from the literature that affect motivation specifically for DMHIs relate to the client's attitude towards and expectations of technology [31,261]. DMHIs have only recently become part of mainstream mental healthcare in a limited number of countries, so clients may not have a realistic mental model of what the experience of using this type of intervention will be like [45]. Along with this lack of familiarity comes a flooded *wellbeing app* market, where light-touch digital programs that have little evidence-base confound perceptions of digital interventions more broadly [65]. In light of this, attitudes towards DMHIs are often negative among those who have not used them [45,158]. Studies show that DMHIs are perceived as less helpful, credible and motivational than FTF therapy and that FTF therapy is often the preferred choice over digital interventions [11,119,284]. A common barrier linked to low uptake and engagement with DMHIs is the belief that they will not work or be useful [31,45,261].

Perceived usefulness is a concept explained within various theoretical models, such as the Health Information Technology Acceptance Model (HITAM) [209], which proposes that the perceived threat of a particular illness, combined with the perceived usefulness and perceived ease of use of a piece of technology, affects attitudes, intentions and resulting health related behaviours [209]. Under the HITAM, the reliability of the DMHI and the self-efficacy experienced by the client in relation to the DMHI collectively impact perceived usefulness and perceived ease of use [209]. In terms of ease of use, technical difficulties can be hugely frustrating for people already experiencing distress or anxiety, and thus lead to negative experiences which undermine the value of this type of support for clients [184]. Thus technical difficulties have been reported as significant barriers to DMHI use [360,373], and engagement is facilitated if clients are informed or trained about how to use the technology [45].

Perceived fit, or the relevance of content to the client's needs, its cultural appropriateness and whether the DMHI can be customised or personalised are also factors effecting perceived usefulness [45]. Wider technology acceptance issues around data security, usability and trust can also influence motivation and engagement [158,360,373]. Few studies to date have explored how clients construe usefulness in relation to DMHIs, and what influences the development of these perceptions.

2.2.4 Implementation Factors

The healthcare ecosystem that surrounds the DMHI and how it is implemented in practice can also have a substantial impact on client uptake and early engagement [90,154]. In fact, a recent review of the engagement with DMHI literature concluded that the disparity between the efficacy of DMHIs in controlled trials and their low effectiveness in real-world contexts indicates that *"the engagement problem is an implementation problem"* [236]. A number of implementation aspects are particularly relevant to uptake and engagement with DMHIs, including how clients are referred into the intervention, and the level of human support provided. In terms of referral, self-referral pathways are often a core component of population-health approaches, despite the fact that clients referred to DMHIs by medical professionals have much greater odds of engaging than those who self-refer online [26,198]. Little is known about how clients experience the self-referral process however, and why it leads to lower engagement. Engagement is also higher when interventions are guided by a human therapist, rather than being self-guided [45,444], but again, it is unclear how clients perceive these different support models.

Implementation science is a field dedicated to understanding and improving how interventions function in the real-world, and as such it provides insight into other service-level factors that might impact uptake and engagement with DMHIs [90,115,154,323]. Implementation science research indicates that effective organisational leadership, management, training, supervision, technical support, interoperability of DMHIs with other digital systems, the presence of digital champions and an evolving adaptation of implementation over time can all contribute to the successful integration of DMHIs within services [115,154]. This in turn can influence the attitudes held about the DMHI by clinicians and those delivering it, which has been shown to effect both client uptake and adherence [45,154].

Other service-level differences which can impact client uptake and engagement include the organisational culture, goals, values, metrics for success, and care pathways [90,91]. Each service provides the DMHI as part of a wider offering of psychological services (e.g., the UK's National Health Service (NHS) Improving Access to Psychological Therapies (IAPT) program is based on a stepped care model, where clients can be stepped up or down to more or less intensive treatments depending on need [71]). Some services, such as universities or smaller organisations, do not have the workforce capacity or funding to provide this level of holistic support. What's more, these smaller services may not be able to manage the additional costs associated with applying recommended implementation strategies such as training and supervision [154]. There is a dearth of research from the client's perspective on the systemic or implementation factors that might affect their uptake and engagement with DMHIs [350]. In comparing different implementation variables (e.g., the care pathways and support options

available), we can explore how a client's journey is situated within this ecosystem and how these often-hidden variables affect the lived experiences of DMHIs.

2.2.5 In Summary

The existing literature on barriers to DMHI use tends to isolate factors related to the client's attitude from other structural or contextual barriers. However, most of the attitudinal barriers explored in this section (e.g., lack of perceived need for support, self-stigma and negative beliefs about technology) are entwined with the person's life and circumstances, the dominant narratives about health and wellbeing that shape their culture and the social and economic systems they exist within. There are also crucial structural aspects related to the healthcare ecosystem that surrounds the DMHI and how it is implemented in practice that can impact both the client's attitude and their uptake and engagement.

There is a considerable gap in our understanding of the real-world *context* of client non-engagement, and the complexities inherent in the connection between engagement and factors such as culture, mental health paradigms, awareness of the need for support, access, broader perceptions of DMHIs, and implementation variables. Thus, context was a core aspect of the mixed-methods study described in Chapter 4 and the subsequent mental health journeys study outlined in Chapter 5.

2.3 Theoretical Landscape of Readiness and Motivation for Digital Mental Health Support

Readiness for digitally delivered mental health support is a complex subject, without any single unifying or dominating theoretical position [209]. Consequently, there are a large number of models and frameworks of relevance to this area, including those focused on motivation and behaviour change in general (e.g., Self-Determination Theory [100]), those more specifically centred on health-related behaviour change (e.g., Health Belief Model [181]) and those explaining technology acceptance (e.g., Technology Acceptance Model [97]). There are also models that cross between the health and technology domains (e.g., Health Information Technology Acceptance Model [209]), and some that specifically explore help-seeking for mental health (e.g., Seeking Mental Health Care Model [257]).

Many of these models take a cross-sectional, fixed perspective (hereafter referred to as *static* models), while some account for the process of change over time, which will be referred to as *temporal* models [287,439]. As behaviour, motivation and readiness are dynamic processes that change over time, static models may not adequately explain their fluctuating nature, thus limiting our broader understanding of this area [37,184,185,439]. See Table 2.1 for a list of

some of the most widely used and cited models in the area, which will be explored in more detail in the following sections [98,260].

Table 2.1. Models of relevance to readiness and motivation for digitally delivered mental health support.

	Motivation & Behaviour Change	**Technology Acceptance**	**Health Behaviour Change**	**Mental Health Help-seeking**
Static Models	Self-Determination Theory (SDT)	Technology Acceptance Model (TAM)	Health Belief Model (HBM)	Seeking Mental Health Care Model (SMHC)
	Social Cognitive Theory (SCT)	Unified Theory of Acceptance and Use of Technology (UTAUT)	COM-B System & Behaviour Change Wheel (BCW)	
	Reasoned Action Approach (RAA)	Health Information Technology Acceptance Model (HITAM)		
Temporal Models	Mindset Theory of Action Phases (MTAP)	Karapanos et al.'s framework	Transtheoretical Model (TTM)	Rickwood et al.'s model
		Technology Acceptance Lifecycle (TAL)	Health Action Process Approach (HAPA)	Cycle of Avoidance (COA)

Use of Theory in Practice

These models are used by service providers, designers and researchers in the digital therapeutics and HCI domains for a number of purposes. Firstly, they often guide efforts to increase uptake and engagement with DMHIs, for example in the design of interventions aimed at improving the client's motivation and readiness for digital support. These have included an acceptance facilitating intervention based on the Unified Theory of Acceptance and Use of Technology [119,426], motivational interviewing strategies based on the TTM [222,294,397,418] and an engagement-facilitation intervention based on the Reasoned Action Approach [25,133]. There is a dearth of research mapping the range and effects of these interventions, hence this will be explored in more detail in the scoping review in Chapter 3.

Outside of these specific 'readiness' interventions, these models are being used in research and design of novel mental health technologies [286,325], and in terms of healthcare strategy, they often inform system-level policy recommendations (e.g., NICE guidelines [289]). They also appear in training materials for clinicians who deliver and support DMHIs [362], and have been used to develop measures that aim to predict therapy engagement and outcomes, the use of which might impact service implementation factors such as client referral and the allocation of additional resources [149]. Research suggests that some models, such as the TTM, have become so ubiquitous that they form a core part of everyday clinician language in practice, shaping the way clinicians think about their clients [275]. These models evidently have a considerable impact on real-world decisions and behaviours related to engagement with DMHIs, however it

can be noted that none of them have been specifically designed in relation to *digitally* delivered *mental* health support.

2.3.1 Static Models

Static Models: Motivation & Behaviour Change

In terms of general models that explain behaviour change and motivation, some of the most widely used in the health domain are Self-Determination Theory [99], Social Cognitive Theory [17] and the Reasoned Action Approach [133]. **Self-Determination Theory** (SDT) posits that there are two different types of motivation - autonomous and controlled motivation, each of which has a distinct effect on behaviour and wellbeing, particularly in terms of long-term outcomes [99]. Autonomous motivation is largely intrinsic and occurs for behaviours that an individual values and personally endorses, whereas controlled motivation involves external pressures, regulations or contingencies, such as reward and punishment [260,363]. According to the theory, the type and strength of motivation a person experiences is effected by social conditions and the fulfilment of our basic psychological needs for autonomy, competence and relatedness [100]. SDT has been used in the design of numerous interventions aimed at increasing motivation for health related behaviours [297,363] and is endorsed by proponents of Positive Computing as the key to engagement, motivation and wellbeing in digital technologies [316].

Social Cognitive Theory (SCT) focuses more specifically on the interrelated cognitive, social, and behavioural determinants of motivation [260]. Derived from Social Learning Theory, SCT proposes that personal agency is rooted in complex social structures and systems, and can be enacted personally, through influence on others, or collectively as part of a group [17]. In referring to agency, SCT encompasses both motivational and behavioural components, including forethought, intention, self-regulation, adaptation and self-efficacy [17,260].

The **Reasoned Action Approach** (RAA) is the most recent version of the Reasoned Action family of models, which includes the Theory of Reasoned Action and the Theory of Planned Behaviour [5]. A key feature of these models is the isolation of intention to behave as an independent construct mediating the relationship between attitudes and behaviour [133]. According to the RAA, attitudes, norms and perceived behavioural control all combine to effect the development of intentions and subsequent behaviour based on these intentions [133,260]. While some evidence suggests that intentions can be significant predictors of health behaviours [255,386], other research proposes an intention-behaviour gap to explain the findings that conscious intention often does not lead directly to action [27,384,431].

Static Models: Technology Acceptance

Frameworks explaining technology acceptance are also of relevance to readiness for digital mental health support. Some of the most notable of these include the Technology Acceptance Model [97], and the United Theory of Acceptance and Use of Technology [426]. The **Technology Acceptance Model** (TAM) was developed in the information systems field to describe general computer usage behaviour and adoption of technology, primarily in the workplace [97]. Based on the RAA, the model proposes that two key beliefs users can hold about a certain technology, perceived usefulness and perceived ease of use, effect their attitudes, intentions and resulting behaviour in relation to that technology [97]. A second version of the theory (TAM2) later included subjective norm as a third construct, which has been found to influence perceived usefulness itself, along with intentions and ultimate acceptance [372,425]. Early research found that perceived usefulness was the most important indicator of positive intentions to use a system; in the words of Davis and Bagozzi themselves, *"users may be willing to tolerate a difficult interface in order to access functionality that is very important, while no amount of ease of use will be able to compensate for a system that doesn't do a useful task"* [97]. A systematic review of the use of the TAM in the health domain found that it was often extended to include other constructs, as health behaviours are more complex than the organisational behaviours the model was originally developed to explain [332].

Outside of the health domain, one notable extension of the TAM (which also incorporates constructs from seven other models including SCT and the RAA) is the **Unified Theory of Acceptance and Use of Technology** (UTAUT). This theory was developed in order to explain technology acceptance in more detail, and proposes three direct determinants of intention to use a system (performance expectancy, effort expectancy, and social influence) [426]. Actual usage behaviour is theorised as dependent on both intentions and facilitating conditions (e.g., perceived behavioural control, self-efficacy, guidance and technical support, and compatibility or lifestyle fit). The model also considers the moderating variables of gender, age, experience, and voluntariness of use, which is a key distinction from many other models that do not reference the importance of individual characteristics. The relationships between constructs in the UTAUT have been demonstrated to be robust [207], however, again its applicability to health, and more specifically mental health, is less well established.

Static Models: Health Behaviour Change

There are a number of descriptive behaviour change models that relate to health specifically, such as the Health Belief Model [181], and the COM-B System [267]. The **Health Belief Model** (HBM; see Figure 2.1) was initially developed to explain why people often do not take action to prevent or detect disease [181]. It suggests that belief in personal threat or danger of an illness is derived from both the perceived severity of the illness in question, along with the person's

perceived susceptibility (i.e., the extent to which the individual believes they are personally at risk of this illness) [181]. Once somebody perceives a threat, their likelihood of engaging in a certain health behaviour in order to evade this threat then depends on the perceived benefits (i.e., efficacy and feasibility) and barriers (i.e., cost, duration, inconvenience) of that behaviour. The HBM also incorporates modifying factors such as demographic and sociopsychological variables, and a crucial trigger or cue to action which precipitates behaviour. This cue can either be internal (e.g., symptoms or pain) or external (e.g., public health campaign, mass media or a social interaction).

Self-efficacy was later added to the model when it evolved to explain behaviours that were more complex than simply getting a vaccination or health screening; when the behaviour is more challenging or takes more effort (e.g., exercising, stopping smoking) people can doubt their own ability to undertake it [260]. In terms of mental health, a recent large scale study found that treatment utilization for depression was significantly associated with all domains of the HBM [230]. The model has been criticised, however, for downplaying social and non-conscious factors [260].

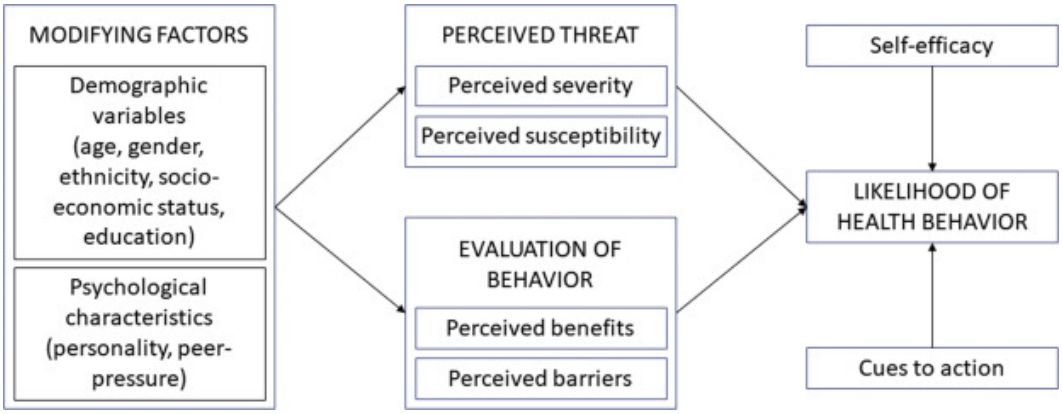


Figure 2.1. Health Belief Model

Another health behaviour change theory which does account for non-conscious processes is the **COM-B System**. This model proposes that three conditions are necessary for an individual to engage with a target behaviour: capability, opportunity and motivation [267]. Michie et al. define motivation as *"all those brain processes that energize and direct behaviour"*, which includes automatic or habitual processes and emotional responses (automatic motivation) as well as rational decision-making and conscious intention setting (reflective motivation) [267]. The COM-B system forms the central hub of a larger framework called the *Behaviour Change Wheel*, which characterises potential intervention functions and broader policy categories as the means to influence the three COM-B conditions, and thus bring about the desired behaviour

[267]. Due to its focus on intervention strategies, the COM-B system is often used at an implementation level to design and assess aspects of health systems and services (e.g., [30]).

Static Models: Mental Health Help-seeking

In terms of frameworks specifically exploring help-seeking for mental health, the **Seeking Mental Health Care Model** (SMHC; see Figure 2.2) was recently developed and includes high-level superordinate variables, as well as intermediary attitudinal variables [257]. According to the model, these variables are interlinked and combine to influence help-seeking awareness, intentions and actual behaviour [257]. The superordinate variables are stigma and treatment experience, which are connected and both exert influence on the intermediary variables of continuum beliefs, mental health literacy, causal beliefs, and self-efficacy. The model proposes that the help-seeking process begins with self-identification, or the individual becoming aware that their distress is a symptom of a mental health issue [257]. Similarly to the RAA and UTAUT, the model relies on intentions as the core mediator between awareness and behaviour.

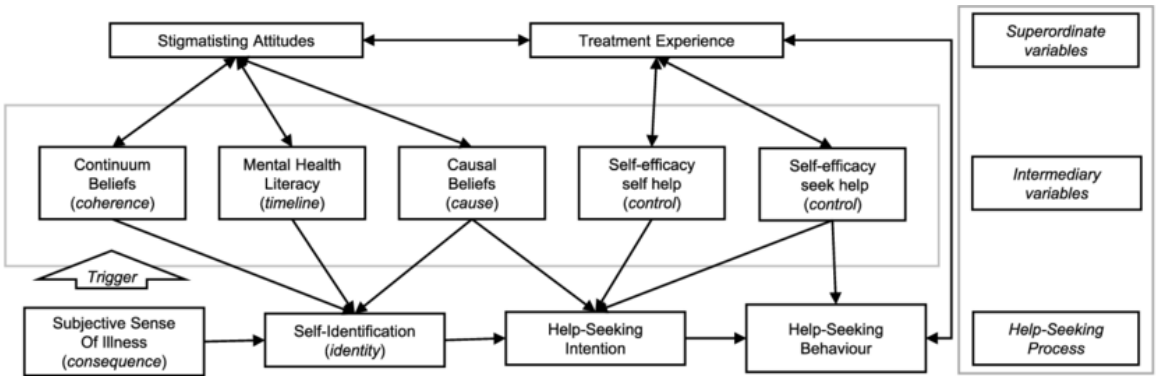


Figure 2.2. Seeking Mental Health Care Model

Static Models: Health Information Technology Acceptance Model

One notable model that bridges the domains of technology acceptance and health behaviour change is the **Health Information Technology Acceptance Model** (HITAM; see Figure 2.3) [209]. This model is an extension of the TAM, that also draws on the HBM and the RAA. The HITAM describes a series of interlinking antecedents and mediating variables that can influence attitudes, intentions and subsequent use of health information technology [209]. In the HITAM, constructs from the HBM (i.e., perceived threat of an illness as derived from perceived severity and perceived susceptibility) fall under the *health zone*, and are represented by the antecedents health status and health beliefs and concerns, which combine to impact upon the mediating process of perceived threat. In addition to the health zone, the model includes information and technology zones, where subjective norms, the reliability of the technology in question and the self-efficacy of the individual in relation to this technology form

the antecedents to the mediating processes of perceived usefulness and perceived ease of use [209].

While evidence validating the HITAM is scarce [208,209], the models that underpin it are widely known and utilised in the literature [230,287,332]. Along with the validation of these models comes their critique, and like many models in this space the crux of the HITAM relies on a direct relationship between intentions and behaviour [346]. The intention-behaviour gap highlights another central issue in using static models like the HITAM – that attitudes and motivation evolve over time. Thus, some commonly used models that take a time-based perspective on motivation, technology acceptance and health behaviour change will now be explored in more depth.

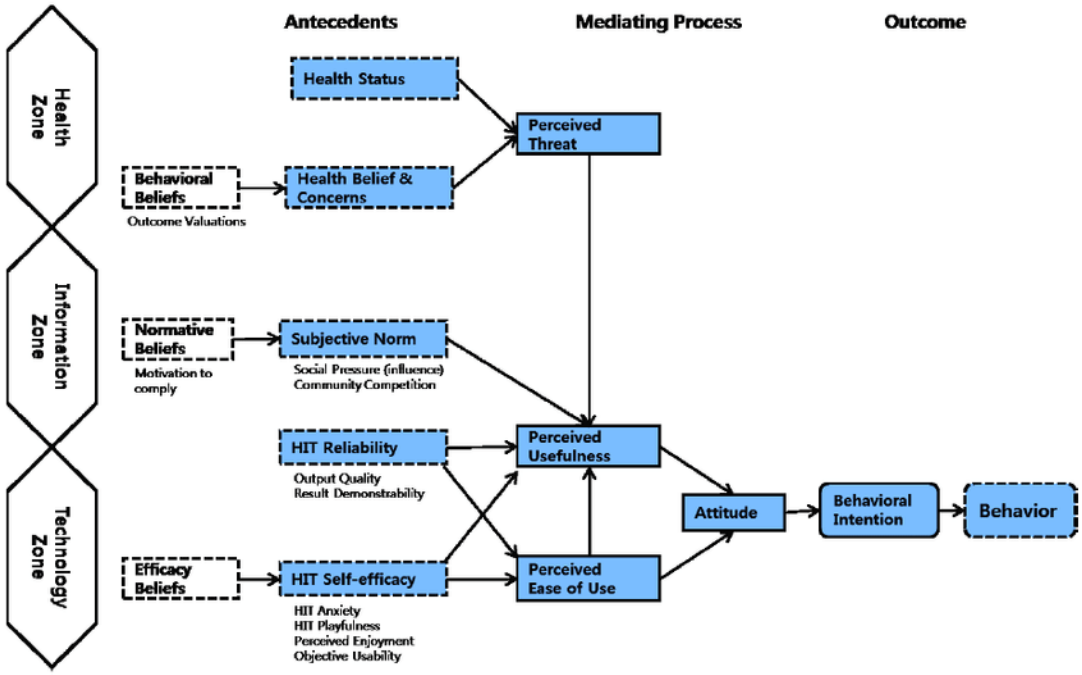


Figure 2.3. Health Information Technology Acceptance Model

2.3.2 Temporal Models

Temporal models help us to understand motivation and readiness as processes rather than fixed states [89]. These models often involve cyclical or stage based approaches, where time and progress are represented and individuals can be said to be aligned with a certain stage at any one time on their journey [287].

Temporal Models: Motivation & Behaviour Change

An interesting temporal model related to general motivation and behaviour change is the **Mindset Theory of Action Phases** (MTAP; see Figure 2.4), which distinguishes between the different cognitive processes involved in the motivational versus the volitional stages of goal pursuit [152]. This model was preceded by the Rubicon Model of Action Phases, which involved

four phases: 1) predecisional phase, where individuals consider their desires and needs and the rationale for pursuing different goals. Once a decision is made and a goal is chosen the individual is said to move on to phase 2) preaction, when planning and initiating behaviour occurs, and through to phase 3) action, which involves continuing with and completing the goal-directed behaviour. Finally, in phase 4) postaction, the individual decides whether they have successfully achieved their goal or whether more action is needed [202].

The Rubicon model became the MTAP when it was proposed that the phases are associated with different mindsets, i.e., phase one and four are associated with motivational cognitive processes, termed the *deliberative* mindset, whereas phase two and three pertain to volition or an *implemental* mindset [152]. A notable feature of the MTAP is the focus on how intentions are translated into actions; research on the implemental mindset found that certain types of planning were more effective in goal pursuit, e.g., contingency plans that specify when and how hypothetical barriers to action will be overcome, termed implementation intentions [152,202]. A recent meta-analysis of six meta-analyses of implementation intentions (some related to health behaviours), demonstrated their effectiveness in promoting behaviour change [202].

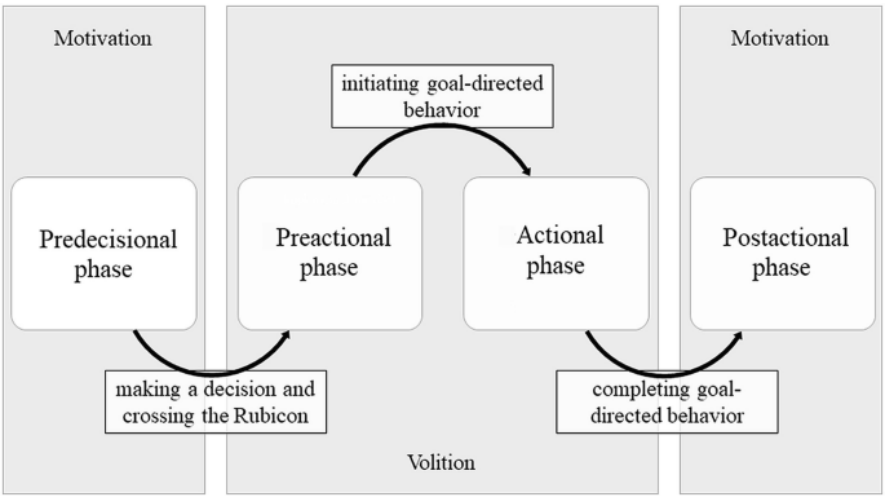


Figure 2.4. Mindset Theory of Action Phases

Temporal Models: Technology Acceptance

Regarding technology acceptance, two relevant temporal models are Karapanos et al.'s framework of user experience over time [197], and the Technology Acceptance Lifecycle [287]. **Karapanos et al.'s framework** (see Figure 2.5) comprises of three stages which individuals are said to progress through in their adoption of technology – orientation, incorporation, and identification [197]. Orientation relates to the first use of the technology and initial experiences with it, which tend to be impacted by the product qualities of ease of use or learnability and stimulation. In the incorporation stage, the usefulness and long-term usability of the product become paramount, as individuals reflect on its meaning within their daily lives. Finally, when

individuals come to the identification stage, the product has become part of their personal or social identity. In this stage, emotional attachment is the main force driving adoption, preceded by the force of functional dependency in the incorporation stage and familiarity in the orientation stage; these forces are said to move people through each of the stages [197].

Prior to the three stages comes anticipation, where expectations are created that influence the acceptance of the technology. Karapanos et al. propose that expectations are also shaped by the experience with the technology itself, in an adaptive manner whereby expectations are subsequently adjusted to fit with actual experiences of the technology. On the whole, the model is described as consisting of micro-temporal experiential episodes, whereby expectations give way to experience which results in judgements about the product. These discrete episodes combine to create an overall sense of an experience with a technology [197].

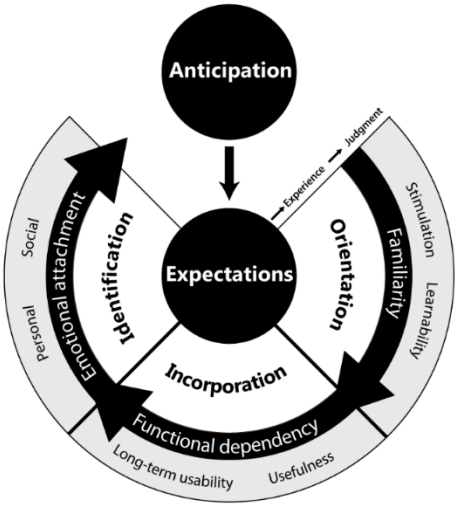


Figure 2.5. Karapanos et al.'s framework of user experience over time.

Another more recent temporal theory of user acceptance of technology is the **Technology Acceptance Lifecycle** (TAL), which derived from a scoping review of technology acceptance specifically in mobile health [287]. This model consolidates multiple definitions and theories used in this space, with a focus on representing the evolution of technology acceptance across the user journey (see Figure 2.6). The TAL distinguishes between acceptability and acceptance, with the former proposed as a stage that occurs before first use of the technology and the latter as something which evolves from initial to sustained use. The model also includes adoption as a point that occurs sometime during sustained use of the technology [287]. While this model does not describe the mechanisms by which acceptance might occur, as does Karapanos et al.'s, it provides a useful timeline on which to anchor and visualise the many different interpretations of technology acceptance.

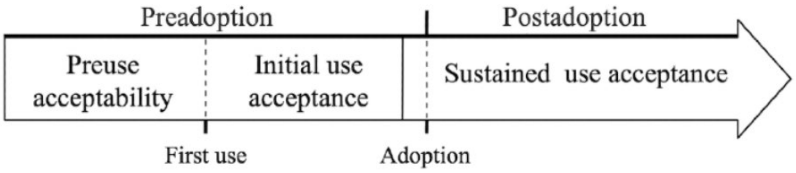


Figure 2.6. Technology Acceptance Lifecycle

Temporal Models: Health Behaviour Change

In terms of temporal health behaviour change models, the most notable and relevant frameworks are the Health Action Process Approach [378] and the Transtheoretical Model [328], which will be explored in more detail in the next section. The **Health Action Process Approach** (HAPA; see Figure 2.7) is a model that integrates aspects of SCT, the RAA and the MTAP. Similarly to the MTAP, this model distinguishes between the process of motivation, which leads to a behavioural intention, and the process of volition, which translates the intention into an actual health behaviour [379]. Between intention and action is said to be a planning stage, not dissimilar to the preaction phase of the MTAP, where individuals prepare for the behaviour by specifying the context and conditions under which they will act, along with anticipating barriers and devising methods for overcoming them [449]. The presence of this planning stage is said to mediate the relationship between intentions and actions, and thus bridge the intention-behaviour gap (a criticism often levelled at the RAA family of models and their descendants) [27,379,384,431].

In line with these three stages, the HAPA suggests that individuals can fall under one of three mindsets or groups – preintenders, intenders and actors. In terms of the preintentional motivational phase of the HAPA, antecedents to the formation of an intention include risk perception (akin to the construct of perceived threat seen in the HBM and HITAM), positive outcome expectancies related to the consequences of the behaviour in question and self-efficacy, or an individual's belief in their ability to perform said behaviour.

Self-efficacy is an important concept in the HAPA, and is theorised as contributing to change and action across both the motivational and volitional phases of the model, albeit in different phase-specific forms. Motivational self-efficacy (also called preaction, action or task self-efficacy) pertains to an individual's belief in their ability to face a new or novel challenge, whereas maintenance or coping self-efficacy relates to an individual's ability to persist with a behaviour and overcome barriers that might arise. Recovery self-efficacy, in contrast, refers to how the individual attributes lapses and setbacks and how they perceive their capacity to regain control after such incidents [378,379].

A recent meta-analysis of the HAPA found that motivational and maintenance self-efficacy and outcome expectancies were the constructs with the largest effects on health behaviours,

however the impact of the different forms of self-efficacy varied depending on the health behaviour in question [451].

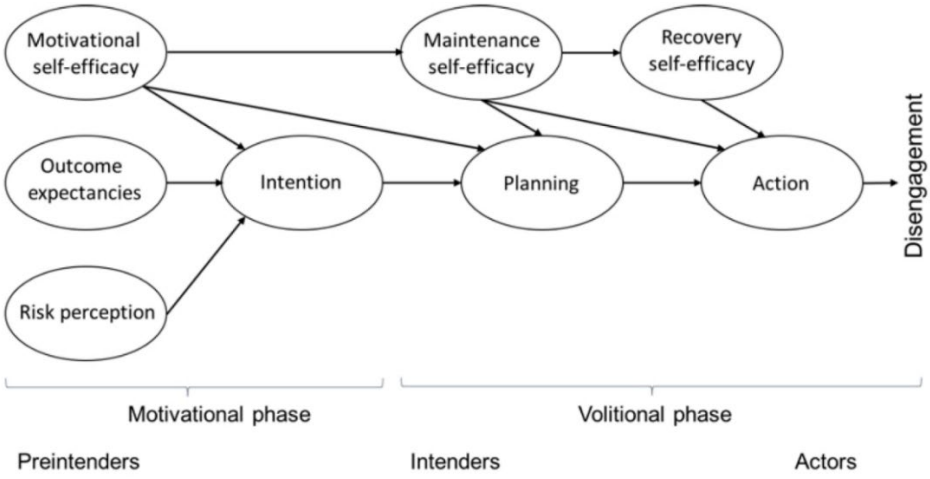


Figure 2.7. Health Action Process Approach

Temporal Models: Mental Health Help-seeking

In terms of temporal models that pertain specifically to help-seeking for mental health concerns, two key models are Rickwood et al.'s help-seeking model and the Cycle of Avoidance. **Rickwood et al.'s help-seeking model** (see Figure 2.8) was developed in relation to the behaviour of young people, and conceptualises help-seeking as a process *"whereby the personal becomes increasingly interpersonal"* [346].

According to Rickwood et al., the most relevant factors relating to help-seeking are those that function at the nexus between the personal and interpersonal domains, because both formal and informal help-seeking are types of coping behaviour that depend on relationships and social skills. The model proposes that the first stage of the help-seeking journey involves awareness of symptoms and consideration of whether the individual has a problem and needs help. Once the individual is aware of the problem and perceives a need for support, they then have to express this need to others, and others must be available to hear them. Finally, the individual must be willing to accept help and disclose their symptoms and needs to the available source [346].

A recent mixed-methods study that used Rickwood et al.'s model to explore young people's online help-seeking found that in an online context, the entire help-seeking process can be undertaken without the need to traverse the interpersonal domain [325]. The stages of the model were still found to be a useful framework however, even in an online context, as they represent some of the important circumstances necessary for help to be sought and accessed.

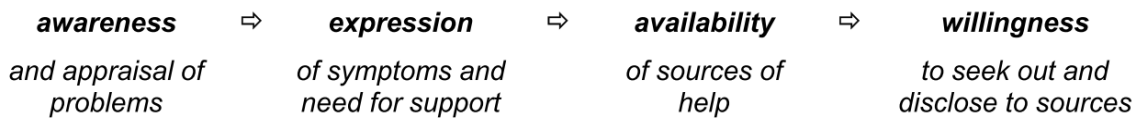


Figure 2.8. Rickwood et al.'s help-seeking model

The **Cycle of Avoidance** (COA; see Figure 2.9) model describes a more dynamic, internal approach to help-seeking, whereby lay diagnosis of symptoms as not 'real' distress occurs in a cyclical process of repeated normalisation and avoidance of the need for help [37]. This model represents just the first stage of the journey described in Rickwood et al.'s model (and the SMHC model) but also sheds light on how the entire act of help-seeking, i.e., decisions about whether or not to seek help and what type of help to seek, are pivotal in defining the very meaning of distress [37]. The help-seeking journey is thus conceptualised by the COA as a fluid, multi-directional process, which distinguishes it from most sequential, stage-based frameworks [37].

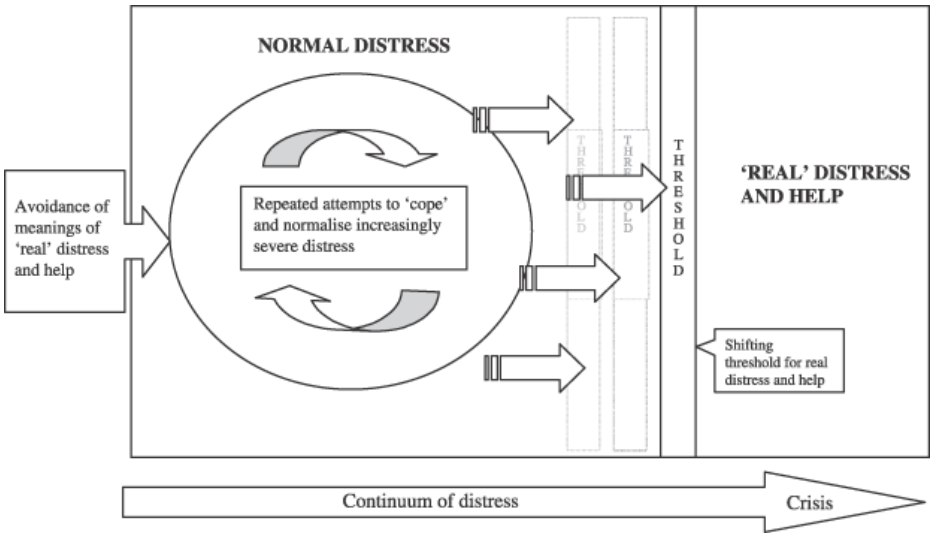


Figure 2.9. Cycle of Avoidance

While both Rickwood et al.'s model and the COA explore help-seeking temporally and incorporate sociological aspects (both highly relevant in the mental health domain [213,250,353]), they concern solely the process of seeking help and do not cover engagement with the help once it is sought. Since many people seek help but subsequently do not engage with this help [28,69,73,134,148,261], the processes of help-seeking, readiness and engagement should be considered on a motivational continuum, as is done with the Transtheoretical Model (TTM).

2.3.3 Transtheoretical Model

The **Transtheoretical Model** (TTM), often known as the *Stages of Change*, is arguably the most widely known and used model in the health behaviour change domain [98,260]. The model was derived from a comparative analysis of prominent psychotherapy and behaviour change theories, and was originally developed to describe the processes involved in smoking cessation, although it has since been applied to a wide range of other health and mental health behaviours [294,327,328]. The basic premise of the TTM is that people move through a series of stages on their journey towards and through the process of change (see Figure 2.10). This theory describes behaviour change not just in terms of action, but as a wider contemplative process that begins before a person is even considering change [327].

The 'stages of change' represented in the TTM are precontemplation, contemplation, preparation, action, and maintenance. Precontemplation refers to the period before the individual is aware that they have a problem, when they are not thinking about change. In the contemplation stage, the individual is aware of their problem and considering change (within the next six months), but they have not made a decision to act. When this decision is made and the individual intends to change in the immediate future (i.e., the next month) they are said to be in the preparation stage; here they might also be taking some small steps towards change or planning how they might go about it. The action stage involves the individual making significant behavioural changes in order to address their problem, and finally the maintenance stage is marked by consolidation of behavioural changes and relapse prevention [294,328].

The model also encompasses ten processes of change that are proposed to help move people through each of the stages [294]. These processes are:

1. **Consciousness raising** – increasing awareness about the causes and consequences of, and solutions for, the health issue in question (e.g., through feedback, confrontations, or media campaigns).
2. **Dramatic relief** – enhancing emotional experiences (e.g., of guilt, fear, or regret) in order to stimulate anticipated relief if the behaviour or action is taken (e.g., through role-playing, personal testimonies, health risk feedback).
3. **Self-re-evaluation** – cognitively and emotionally assessing self-image with and without the new behaviour (e.g., through clarifying values, using positive images to envision future and healthy role models).
4. **Environmental re-evaluation** - identifying the effect of either the problem behaviour or the new healthy behaviour on the individual's social environment (e.g., through family interventions, testimonials or empathy training).
5. **Self-liberation** – developing belief in the ability to change and a commitment to change (e.g., New Year's resolutions, social collaborative goal-setting).
6. **Social liberation** – increasing opportunities for social connection around the new healthy behaviour (e.g., with smoke-free zones, exercise clubs, community or group mental health support).
7. **Counterconditioning** - learning new healthy behaviours (e.g., positive affirmations, relaxation techniques, and assertiveness skills).

8. **Stimulus control** – exchanging cues to problem behaviours with prompts to engage in the new healthy behaviour (e.g., through environmental re-engineering, and self-help groups).
9. **Contingency management** – planning potential consequences for engaging in old unhealthy behaviour or reinforcements for maintaining new healthy behaviour (e.g., incentives, contracts, group recognition).
10. **Helping relationships** – fostering caring, trusting, and open relationships with people who support the individual's behaviour change (e.g., through therapeutic alliance, rapport building, and buddy systems).

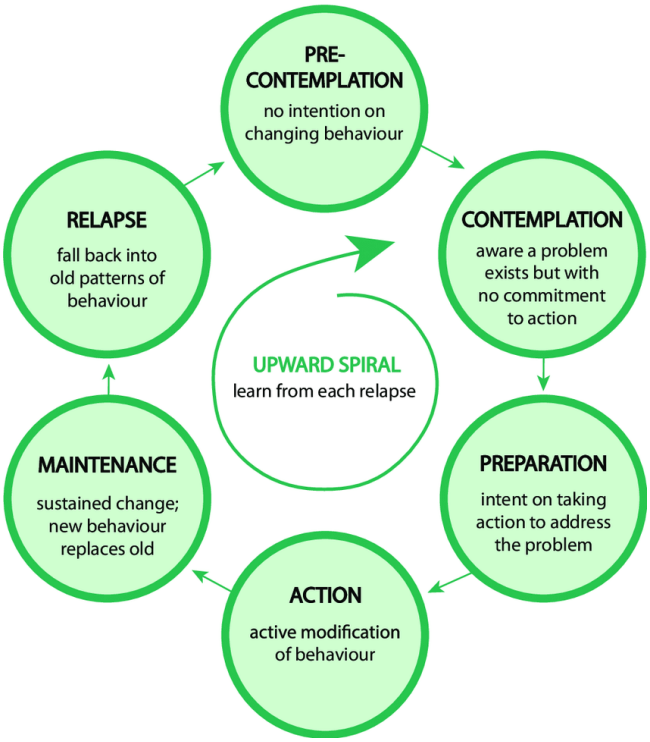


Figure 2.10. Transtheoretical Model

The TTM proposes that different processes are relevant to different stages of change, for example the processes at work during the precontemplation stage include consciousness-raising, dramatic relief and environmental re-evaluation, whereas in the contemplation and preparation stages the main process is self-re-evaluation. Self-liberation comes into play in the action stage and in the maintenance stage the processes include counterconditioning and helping relationships [260,328]. Other constructs present in the TTM are decisional balance, which involves weighing up the pros and cons of change, and self-efficacy, which relates to an individual's confidence in their ability to make the necessary changes and overcome temptation to relapse [328].

The TTM shares similarities with other stage based models such as the Precaution Adoption Process Model (PAPM), which includes the stages unaware of issue, unengaged by issue, deciding about acting, decided to act, acting, and maintenance [432]. The major difference is that the PAPM is described in terms of mental states, and it splits the contemplation stage into those who are aware of the problem but not interested in changing and those who are both

aware and interested in changing. This highlights a core issue with the TTM – there is no distinct stage or allocation given to those who are aware that they have a problem but are not contemplating change.

In terms of how the TTM relates to mental health support seeking and engagement, meta-analytic research indicates that the stage a client is in pre-treatment positively correlates with their outcomes post-treatment (i.e., the further along they are in terms of the stages, the better their outcomes) [217,294]. This relationship could be mediated by engagement, where those who are not adequately prepared (i.e., still in the contemplation or preparation stages) may have difficulties engaging with the support, and consequently lower outcomes [227]. In addition, it has been found that the precontemplation stage is directly associated with dropout from therapy [395]. In terms of early engagement, studies indicate that if the client is in the action stage at the onset of treatment, they can fully engage with the process immediately, rather than spending initial sessions or interactions in ambivalence and thus delaying improvements [26,226,227,434]. These studies rely on the measurement of which stage of change the client is currently in, which is generally accomplished using one of the measures described below.

Measuring the Stages of Change

The most frequently used measure of the stages of change in the mental health domain is the *University of Rhode Island Change Assessment* (URICA), which consists of 32 items, each rated on a five point Likert scale, that generate separate scores on four continuums: precontemplation, contemplation, action, and maintenance [112,217,253]. The preparation stage is determined by averaging the contemplation and action subscales, and an overall readiness to change score is calculated by adding together the means of the contemplation, action, and maintenance subscales, and then subtracting the precontemplation mean [46]. Other measures include the *Stages of Change Readiness and Treatment Eagerness Scales* (SOCRATES), which uses 19 items to produce three continuous scales: ambivalence, recognition, and taking steps [268] and the single-item *Stage of Change Scale*, which contains four responses that correspond to the pre-contemplation, contemplation, preparation and action stages of change [110].

A more recent measure, developed exclusively for the area of psychological therapy, is the six item *Readiness for Therapy Questionnaire* (RTQ) [149], based on the more extensive 20 item *Readiness for Psychotherapy Index* [300]. The RTQ includes questions on urgency, willingness to change, openness, perseverance, commitment and the importance of therapy and is assessed on a single readiness dimension where a higher score indicates a greater readiness for therapy [149]. This measure differs from the others in that it does not segregate individuals into discrete stages; a major criticism leveraged against the TTM relates to the integrity of the stages

and the fact that the model makes arbitrary divisions among complex, multifaceted factors that vary on a continuum [60]. Individuals responding to a questionnaire are usually compliant in terms of choosing a response, but this doesn't mean that their experiences coincide with the response options [433]. While the TTM authors do acknowledge that the stages of change do not necessarily define a client's experiences [217], the model has received critique for many other reasons. In order to proceed with a holistic understanding of the models and frameworks used in this area, these critical appraisals will now be examined in more detail.

2.3.4 Critique of Current Models

Stage-based Models

Aside from receiving criticism for their seemingly arbitrary nature, the stages associated with the TTM and some of the other models mentioned, have also been questioned in terms of their linearity. The simplicity and convenience of these models is undoubtedly what makes them so popular, however Bunton et al. note that simplicity can be misleading, and the categorisation of stages undermines the explanatory value of these models [60]. This compartmentalisation condenses and generalises experiences of change, which are often reported to follow more nuanced and diverse trajectories [36,335]. These experiences might include periods of self-discontent, being vulnerable in reaching out for help, coming to understand one's issue in more depth, searching for information and finding appropriate resources [36].

Bunton et al. argue that the stages in the TTM lack explanatory value and thus present a conceptual tautology, whereby the stages are described in terms of the very behaviours that the model is attempting to explain, which could undermine much of the empirical evidence supporting the theory [60]. Research which tells us that people in the action stage of change are more likely to act because they are currently acting does not seem entirely useful; critics of the TTM argue that this is little more than common sense [433]. This relates to Valsiner and Brinkman's questioning of the use of manipulable variables in psychological research, which can be seen as futile when we understand that human psychological processes are open systems comprised of exchange relations with the environment, that function on the basis of cyclical, rather than linear causality [424].

Misapplication of Theory

Another area of concern is the misapplication of these theories [260]. The TTM, for example, was originally developed to describe addictive or problematic behaviour, which involves a specific set of constructs that are not necessarily applicable to broader mental health domains [60,260]. Disengaging with an overtly risky health behaviour is a vastly different experience to initiating a new healthy behaviour. A meta-analysis of the TTM applied across a range of health problems found that the sequencing of the processes of change differed between problems

[358]. Understanding the processes that are pertinent to a specific domain at different timepoints is therefore an important factor to consider when using models such as the TTM.

In developing the *Readiness for Psychotherapy Index*, Ogrodniczuk et al., claim that readiness in relation to psychotherapy pertains to a specific activity (engaging in therapy) that is independent of the problem or problem behaviour that the client might fundamentally want to change [300], i.e., there is a difference between 'readiness for change' and 'readiness to engage in therapy in order to change'. This intermediary, proximal goal makes mental health support seeking more complex than change in relation to individual problematic behaviours [149,211,300].

In addition, many of the models used to explain motivation and behaviour change in relation to mental health do not address the broader sociocultural and environmental determinants of behaviour or distress [8,53,60]. Mental health is a social construct; culture and context influence the development of attitudes towards mental distress, perceptions of need and subsequent decisions around help-seeking [53,63,212]. Exploring readiness in isolation of context risks leaning towards *healthism*, or the implication that it is solely up to the individual to change their behaviour for better health [83]. There could be many factors, not under the control of the individual, that might impact their distress, their capacity to seek help or their readiness to engage with a DMHI [3,8,53,171,213,353]. In fact, research shows that emphasising these factors, rather than assumptions about the controllability of mental distress, can reduce self-stigma and improve attitudes towards help-seeking [23].

The self-stigma that surrounds help-seeking is another area that complicates our understanding of readiness to engage in therapy, as we saw with the COA model; internalised beliefs and deep patterns of emotion could make true readiness difficult to measure [23,78]. It may be because of these amorphous, concealed factors that individuals sometimes spontaneously engage in change even without any intentions, or more commonly, do not engage in a behaviour for which they are objectively 'ready' [431].

Intention-Behaviour Gap

This highlights a final criticism of models such as the TTM, the RAA [133] and its associated and descendent models (e.g., the HAPA [449]), which suggest that intentions are the most significant predictors of health behaviours [255,260]. These models make an assumption that people consciously plan changes before making them, and that these plans are coherent and stable [260,433]. Research on the intention-behaviour gap is compelling [27,384]; a meta-analysis of interventions aimed at increasing (predominantly health related) intentions found that some interventions had direct positive affects on behaviour even outside of any changes in intentions [431]. In some instances behaviour change can even precede cognitive change (e.g.,

in the case of legal or policy constraints, such as smoking regulations, where behaviours are controlled and attitudes follow [301]).

Subconscious processes such as reward and punishment responses, habit, emotional arousal and associated learning could play a more significant role in engendering health behaviour change than these models allow [98,433]. Some frameworks, such as the COM-B system, acknowledge the influence of these automatic types of motivation, which are not necessarily available to conscious awareness and might reflect more primitive, nonverbal drives and impulses (e.g., seeking affiliation or avoiding social rejection) [86,267,433]. While the more reflective type of motivation described in the TTM could drive behavioural intentions, planning and the purposeful 'readying' of oneself for change, automatic motivation may be more focused on the inherent qualities and satisfaction derived from the task at hand, and thus have more of an impact on moment-to-moment behaviour and the fulfilment (or not) of these conscious intentions [86]. Phenomenological HCI research indicates that change is perhaps a more idiosyncratic, continuous, and integrated process than previously thought [335].

How Theory Shapes Reality

Considering the problematic nature of the theoretical models discussed here, one might ask why they are still so popular and frequently used by service providers and researchers in the mental health domain? Davis et al. highlight that extent of use *"may not reflect perceived quality of the theory but instead, fashion, familiarity, prior training, exposure or incentivisation"* [98]. The practical utility, convenience and simplicity of these models appeals to researchers, designers and practitioners, particularly as they are seen to encapsulate a complex body of knowledge, which is otherwise potentially unwieldy and impenetrable [60]. This could be said of all theoretical models, they are practical tools for understanding complex processes and can never fully capture the entirety of a phenomenon [168,293]. Models play an important role in converting research into practice, but consideration should be taken in light of the 'methodological horror' of reflexivity (i.e., the theory we use shapes our reality, which in turn shapes our theories) [442].

Taking a paradigm level perspective on how the theory around readiness and motivation delineates our understanding, we can see that most of the theoretical models highlighted above situate motivation as an internal, instrumental entity existing predominantly within the mind of the client [275,436]. Møller discusses how motivation should be seen instead as a relational concept that emerges in response to concrete contexts and social encounters [275]. In order to move beyond these entrenched paradigms and understand readiness and motivation for digital mental health support in terms of the real lived experiences of clients, there have been calls for further temporal, idiographic and contextualised research in this area [98,168,266,293].

2.3.5 In Summary

There are a wide range of models and theories used to understand and explain readiness and motivation for digital mental health support. The most commonly used models derive from the domains of general motivation and behaviour change, health-related behaviour change, technology acceptance and help-seeking for mental health. Critique of the use of these models in the digital mental health domain highlights that while static models discount the process of change over time entirely, temporal models tend to focus on generalised, linear causality rather than depicting the process of becoming ready or motivated as dynamic, nuanced, and contextual, as has been suggested is the case.

Other critical appraisals relate to the relevance and applicability of these theories, none of which was developed for the specific context of understanding readiness and motivation for DMHIs. Engaging with (digitally delivered) support for mental distress is an entirely different process to seeking care for physical illnesses, disengaging with risky behaviours or using technology for non-health related functions. While some of the models explored in this chapter include reference to the social factors that influence motivation, none of them cover the social determinants of distress itself, and few incorporate the self-stigma of mental health, which is a significant factor that can impact perceived need, motivation and engagement with help.

Finally, while a number of the frameworks distinguish between motivation as automatic or reflective, many models take motivation to be only reflective, and thus centralise intentions as the primary indicators of behaviour or engagement. This narrow focus ignores a host of crucial factors related to more primitive, nonverbal drives and impulses, such as the inherent qualities and satisfaction derived from the task at hand, reward and punishment responses, habit, emotional arousal, and associated learning.

There are significant gaps in the theory we use to understand readiness and motivation for digital mental health support. Despite these gaps in our knowledge, efforts have been made to increase client readiness and motivation in order to address the pressing problem of low uptake and engagement with DMHIs. The study in Chapter 3 thus aimed to understand what is currently being done in practice in this area, so that this theoretical exploration might be complemented with a view of the concrete actions and interventions being developed and deployed. Then, through the studies in Chapters 4 and 5, this thesis aimed to address the gaps in our understanding, with research exploring the temporally dynamic, contextual, and momentary nature of motivation, situated in relation to need and distress, as influenced by both external and internalised sociocultural factors.

2.4 Understanding Readiness and Motivation in More Detail

It is clear from the previous sections that motivation for and engagement with digital mental health support are complex areas, with multiple factors to consider. In order to better understand this topic, this section will consolidate knowledge from the literature examined thus far and explore some of the complications and tensions that surround these areas.

2.4.1 Readiness

Readiness is a term often used in reference to the TTM or 'stages of change' (i.e., the further along someone is in terms of the stages of change, the more 'readiness for change' they are said to have [112,217,294]). As such, the term could be said to encompass both the motivational and action-oriented processes that combine to make someone prepared to engage in a certain behaviour [266]. According to a qualitative nursing study which examined the readiness of clients with chronic illness to make health-related changes, readiness is both a state and a process, i.e. a client can increase their 'readiness for change' until they can be said to be optimally 'ready' to change [89]. As we saw from the criticisms of the TTM however, readiness for this distinct health behaviour might be very different from readiness to engage in digital mental health support.

In terms of the difference between 'readiness for change' and 'readiness to engage in therapy in order to change' [300], Michie et al. advocate for a focus on the latter (i.e., the more immediate behavioural outcomes) in the development and evaluation of behaviour change interventions, rather than defining success in terms of outcomes further down the causal chain, which are usually the consequences of behaviour [266]. Klasjna et al. propose the terms distal outcomes (i.e., long-term, ultimate end-points or goals which can come about gradually and be effected by other factors) and proximal outcomes (i.e., short-term, behavioural outcomes that are intended to bring about distal outcomes) [211]. Thus readiness for therapy and engagement with therapy could both be defined as proximal outcomes, helping clients move towards their ultimate goals for therapy (e.g., feeling better) which are the distal outcomes of both therapy and any intervention designed to increase readiness.

This separation between proximal and distal outcomes is a core differentiator between readiness to change problematic health behaviours and readiness to engage in therapy. Many of the aforementioned models were designed around changing a problematic behaviour (e.g., smoking or alcohol use), where behaviour change could be considered both the distal and the proximal goal [98,168]. Readiness to change in relation to mental health is notably more complex, even without engagement with therapy as a mediating proximal goal. We saw in Section 2.2.2 Culture and Stigma, that mental health is a social construct; culture and context influence perceptions of need and subsequent decisions around help-seeking and engagement

with care [53,63,212]. Yet many of the models that have been examined do not address the social and contextual determinants of distress or the impact of self-stigma, nor do they make explicit the mental health narratives upon which they are based [60]. An important point to remember when considering readiness is that someone who is ready to change may be *more likely* to change, but readiness is not necessarily a prerequisite for change.

2.4.2 Motivation

Michie et al. define motivation as *"all those brain processes that energize and direct behaviour"*, which includes involuntary or habitual processes and emotional responses (automatic motivation) as well as rational decision-making, goal pursuit and conscious intention setting (reflective motivation) [267]. Many of the theoretical models that have been explored focus solely on reflective motivation, which we saw in the critique of these frameworks which highlighted the intention-behaviour gap [27,384,431]. Automatic motivation implies processes that are not necessarily available to conscious awareness, and thus may be more focused on the inherent qualities and satisfaction derived from the task at hand [86]. Automatic motivation in relation to engagement with digital mental health support would therefore relate to the experience of using the intervention itself, apart from any anticipated outcomes.

Both the automatic and reflective motivation described by Michie et al. could fall under the category of intrinsic motivation, which is internally derived, as compared to extrinsic motivation which is based on external pressure to act [99,142]. SDT references intrinsic and extrinsic motivation, but instead distinguishes between the slightly different constructs of autonomous and controlled motivation [99,100]; autonomous motivation being mostly intrinsic, but also including those extrinsic elements that have been integrated into an individual's sense of self, while controlled motivation is mostly extrinsic, but includes internalised regulation of action for which the individual feels pressure to act [100]. According to SDT, autonomous motivation is linked to greater mental health, better performance and longer lasting maintenance of goals [100,297]. Thus, agency and autonomy are key factors affecting healthy motivation, as is the associated construct of self-efficacy (one's belief or confidence in their own ability to act, change or behave in a certain way), which appears across a number of the models that have been explored (e.g., SCT, HAPA, UTAUT, COM-B and HBM).

Another aspect of motivation for mental health support, which surfaced in Section 2.2.1 Perceived Need, relates to the different types of goals that an individual might be pursuing. While the main reason clients seek out mental health support may be to reduce psychological distress [288,350], this can be conceptualised as either an immediate, hedonic drive to reduce pain or a more eudemonic, values-based drive towards long-term wellbeing and the attainment of happiness [104,316,400], often underpinned by normative conceptions of the ideal *healthy, happy* self [2,104,400]. These different goals are represented in the motivation literature as

avoidance and approach systems (i.e., the individual is either withdrawing from a source of aversive stimulation or moving towards a desired end state for which they feel positive affect [94]).

Regulatory Focus Theory describes the broader motivational systems of prevention and promotion, which serve our complementary survival needs for security and growth respectively [170]. The prevention system prefers vigilance as a regulatory strategy and excels at upholding duties and maintaining commitment to a course of action, whereas the promotion system prefers eagerness as a regulatory strategy and excels at exploration and openness to change a course of action if necessary [170,375]. The theory explains how individuals and cultures are generally inclined towards one or the other system, which it calls their motivational orientation, yet the authors advise that both types of self-regulation are essential and their use should be balanced depending on context [375]. The authors advocate for metamotivation as a way to ensure this, where individuals become aware of and can choose which system to engage in any given situation [375]. In terms of motivation to engage with mental health support, the goal of reducing symptoms of distress could be aligned with the prevention system, while pursuing one's values pertains to a promotion focus; research has indicated that value-based goals and a promotion focus are more motivational in the context of engagement with psychotherapy and therapeutic tasks [200,306]. There is little research to date that explores readiness and motivation for mental health support in an ecological, systemic sense, considering stigma, context and the different layers of goals and outcomes involved.

2.4.3 In Summary

Readiness and motivation are correlated constructs, however readiness is most often used in reference to the 'stages of change' represented by the TTM, while motivation tends to be a more broadly applicable concept used across a wider span of theories. Readiness is often measured with quantitative scales that segregate people into distinct categories, denoting their degree of 'readiness for change'. Change in relation to risky health behaviours (the original focus of the TTM) is different, however, to change in relation to engaging with mental health support. In the latter instance, change refers to a proximal outcome (engaging with therapy) that is distinct from the longer-term distal outcomes brought about by the therapy itself. Digital interventions are currently being delivered with the explicit aim of increasing this proximal engagement outcome, however it is unclear what effects these interventions are having on either outcome (i.e., engagement or the outcomes of the therapy itself). In light of this, the scoping review in Chapter 3 explored the landscape of digital readiness interventions, to understand how feasible these interventions are in practice.

This section also explored motivation, which can be extrinsic (i.e., based on external pressures), or intrinsic (i.e., related to agency, autonomy and self-efficacy), intrinsic motivation being the more impactful and sustainable form. Goals and perceived need for support play an important role in motivation; the particular context of what someone is motivated to avoid or move towards can vary from person to person in terms of their mental health goals. Thus, motivation for DMHIs should be considered in relation to a person's unique context. The theories currently used in this space do not adequately describe or explain the complex processes involved in motivation for and engagement with digital mental health support. Hence, the studies in Chapters 4 and 5 sought to deepen our knowledge of this area.

2.5 Conclusion

There is a significant divide between the vast number of people experiencing distress, and the quantity of these people who are receiving support. DMHIs have the potential to help narrow this gap, due to their accessibility, flexibility, scalability and cost-effectiveness. Despite research indicating that DMHIs are an effective form of care, low uptake and engagement seriously impedes their latent capacity. Understanding and addressing low uptake and engagement with digital interventions is thus a significant area of focus within the disciplines of digital therapeutics, psychology and HCI.

This chapter explored the existing literature on barriers to DMHI use, which tends to isolate factors related to the client's attitude from other structural or contextual barriers. However, most of the attitudinal barriers examined in this chapter (e.g., lack of perceived need for support, self-stigma, and a belief that the DMHI won't be useful) are entwined with the client's life, culture and circumstances. What's more, structural aspects related to the implementation of the DMHI and the healthcare ecosystem surrounding it (e.g., referral and support) can impact both the client's attitude and their uptake and engagement. This chapter highlighted a considerable gap in our understanding of the real-world *context* of client non-engagement, which has predominantly been explored via narrow, quantitative, experimental studies. There is a dearth of naturalistic, qualitative research on the lived experiences of non-engagers, and the complexities inherent in the connection between engagement and factors such as culture, mental health paradigms, awareness of the need for support, access, broader perceptions of DMHIs, and implementation variables. Thus, context was a core aspect of the mixed-methods study described in Chapter 4 and the subsequent mental health journeys study outlined in Chapter 5 of this thesis.

This chapter went on to explore the wide range of models and theories used to understand and explain readiness and motivation for digital mental health support. The most commonly used

models derive from the domains of general motivation and behaviour change, health-related behaviour change, technology acceptance and help-seeking for mental health. Critique of the use of these models in the digital mental health domain centres around the linearity of temporal models and the lack of accounting for change processes in static models, the relevance and applicability of these theories for use in the digital mental health domain, and the centrality of intentions within these theories; research on the intention-behaviour gap suggests that motivation is perhaps more subconscious or automatic, and intentions are therefore not adequate indicators of behaviour or engagement. Finally, this chapter explored the constructs of readiness and motivation in more detail, finding that while readiness is most often used in reference to the TTM's 'stages of change', motivation tends to be more broadly applicable. Goals and perceived need for support play an important role in motivation; the particular context of what someone is motivated to avoid or move towards can vary from person to person in terms of their mental health goals. Thus, motivation for DMHIs should be considered in relation to a person's unique context. The theories currently used in this space do not adequately describe or explain the complex processes involved in motivation for and engagement with digital mental health support.

Despite these gaps in our knowledge, efforts have been made to increase client readiness in order to address the pressing problem of low uptake and engagement with DMHIs. The scoping review in Chapter 3 thus aimed to understand what is currently being done in practice in this area, so that this theoretical exploration might be complemented with a view of the concrete actions and interventions currently being developed and deployed. Then, through the studies in Chapters 4 and 5, this thesis aimed to enhance our knowledge with research exploring the temporally dynamic, contextual, and momentary nature of motivation, situated in relation to need and distress, as influenced by both external and internalised sociocultural factors. Hence, this thesis aimed to support further research and design in this space by addressing substantial gaps in our understanding of readiness and motivation for digital mental health support.

3 Scoping Review of Digital Interventions to Enhance Readiness for Psychological Therapy

The previous chapter outlined the complex theoretical background underpinning efforts to increase client motivation and readiness for digital mental health support. This chapter explores the practical application of these theories, aiming to map the landscape of how readiness is addressed in practice. The range of interventions currently being used and their feasibility as a means of increasing engagement with therapy are poorly documented. A scoping review of digitally delivered interventions aimed at enhancing client readiness for and engagement with psychological therapy is presented. While this thesis is focused primarily on digital mental health support, this review took a more expansive look at how clients are being prepared for a broad range of different types of therapy (e.g., in-person, hybrid, and fully digital), in order to develop a comprehensive map of the landscape.

This review reveals a large range of varied digital interventions which show potential as a means of preparing people for therapy, however, despite being easily accessible, these interventions are not without risks. The complex nature of stigma, motivation, and individual emotional responses toward engaging in mental health support suggests that further research is needed before additional design efforts are made in this space.

Due to the expansive search results, this work was conducted in collaboration with fellow human-computer interaction (HCI) researcher Robert Bowman (Trinity College Dublin), who helped with reviewing and selecting the articles and provided checks and calibration during the data charting process. I designed the study, conducted the article search, charted the selected articles and wrote up the findings. This chapter contributes to answering Research Objective 1: What is the theoretical and practical landscape of readiness and motivation for therapy in a digital context?

3.1 Background

3.1.1 Non-digital Readiness Interventions

Traditional in-person interventions aimed at preparing clients for therapy include motivational interviewing (MI), role induction, and vicarious therapy pretraining [429]. MI is arguably the most established of these interventions due to the significant effects it has demonstrated on client adherence to subsequent therapy, as well as their outcomes [248,356,434]. MI is a collaborative, discursive therapeutic approach that aims to guide rather than direct clients, fostering autonomy through open questions and evoking the client's own personal reasons for change [269,388]. The specific techniques or tools used by MI practitioners (these will be referred to as *'components'*), include exploring reasons for change, weighing up the pros and cons of change, developing discrepancy between the client's ideal and current states, and building confidence and self-efficacy [387].

The key causal model of MI is that client speech affects client outcome [247], meaning that the more a client talks favourably about behaviour change, the more likely they are to make the change. Helping clients to achieve this *'change talk'* is a highly nuanced, conversational art undertaken by skilled practitioners, over multiple sessions [269]. Originally developed as a brief standalone intervention for alcohol misuse, MI is now used as a pre-therapy intervention for a range of mental health difficulties, including anxiety and depression [356]. However, due to its current face-to-face (FTF) delivery format, traditional MI is not a widely available or accessible option for the millions of people experiencing mental health difficulties around the world.

3.1.2 Digital Readiness Interventions

Digital methods of intervention delivery hold promise as a way of creating accessible and timely solutions which can be easily scaled to cover entire populations, including those people who haven't yet reached out for help [412]. A recent systematic review of technology-assisted MI indicated potential in this area [387]. However, in almost all of the included studies, the MI components were integrated with other approaches (e.g., Cognitive Behavioural Therapy or CBT), and used as standalone digital treatments targeted at changing problem behaviours, such as alcohol use and smoking [387], rather than as motivational *pre-therapy* interventions. It is unclear the extent to which digitally-delivered MI has been used as a readiness intervention to prepare clients for therapy, and how feasible the digital delivery of such a conversational and highly tailored process can be [387].

Outside of MI, other digital approaches have begun to emerge, such as engagement-facilitation interventions (EFIs), which aim to increase both uptake of and adherence to online mental health programs [25]. The components of these interventions differ to those used in MI, for

example EFIs include components such as expectation setting, psychoeducation about symptoms and treatment, enhancing treatment belief, symptom assessments, and assessment feedback [158]. At present, little is known about the full range of different types of digital interventions that are being used to prepare clients for further therapy, the components these interventions are comprised of, or the design processes used in their development. Furthermore, research in this area is spread across the digital health, behaviour change and HCI fields. Thus a review is needed to scope this topic and bring clarity to what is currently a dispersed and diverse body of research.

3.1.3 Research Questions

The aim of this study was to define the emerging field of digital interventions to enhance readiness for psychological therapy. Collaboration with clinical professionals and human-centred design processes are key to developing effective mental health interventions, given their sensitive and complex nature [22,105]. As this is an emerging field, formative research exploring intervention design, development, and evaluation can provide insights into the opportunities, barriers and design strategies that can be used to create effective and acceptable solutions. Through exploring the current state of the research in this area, it was hoped that the conceptual boundaries of the topic could be identified and gaps in the research literature detected. To this end, the research questions for this study were:

1. What types of digital interventions have been used to prepare clients for psychological therapy?

2. What components have been used in these interventions and which of these show evidence of effectiveness?

3. What design processes have been used to develop these interventions?

4. Is the digital delivery of preparatory interventions to enhance readiness for psychological therapy feasible?

3.2 Methods

3.2.1 Protocol and Study Design

The protocol for this review was registered with the Open Science Framework (OSF) on 26 March 2021 [183]. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews guidelines (PRISMA-ScR) was used to structure this review [421].

A scoping review approach was chosen because the research studies in question are heterogeneous in nature and spread across multiple disciplines; they use different study designs to measure different outcomes, with different populations, in different contexts. As this is an emerging field, there are few boundaries on the extent, range and nature of the evidence [421], and the terminology used among the published literature is inconsistent and varied [393], so this exploratory review type is well suited.

3.2.2 Eligibility Criteria

Publications were included for assessment when they met the following criteria: 1) the article concerns an intervention, a specific target of which is enhancing engagement with *further psychological* treatment or therapy; 2) the intervention is delivered *digitally* (i.e., the primary active content of the intervention is digital), studies that use technology solely as a means of synchronous communication (e.g., web chat, video calls) were excluded; 3) the intervention takes place *before* the target psychological treatment (i.e., not combined or done in tandem with the target treatment); 4) the article is written in English; 5) the article is published in a peer reviewed publication between 2006 – 2021; 6) the intervention is designed for adult or adolescent populations (i.e., age 12+).

The rationale for only examining more recent evidence (past 15 years) is that digital technology is advancing rapidly; older studies may be out of date in terms of client attitudes and acceptance of technology [45]. Comparable timeframes have been used in many recent reviews of digital mental health technologies [13,45,387]. Adolescent populations were included in this review because research indicates that the main barriers to engagement with mental health treatments are comparable across adult and adolescent populations [240].

3.2.3 Search Strategy

The following electronic databases were searched: PubMed, PsycINFO, PsycARTICLES, Scopus, EMBASE, Association for Computing Machinery (ACM) Guide to Computing Literature, and Institute of Electrical and Electronics Engineers (IEEE) Xplore Digital Library. See Table 3.1 for the search terms used.

3.2.4 Data Collection

An initial, exploratory search of the PubMed and ACM databases was conducted and the words contained in the titles and abstracts of retrieved papers were analysed. The search terms were adjusted based on the identified papers and the final search strategy was decided upon. Once the protocol had been registered with the OSF, the full search was undertaken across all included databases in March 2021; the search was updated in November 2021. Additional records were retrieved by checking the reference lists of included articles.

Robert Bowman (RB) and I began by independently reviewing a subset (N=1,300, 15%) of the titles and abstracts against the eligibility criteria, and comparing our findings. Discrepancies were found, so the eligibility criteria were clarified in discussion between RB and I, using relevant examples from the first sample. A further (N=1,300, 15%) were reviewed and the findings compared, and consistency in decision making about inclusion and exclusion was reached. The remaining articles were then split between the two of us, and we each assessed the titles and abstracts independently. The final list of selected articles was checked by both myself and RB, I then retrieved the full-texts of the selected articles, and RB and I independently evaluated them against the eligibility criteria. Reasons for exclusion were recorded and where there were discrepancies, a discussion was had and a consensus was reached on the final selection of articles.

Table 3.1. Scoping review search terms

Criteria	**MeSH terms**	**Free-text terms**
Target treatment (further psychological treatment or therapy)	"Mental Health" OR Psychotherapy OR "Stress, Psychological" OR "Anxiety Disorders" OR "Mood Disorders"	CBT OR psychological OR "mental ill-health" OR anxiety OR depressi* OR stress OR wellbeing OR "well-being" OR resilience OR mood OR disorder* OR phobia*
Digital delivery	"Therapy, Computer-Assisted" OR Internet OR "Digital Technology"	digital OR technolog* OR comput* OR "e-health" OR ehealth OR "m-health" OR mhealth OR mobile OR online OR web OR "web-based" OR smartphone*
Intervention type (readiness intervention, takes place before the target treatment)	"Transtheoretical Model" OR "Motivational Interviewing"	readiness OR "pre-therapy" OR "pre-treatment" OR prepar* OR prelude OR prequel OR prior OR "stage of change" OR "stages of change" OR "motivation to change" OR "motivational enhancement" OR "motivation interview" OR "motivational intervention"

3.2.5 Data Analysis

Data charting was done in Microsoft Excel by myself, with checks and calibration by RB. The data charting form contained general study details as well as variables related to the research questions, including target treatment, intervention type (e.g., technology used, duration, and level of interaction), intervention pathway (e.g., how and when the intervention was delivered to clients, and the relationship between the intervention and the target treatment), intervention components, the model or framework used, measures and outcomes, user experience or acceptability, design process, critical appraisal (e.g., limitations in the study, biases, strength of methodology, generalisability of results), and key learnings.

3.2.6 Synthesis of Results

The charted data were further summarised based on key characteristics of the data. For example, within a charted column such as *target treatment* or *duration*, findings were assessed in relation to each other and overarching categories were created based the most common results. The frequency of occurrences was then examined and results tables were created. In terms of the more complex findings, such as components and outcomes, separate excel worksheets were created, where individual studies or interventions could be explored in more detail. Frequent checks of the full papers were made to validate initial charting.

3.3 Results

3.3.1 Study Selection

The search resulted in 13,571 hits. A further 1379 studies were identified via other sources. After removing duplicates and screening titles, abstracts and full texts, 45 papers (0.30%) met the eligibility criteria (Figure 3.1).

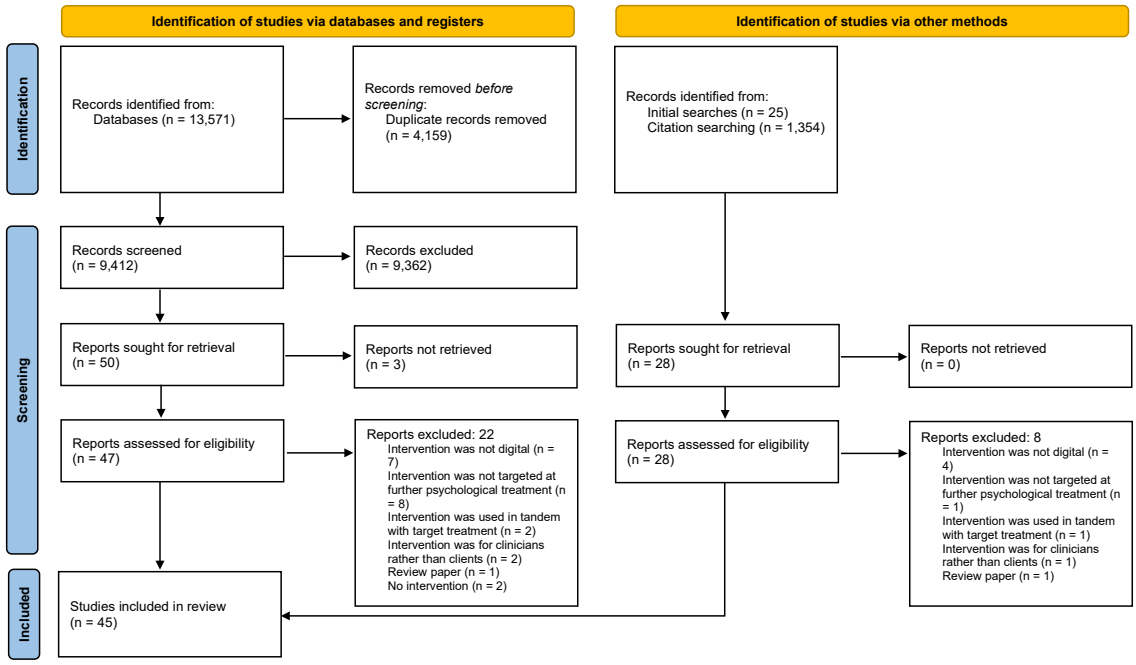


Figure 3.1. Flow diagram of study selection process

3.3.2 Study Characteristics

The studies included in this review (Table 3.2) were mainly conducted in USA (17/45), Australia (9/45), or Germany (7/45); only one study included multiple countries [38]. In terms of study design, there were 19 randomised controlled trials (RCTs), 7 observational studies, 6 protocols, 4 studies exploring the development process of interventions, 3 pre-post designs, 2 non-randomised controlled trials (NRCTs), 2 historically controlled studies, one qualitative evaluation and one paper that presented the results of multiple studies (2 RCT's and one pre-

post). Only 12 of the studies included qualitative data collection; 8 used mixed methods [32,55,101,113,114,160,203,302] and 4 were purely qualitative [92,189,239,281].

Depression and unspecified general mental health were the most common target conditions covered (9 studies each), with comorbid anxiety and depression the next most frequent (6). Other conditions and issues targeted included smoking (5), eating disorders (5), suicide (3), social anxiety (3), substance use (2), gambling (2) and psychosis (1).

Table 3.2. Characteristics of the included papers

Paper	Authors	Year	Study Design	Country	Condition
[70]	Christensen et al	2006	RCT	Australia	Depression
[340]	Reis & Brown	2006	RCT	USA	General mental health
[160]	Haas et al	2008	Observational	USA	Suicide
[81]	Costin et al	2009	RCT	Australia	Depression
[302]	Olson et al	2009	Historically controlled	USA	General mental health
[418]	Titov et al	2010	RCT	Australia	Social anxiety
[57]	Brunette et al	2011	NRCT	USA	Smoking
[190]	Johansen et al	2011	RCT	USA	General mental health
[404]	Strassle et al	2011	RCT	USA	General mental health
[131]	Ferron et al	2012	Observational	USA	Smoking
[339]	Reins et al	2013	Protocol	Germany	Depression
[174]	Hötzel et al	2014	RCT	Germany	Eating disorder
[411]	Taylor-Rodgers & Batterham	2014	RCT	Australia	Anxiety & depression
[4]	Ahmedani et al	2015	Pre-post	USA	Depression
[119]	Ebert et al	2015	RCT	Germany	Depression
[210]	King et al	2015	RCT	USA	Suicide
[24]	Batterham et al	2016	RCT	Australia	Anxiety & depression
[38]	BinDhim et al	2016	Observational	Australia, UK, Canada, New Zealand, USA	Depression
[270]	Moessner et al	2016	Observational	Germany	Eating disorder
[39]	Birnbaum et al	2017	Observational	USA	Psychosis
[43]	Bommelé et al	2017	NRCT	Netherlands	Smoking
[55]	Brown et al	2017	Development process	USA	Smoking
[156]	Griffiths et al	2017	RCT	Australia	Social anxiety
[216]	Krampe et al	2017	RCT	Germany	General mental health
[263]	Metz et al	2017	Protocol	Netherlands	General mental health
[281]	Muir et al	2017	Development process	UK	Eating disorder
[239]	Liu et al	2018	Development process	New Zealand	General mental health
[408]	Suka et al	2018	Observational	Japan	Depression
[25]	Batterham et al	2019	Protocol	Australia	Anxiety & depression
[92]	Dannenberg et al	2019	Development process	USA	Depression
[101]	Denison-Day et al	2019	RCT	UK	Eating disorder
[113]	Dreier et al	2019	Protocol	Germany	Suicide
[120]	Ebert et al	2019	RCT	Germany	General mental health
[189]	Johansen et al	2019	Qualitative	Norway	Gambling
[258]	McLean et al	2019	Observational	Australia	Eating disorder

[382]	Shand et al	2019	Protocol	Australia	Depression
[32]	Beck et al	2020	Pre-post	Canada	Anxiety & depression
[58]	Brunette et al	2020	RCT	USA	Smoking
[114]	Duffy et al	2020	Pre-post	UK	Anxiety & depression
[315]	Peter et al	2020	RCT	USA	Gambling
[203]	Keller et al	2021	RCT & Pre-post	USA	General mental health
[303]	Olthof et al	2021	Protocol	Netherlands	Substance use
[397]	Soucy et al	2021	RCT	Canada	Anxiety & depression
[419]	Tobias et al	2021	RCT	USA	Social anxiety
[447]	Yoon et al	2021	Historically controlled	USA	Substance use

3.3.3 Types of Intervention

In order to assess the interventions that were analysed within the included papers, the interventions themselves were first distinguished from the papers. Six studies in the sample [58,70,81,190,418,419] each assessed two distinctly different interventions in their analysis (i.e. the components of the interventions were distinct), so these were separated out into individual records. Two studies assessed slight variations on the same intervention [203,315], however, these were not segregated because they only reflected minor variations on what were essentially the same intervention. Furthermore, three sets of two studies in the sample analysed the same interventions [57,131]; [101,281]; [32,397], so these were grouped together. The final list of 48 interventions is henceforth analysed in this section and the subsequent one.

The interventions were explored under a number of categories: intervention format, the target treatment or therapy that the intervention was designed to prepare clients for, the level of support provided, whether the intervention was designed for repeated or once-off usage, the duration of the intervention, the theoretical model used, and how the intervention was delivered to the client (Table 3.3).

Many variations were found in the types of interventions that have been used to prepare people for psychological therapy. Almost half of the interventions were online programs (22/48); other formats included screening tools, videos, apps and websites. Many of the included interventions were not designed to prepare clients for a specific treatment, but instead to encourage general professional help seeking (27). Of those that were targeted at specific treatments, FTF therapy was the most common (14), followed by online therapy (7) and phone therapy (1).

In terms of the duration of the interventions, those that specified a duration ranged from 15 seconds to 6 months, with most interventions taking less than 90 minutes to complete (23). How and when the interventions in question were delivered to clients was also investigated. Most of the interventions (32) were delivered to clients who had not already sought help, via outreach methods such as social media, marketing or email. Excluding one study which was

unclear, the remaining 15 interventions were delivered to clients who had already sought help or were investigating help.

Table 3.3. Types of interventions in the selected studies.

Category	N =
Intervention Format	
Online program	22
Screening tool	7
Video	6
App	4
Website	3
Automated emails & website	2
Screening tool & messaging	2
Advertisement	1
Advertisement & website	1
Target Treatments	
General professional help	**27**
Specific treatments	**21**
Specific face-to-face (FTF) therapy	14
Specific online therapy	6
Specific phone therapy	1
Support	
No support	**35**
Supported	**13**
Asynchronous (clinician)	5
Synchronous (digital)	4
Synchronous (clinician)	2
Asynchronous & synchronous (peer)	1
Asynchronous & synchronous (clinician)	1
Usage	
Once-off	28
Repeated	20
Intervention Duration (estimated or average)	
Duration in minutes/hours	**25**
30 min or less	14
31 - 90 mins	9
91 min - 4.5 hours	2
Duration in weeks	**16**
1 - 4 weeks	9
4 weeks +	7
Duration not specified	**12**
Theoretical Models[a]	
No model mentioned	16
Motivational Interviewing (MI)	16
Cognitive Behavioural Therapy (CBT)	6
Transtheoretical Model (TTM)	4
Theory of Planned Behaviour (TPB)	4
Intervention Delivery	
Outreach (clients had not sought help)	**32**

Social Media	9
Clinician/health service referral	8
Print marketing (flyers, brochures)	6
Trial panel (e.g. MTurk)	6
Email (student email, newsletters, from EMR portal)	5
Digital marketing (online advertisements, media)	5
Postal screening questionnaire	4
GP waiting room	2
Events (community events, school workshops)	2
Before target treatment (clients had already sought help)	**12**
Before 1st use/session	6
On waiting list for treatment/assessment	3
During intake	2
Before intake	1
Self-selected (clients were interested in help)	**3**
Downloaded screening app	1
Via e-mental health portal	1
Via referral website for clinic	1
Unclear	**1**

[a]**Other models used in only 1 or 2 studies:** Health Belief Model, Acceptance & Commitment Therapy (ACT), Self-Determination Theory, Unified Theory of Acceptance and Use of Technology (UTAUT), Screening Brief Intervention & Referral to Treatment (SBIRT), Motivational Enhancement Therapy (MET), Theory of Reasoned Action, Extended Parallel Process Model.

3.3.4 Intervention Components

The 48 interventions examined in the included studies were all comprised of a number of different topics and tools, which will be referred to as components. The most prevalent component was general psychoeducation (40/48), followed by symptom assessments (23), and information on various treatment options (21). See (Table 3.4) for a list of the 14 most common components. Other components included in fewer than 4 studies were self-monitoring, data security information, personal strengths, therapeutic alliance and roles in therapy, acceptance, imaginative exercises (e.g. imagine ideal life or future with/without treatment), MI techniques (e.g. importance and readiness rulers) and information about the effectiveness, or advantages, of a specific target treatment.

Table 3.4. Components used in the included interventions.

Component	Description	Frequency
Psychoeducation	Information about: condition, symptoms, risks, prevalence, treatment benefits, recovery chances, myth-busting	40
Assessments	Self-administered assessments of symptoms or behaviour	23
Treatment options	Information about potential treatment options	21
Assessment feedback	Tailored or generic feedback on assessments, e.g. severity relevant to general population	18
Referral information	Direct contact information or guidance for further treatment	17
Testimonials	Videos or written stories from people with similar issues, or those who have been through treatment	16

Expectation management	Guiding expectations on treatment or help-seeking, expectation setting	16
Pro/Con list	Cost/benefit analysis of change, treatment or help-seeking	15
Coping skills	CBT skills (e.g. cognitive restructuring, behavioural activation), relaxation, mindfulness, emotion regulation	10
Planning	Planning for change or treatment, planning for overcoming obstacles to change or treatment (implementation intentions)	8
Goal setting	Personal goals, life goals, treatment goals	8
Values	Using values to develop discrepancy between ideal and actual self	5
Self-efficacy	Building belief in ability to change, self-esteem, positive self-affirmations	4
Problem solving	Identifying problems, brainstorming solutions, solution planning	4

In terms of which components showed evidence of effectiveness, this was difficult to assess from the variety of different interventions and components covered in this review, as well as the diversity in the outcomes of the experimental studies (see the *Feasibility* section below for a closer look at these outcomes). Some studies that compared two interventions with different components found no differences between the outcomes of these interventions [58,81], however in other studies the opposite was found (i.e., different components in similarly delivered interventions resulted in significantly different outcomes [190,418,419]). In two studies aimed at social anxiety [418,419], the addition of components like the pro/con list, goal setting, values, and planning led to significantly greater engagement with further treatment or help-seeking behaviours, than interventions without these components. Interestingly, another study found that the effectiveness of the components depended on the condition in question – in this case providing tailored feedback on screening was detrimental when it came to social anxiety, but not depression [24].

3.3.5 Design Processes

Only 18 of the 45 included papers discussed how the intervention in question was designed or developed. Of these 18 studies, only four mentioned the design approach taken: one study employed user-centred design [92], one used a person-based approach [281], another used participatory design [25], and the final study utilized participatory design, ethnography, and co-design [239].

In terms of the design methods employed in the development of the interventions, nine studies included consultation with experts or input from expert groups [39,92,239,258,281,302,340,397,447], five studies used expert or user surveys [55,113,239,258,281], four conducted focus groups with users [25,43,92,239], and three conducted interviews with either users or experts [55,92,239]. Two studies reported using working groups comprised of users with lived-experience and experts, to co-create the intervention [39,239], and a further two used expert-only working groups [302,340]. A total of 12 studies reported conducting user testing of their interventions, usually with an iterative

process of implementing feedback; one study conducted feasibility testing with clinicians [302].

3.3.6 Feasibility

In order to understand more about the effectiveness of the included interventions, the controlled studies (24) were isolated and their outcomes charted (Table 3.5). Outcome measures across the studies were diverse and ranged from behaviour to intentions and attitudes towards further treatment. Other associated factors like symptom improvement, mental health literacy, stigma and acceptance were also used as proxy measures to infer subsequent behaviour or action. Controls used included treatment-as-usual (TAU), waitlist, no intervention, intervention control, and attention controls. For the attention controls, a distinction was made between nonspecific treatment component controls (NTCC) and specific treatment component controls (STCC) [272].

Of the 16 studies that measured actual behaviour or action (e.g., engagement with target treatment or help-seeking behaviour) seven showed evidence of intervention effectiveness compared to controls [57,210,315,340,397,418,419]. However, these results should be considered in the context of the other findings in the studies. For example, one study of an MI-based program aimed to prepare clients for online CBT, found that clients in the intervention group (IG) spent longer using the target treatment than the control group (CG), but their symptoms were actually worse post-treatment [397]. Participants in this study had high motivation to engage in treatment at screening, which should also be noted along with the results.

A further seven studies found no differences between controls and interventions in terms of behaviour [43,58,70,81,101,190,404], but again the other results in these studies provide vital qualifying information. For example, Denison-Day et al [101] offered clients in the IG the intervention but allowed for natural uptake, meaning that only 34% of the IG actually used the intervention. Hence no differences were found between groups, when in fact 98% of those who actually used the intervention engaged in further treatment. The type of control also had a considerable impact on whether the interventions were found to be ‘effective’ or not (e.g., Brunette et al [58] found no differences between groups, but both groups were given interventions and both had high subsequent utilization of target treatment). Even in some studies with no intervention controls, both groups were found to exhibit high adherence to the target treatment [404].

Two studies indicated worse behavioural outcomes for the IG compared to the CG [24,216]. Again the control and other results need to be considered; in Krampe et al [216] the ‘treatment as usual’ CG received both the digital intervention and MI based FTF psychotherapy sessions,

whereas the IG received the digital intervention alone, and their results showed that the digital intervention was comparable to the FTF control for those with high readiness to change scores [216]. In the study by Batterham et al [24] the IG received tailored feedback after screening, based on symptom severity, whereas the CG received generic, untailored feedback. For clients with social anxiety, the tailored feedback actually led to lower treatment utilization and intentions to seek help than the generic advice. Study attrition was lower for the IG than the CG however, which is another factor to consider along with these results [24].

Table 3.5. Outcomes of the controlled studies in the sample (standardised measures are abbreviated).

Paper	Study Design	Control	Sample size	Intervention	Measures	Significant Outcomes
[302]	Historically controlled	TAU	163	Screening tool	Acceptance and quality of physician appointment survey; qualitative physician feedback.	IG more likely to discuss alcohol and tobacco use with physician but not mood disorders. IG increased acceptance of subsequent physician appointment.
[447]	Historically controlled	TAU	301	Screening tool	Screen for unhealthy drinking behaviours and alcohol use disorders; motivation to change and referral interest survey; acceptance survey.	CG used to compare response rate only (responses were comparable). Only 16% of IG had unhealthy drinking. Of these, 14% were interested in further help, 40% would cut back on their own.
[43]	NRCT	NTCC	757	Online program	PO: Receptivity to information, motivation to change, self-efficacy and referral interest survey; SO: cigarettes per day; quit attempts.	IG more receptive to information than CG at post, but not at 2 weeks or 2 month FU. IG had reduced smoking at all timepoints. No differences in quit attempts or referral.
[57]	NRCT	Waitlist	41	Online program	PO: Treatment seeking and motivation to change survey (verified by medical records); SO: FTND; 1 item from SCS; ATS.	IG more likely to have taken action towards change than CG (e.g. attempting to quit, meeting with a clinician to discuss or start treatment).
[404]	RCT	No intervention	68	Video	PO: return for 2nd session of TT; SO: SCL-90; IIP-32; CASF-P; therapist measures: GAF; CASF-T.	No differences between IG and CG in adherence to TT, therapeutic alliance or TT outcomes (all clients had high adherence to TT).
[119]	RCT	No intervention	128	Video	PO: Acceptance survey; SO: expectations, social opinions, internet concerns, help-seeking attitudes and online therapy literacy survey.	IG had higher acceptance, expectations and literacy and less internet concerns than CG. No differences in

						social opinions or help-seeking attitudes.
[120]	RCT	No intervention	1374	Screening tool	PO: Intention to seek help survey; M: CIDIS; AUDIT; CSSR; SITBI; subjective health, lifetime and current treatment utilization, intention to use mental health services, barriers to treatment utilization and readiness to change survey.	IG had higher intentions to seek help than CG. Intervention was more effective for those with panic disorder, worse physical health, and those who were non-heterosexual. No effect of intervention for those in the action stage of change.
[397]	RCT	No intervention	231	Online program	PO: CQ; TT lessons accessed; GAD-7; PHQ-9; SO: Motivation to engage in TT survey; acceptance survey; K10; SDS.	IG spent longer in TT than CG. IG had higher anxiety and perceived disability at post-TT than CG. No differences in motivation, or acceptance.
[70]	RCT	NTCC	414	2 IGs: Website (W) & Online Program (OP)	CES-D; Help and treatment seeking survey.	Both W & OP reduced depression symptoms compared to CG. W less likely to seek informal help than CG. OP more likely to use certain evidence-based treatments.
[340]	RCT	NTCC	125	Video	Therapist measure: TSQ.	IG had lower dropout from TT than CG.
[81]	RCT	NTCC	348	2 IGs: Both automated emails & website	PO: AHSQ; informal help seeking survey; SO: GHSQ; beliefs about help seeking survey; depression & help-seeking literacy survey; CES-D; acceptance survey.	No differences between IGs, or between IGs and CG in help-seeking behaviour, intentions, literacy or depression symptoms. IGs had more positive beliefs about formal help than CG.
[190]	RCT	NTCC	105	2 IGs: Working Alliance (WA) video & Experiential Acceptance video (EA).	Acceptance survey; PANAS; WAI-S (client & therapist); return for 2nd session of TT.	WA had higher negative affect and lower therapist-rated alliance than CG. No difference in client-rated alliance between IGs. No differences in adherence to TT between IGs & CG.
[411]	RCT	NTCC	67	Online program	PO: A-Lit; D-Lit; LSS; DSS; GASS; SOSS; ATTSPH-SF; GHSQ; SO: PHQ-9; GAD-7; acceptance & adherence survey	IG had increased anxiety literacy, help seeking attitudes and intentions and reduced depression stigma compared to CG. No differences in symptoms, acceptance or adherence.

[156]	RCT	NTCC	83	Online program	PO: GHSQ; SO: ATSPPH-SF; SA-Lit; SASS-I; perceived need for treatment & interest in TT; acceptance survey.	IG had higher literacy, perceived need & positive attitudes towards treatment than CG. No differences in help seeking intentions or stigma.
[210]	RCT	STCC	76	Screening tool & messaging	Perceived need for help & treatment utilization survey; 2 items from DDS; readiness to access help survey.	IG had higher readiness to access help, treatment utilization and lower stigma than CG at 2 month FU.
[24]	RCT	STCC	2773	Screening tool	PO: AHSQ; SO: PHQ-9; SOPHS; 2 items from GHSQ; AQoL-4D; self-reported days out of role.	IG had higher study attrition than CG. For social anxiety, IG had lower treatment utilization and intentions to seek help than CG, no differences found for depression.
[315]	RCT	STCC	805	2 IGs: Screening tools - Interactive message (IM) & noninteractive message (NM).	PO: Choice between BBGS and 3 items from GBQ; M: Gambling history, psychological distress & treatment interest survey.	IM more likely to complete gambling screener than NM or CG.
[418]	RCT	Intervention control	108	2 IGs: Online programs - Education (E) & Education + Motivation (E+M)	PO: SIAS; SPS; SO: PHQ-9; K-10, SDS, CEQ; literacy and motivation to change survey; time spent, log-ins, homework downloads of TT.	E+M had higher usage of TT than E. No differences in TT outcomes or acceptability. No differences in motivation to change.
[419]	RCT	Intervention control	267	2 IGs: Online programs - Education (E) & Education + Motivation (E+M)	Motivation for individual treatment steps, attitudes toward & intentions to seek treatment, perceived ability to engage in treatment seeking & treatment utilization survey; CSQ-8.	E+M had improved treatment-seeking attitudes and behaviours, compared to E. Both groups improved on all outcomes.
[58]	RCT	Intervention control	162	2 IGs: Online programs - Interactive Online Program (IOP) & Digital Education Pamphlet (DEP)	PO: treatment utilization (verified by medical records); SO: expired carbon monoxide; TFB (quit attempts); PUEUS.	No differences between IOP and DEP in TT utilization, quit attempts or abstinence (both groups had high utilization of TT).

[101]	RCT	TAU	313	Online program	PO: Attendance at initial assessment appointment; SO: usage of TT, acceptance & motivation (interview).	No differences between IG and CG in attendance at initial appointment. Only 34% of the IG used the intervention, of these 98% attended the appointment.
[216]	RCT	TAU	220	Screening tool	PO: treatment utilization; SO: URICA; BSI-GSI.	IG had lower treatment utilization and worse symptoms than CG. IG and CG were comparable for those with high readiness to change scores.
[203]	RCT	Waitlist	320	3 IGs: Videos -7min, 13min & 17min.	SSOSH; stigma survey.	Only the 17min IG reduced stigma compared to CG.
[174]	RCT	Waitlist	212	Online program	PO: SOCQ-ED; SO: P-CED; SES; RSES; EDE-Q.	IG had higher motivation to change, self-esteem and symptom improvement than CG. No differences in motivation to begin treatment.

[a]**Abbreviations:** CG Control group; FU Follow up; IG Intervention group; M Moderators; NRCT Non-randomised controlled trial; NTCC Nonspecific treatment component controls; PO Primary outcomes; RCT Randomised controlled trial; SO Secondary outcomes; STCC Specific treatment component controls; TAU Treatment as usual; TT Target treatment.

[b]**Standardised or established measures:** AHSQ Actual Help Seeking Questionnaire; A-Lit Anxiety Literacy Scale; AQoL-4D Assessment of Quality of Life; ATS Attitudes Towards Smoking Scale; ATTSPH-SF Attitudes Toward Seeking Professional Help Short Form scale; AUDIT Alcohol use disorders identification test; BBGS Brief Biosocial Gambling Screen; BSI-GSI Global Severity Index of the Brief Symptom Inventory; CASF-P Combined Alliance Short Form-Patient version; CASF-T Combined Alliance Short Form-Therapist version; CEQ Credibility/ Expectancy Questionnaire; CES-D Centre for Epidemiological Studies Depression Scale; CIDIS Composite International Diagnostic Interview Screening Scales; CQ Change Questionnaire; CSQ-8 Client Satisfaction Questionnaire; CSSR Columbia Suicidal Severity Rating Scale; DDS Discrimination-Devaluation Scale; D-Lit Depression Literacy Scale; DSS Depression Stigma Scale; EDE-Q Eating disorder symptomatology; FTND Fager-ström Test for Nicotine Dependence; GAD-7 Generalized Anxiety Disorder 7-item; GAF Global Assessment of Functioning Scale; GASS Generalised Anxiety Stigma Scale; GBQ Gamblers' Beliefs Questionnaire; GHSQ General Help Seeking Questionnaire; IIP-32 Inventory of Interpersonal Problems-32; K-10 Kessler 10-item; LSS Literacy of Suicide Scale; PANAS Positive and negative affect schedule; P-CED Pros and Cons of Eating Disorders Scale; PHQ-9 Patient Health Questionnaire 9-item; PUEUS Perceived Usefulness and Ease of Use Scale; RSES Rosenberg Self-Esteem Scale; SA-Lit Social Anxiety Literacy Questionnaire; SASS-I Social Anxiety Stigma Scale; SCL-90 Symptom Checklist-90-Revised; SCS Stage of Change Scale; SDS Sheehan Disability Scales; SES Self-Efficacy Scale; SIAS Social Interaction Anxiety Scale; SITBI Self Injurious Thoughts and Behaviors Interview; SOCQ-ED Stages of Change Questionnaire for Eating Disorders; SOPHS Social Phobia Screener; SOSS Stigma of Suicide Scale short form; SPS Social Phobia Scale; SSOSH Self-Stigma of Seeking Help scale; TFB Timeline Follow-Back method; TSQ Termination Status Questionnaire; URICA University of Rhode Island Change Assessment; WAI-S Working alliance inventory.

When we look at the other variables measured in these studies, the findings are again mixed. Some indicated that the interventions increased help seeking intentions [120,411], while others showed no effect on intentions [81,156,174], despite effectiveness in improving attitudes towards treatment or motivation to change. Some indicated improved symptoms [43,70,174], while others reduced stigma or improved literacy [119,156,203,411]. In addition, all of the pre-post studies in the review found that their interventions either reduced client symptoms [4,114] or increased client interest in further treatment [4,32], and all of the observational studies in the sample indicated positively skewed effects of their interventions on help-seeking action, behaviour or intentions [38,39,131,160,258,270,408].

No obvious patterns were observed between intervention format, support level, duration, components (see *Intervention Components* above), condition, target treatment or intervention delivery and whether the interventions were effective or not. A number of studies that compared interactive and non-interactive interventions suggested that interactivity is important to effectiveness [70,315,419], however the opposite result was also found [58].

3.4 Discussion

3.4.1 Principal Findings

This scoping review explored digital interventions to enhance readiness for psychological therapy. These interventions are delivered most often as unsupported, online programs designed for once-off usage that takes less than 90 minutes. They are used to prepare clients for specific therapies or more generally to enhance readiness for professional treatment, and they are provided to clients either via outreach methods for those who have not sought help, or they are inserted into the care pathway before the main therapy for those who have already reached out. Thus, these interventions appear to cater to clients across their mental health journeys, from those who are not yet aware that they need help, to those who are actively seeking it out.

What is most apparent from this review is the substantial variation not only in the types of digital readiness interventions that have been used, but also in their development, delivery, and evaluation. When it comes to the feasibility of digitally delivering interventions such as this, the included studies indicate that there is potential in this area. The current state of the literature, however, does not yet support the possibility to determine which components or types of interventions are effective or not effective; this is a complex undertaking with multiple factors to consider. For example, in some contexts interactivity appears to be an important aspect of these interventions, which makes sense considering the conversational nature of traditional FTF motivational interviewing. However many simple, non-interactive interventions such as videos and advertisements were also effective at improving variables related to further help-seeking or engagement with therapy. Despite the variability among the studies included in this review, a number of common topics emerged: *Tailoring, Intervention Pathways, Risk* and *Evaluation.*

3.4.2 Tailoring

Several studies in this review involved tailoring their interventions to suit the TTM ‘stage of change’ the client was in [4,131,258,281]. In two studies the tailoring involved a simple two-way split, with different content for those who were interested in further help or not interested

[4,131]; in one of these studies clients who were not yet interested in therapy were given CBT coping techniques, as a way to show them how therapy works and how effective it can be, rather than simply telling them this [4]. When clients are more highly motivated, tailored interventions tend to focus on practical aspects of engaging with further help (i.e., choosing the right type of help, setting expectations, and planning). Effectively identifying a client's stage of change is a significant aspect of tailoring. This can be done by asking simple binary questions, such as in the studies mentioned above (e.g., Are you interested in therapy?), or more formally with readiness measures like the General Help Seeking Questionnaire [438]. One interesting website intervention used the stages of change as a way to frame the headings of the main website navigation (i.e., "Do I have a problem?" "Should I get help?" "I want and need help?", "I have tried to get help") giving the client agency in self-selecting their own stage and thus controlling and tailoring their own journey [258].

Outside of the stages of change, information based interventions can be tailored to the client's personal circumstances and needs on a broader level. For example, Dreier et al [113] provided suicide stigma interventions which were modified depending on whether clients had a suicide attempt in the past, were having suicidal thoughts, had lost a close person by suicide, were fearing the loss of a close person by suicide, or were interested in the topic in general. Tailored digital readiness interventions have the potential to bridge the divide between client and therapeutic intervention, providing light-touch interactions for those who are already motivated, as well as more detailed programs for those who are less ready for help. For clients, these interventions could serve as stepping stones between information gathering and formal support with layered interactions that support individuals across their mental health journeys [39].

3.4.3 Intervention Pathways

The implementation of digital readiness interventions involves both onboarding (i.e., the uptake of the intervention itself) and off-boarding (i.e., the link between the intervention and the further help). In terms of onboarding, the first point of contact and the framing of digital readiness interventions are crucial, as uptake issues can drastically impact their effectiveness in the real world. Denison-Day et al [101] found that, even though their intervention was highly effective for those who used it, only 34% of the IG actually used it (they offered participants the intervention but allowed for natural uptake). They note that simply offering new interventions to address the problem of target treatment engagement may not be enough, and approaches focused on low engagement may need to be considered even earlier in the care pathway. An interesting aspect of their intervention (further detailed in the development process paper by Muir et al [281]) was that, instead of aiming to prepare clients for the full extent of therapy, they framed it as preparation for the initial assessment appointment only. This removed some

of the overwhelming aspects of thinking about full 'recovery' and instead allowed clients to take their mental health journey one step at a time [281]. How the first step on a client's journey is presented, and by whom, could have an impact on the client's subsequent progress towards change.

A number of the studies included in this review took place in healthcare settings, where client trust is already established [92,216,447]. Embedding readiness interventions within existing pathways, such as routine screening, GP waiting rooms, or waiting lists, can draw on this trust and help the client to get direct access to appropriate services. Regarding off-boarding, many of the studies in this review noted that access to the psychological support in question needs to be provided in a timely manner following the readiness intervention, as motivation wanes over time [43,57,58,210,408,419]. Moessner and colleagues [270] included clinician monitoring of client deterioration as part of their intervention, allowing clients to take their time in becoming ready for help, while still being supported. In the intervention developed by Brown et al [55] the first session of the target treatment immediately follows the readiness intervention (if the client wants to proceed), making the most of their motivation and removing any lag time between interventions. Where digital readiness interventions fit within the wider context of client pathways appears to be an important consideration for both their development and evaluation.

3.4.4 Risk

A hugely important aspect that surfaced while reviewing these studies was the potential risk of readiness interventions impairing engagement with subsequent care, reducing help-seeking, worsening symptoms, or increasing self-stigma. Batterham et al [24] found that tailored feedback on screening reduced help-seeking for individuals with social anxiety, compared to a control that was just generic information; the directive nature of this feedback may have come across as particularly confrontational to clients experiencing difficult emotions centred around their interactions with others. Similarly Johansen et al [190] found that a video providing information on the working alliance between client and therapist led to more negative emotions for the client and no improvement in working alliance ratings. Information designed simply to 'prepare' clients for what is to come, can potentially lead to negative emotions and apprehension, which can in turn affect readiness for therapy.

Stigma adds another layer of complexity to the help-seeking and therapy readiness process; Keller et al [203] found that their informational videos on suicide prevention increased empathy, while at the same time decreasing help-seeking. Previous research shows that different types of stigma (e.g., public stigma vs. internalised self-stigma [77]) effect help-seeking in different ways [374]; how we interpret the experiences and emotions of other people is distinct from how we perceive our own internal states. When addressing stigma with a digital

readiness intervention, care should be taken as to which types of stigma are being targeted, and the intricate relationships between them. Furthermore, stigma is not only complex, layered, and subjective, but even the act of measuring it can reproduce or reinforce stigmatizing attitudes [113]. Individual emotional responses towards engaging in support for mental health difficulties are sensitive and differ from person to person; a delicate, cautious approach is clearly needed when developing and implementing readiness interventions.

3.4.5 Evaluation

The final discussion point concerns the evaluation of readiness interventions and issues with conducting research in such a sensitive area. A number of the studies in this review found that clients in the control arms improved as much as those in the intervention arms [58,81,404]. Considering the large battery of measures used in several of the studies, and the fact that screening was a core component in many of the included interventions, it is difficult to separate the effects of the interventions themselves from the overall effects of trial participation. While this is often the case with research trials, the specific light-touch, preparatory nature of these interventions makes them more susceptible to this reactivity. Perhaps, in many cases, being included in a trial focused on help-seeking constitutes a readiness intervention in itself.

In addition, the way in which the trial is designed has a huge influence on the 'effectiveness' of a given intervention. Constrained processes which force engagement with an intervention may provide rigor in terms of intervention effects, but little ecological validity. There is also potentially greater baseline motivation amongst people who are prepared to take part in clinical trials, compared to the general population [418]. As we have seen, the real world uptake of digital readiness interventions is key to their effectiveness, naturalistic studies could therefore be a more useful method of understanding how these interventions would function in practice. In-depth, qualitative research is also crucial to understanding individual emotional responses and how constructs like self-stigma affect motivation and engagement. Temporal research could also provide insights on individual trajectories, because the process of becoming ready for support can be a long-term one, involving many layers and influences [270]. Recent phenomenological research indicates that change is perhaps a more continuous, internal, and holistic process than the TTM allows [335], so understanding the process of change in relation to readiness for mental health care would add depth to our theoretical foundations.

Another aspect of evaluation involves the chosen research methodology, which not only has a fundamental impact on the outcomes of the study, but also on how we come to understand complex social constructs like stigma, motivation, and the stages of change. Using quantitative measures to isolate and examine phenomena like attitudes and emotions is limited because these experiences are highly subjective and contextual [203]; we miss out on vital information

when we detach these occurrences from what gives them meaning. Considering that only a quarter of the studies in this review included any qualitative data collection (and this was primarily in the form of open-ended questionnaire responses which do not allow for much depth or insight), there exists a significant gap in our understanding of the nuances of this process on an individual level. Furthermore, many of the studies in this review used proxy measures, such as intentions and attitudes, to infer potential future action, despite the fact that the attitude-intention-behaviour models that underpin these inferences have been contested in research across a number of fields [27,124,342]. This review suggests that the measurement of digital readiness interventions needs careful consideration, due to the many intricacies involved.

3.4.6 Limitations

There are a number of limitations to this study. Firstly, help-seeking was not included as a search term (it was decided that the search would be focused on the more general areas of readiness, preparation and motivation), so coverage of help-seeking interventions is not comprehensive in this review. Furthermore, the digital only inclusion criteria excluded some interesting interventions that could easily be reproduced digitally (e.g., a postal survey on implementation intentions [385] and an educational handout about the dose effect relationship of therapy and expectation setting around treatment length [410]).

3.5 Conclusions

The field of digital interventions to enhance readiness for psychological therapy is broad and varied. The interventions in question range from brief, simple, once-off videos and advertisements to supported, interactive online programs designed for use over a number of weeks. Results indicated that the implementation and uptake of these interventions is an important element to consider in design, delivery and measurement. While these easily accessible, digital approaches show potential as a means of preparing people for therapy and thus increasing uptake and engagement, they are not without risks. These interventions have the potential to decrease client engagement with therapy and worsen outcomes, and depending on how they are framed and situated within care pathways, they can form an additional barrier to care. What's more, the light-touch nature of these interventions means that study design and trial effects often confound results, and the largely quantitative exploration misses out on vital contextual information about the client's experience. The inconclusive nature of these findings, and the complexities inherent in individual emotional responses towards engaging with psychological support, suggests that additional naturalistic, qualitative research is needed to better understand the problem space, before further efforts are made to design solutions.

Thinking more specifically about digital mental health support, this review highlights the complex nature of the digital delivery of diverse forms of therapeutic aid. Digital interventions are widely accessible, but this broad reach masks a multitude of idiosyncratic experiences, of which we have little meaningful understanding. As evidenced in this review, the field of digital therapeutics is moving forward with interventions and strategies aimed at increasing client readiness and motivation for digital support (as a means of increasing uptake and engagement), without this depth of understanding about what is going on for clients who don't sign up or engage with digital mental health interventions (DMHIs).

There is a significant gap in our knowledge about what prevents people from and motivates people to use digital mental health support in the real-world. Due to the potential risks involved with digital readiness interventions, as indicated by this scoping review, efforts to increase uptake and engagement with DMHIs could perhaps be directed elsewhere (e.g., to the design and implementation of DMHIs themselves). Hence, the following chapter describes a mixed-methods, naturalistic study with non-engaging clients of a DMHI, exploring the barriers they experienced from a contextual perspective.

4 Mixed-methods Study of Real-world Barriers to Uptake and Early Engagement

The previous two chapters uncovered the complexities involved in researching readiness and motivation for digital mental health interventions (DMHIs), which are sensitive and contextual topics, and exposed the need for further qualitative, naturalistic research to deepen our knowledge of the area. The literature review in Chapter 2 outlined some of the most common barriers to uptake and engagement with DMHIs, of which attitudes and motivation appear to play a central role. Much of this existing research around engagement focuses on quantitative predictors of dropout, rather than exploring the lived experiences of clients who dropout early or do not engage [6,26,31,122,198,373]. A core reason for this could be that reaching this population is inherently difficult; non-engagers are, by their nature, difficult to recruit. Consequently, little is known about what these non-engagers want or need, what prevents them from engaging, what motivates or demotivates them, or what contextual factors impact upon their experiences [412]. With this study, the focus on readiness and motivation was expanded so that a broader understanding of uptake and engagement could be explored.

This chapter presents an observational, mixed-methods inquiry into the barriers that prevent uptake and early engagement with DMHIs in real-world settings. The aim of this study was to understand the lived experiences of real, non-engaging clients from a broad, context aware perspective; hence the study was conducted across four different healthcare ecosystems in the UK and US, and included an exploration of the reasons why clients showed initial interest in the DMHI. Online questionnaire responses were collected from 205 participants and 20 interviews were conducted. Participants reported multiple reasons for considering the DMHI, reflecting the contextual, subjective nature of mental health.

Questionnaire results revealed that uncertainty about DMHI usefulness and usability were the main barriers to uptake, whereas forgetting about it, not finding time for it and not finding it useful were the main barriers to early engagement. A reflexive thematic analysis was performed on the qualitative data, generating themes around (1) the need for human connection, (2) the impact of self-stigma on help-seeking, (3) the lack of knowledge around

DMHIs and psychological therapy, (4) the desire for personally relevant care, and (5) the fluctuating, perennial nature of mental health.

While I designed the study, managed the data collection, conducted the interviews, analysed the data and wrote up the findings, the study benefited from feedback on the questionnaire and interview design from Angel Enrique (Amwell), and critical discussion and feedback on the qualitative analysis process from Sarah Robinson (University College Cork) and Camille Nadal (Trinity College Dublin). This chapter contributes to answering Research Objective 2: What are the experiences of people who have difficulties engaging with digital mental health interventions?

4.1 Research Questions

This study was an exploratory, observational inquiry into the experiences of non-engagers of a DMHI in relation to uptake and early engagement. The main aims were to understand the barriers that prevented people from signing up for the DMHI, and for those who did sign up, the factors that led to them not returning after this initial use. The study also sought to learn more about the perceived needs of this cohort and the reasons why they decided to investigate the DMHI (i.e., visited the self-referral website or signed up), to contextualise the findings. Due to the difficulties inherent in recruiting non-engagers, a comprehensive understanding of this particular group was aspired towards. Hence, the study targeted both common perspectives across the wider non-use population as well as more in-depth insights based on lived experiences. The research questions for this study were:

1. What prevents people from signing up for a DMHI or using it after signup?

2. Why do non-engagers show initial interest in the DMHI?

4.2 Methodology

4.2.1 Study Design

This was a cross-sectional, observational study using mixed methods. Data collection included a short online questionnaire, through which participants were recruited for semi-structured online interviews. Data collection for this study ran between December 2021 and April 2022. The consolidated criteria for reporting qualitative research (COREQ) checklist [420] was used for the qualitative component of the study. This study was approved by the UK's National Health Service (NHS) Health Research Authority (21/NW/0351) for the health service site in the

study, and by the Research Ethics Committee of the Trinity College Dublin School of Computer Science and Statistics for the universities and not-for-profit organisation sites in the study.

4.2.2 Intervention

SilverCloud Health is a digital mental health platform, designed through HCI research [106] and subsequently validated through a series of randomised controlled trials (RCTs) [106,343,345]. SilverCloud offers over 20 programs, each aimed at a specific category of distress (depression, anxiety, stress, insomnia, etc.). It has delivered human-supported interventions to over a million users via more than 300 partner organisations in both the public health and private sectors and across different geographies [118,343,344]. The programs offered are most often based on Cognitive Behavioural Therapy (CBT) and typically include 6-8 modules of psychoeducational content, as well as tools like a journal, mood monitoring and quizzes. Programs are delivered to clients via their service (e.g., health service, employer, university etc.), resulting in a variety of different ecosystems that can surround the platform (see Appendix B for screenshots of the SilverCloud platform).

Support Models

SilverCloud can be delivered unsupported in *self-guided* mode, but it is most often delivered with human support in the form of weekly written or telephone feedback [106]. Supporters are usually early career stage clinicians, but trained volunteers have also demonstrated effectiveness at providing this non-judgmental encouragement and feedback [345]. Supporters and support models vary by service and support usually lasts for 4-8 weeks, after which clients have one year to continue using the platform alone.

Referral & Signup Flow

Clients access the SilverCloud platform either via clinician referral (where a link to sign up is sent by email) or through the self-referral website. The self-referral website provides an overview of how the intervention works, explains the programs on offer and allows clients to self-select to sign up. Clients choose a program (e.g., Space from Depression, Space from Anxiety, Space from Stress) either on the self-referral website before they click to sign up, or during the signup flow. The signup flow differs between services, but usually involves clients clicking a link to sign up, entering their email address as a username, creating a password and clicking that they understand and agree to the privacy notices. The next screen presents a series of personal goals that the client can select from (e.g., *Feel calmer*, *Be more active*), followed by one or more sets of standardised measures (e.g., Patient Health Questionnaire-9 or PHQ-9) associated with the particular program the client selected. These again differ based on service and support type, and are used to track progress, monitor and escalate risk and assess intervention effectiveness across the service. Finally, the client is shown three illustrations that

represent a mental model of the platform (program, tools, supporter) and is prompted to start the first module of their program immediately, to help them get the benefits of the program as soon as possible (see Appendix B for screenshots of the SilverCloud self-referral website and signup process).

4.2.3 Setting

This study was conducted in collaboration with four SilverCloud services, three in the UK and one in the US, within the health service, not-for-profit and higher education sectors.

Service 1: UK Health Service

The Berkshire Healthcare Foundation Trust is an National Health Service (NHS) Improving Access to Psychological Therapies (IAPT) service, covering a population of 900,000. The IAPT program is a stepped care approach to treating people experiencing anxiety and depression, as recommended by the National Institute for Health and Care Excellence (NICE) [290]. Step 2 interventions are offered to those experiencing mild or moderate symptoms and include low-intensity CBT-based interventions such as guided self-help, SilverCloud and group therapy, whereas step 3 services, for those with more severe symptoms, involve high-intensity face-to-face (FTF) CBT and counselling interventions. Clients are monitored throughout their treatment with weekly clinical measures (e.g., PHQ-9 for depression) and stepped up or down accordingly. All clients offered SilverCloud are provided with support from trained psychological wellbeing practitioners.

Service 2: UK Not-for-profit

The remit of the Ben charity (Motor and Allied Trades Benevolent Fund) is to support the health and wellbeing of those working in the automotive industry in the UK, and their families. Ben provides a number of support avenues including life coaching, financial advice and assistance, mental health assessments, FTF therapy and SilverCloud, as well as industry training (e.g. mental health first aid). The Ben service is most often accessed by clients via their employers, who provide access to Ben resources as part of Employee Assistance Programs. Support on SilverCloud is provided by Ben counsellors in an opt-in manner, whereby clients can self-select support at any stage of their journey.

Service 3: UK University

Nottingham Trent University is one of the largest higher education institutions in the UK, with over 40,000 students and staff spanning five university sites. The university's wellbeing teams include Student Support Advisers, who offer general advice and signposting, the Counselling Service, which offers phone, video and FTF counselling and email support, and Pastoral support from chaplains. SilverCloud is provided without support (as self-help) to students and

employees of the university, along with other recommended resources under a "wellbeing toolkit" offering.

Service 4: US University

Colorado State University is a public research university with approximately 40,000 students and staff across three campuses. The university's Health Network provides an extensive range of mental health resources including group therapy, workshops, substance use screening and support, FTF counselling, and psychiatry services. SilverCloud is offered to students with support from the counselling team or as self-help, and only as self-help to staff of the university.

4.2.4 Participants

This study focused only on people who accessed the DMHI via the SilverCloud self-referral website, because engagement is generally lower without the motivational structure of clinician referral. As the study was interested in both uptake and early engagement, two different groups of participants were recruited, 1) those who visited the SilverCloud self-referral website and were undecided about signing up for the intervention, and 2) those who signed up for the SilverCloud intervention and didn't return for at least 2 weeks after their initial use. To be included in the study, participants had to be over 18 years of age, have provided informed consent and have accessed SilverCloud via the self-referral website.

4.2.5 Recruitment

Those who were undecided about signing up for the intervention were recruited via static, unintrusive notifications on the self-referral website, which read *'Undecided about signing up? Do you have 2 mins to take this short research questionnaire?'.* Those who signed up for the intervention and didn't return were recruited via an automated email, sent from the SilverCloud platform at 2 weeks post signup. Both the notification and the email contained a link to the questionnaire, which was preceded by a participant information sheet and consent form. Interview participants were recruited via the questionnaire, through an option to enter their email address to be contacted for interview; a separate interview information sheet and consent form were then emailed to participants. Interview participants received a $/£50 Perx Reward virtual gift card after the interview was conducted.

Due to the naturalistic nature of this study, the protocol had to be adjusted to address arising issues. Firstly, due to a very low response rate from the questionnaire email, a second email was sent, which directly invited participants to the interview and presented the questionnaire as an alternative participation option. This approach yielded a much higher recruitment rate for both the questionnaire and the interview. Secondly, many of the clients who were sent the email in fact had multiple accounts under the same email address. Therefore, despite the intentions of the study being clearly stated in the email and participant information sheet,

responses were received from users who had already engaged with the platform. After interviewing three of these participants, I decided to send a qualifying email to check whether participants were using the platform, reiterating that the study was focused on people who were *not* using the platform.

These engaged participants were kept in the corpus because they still provided insights on the barriers they experienced when signing up, and in fact many of the interview participants recruited via the self-referral website notification had signed up for the intervention at the time of the interview and were actively using it, despite being 'unsure' about it initially. To manage this in the data analysis process the corpus were sorted into three groups based on their engagement status at time of interview: not signed up (NSU), signed up and not using (SUNU), and signed up and using (SUU). This same engagement status data was not collected for the questionnaire respondents.

4.2.6 Questionnaire Design

As this was an observational enquiry, and the cohort in question were non-engagers and thus likely to be difficult to recruit, a short questionnaire was designed (see Appendix C), which took only 1-2 minutes to complete. The aim of this was to increase the response rate for this difficult to access group [238]. Multiple choice options were provided, as previous research indicates that participants often find it hard to identify or articulate the factors that affect their decisions around engagement with support [370,373]. The questions and multiple-choice options for the two main research questions were developed based on the Health Information Technology Acceptance Model (HITAM) [209] and existing clinical literature on common barriers to uptake and engagement with digital mental health interventions [6,10,31,45,121,122,279,326,360].

One of the most common reasons clients give in the literature for not engaging with support is that they would 'prefer to deal with it alone'. As this statement could be underpinned by either self-stigma or public stigma [23,77], I decided to unpack it into two options: 'I should be able to deal with my problems by myself' (self-stigma) and 'I wouldn't want anyone to find out I was using it' (public-stigma). The order of choices was randomised to prevent order bias, participants could select more than one option, and 'Other' options were also provided for those clients who wished to articulate their own reasons [370,373]. The questionnaire began with five demographic questions (age, gender, ethnicity, education level, and employment) to understand participant characteristics and because placing simple, easy to answer questions at the start of a questionnaire has shown to increase participant confidence and overall questionnaire completion [238].

4.2.7 Quantitative Data Analysis

Quantitative data were analysed in IBM SPSS Statistics for PC, Version 28. Descriptive summary statistics were used to answer the main research questions and understand the characteristics of the data and the representativeness of the sample. Due to the non-standardised nature of the questionnaire and the multiple-choice options, no statistical tests were performed.

4.2.8 Interview Design

The semi-structured interview script was designed based on the same literature as the questionnaire and acted as a more detailed exploration into the same two core research questions. Through the interview a number of areas were explored, including how the client came to access the platform and the barriers they experienced, along with background information on their opinion about mental health and technology in general. Feedback was sought about the interview process from participants in the initial interviews, but there were no major issues or changes made to the protocol. Minor adjustments were made to the script after each interview, but the initial question *'Can you tell me about the first time you heard about SilverCloud?'* always remained the same, as it allowed participants to reflect back on the start of their journey.

Sensitivity and care were taken not to push participants on their personal reasons for seeking help, if these were not forthcoming in answer to the question *'Why did you decide to check out SilverCloud?'.* I recognised my limits in terms of therapeutic training and the risk of creating a space where people might feel exposed. My role and experience were clearly stated at the start of the interview, and a risk protocol was created (including contact details for the relevant emergency services) and kept on hand throughout the interviews. Participants were also reminded of the value of critical feedback and my impartiality in terms of the design of the intervention, to stem social desirability bias.

4.2.9 Qualitative Data Analysis

Qualitative interview data were analysed using reflexive thematic analysis (TA) [49–51], underpinned by a critical realist stance [320,321]. Reflexive TA is a method for developing and interpreting patterns in meaning across a qualitative dataset, which values the researcher's subjectivity and their critical reflection on their role and process [49]. Broadly it involves the researcher familiarising themselves with the data, the coding of individual instances of meaning across the dataset, and the grouping of these codes into themes, which are then iterated upon and refined [49]. Themes, the core aspect of reflexive TA, are defined by a central organising concept and capture shared meaning across the dataset. The flexibility of this method means that it can be employed from a range of different philosophical standpoints,

once they align with reflexive TA's 'Big Q' qualitative sensibilities (i.e., understanding that knowledge and truth are relative and not absolute) [48,49].

In keeping with the reflexive TA method, I used my subjectivity as an analytic resource and kept a reflexive journal throughout the interview and data analysis process, to remain cognisant and questioning of how my beliefs were shaping this work (see Appendix D for selected excerpts from this journal). I also used conversations with colleagues, friends, and my therapist as reflexive opportunities to untangle the fluctuating position I held in relation to this topic and my evolving relationship with the data. See section 1.5 Research Context and Positionality for an overview of my background and position in relation to this research, and Appendix A for position statements for my collaborators.

Reflexive TA was chosen for this study because it allowed for a critical realist foundation, but also because the complex nature of the topic at hand (decision making around mental health support seeking) necessitated a method which supported creative oscillation between surface-level felt experience and underlying generative mechanisms. This approach offered movement between semantic and latent coding of the data, and between descriptive and interpretive reporting [49]. At different stages, the analysis moved along the inductive-deductive spectrum, never being fully deductive because there was no attempt to fit the data into existing theories, but never being fully inductive either, as theory was used to inform the study design [49]. Considering recent calls for greater detail in the reporting of reflexive TA practice in healthcare HCI [48], a comprehensive methodological account of the analytic process is henceforth provided.

The Analytic Process

The interviews were transcribed by an external transcription company and I checked the recordings against the transcripts, updating the text where discrepancies were found. I also made field notes during each interview, which I typed up immediately afterwards. **Phase 1** of the TA process involves familiarisation with the data [49]. I printed the transcripts (with field notes attached), randomised their order and read through each one in detail, making notes in pencil on the transcripts and notes for each case in a TA notebook. I then consolidated these notes into a familiarisation mind map (see Appendix E).

Coding (**Phase 2**) began by hand using the printed transcripts. Working with hardcopies allowed for freedom and flexibility in terms of working environment, and for a physiological, tactile experience of coding. Coded text was highlighted in the transcript and tagged with a number, which linked to a code label written down in my TA notebook. I used three different colours to highlight the text, two for the main research questions (barriers and reasons for seeking help) and the third for miscellaneous codes which were of interest. After eight transcripts were coded in this way there were 219 codes and checking back and forth in my TA

notebook for existing codes became unwieldy, so I typed up all the codes into a Microsoft Word document and organised them under headings, to make finding codes easier. I was conscious of the danger in this premature grouping of codes as it segregated the ideas into topics, but I was confident that I could amalgamate the codes again in subsequent rounds of coding. This new code list was printed and used for the rest of the first round of coding, with new codes being written in by hand (see Appendix E for image of first round coding process). The handwritten codes were typed up into the Word document at the end of this round; there were 362 codes at this stage. Between the first and second rounds of coding I took a three week break from the analysis.

The second round of coding was performed using QSR International's NVivo 12 software, because I am familiar with it from previous work and find it useful as a means of organising and working with large numbers of codes. The transcripts were ordered differently to the first round of coding. The paper transcripts were used to check the first-round codes, the corresponding code was then searched for using the digital Word document and the transcript was coded in NVivo. Codes were placed into two sections reflecting the two main research questions. Adjustments were made to the coding throughout this process; codes were combined if similar, split if they covered more than one meaning, left out if they were not relevant enough to the research questions, and new codes were created. The third round of coding was brief and involved double checking over transcripts to make sure nothing was missed. At the end of the third round there were 173 codes.

The final stage in the coding process involved systematically examining each code and its associated quotes, making sure the code label captured the essence of the meaning contained within the group of quotes, and removing or moving quotes that did not fit. The final list of codes came to 142. During this time (and throughout the theming process) I was attending regular TA discussion groups with other researchers, where we talked about methodological issues we were having with our various TA analyses. These sessions were vital to the development of my understanding of TA and provided a much-needed outlet for what can often be an overwhelming process.

The generation of initial themes (**Phase 3**) began with a printed list of the codes, again to allow for creativity and a tangible connection to the data. Each code was cut out on a separate small piece of paper (see Appendix E for image of candidate theme creation). Candidate themes were ideated upon in a creative process of playing with the codes and moving them about to create different groupings. In developing and reviewing the themes (**Phase 4**), I drew thematic maps to work through the layers of meaning within potential themes, to draw connections between them and to process questions I had.

For the most part, the more semantic/descriptive themes persisted through the different theming rounds, whereas the more latent/interpretive themes took longer to work through and changed more drastically as the theming developed. It was around this time that I began engaging with socially situated mental health literature [8,47,53,87,178,213,337,348,353], because the data and the meaning I was making of it did not fit with a medical framing of distress.

Once I felt comfortable with a cohesive list and map of themes, I began **Phase 5**, which involved refining, defining and naming themes. I wrote up theme definition paragraphs and spent some time adjusting the theme names to make sure they reflected the particular meaning and direction of each theme. It was only upon writing up the results section and choosing quotes for each theme (**Phase 6**) that I realized the boundaries between my themes were somewhat blurred, I had been trying to cover too much with each theme. To address this, I returned to Phase 5 and wrote up a one sentence tagline for each theme, which succinctly highlighted the main focus and thus brought clarity and defined the edges of the themes. The themes were further refined in consultation with my collaborators.

4.3 Results

4.3.1 Questionnaire Results

There were 205 responses to the online questionnaire, 162 from participants who visited the self-referral website and accessed the questionnaire via the notification (notification group) and 43 who were SilverCloud users and accessed the questionnaire via the email (email group). A total of 93 participants (45.3%) came from the two university services, 31.2% from the health service and 23.4% from the not-for-profit service. Due largely to the university services, many participants were aged between 18-24 (40%), aside from this there was a balanced spread of age groups represented in the sample. The majority of participants were also female, white, and educated to college or university level, as is typical of service users [71,350]; see Table 4.1 for questionnaire participant characteristics.

In terms of the employment question, a *'select all that apply'* response option was used to reflect the varied circumstances of each participant, and 37 participants (18.2%) selected more than one option, including 3.4% who were parenting young children or on maternity or paternity leave, and 2% who were caring for the sick or elderly. Of those who only selected one option, the majority were employed 30-50 hours per week (40.5%) or full-time students (19.5%). See Appendix F for full table of employment characteristics.

Table 4.1. Questionnaire participant characteristics

		All (N=205) n (%)	Notification (N=162) n (%)	Email (N=43) n (%)
Service	UK Health service	64 (31.2)	51 (31.5)	13 (30.2)
	UK University	62 (30.2)	40 (24.7)	22 (51.2)
	UK Not-for-profit	48 (23.4)	43 (26.5)	5 (11.6)
	US University	31 (15.1)	28 (17.3)	3 (7.0)
Age	18-24	82 (40.0)	65 (40.1)	17 (39.5)
	25-34	46 (22.4)	34 (21.0)	12 (27.9)
	35-44	32 (15.6)	23 (14.2)	9 (20.9)
	45-54	26 (12.7)	24 (14.8)	2 (4.7)
	55-64	15 (7.3)	12 (7.4)	3 (7.0)
	65+	4 (2.0)	4 (2.5)	-
Gender	Female	155 (75.6)	124 (76.5)	31 (72.1)
	Male	46 (22.4)	36 (22.2)	10 (23.3)
	Non-binary	3 (1.5)	2 (1.3)	1 (2.3)
	Prefer not to say	1 (0.5)	-	1 (2.3)
Ethnicity	White	161 (78.5)	126 (77.8)	35 (81.4)
	Asian	12 (5.9)	10 (6.2)	2 (4.7)
	Black	11 (5.4)	9 (5.6)	2 (4.7)
	Mixed	11 (5.4)	9 (5.6)	2 (4.7)
	Indian	4 (2.0)	4 (2.5)	-
	Latino/Hispanic	4 (2.0)	3 (1.9)	1 (2.3)
	Native American /Alaskan native	1 (0.5)	-	1 (2.3)
	South Pacific Islander	1 (0.5)	1 (0.6)	-
Education	College/University	132 (64.4)	105 (64.8)	27 (62.8)
	High School/Secondary	44 (21.5)	37 (22.8)	7 (16.3)
	Postgraduate masters/Doctorate	28 (13.7)	19 (11.7)	9 (20.9)
	Primary	1 (0.5)	1 (0.6)	-

Responses to the two main research questions were *'select all that apply'*, so the distribution of answers was accumulative, (i.e., for the question '*Why did you decide to check out SilverCloud?*', more than half of participants (131/205, 63.9%) selected more than one multiple choice option). This was also true of the question *'Why are you unsure about signing up for SilverCloud?*', where 59.6% of participants (118/198) selected more than one option. This indicates that the reasons people have both for seeking help via the DMHI and for being uncertain about it, are manifold.

Regarding the first question around reasons for considering using the DMHI (see Table 4.2 for full results), the most prevalent response was *'to feel better'* (54.6%), followed closely by *'because my mental health is important to me'* (51.2%). Many participants wanted to deal with circumstantial or external stressors, and interestingly 60 participants (29.3%) decided to investigate the DMHI because it was recommended to them. Of the 11 participants (5.4%) who

selected the *'other'* option and entered free text, responses centered around specific stressful life events or situations (e.g., *"To cope with an unbearable workload and work environment"),* alleviating distress, easy access and self-care (e.g., *"to give myself better support"*).

Table 4.2. Responses to the question *'Why did you decide to check out SilverCoud?'*

Multiple choice options, *n (% of cases)*	**All (N=205)**	**Notification (N=162)**	**Email (N=43)**
To feel better	112 (54.6)	93 (57.4)	19 (44.2)
Because my mental health is important to me	105 (51.2)	88 (54.3)	17 (39.5)
To improve my work, study or home life	78 (38.0)	64 (39.5)	14 (32.6)
To cope with a stressful life event	75 (36.6)	61 (37.7)	14 (32.6)
It was recommended to me	60 (29.3)	44 (27.2)	16 (37.2)
To improve my relationships	46 (22.4)	40 (24.7)	6 (14.0)
I was just curious	39 (19.0)	30 (18.5)	9 (20.9)
To help someone else with their mental health	13 (6.3)	11 (6.8)	2 (4.7)
Other	11 (5.4)	8 (4.9)	3 (7.0)
Total	539 (262.9)	439 (271)	100 (232.7)

As the primary research question (around what prevented participants from engaging with the DMHI) was presented slightly differently to the email and notification groups, the results will be displayed separately for each group. For the notification group, the question was '*Why are you unsure about signing up for SilverCloud?*'. Of this group, 155/162 participants completed this question (see Table 4.3 for full results). The most prevalent response to this question was *'I'm not sure how useful it will be'*, selected by 59.4% of participants.

The two most widely selected responses following on from this centred around perceived ease of use, *'I'm not sure how to use it'* (33.5%) and *'I can't decide which program to choose'* (32.9%). The option based on self-stigma *('I should be able to deal with my problems by myself'*) was selected by 27.1% of the non-user group. Free text responses to the *'other'* option were varied and included reasons related to stigma and apprehension about seeking help (e.g., "*I'm worried someone will say I'm making it up*"), not having enough time to use the DMHI or information about it (e.g., "*I don't know enough about what it entails*"), and having more suitable options elsewhere.

Table 4.3. Responses from notification group (N=155) to the question '*Why are you unsure about signing up for SilverCloud?'*

Multiple choice options	**n**	**% of cases**	**% of total responses**
I'm not sure how useful it will be	92	59.4%	24.8%
I'm not sure how to use it	52	33.5%	14.0%
I can't decide which program to choose	51	32.9%	13.7%
I should be able to deal with my problems by myself	42	27.1%	11.3%
I'm not sure if I will be able to fit it into my life	29	18.7%	7.8%
I need more support than this	28	18.1%	7.5%
I'm not sure if I need it	27	17.4%	7.3%

Multiple choice options	n	% of cases	% of total responses
I wouldn't want anyone to find out I was using it	27	17.4%	7.3%
Other	10	6.5%	2.7%
I'm worried my data won't be secure	8	5.2%	2.2%
My mental health isn't important to me	4	2.6%	1.1%
My mental health isn't a priority for me right now	1	0.6%	0.3%
Total	371	239.4%	100%

For the email group, participants were first asked *'Do you plan on logging back in to SilverCloud?'.* In response to this question 46.5% of participants (20/43) answered *'Yes'*, 41.9% (18/43) selected *'Undecided'*, and 11.6% (5/43) said *'No'.* Different follow-up questions were asked and different multiple-choice options were presented depending on which answer participants chose. For the *'Yes'* response group, the follow up question was *'What has been preventing you so far?*' (see Table 4.4 for *'Yes'* group results). The most widely selected response among this group was *'I forgot about it'* (45%, 9/20), followed by *'I'm finding it hard to fit it into my life'* (35%, 7/20). Responses to the *'other'* option were related to complications with switching programs, difficulties in prioritizing self-care (e.g., "*I always put myself last*") and issues with public stigma (e.g., "*There's no accountability because I don't want people at work to know I am using it").*

Table 4.4. Responses from the group who answered *'Yes'* (N=20) to *'Do you plan on logging back in to SilverCloud?'* to the follow up question *'What has been preventing you so far?'*

Multiple choice options	n	% of cases	% of total responses
I forgot about it	9	45.0%	26.5%
I'm finding it hard to fit it into my life	7	35.0%	20.6%
I can't decide which program to choose	4	20.0%	11.8%
I'm not sure how to use it	3	15.0%	8.8%
Other	3	15.0%	8.8%
My mental health isn't a priority for me right now	2	10.0%	5.9%
I should be able to deal with my problems by myself	2	10.0%	5.9%
I haven't found it useful so far	1	5.0%	2.9%
I've been feeling better	1	5.0%	2.9%
I wouldn't want anyone to find out I was using it	1	5.0%	2.9%
I'm worried my data won't be secure	1	5.0%	2.9%
Total	34	170.0%	100.0%

The follow-up questions for the *'No'* response group was '*Why not?*' and for the *'Undecided'* response group the question was *'What is affecting your decision?*' (see Table 4.5 for *'No'* and *'Undecided'* group results). The multiple-choice options for both of these questions were the same. Of the *'No'* response group, 80% of participants (4/5) selected *'I haven't found it useful so far',* while 60% (3/5) selected *'I need more support than this'*. In the *'Undecided'* group 44.4% (8/18) chose the option *'I'm not sure if I can fit it into my life'*, 27.8% (5/18) selected *'I'm not sure how to use it'* and 22.2% (4/18) chose *'I need more support than this'.* Free text responses

from the *'other'* option concerned feeling constrained by program choice (e.g., "*Felt restricted by signing up to one particular area, although there would have been more than one relevant for me at that time")*, not finding the DMHI useful and not needing it because help was found elsewhere.

Table 4.5. Responses from the group who answered '*No'* and '*Undecided*' to '*Do you plan on logging back in to SilverCloud?'* to the follow up questions *'Why not?'* and '*What is affecting your decision?'* respectively.

	No response group (N=5)			**Undecided response group (N=18)**		
Multiple choice options	n	% of cases	% of total responses	n	% of cases	% of total responses
I'm not sure if I can fit it into my life	0	-	-	8	44.4%	24.2%
I'm not sure how to use it	2	40.0%	15.4%	5	27.8%	15.2%
I haven't found it useful so far	4	80.0%	30.8%	3	16.7%	9.1%
I need more support than this	3	60.0%	23.1%	4	22.2%	12.1%
I wouldn't want anyone to find out I was using it	1	20.0%	7.7%	3	16.7%	9.1%
I can't decide which program to choose	0			4	22.2%	12.1%
I'm worried my data won't be secure	1	20.0%	7.7%	2	11.1%	6.1%
Other	2	40.0%	15.4%	1	5.6%	3.0%
I should be able to deal with my problems by myself	0	-	-	2	11.1%	6.1%
I got what I needed from it already	0	-	-	1	5.6%	3.0%
My mental health isn't a priority for me right now	0	-	-	0	-	-
My mental health isn't important to me	0	-	-	0	-	-
I don't need it	0	-	-	0	-	-
Total	13	260.0%	100.0%	33	183.3%	100.0%

Across all of the questions, there did not appear to be any trends between demographic groups and selected responses, however, it is not certain whether any significant differences between groups existed because statistical tests were not performed.

4.3.2 Interview Participants

A total of 20 participants were interviewed, 13 recruited via the self-referral website notification and 7 via email. At the time of interview, 5 participants had not signed up for the intervention (NSU), 7 had signed up and were not using the intervention (SUNU), and 8 had signed up and were actively using the intervention (SUU). Despite half of the services involved being universities, participants were quite evenly distributed in terms of age, however there

was again a skew towards more white women in the sample; see Table 4.6 for interview participant characteristics.

Table 4.6. Interview participant characteristics (N = 20)

		n (%)
Service	Health Service	8 (40)
	UK University	5 (25)
	Not-for-profit	5 (25)
	US University	2 (10)
Age	18-24	7 (35)
	25-34	5 (25)
	35-44	4 (20)
	45-54	3 (15)
	55-64	1 (5)
Gender	Female	14 (70)
	Male	6 (30)
Ethnicity	White	14 (70)
	Asian	1 (5)
	Black	1 (5)
	Mixed	2 (10)
	Latino	2 (10)
Education	College/University	11 (55)
	High School/Secondary	3 (15)
	Postgraduate masters/Doctorate	6 (30)
Employment	Employed (30 - 50 hrs per week)	5 (25)
	Employed (<30 hrs per week) & Student (full-time)	4 (20)
	Student (full-time)	2 (10)
	Unemployed	2 (10)
	Student (part-time)	1 (5)
	Employed (< 30 hrs per week)	1 (5)
	Employed (< 30 hrs per week) & student (part-time)	1 (5)
	Employed (30 - 50 hrs per week) & student (full-time)	1 (5)
	Employed (<30 hrs per week) & parenting young children	1 (5)
	Employed (30 - 50 hrs per week) & parenting young children	1 (5)
	Employed (30 - 50 hrs per week) & student (full-time) & parenting young children	1 (5)

4.3.3 Qualitative Results

Five themes and two subthemes were identified through the reflexive thematic analysis, which fall at different temporal positions along the timeline of engaging with mental healthcare (see Figure 4.1 for thematic map). The first theme, *Humans need humans*, covers the idea that human connection is a large proportion of what people are looking for when they seek psychological help. *Needing help means I'm weak or I've failed* centres on the deep emotional, self-stigmatized beliefs that can underpin reluctance to seek help, and even stifle awareness of the need for help.

The third theme, *Getting the right help is confusing* contains two subthemes; *What is "help"?* deals with the lack of understanding, education and guidance around therapy in general and how to choose appropriate care, while *What the hell are DMHIs?* centres more specifically on the dearth of knowledge around DMHIs and how this impacts expectations about these relatively novel interventions. The fifth theme, '*One size fits all' fits few* references the need for choice and personal relevance in terms of care options and content; and finally *Accounting for changing needs* highlights the diverse, intersecting trajectories of mental health goals and motivation and how they are not adequately catered for by existing care systems. Quotes are presented with the participant number, gender, service type and engagement status group (NSU: not signed up, SUNU: signed up and not using, and SUU: signed up and using), to situate each participant's words within their particular context. See Appendix G for theme and code tables.

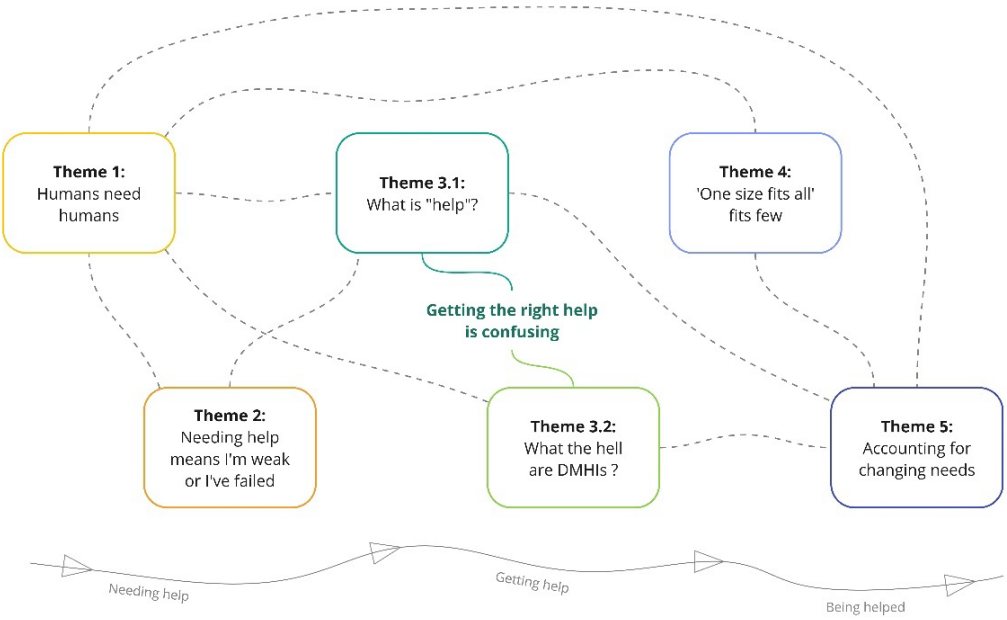


Figure 4.1. Thematic map

Theme 1: Humans need humans

A fundamental part of what many participants in this study desired, in terms of therapeutic care, was human connection. This was either because human interaction was perceived as a crucial component of the therapeutic healing process, or simply because participants wanted an antidote to feeling alone. The importance of feeling heard and understood by another human was reported widely across the data, and many participants felt that this was not something that could be translated to the digital realm. As participant 7 here describes, it is the relational quality of human-to-human contact that is key,

> "I think if you're talking to a person, you feel more interacted, I guess…maybe you feel more of a connection, you really feel like someone's listening. Obviously, you can tell when someone, you're talking face to face with someone you can tell if they're listening, if they're interested in what you're saying. Through a computer I guess you don't get that." (P7, male, not-for-profit, SUNU).

The positive, healing relationship between therapist and client is a large component of the effectiveness of FTF therapies [218], and clearly something that participants in this study felt was missing from the DMHI. There were, in fact, a small number of participants who expressed that using a computer to improve their mental health further enhanced their feelings of seclusion and disconnection, even in services where human support was provided as part of the DMHI. One aspect of this preference for human interaction over digital was a desire to offload and externalize pent up worries or thoughts, *"I sort of feel like I need to actually talk to someone and maybe just vent about it or to have someone to listen to me"* (P8, female, university, SUNU). For this participant, who was struggling with multiple interacting forms of distress, it was being able to express her complex concerns that mattered most. The role of the other person in this interaction, therefore, was simply to facilitate a space for expression. As participant 12 notes,

> "I think having someone to hear you, to be heard, to actually listen to your problem, is, is quite important to influence changes not only thinking, reflecting on your behaviour but to influence any changes in mental health." (P12, female, health service, SUNU).

The reflective power opened up by being listened to was, for this participant, a core mechanism expected to bring about cognitive and behavioural change. Therapy has informally been termed the 'talking cure', and this name underpins common perceptions and expectations of the therapeutic process [310]. The relational function of talking was mentioned by participants as a key therapeutic process that was integral to change. For example, participant 10 here describes the art of conversation as an externalisation whereby thoughts are taken out of the inner realm of the mind and made concrete,

> "having an actual conversation with somebody, it felt a bit more real and you know, like I had to maybe think about it for more than two seconds, trying to articulate what I needed to say, rather than having it in front of me you know, choosing which option" (P10, female, health service, SUNU).

The inherent difficulty in verbalising thoughts (*"had to think about it", "trying to articulate")* was recognised by this participant as a positive and integral aspect of processing distressing cognitions. The alternative, working through content digitally and alone, was seen as easier but markedly less effective for this individual. Aside from the beliefs participants held about the therapeutic value of conversing with another human, the need for human connection also resonated through the data as a solution to the common circumstance of social isolation and loneliness. There were different reasons across the data for this isolation, from recent emigration, "*I move to the UK very recently like six- five months ago. So, I feel like I'm alien and I*

don't see people much" (P16, female, health service, SUU), to the working conditions that have become mainstream as a result of the COVID-19 pandemic,

> "I actually work at home but I've got a log cabin at the bottom of the garden so I'm completely detached from even the family in the house. So, I don't- unless I choose to, I don't get a lot of interaction with other people" (P1, male, not-for-profit, NSU).

For some participants, however, there was no precipitating event that brought about their loneliness, they simply did not have any close friends or family members. A small number reported that they didn't have a single person in their life who they felt they could talk to about their mental health. Even when participants did have support networks, people were sometimes seen as too busy to be supportive,

> "people say you know they'll check-in on someone and whatever else. But people don't, people are wrapped up in whatever they have going on. They're not bad people for it, it's just life and I think everyone gets wrapped up in their day and they just forget" (P13, female, not-for-profit, SUU).

Participant 13 had been through a recent bereavement and noted that the support she received immediately following her loss waned consistently over time. The social cue of loss triggers supportive instincts in those around us [241], but when it comes to distress that is not linked to an overt external event, or continues long after an event, these supportive social cues are less obvious. From a sociopolitical perspective, theorists have noted that modern capitalist economic and social systems tend to isolate us and consume our attention, obscuring our capacity to recognise and care for each other [249]. This participant wanted to be reached out to, rather than proactively asking for help, because of the stigma associated with not being able to cope alone (discussed further in the next theme).

A number of participants noted that apprehension about burdening others with their problems prevented them from opening up or seeking help. There is evidently a complicated relationship between interpersonal bonds and mental health, as conversely participants noted that the influence of other people contributed to them seeking help. For some this came in the form of a recommendation from a trusted person or the testimonial recommendations on the self-referral website as the main influences that lead them to use the DMHI. For participant 19, his girlfriend played a key role not only in his decision to reach out for help, but also in his recognition of the need for help in the first place. He notes here the difficulty that people might experience if they don't have this same level of support,

> "But a lot of people I suppose wouldn't be in that position where they want to address that issue themselves. So, it might take someone else to then, but if they haven't got anyone then it's a bit of an awkward situation for them I suppose." (P19, male, health service, SUU).

Overall, we can see that human connection appears to be a crucial component of the need for help, yet the interpersonal weight of mental health makes attaining this support difficult, as we shall see in the following theme.

Theme 2: Needing help means I'm weak or I've failed

Many participants in the study revealed that they felt ashamed of their mental distress and feared the judgement of others, feelings which had previously prevented them from seeking help or even talking about their mental health. This emotional response was sometimes rooted in experiences of public stigma, such as that which participant 8 encountered,

> "I've been in therapy before and even when people don't mean to be rude or show that there is a stigma around it, I've had people say like, "Oh, yeah, I could never, like I'm not that crazy" or something like that, which is shocking." (P8, female, university, SUNU).

This type of negative social assessment can lead to shame and the internalisation of public attitudes as self-stigma [77]. Even nowadays, when public stigma and discrimination have become far less socially acceptable (participant 8 was shocked by this overt display of stigma), self-stigma persists. Stigma was mentioned by participants from a variety of diverse backgrounds and across each of the included services, yet it appeared to be slightly more prevalent among participants from the not-for-profit service, and some of the male participants noted that they believed mental health stigma was worse for men than women. In addition, a small number of participants described how their culture impacted their feelings towards seeking help. Participant 5, who was from Zimbabwe, described mental health as not being part of her culture at all, but this is perhaps a reflection of how distress and suffering can be conceptualised and expressed differently across cultures [53],

> "when people think mental health, they start thinking, okay there's some sort of witchcraft involved in it, or you're crazy basically… people tend to not want to talk about it because they are afraid of what other people might think like, okay, if I say that I'm feeling depressed right now, people will just be like, 'ah you're just trying to get attention, you're not depressed'. So, you tend to just keep it in." (P5, female, university, NSU).

When participant 5 moved to the UK, she was inundated with mental health and wellbeing information; she explained that it was a relief to admit to herself that she might need help, and to have these resources available to her. Other participants communicated recognition of the general decline of mental health stigma in recent years, the increase in public debate around the subject, and the widespread availability of information and self-care resources. Yet there was a sense that underneath this surface-level awareness, we are still a long way from living in a society that fully grasps the many reasons how and why distress affects us and what can be done to prevent or alleviate it. As participant 18 notes,

> "there is still a disconnect between the rhetoric and the reality. So, you know, we talk a good game in society around [mental health] and its importance. I think there's a bit of a lag in terms of the actions or the real understanding of it" (P18, male, not-for-profit, SUU).

The hidden, stigmatised emotional beliefs surrounding mental health could be a key factor in the perpetuation of self-stigma, as many participants in this study described how scared they had been to admit that they had a problem and needed help. To cross behavioural help-seeking barriers, people must first cross the more significant psychological barrier between being what they perceived as 'healthy' and what they perceive as 'someone in need of help' [78,79]. Deciding what constitutes *bad enough* to cross this barrier is a delicate balancing act, where comparisons are constantly made against other people,

> "I guess, also, this thought of, oh, I'm not doing that bad, to actually go to someone. We think sometimes that oh there are a lot of people that are doing worse than me so, I'm not going to waste their time, like the therapists' time." (P8, female, university, SUNU).

Other participants, along with participant 8, held the perception that a person needs to be at a certain, socially mediated, level of severity in terms of distress to seek and receive help. Identifying the boundaries of this level can be problematic because it requires not only social comparisons between the self and others, but introspective evaluations between current experience and previous states [376]. Participant 6 was so unsure about the validity of her own distress, that she believed she might have been imagining it, *"sometimes I almost convince myself that I've made up any issue I've got in my head"* (P6, female, university, SUNU). Many participants in this study declared that they did not know whether they needed help or not, or what was normal vs. 'help-worthy' in terms of emotional distress, a finding that is consistent with previous qualitative research [37].

Looking more closely at the social aspect of crossing this needing help barrier, some participants remarked that they felt pressure to cope with the difficult emotions they were experiencing, which usually involved keeping them in or not expressing them. Participant 13 describes how she remembers her mother coping with bereavement, *"I don't know how she coped, but I don't ever remember her crying, I don't ever remember her falling apart and I shouldn't. I should be able to do what she did."* (P13, female, not-for-profit, SUU). Sadness, along with other dysphoric states and emotions such as anxiety and anger, hold the position in many cultures around the world of being unwanted, and therefore broadly classified as unhealthy [241]. Expressing these emotions, for participant 13, was equated with *"falling apart*" and seen as the opposite of coping. Coping therefore is an ideal state, something that one *should* be able to do. The term *healthism* has been used to refer to the common but harmful assumption that individuals have sole responsibility over their own health, and therefore upholding one's status of good health (e.g., through coping) is a moralized duty [83]. Coping as a moral, socially

promoted act becomes complicated when we observe the opinions of those towards people who do *cope* by concealing their distress, as participant 1 describes,

> "I know I've got a friend who has always been very sort of happy, very sort of outward and we found out a few months ago that actually, he'd been suffering from depression, which none of our circle of friends actually knew. But I know that some of the other people I heard talking about it seemed to say 'well you know, why would he suffer from depression, he's always happy'." (P1, male, not-for-profit, NSU).

A paradox exists here whereby neither expressing your distress *("falling apart")* nor concealing it (people think you are lying or making it up) are socially tolerated. The dominant social norm or assumption, therefore, is that you shouldn't be experiencing these emotions in the first place, to do so means there is something wrong with you (you have an illness), or you're either imagining it or you failed to look after yourself adequately (it is your fault) [348]. This has been termed the 'mad or bad, brain or blame' dichotomy, and it is deeply enmeshed with the biomedical model of distress [192]. Rather than situating distress in the context of external stressors, medical framings can individualise suffering and enhance self-stigma [192,336,337,361]. In order to seek help, people must face their own internal beliefs about what it means for them to need this help, a finding that was seen widely across the data in this study.

Theme 3.1: Getting the right help is confusing: What is "help"?

In addition to uncertainty around when to seek help, many participants in the study also communicated that they were unsure what *type* of help they needed, and in a more practical sense what getting help entailed. In terms of awareness of mental health support, participants stated that their understanding came from either direct personal experience, specialised education (e.g., studying psychology or working in the health sector), or television programs, movies and talking to friends and family. The pervasiveness of the biomedical model means that many people assume the healing process in relation to distress is akin to physical health, for example, a small number of participants mentioned being *"fixed"* or *"cured"* of their distress. Participant 13 was worried about her not-for-profit service telling her they couldn't help when she sought out the DMHI,

> "if they say they can't help me, then I'm really going to have to go to the doctor's, it's just someone else telling me that. But actually, if they turn around and say, "I can help" then I'm not 'not fixable'. I know that sounds stupid" (P13, female, not-for-profit, SUU).

Participant 13 was conscious that her worry about being *"not fixable"* was perhaps a social faux pas, as were others in the study. These participants believed there was something inappropriate about suggesting that emotional distress can be cured, but for want of an

alternative, they were unsure how else to think about it. In line with this confusion about the goals or outcomes of therapy, disconcertion was experienced around whether the DMHI was the right fit for certain individuals and their specific circumstances. For these participants, it appeared that their satisfaction with *any* solution presented to them, no matter how simple, depended primarily on its suitability, as participant 4 explains,

> "I want to be sure that someone who's qualified can listen and then say, 'okay, yes, you know that's just everyone goes through this from time to time, it's fine'. Or you know, 'okay I think you should try this program' or even just you know, even if they said you know, 'do some breathing exercises'." (P4, male, health service, NSU).

The most important aspect of getting help for this participant was having a trusted professional hear his story, assess whether he needed help and if he did, guide him towards the right course of action. Several other participants also mentioned wanting advice from qualified experts, or specifically to be triaged, noting that this aspect of getting help was missing from the DMHI self-referral process they experienced. This could be a factor impacting the higher DMHI engagement rates seen amongst those clients referred by a doctor or other professional [26,198]. DMHIs accessed via self-referral, perhaps because of this lack of triage that can be discouraging for some, are consequently not seen as *help* in the same way that more traditional forms are. Participant 1 held the opinion that his interest in the DMHI was something different to the more meaningful act of seeking help, "*I mean I'm not actually sort of seeking physical help myself but certainly I've used a multitude of different Apps over the years for different things*" (P1, male, not-for-profit, NSU). Thus, in using or investigating a DMHI, one can remain comfortably on the *healthy* side of the *needing help* barrier. As participant 9 explains, the digital route to help allows for a less overwhelming experience of seeking support,

> "I'd rather not go and cry to my doctor and tell them that I need help, I'd rather go on the computer… I think that's what's nice as well actually about this online thing because it's not so much of a big deal, is it? Just turn your computer on and doing it that way, it's not quite as difficult to get yourself to do it." (P9, female, not-for-profit, SUNU).

This positioning of DMHIs on the fence, so to speak, between help and not help, could contribute to the notion that they are a good first step, an easy route into the daunting world of help, as was mentioned by a number of participants. Participant 17 had a traumatic past experience with distress, so the idea of *"going back there",* signified by seeking "*treatment"*, was a frightening prospect for her,

> "everything to do with mental health is negative to me because I don't want it, I don't like it. And I needed to turn it into a positive, that's something you don't really need but it's to help you so, that's how I've seen it." (P17, female, health service, SUU).

This participant was unsure about signing up for the DMHI because of these fears, but the ambiguity of the DMHI meant that she was able to reframe it as something she *"didn't really*

need", which allowed her to circumvent the barrier of admitting she needed help. Seeing the DMHI as a coping strategy or preventative measure is precisely why she went on to engage with it, but other participants had different reactions to this aspect of the DMHI. Participant 12 also saw the DMHI as preventative, but for her this was a problem because she was seeking a more reactive solution, *"It is good for someone with stable mental health, not for people who are looking [for help]"* (P12, female, health service, SUNU). Other participants also believed that digital solutions were not as effective or as serious as FTF therapies, precisely because they were not perceived as real help,

> "if I'm at the stage where I'm like sitting in the shower like properly sobbing because I don't know what, what the hell is happening with my life, I can't- like sitting on a computer just clicking on boxes is not what I- it's not going to help me at that point." (P10, female, health service, SUNU).

Participant 10 desired immediate relief from her overwhelming experience of distress, which she did not find with the digital solution presented to her. She mentions getting to a point where she needed something more than the DMHI could provide, an area that that will be discussed further in theme four. Crossing the *needing help* barrier was not a concern for this participant, but for those who do experience this stigma, DMHIs appear to hold a unique position in terms of being able to help without being considered *real help.* Underpinning this is a deep uncertainty about what it means to get help for mental distress, a confusion that was found to be exacerbated by the lack of knowledge and understanding of digital solutions more broadly.

Theme 3.2: Getting the right help is confusing: What the hell are DMHIs?

One of the most prevalent codes across the entire dataset involved participants not being sure what the DMHI was. Most participants had not heard of or used a digital solution previously, and therefore had little frame of reference to go on, "*I didn't have any expectations because I never used anything like that before"* (P3, female, university, NSU). Even when participants had prior experience with the platform (e.g., one participant was a nurse who had previously recommended it to her patients) there were still many layers of uncertainties and unanswered questions. Participant 1 remarked that "*until you sign up you can't really see the sort of increased detail as to what exactly it is*" (P1, male, not-for-profit, NSU), which points to a lack of practical explanation of the intervention on the self-referral website and in other materials provided to clients in anticipation of sign up.

Many other participants also declared that there was not enough information given in these preliminary materials (e.g., service websites, outreach emails, and wellbeing resource landing pages) or that the information provided oversold the intervention, leading to unrealistically high expectations which were not met, and therefore left participants feeling disappointed. Recent HCI research has called for greater transparency and honesty in client-facing marketing

of mental health technologies [400], because implying that psychological change is easy cultivates expectations that are unattainable [389]. In line with this, a major request from participants was for more information to be provided before clients are expected to enter their details and commit to signing up for the DMHI. Participant 14 was enthusiastic about the digital option but had doubts about it due to previous negative experiences with FTF CBT, as she explains,

> "I just wanted to see I guess what it was actually offering, go into more depth about it… I like structure so it would have been nice to have like- I don't know, like a course detail thing of like what it all goes through." (P14, female, health service, SUU).

For those participants who did decide to sign up, as in participant 14's case, the desire for more guidance and information continued into experiences of the platform itself. A number of participants professed that they didn't know how to use the platform, this confusion often stemming from not understanding the fundamental nature of how interventions like this operate. For example, participant 15 expected someone to contact her to initiate the start of her journey with the DMHI, an expectation possibly based on traditional forms of therapy, which are interactional rather than self-directed,

> "I didn't actually know how to start the program, if that makes sense? Because I kind of sort of logged in, did the things and then I was kind of waiting for somebody- Waiting for the, well, when do I start? How do I start it? So, I'd signed up for a few days and it was like, oh okay, so I've got to kind of go back in. So there was a slight gap." (P15, female, health service, SUU).

The autonomous nature of DMHIs was not something that this participant fully comprehended before she signed up, so she was left waiting for direction. There was also uncertainty around the sign-up process, as some participants believed that the self-referral website was part of the intervention platform itself; without a mental model for the DMHI, it can also be difficult for people to grasp the systems and processes surrounding the DMHI. These unknowns left many participants feeling frustrated and lost. Participant 12's exasperation was palpable,

> "I didn't know did I, did I click on the right page? Where, or did I already sign up? What is it? There was nothing, nothing really to guide me, to explain what that Silver Cloud is, why clouds are silver. I was- I couldn't understand really what it is." (P12, female, health service, SUNU).

This excerpt introduces another area that perplexed some participants, relating to the ecosystem of the intervention itself and the relationship between the participant's service and this external company 'SilverCloud' who were delivering the intervention. Previous research found that endorsement by a trusted service and the presence of familiar logos indicated credibility when people were seeking mental health information online [325], and for many participants in this study this was found to be true, e.g., "*I thought oh, I might as well give it a go because I saw that it was… done with the NHS so, I knew it would be reliable"* (P19, male, health

service, SUU). However, other participants found the presence of branding outside of their 'trusted service' to be a point of ambiguity and concern. Participant 4 expressed distrust in private sector companies and queried the usefulness of the intervention considering what he perceived to be the potentially immoral values and goals of the corporation behind it,

> "anything that's for-profit healthcare… has that implicit you know incentive for the company, assuming they are not that scrupulous, to you know, effectively try and keep their customers on board rather than providing them with help." (P4, male, health service, NSU).

When faced with this dearth of knowledge about DMHIs, participants tended to forge expectations based on the closest comparable thing they had knowledge about, which was often wellbeing apps and other similar digital products they had used before, "*my expectation was that an online tool would be similar to you know, other stuff out there"* (P18, male, not-for-profit, SUU). For example, some participants expected to have to pay for the intervention, and that the payment structure might be like consumer facing apps (e.g., restricted access to content based on subscription level). In addition, because most of these apps are delivered as self-help, many participants did not expect human support from the DMHI; some participants from the supported services in the study didn't even realise there was a human support aspect. For the most part, attitudes towards other widely available mental health and wellbeing apps were negative; participant 9 dismissed the apps she had used previously as frivolous and unhelpful,

> "I think the ones I'd seen were more just like, here's a daily mantra for you and write your dream and [laughs] I don't know, like weird things like that. Because I did actually download some of them ages ago and they were rubbish, I never used them" (P9, female, not-for-profit, SUNU).

Pre-determined negative attitudes towards the broad category of *'wellbeing technologies'*, means that DMHIs can become tarred with the same brush, as was found in this study. Many participants had low expectations for how useful the intervention was going to be, as did participant 8, who put off engagement with the DMHI because of this pessimism, *"I feel like I'm delaying it just because I'm like, oh yeah it's not going to work"* (P8, female, university, SUNU). Belief that DMHIs will not work is a common barrier to uptake and engagement found in the literature [31,45,261], but another explanation for these attitudes could be linked to the inherently standardised nature of digital solutions. For many participants, the usefulness of the DMHI was directly linked to its relevance to their personal situation and circumstances. Participant 6, who it should be noted was provided the DMHI without human support, questioned the effectiveness of a universally applicable digital intervention considering her specific circumstances and needs,

> "How are they going to know exactly what I need help for if they're not asking me… I thought how can this really help, like it might be one of those things that they say is going to help and it might

> make you think it's going to help, like a bit placebo effect but it doesn't really help." (P6, female, university, SUNU).

Not knowing how DMHIs function, what their underlying mechanisms are, or how they are tailored can lead to huge gaps in understanding, gaps which are often filled with inference. The notion of tailoring and personalisation of digital interventions will be explored in more detail in the following theme.

Theme 4: 'One size fits all' fits few

When asked what brought participants to the DMHI, they conveyed a range of different reasons for seeking help, involving one or a number of external stressors, such as recent bereavement, job loss, starting university, domestic violence, or moving country, *"I'm an international student so I just wanted some aids to help me because it's a new environment"* (P5, female, university, NSU). These stressors often precipitated help seeking, so understandably participants wanted to address these issues specifically with the help they sought. From a clinical standpoint, many of these issues would be classified as related to 'adjustment disorder', a diagnostic category that raises taxonomic dilemmas around the boundary between normality and pathology [403].

While the range of program options available through the DMHI was mentioned by several participants as an appealing aspect of this particular intervention, *"it covers such a wide aspect, a wide range, a wide variety if you want, of issues that people can seek help with"* (P7, male, not-for-profit, SUNU), many participants still felt that their particular problem was not covered or represented. There was an overall perception among most participants that a digital solution implies generic content, and that generic content is undesirable, as has been found in other recent HCI studies [15,16]. Participant 12 found a disconnect between her subjective experience of her own distress and the nonspecific solution presented to her, "*it's just I find it strange that we all have different problems and we all get treated with the same, the same generic videos"* (P12, female, health service, SUNU). Frequently coupled with this aversion to a 'one size fits all' approach was a preference for human interaction, due to its intrinsically personal nature. Participant 1 articulated the desire for a solution that could be adapted to him and his needs,

> "I think where it would fall down is if I felt that it was too generic and therefore didn't suit me and therefore talking to someone in person is probably much more tuneable to personal circumstance." (P1, male, not-for-profit, NSU).

Not understanding the role of the human supporter in the DMHI, or not knowing that there was a human support element at all, led many participants to underestimate the personalised nature of the intervention. However, even when people did understand the supporter role and

were actively using the intervention with support, as in participant 16's case, there was still a sense that the content of the DMHI was indistinguishable from the plethora of mental health information that is now widely available online,

> "I've been reading I know these modules, they maybe they are helpful but it's still these things are, we can, we can find them outside like any other websites." (P16, female, health service, SUU).

The global therapeutic and self-help industries have grown substantially in recent decades [348,400], meaning that most people have been exposed to 'self-help' style wellbeing advice in one form or another, often including techniques from the widely popularised CBT [290]. Some participants who had this existing knowledge and already used CBT techniques as part of their own self-care routine, found the provision of this advice through the DMHI to be simplistic and even patronising,

> "Have you tried, I don't know, sitting down and having a cup of tea? Or just writing out your thoughts? And I'm like, yes, I have, I've thought about all that. I've done all of that. I keep a diary so I'm very mindful about how I'm feeling, when I'm feeling it… I almost felt it was a bit- I don't know if- I don't really know how to say it. Like I don't want to say like it was talking to a child, you know like explaining things." (P10, female, health service, SUNU).

Being given these nonspecific recommendations was an extremely frustrating experience for participant 10, and it is clear that the DMHI was not an appropriate option for her at that time. For many participants in fact, the DMHI was simply not suitable. This was either because they were not comfortable using technology, *"I'm just quite bad with technology, it takes me a while to figure it out…I'm just, I don't really know how to work it properly*" (P8, female, university, SUNU), or they were experiencing types of distress for which CBT or the digital format was not suitable, "*I guess the stuff I have kind of been struggling with it was- I didn't know that it was really going to provide the help that I felt I needed*" (P2, male, university, NSU). That said, we can see from some of the engaged participants in the sample that the DMHI was an ideal solution for some, due to its adaptable, self-directed nature and relative convenience compared to FTF modalities. Even amongst the non-engaging participants, these beneficial attributes were regularly mentioned. For participant 13, a busy working mother with young children, the DMHI was a perfect fit,

> "I can actually help myself rather than feeling like I've got to have a childminder, I've got to try and get somewhere, I've got to book an appointment, no one else is around at that time. So I don't think I had realised before actually looking into it that it was flexible enough that it helped us, but it's also not feeling like I've got to add an extra pressure into my day." (P13, female, not-for-profit, SUU).

Choice and agency over support options surface here as essential mediating factors in client satisfaction. Giving clients transparent information and multiple options from which to choose can help them find a solution that meets their needs, and crucially, one that they are happy with. Some participants felt like they were pushed towards the DMHI because no other options were

available to them, when their preference was to talk to a therapist, *"I went again to the health centre and they didn't have enough staff, so they tried to direct me to the SilverCloud platform"* (P3, female, university, NSU). Providing DMHIs as an alternative to FTF therapy can be problematic if people feel like they are being given something inferior and unsuitable for them, thus the framing of DMHIs is a key area for consideration. Human variability is so wide and complex that each different support option presented will inevitably suit a portion of the population, but no single option will suit everyone. Add to this the fluctuating nature of mental health and the different trajectories of distress that clients can experience, which will be explored in the next theme, and the picture becomes even more complex.

Theme 5: Accounting for changing needs

Client needs or goals for mental health support can be conceptualised as immediate and hedonic (i.e., the reduction of pain and distress) or more eudemonic and related to long term wellbeing, the attainment of happiness and the prevention of future distress [104,316,400]. There is a complex relationship between these intersecting, fluctuating goals, which caused confusion for participants in terms of what they expected or wanted from the DMHI at different times. The connection between perceived need or level of distress and motivation was mentioned by several participants, for example participant 6 noted that she tends to only work on her mental health when she is feeling low,

> "I kind of go through like phases so, when I don't, when I'm not going through a phase of feeling low then I kind of stop looking for help. Which isn't good but that is part of the issue. So, I think I do need to just start doing it and force myself to keep doing it." (P6, female, university, SUNU).

Participant 6 recognised the inherent issue with her mood-dependent help-seeking behaviour, but her instinct was to avoid the unpleasant prospect of working on her mental health when she was feeling well. She references "*forcing"* herself to work on the DMHI, while she would engage effortlessly when experiencing low mood. Alleviating distress feels good, whereas experiences of growth and meaning may not be as hedonically pleasant, and can in fact be subjectively uncomfortable [241,377,389]. A number of participants in this study referenced the challenging nature of working on their mental health and the difficulties they experienced in finding motivation, which has also been found in previous research [102,184]. Under most health behaviour change models, including the HITAM, intentions are theorised as a core predictor of behaviour change [209]. Many participants in this study, who emphasised the importance of mental health and had signed up with intentions to use the DMHI, still found motivation to use it varied and was hard to come by. This highlights the emotional, fluid nature of motivation, a factor which could underpin the *intention-behaviour gap* that has been found in relation to multiple areas including mental health [27,224,384].

For other clients, motivation was not an issue because their only goal was immediate distress relief. Participant 11 no longer felt the necessity to spend time and energy on her mental health because she was no longer experiencing distress, *"I should give credit to my mental health but I'm just, just not giving any attention to it anymore because… I'm not in need of it."* (P11, female, university, SUNU). We cannot assume that clients seeking support want to build long term skills for future wellbeing or engage in sustained use of the technology. This potential conflict between the (fluctuating) goals of the client and the (usually static) goals of the intervention evokes debate on the power dynamics that exist between clients and the governments, employers, private corporations and institutions creating and delivering DMHIs [104,243,330]. The weight of responsibility is often directed towards individual clients to maintain their own wellbeing through self-care [83], yet some participants in this study indicated that there were too many competing demands on their time to find the space to work on the DMHI.

Prioritising use of the DMHI amidst work and childcare responsibilities was not an option for participant 9, *"I kept thinking oh, I'll do it when I get to bed or you know, sit and have a bit of time and I just kept falling asleep and just not bothering"* (P9, female, not-for-profit, SUNU), which speaks to the contextual nature of need and motivation, as influenced by external factors. In many instances, what is best for the wellbeing of the client is *not* to use the DMHI, particularly when this 'self-care' work is perceived as burdensome. DMHIs do have the potential to provide more immediate support, due to their accessibility, however, for many participants the signup process itself was a barrier to attaining this momentary relief,

> "unfortunately when your thoughts are racing and you're not feeling your best, the last thing you want to do is read and sit down and take things in. Because you don't take it in, you just want to go straight to it." (P17, female, health service, SUU).

Participant 17 was experiencing heightened distress caused by the prospect of seeking help, which impeded her ability to process information and make decisions. Distress experienced while going through the signup process comes at a time when clients are often most in need of support. Several participants pointed out this gap in care provision between crisis services and preventative solutions, and there was a collective call for better *"middle ground*" support, i.e., immediate but not emergency care. Participant 14 gives a potential solution to this issue:

> "maybe it would be good if you had like an option of like if you're feeling you know, hopeless and unmotivated like speak to the Crisis Team first. Like speaking to someone about it, just about your mental health in general would really help and then people who actually want help and are in the right mindset for help, SilverCloud would be really useful for." (P14, female, health service, SUU).

This participant's idea involves options that depend on the client's attitude towards help, which is shaped by their culture and prevailing mental health narratives, e.g. healthism and the biomedical model [63,83,337]. Thus the *"right mindset for help"* is potentially one that assumes responsibility over and the ability to control distress. These narratives also determine how

interventions are assessed and assigned, with diagnostic definitions and symptom measures being standard practice. For example, under NICE guidance, the stepped care model used by the health service in this study advocates that DMHIs are more suitable for those with mild to moderate 'symptoms' [291], despite evidence suggesting those experiencing more severe symptoms still benefit [114,199,271]. In fact, as we saw above, fluctuating periods of severity could actually be motivational in terms of client engagement with DMHIs. What's more, clients who struggle to fit their unique experiences into these standardised symptom measures and rigid diagnostic categories could feel enhanced distress, as was found in this study,

> "I will absolutely work myself up into a state where I can't get any work done for like one or two weeks at a time and then the problem will magically resolve itself and I'll be fine for like a month. So, it's not constant and if you do any of those questionnaires they're always like, 'oh in the last two weeks you know, how many days roughly has this been affecting you?' And it's like if I answer it honestly then there's never any kind of solution presented. It's always like, 'oh you know, you've just- you're having a bad week, sod off, come back when you've got a problem'." (P4, male, health service, NSU).

This participant was suffering from intermittent bouts of anxiety, that were extreme when he was experiencing them, but were not constant. The progression of distress experience over time involves multiple interacting trajectories, which are not accounted for in current diagnostic classification systems [47]. Mental health is hugely varied and contextual and thus needs multiple ways to be formulated and understood [192]. There was a sense from this data that the reality of mental health as a complex and subjective experience, with oscillating needs and shifting trajectories, was perceived by participants as not being adequately addressed by current care pathways and models.

4.4 Discussion

4.4.1 Overview

The primary aim of this study was to understand what prevents people who are interested in a DMHI from signing up for it or using it after they sign up. The secondary aim of this study was to explore why these non-engagers considered the DMHI in the first place, to understand the participants' perceived need for mental health support. The quantitative results showed that over 50% of participants were interested in the DMHI because they wanted to *'feel better'*, and over 50% because mental health was important to them. Similarly, when it came to the reasons why participants were unsure about signing up for the DMHI or why they were not engaging, very few stated that mental health was not important to them or was not a priority for them right now. These results indicate that participants in this sample perceived both a threat associated with emotional distress and the need for support, findings that align with prior

studies [288,350]. This need was found to be multifaceted and temporal, as over 60% of questionnaire participants selected more than one reason for checking out the DMHI, and interviewees described multiple stressors influencing their need for help (e.g., emigration, bereavement, job loss, domestic abuse) and how their needs changed over time (Theme 5: Accounting for changing needs), findings that again are consistent with previous literature [84,265,288].

Regarding the primary aim, perceived usefulness and perceived ease of use were prevalent issues; almost 60% of questionnaire participants who were unsure about signing up stated that this was because they were not sure how useful the DMHI would be for them. Considering the qualitative findings, we can see that this may be because of a lack of perceived fit, i.e., not believing that the DMHI would be relevant to their specific needs (Theme 4: 'One size fits all' fits few), or not knowing whether the DMHI was the right type of support for them (Theme 3.1: Getting the right help is confusing: What is "help"?). It could also be down to not understanding what the DMHI entailed (Theme 3.2: What the hell are DMHIs?).

Two other common factors preventing uptake (both also key barriers among the signed up but not engaged groups) were not being sure how to use the DMHI and not knowing which program to choose. This again speaks to the dearth of information and guidance around DMHIs as discussed in Theme 3.2 and could be related to the self-referred nature of the cohort in question, who did not have the scaffolding benefits of clinician referral. It also brings to mind issues inherent in the categorisation of mental distress [47,313], as discussed in Theme 5, and the importance of the suitability and relevance of the intervention to personal needs, as detailed in Theme 3.1 and Theme 4. The need for more information during the uptake process was also evident in the disparity between notification and email response rates; those on the self-referral website were actively seeking out information and perhaps saw the research as an opportunity for their questions to be answered.

Of those questionnaire participants who had signed up and were planning to return to the DMHI, forgetting about it was the most common factor preventing engagement. This implies that there could be lower perceived need for immediate distress relief among this group, as we saw in Theme 5 how motivation can often be linked with distress rather than long term goals. There could also be lower perceived threat of emotional distress and its impacts, or the DMHI could lack salience due to scepticism about its effectiveness (Theme 3.2). Although, from the next most prevalent selection among this group (not being sure if they would be able to fit the DMHI into their lives), we can see that the participant's environment could play as much of a role as their internal perceptions. This selection was also common across the other participant groups, which suggests that participants' lives were too busy to allow time for their mental health.

This evokes debate on the wider contextual and social determinants of mental health [8,53], and the issues inherent in the positioning of responsibility on the individual to address their own welfare, when they exist within structures that undermine this welfare (e.g., work cultures that propagate burnout [56]) [213,277,348,400]. Questionnaire participants who did not plan to use the DMHI again mostly reported that this was because they had not found the DMHI useful so far or they needed more support than it could offer (i.e., a lack of perceived fit). This relates back to ideas around pluralities of non-use, and how not all non-engagers are simply *lagging adoption*; for some, the DMHI was simply not an appropriate form of support for them at that time (Theme 4).

In order to **address the barriers** found in this research, some implications for the design and implementation of DMHIs are henceforth presented. Implications for further research will also be discussed, along with some wider, transdisciplinary opportunities for moving forward in the digital mental health space (see Table 4.7 for a summary of the main implications).

Table 4.7. Summary of the main implications of the study

Implications for Design & Implementation	• Be transparent about what exactly is involved in the DMHI. • Consider the framing of DMHIs and the mental health narratives they might be propagating. • Emphasise the presence of human support in marketing or introductory content. • Endorse DMHIs with real-world testimonials and recommendations as well as clinical evidence. • Create adaptive care models that expand the spectrum of options between purely digital and purely FTF support (e.g., include human touchpoints at critical stages such as triage). • Position DMHIs on the 'help' side of the 'help or not help' fence by distinguishing them from wellbeing apps and including more human contact or leverage the 'not help' aspects by providing information about care options and mental health narratives, to help clients experiencing self-stigma to make sense of their own needs and goals. • Provide flexible, customisable pathways to address clients' unique and changing needs. • Design DMHIs that normalise emotional distress in response to situational stressors, or specifically to support people through common life transitions or difficult circumstances.
Implications for Research	• Explore different forms of non-use in the context of broader sociotechnical and political trends. • Critically examine whose needs are being served by the success metrics of DMHIs, and explore more contextual, fluid and personally meaningful ways to assess their benefits.
Transdisciplinary Implications	• Address the loneliness epidemic by facilitating real-life interactions and community support, rather than creating individual technological solutions. • Explore alternative understandings of mental health that account for social norms and determinants, because the biomedical model can enhance self-stigma by individualising distress and masking situational factors. • Consider a transdisciplinary approach to mental healthcare, combining knowledge and focus from both the medical and social sciences.

4.4.2 Implications for Design & Implementation

While many of the standalone readiness interventions explored in Chapter 3 could be potentially risky as a means of increasing uptake and engagement with DMHIs, the current study highlights a number of areas where efforts could be directed instead. One key implication of this research is the need for greater transparency and sincerity in the framing and marketing of DMHIs, a need also called for by other interaction design and HCI research [389,400,445]. Providers should focus on clearly articulating what is involved in the DMHI in practical terms, for example, despite the critique surrounding CBT, it provides practical techniques that can be highly beneficial in helping people deal with emotional distress [123,175], and research has shown that individuals who viewed CBT as a learning process, rather than an opportunity to offload, were better able to learn skills and use them after the intervention [141].

This provision of information extends beyond the specific features of the intervention in question, to the type of help it provides and the associated model of mental health it promotes. While the majority of DMHIs available on the market might present a narrative in line with the biomedical model of mental health [192,353,444], designers cannot assume that potential clients are familiar with this narrative and how it shapes their perceptions. Disregarding core ontological elements such as this risks creating normative interventions that propagate singular stories about mental health, rather than giving people the knowledge to choose their own story [104,244,245,320,399]. It can also result in people internalising responsibility for the environmental factors which might be causing their distress [53,192].

In line with this, pluralities of knowledge should also be considered in terms of the 'evidence' that can validate DMHIs for clients [76]. While RCT evidence is usually presented as the primary scientific endorsement for DMHIs, real-world client testimonials and recommendations from trusted persons could play a key role in guiding expectations and beliefs about intervention usefulness, as was mentioned in Theme 1: Humans need humans. Finally, in terms of transparency, if there is human support provided as part of the DMHI pathway (e.g., interactions with mental health professionals, trained volunteers, or peers), this should be emphasised strongly (but genuinely) in marketing or introductory content, as clients often do not expect human contact from digital care options.

In addition, it was found that there is a significant learning curve involved in understanding and getting started with DMHIs, which can be intensified when clients are experiencing heightened distress brought on by the act of seeking help. An adaptive care model could incorporate the option for human touchpoints at critical stages in the client's help-seeking journey, such as during the referral process or in triage, to help these clients. Thinking more flexibly about mental health support could help us to expand the spectrum of care options that

can exist between purely digital and purely FTF support, moving from regarding DMHIs as standalone products to thinking instead about technology-enabled services [274].

Furthermore, designers should consider on which side of the 'help or not help' fence to situate their DMHI. To be seen as real or legitimate help, DMHIs need to distinguish themselves from wellbeing apps and include human contact, as this is where many of the core benefits of therapy can be found [218,319,327]. Alternatively, a positioning on the 'not real help' side could help those clients experiencing self-stigma to safely make sense of their needs, learn about different narratives of mental health [192], understand the care options available to them, and consequently make more informed decisions [182]. In this sense, DMHIs and their delivery via self-referral websites could be akin to the website style of readiness intervention, as explored in Chapter 3, focusing more on the provision of information, providing a trusted resource on mental health amidst the overwhelming torrents of information available online, and acting as a stepping stone to further help.

This study also bears significance in movements towards greater personalisation of mental health technologies [15,184,355]. The findings suggest that static, standardised solutions are not perceived by clients as sufficient to address the individual, shifting and contextual nature of emotional distress. Systems that offer multiple branching pathways could forefront client choice and agency by helping clients to identify and address their specific needs at diverse timepoints [259], as digital has the potential to help alleviate momentary distress as well as providing more future-oriented, skills-based learning [325]. In developing personalised interventions, designers should be mindful of the social and environmental factors that influence distress and the idiosyncratic complexity of human emotional responses [8,178]. DMHIs could play a role in helping to normalise emotional distress in response to life stressors, along with enabling understandings of distress that can be both normal *and* help-worthy, rather than one or the other [336,400]. Finally, as many of the participants were seeking support for specific situational stressors, DMHIs that address common developmental or life transitions (e.g., migration, bereavement) or external stressors (e.g., domestic violence, job loss) are an important area for future development [246,409].

4.4.3 Implications for Research

While the intention of this study was to recruit non-engaging clients only, some of the most important insights came from currently engaged clients who had overcome initial periods of non-engagement. This research has thus highlighted the need for a broadening of our understanding of non-engagers as one homogenous group, to explore different forms of non-use and the evolution of engagement over time [287,371]. Satchell and Dourish describe non-use as more than simply an absence of use, rather it is *"active, meaningful, motivated, considered, structured, specific, nuanced, directed, and productive"* [371]. In addition to

researching those who are (or were) simply *lagging adoption*, investigating the people who actively resist or are disenchanted by DMHIs could facilitate a better understanding of where mental health technologies fit within broader sociotechnical trends, while considering the perspectives of people who are simply disinterested in DMHIs might allow for alternative views of 'problems to be solved' like uptake and engagement [29,33,178,231,352,371].

Addressing low uptake and engagement could go beyond a focus on individual clients and their (lack of) motivation, as was the case with many of the readiness interventions examined in Chapter 3, to explore the social, political, and economic dynamics of DMHIs and the power structures they are bound up in [104]. This shift in mindset could help us reconsider the goals of these interventions and whose interests they are serving [90]. For example, while personal recovery can be a meaningful goal for many of those who are suffering, disability justice and movements against the recovery focus of mental health support advocate that a sole focus on personal recovery at the level of service provision negates political responsibility for widespread distress [250,392]. When considering the personal level, these movements also remind us that lives lived with disability and illness can, for many people, be lives lived meaningfully and well [93,195,250,317,437].

Thus, in evaluating the success of DMHIs in practice, instead of adhering to one-dimensional, normative ideals of health and wellbeing, we could look to the many cultural and personal variations of what it means to be and live well [53,63,242,348]. Usage-based success metrics and standardised outcome measures, while important for large-scale service evaluation, do not adequately account for these unique client experiences and personal goals [221]. A pluralist approach to success in terms of DMHIs would be to account for broad sociopolitical agendas, personally meaningful objectives and the use of standardised outcome measures, thus making explicit the many layered goals of these interventions [76,192,348].

4.4.4 Transdisciplinary Implications

This study endeavoured to present a comprehensive picture of the barriers to DMHI uptake and early engagement, which means that many of the findings relate to the field of mental healthcare more broadly. In terms of the first theme (Humans need humans), recent research from the health field has recognised the pressing nature of the emerging loneliness epidemic [186,234,285], which has in part been exacerbated by the rapid evolution of technology and its facilitation of now familiar practices such as remote working, as well more direct disruption of traditional social networks [147,163,186,380]. While technology can undoubtedly be used to connect people, it can equally further isolate, e.g. as was found with a recent HCI study around homesickness [204]. Developing digital interventions to address loneliness on an individual level (e.g., [413]), could be compared to recent suggestions that the loneliness epidemic might be tackled pharmacologically [186]; medicating for loneliness severely disregards the social

and contextual nature of our experiences. Opportunities exist here for more creative and socially conscious thinking around the use of technology to address social disconnection [223], e.g., digital communication channels could be used to facilitate online community forums and real-world community interventions such as urban walk and talk groups [280] and governments could digitally disseminate interventions teaching support skills as public health initiatives, thus making the prevention of social disconnection a societal responsibility, rather than an individual one [348,400].

Putting the use of technology aside, this research indicates the need for mental healthcare to move away from singular, individualising ontologies of health towards more balanced approaches that account for social norms and determinants [2,63,171,178,241,350]. The 'mad or bad, brain or blame' dichotomy, which we saw in Theme 2: Needing help means I'm weak or I've failed, can underpin self-stigma and thus inhibit help-seeking, yet it is rooted in the very biomedical model of distress that shapes most current thought around mental health [53,178,192]. Critique of the biomedical model is widespread, even within the field itself [192,215] and often extends to the neoliberal or late capitalist economic system within which the model has flourished [96]. The confusion that we saw in Themes 2 and 3 around when to seek help, what is 'normal' in terms of distress and what help is or should entail, could originate in the juxtaposition of this reductive, categorical model with the fluid, contextual nature of lived experiences of distress [336,337]. One of the participants described a disconnect between the rhetoric around mental health and the felt reality of it; perhaps clients are caught in this gap, confused and unsure how to make sense of their experiences [53,348].

Alternatives to the biomedical model, such as the *Power Threat Meaning Framework* (PTMF) [192,337] offer more contextually and culturally sensitive approaches that focus on patterns of response [313,351]. In line with the pluralist approach of this research, we advocate not for one model over another, but for multiple perspectives to be considered [76]. A natural extension of this is to consider a more transdisciplinary approach to mental healthcare, which would combine knowledge and focus from both the medical and social sciences [53,180,359]. Rogers and Pilgrim, in discussing the discrepant value positions held around mental health, note that *"currently there is no single platform from which to launch a campaign for improved 'mental health literacy', or to set out a single blueprint for a public mental health policy"* [353]. How can we expect clients to understand mental health and the help-seeking process, when so much uncertainty surrounds it at the policy and service provision level?

Rather than debating the merits of either perspective, transdisciplinarity would allow us to harness the benefits of both sides (i.e., addressing the global mental health crisis at the crucial root level of societal and structural change, while simultaneously providing tangible and timely solutions for those who are suffering [83,87,213]). The emerging field of *deep medicine*

advocates for a shift in focus to the ways in which systems interact to create health or illness, because we evolved as systems within systems [249]; systems thinking could be a core part of dealing with the complexities inherent in a transdisciplinary approach to distress [259].

4.4.5 Limitations

Due to the exploratory, real-world nature of this study, there was an inevitable self-selection response bias, which was apparent particularly in relation to the interviews. The cohort in question put themselves forward to take part and were therefore, by their nature, more comfortable with and predisposed towards talking; this could affect the transferability of these findings. Across the study, there was a skew towards white, educated women, which is typical of service users within high-income countries [350]. In a global sense, the relative privilege of this participant pool is acknowledged; specific steps should be taken to understand the perspectives of more diverse groups of non-engagers in future studies, as their experiences are likely to be different [277].

Additionally, while the multiple-choice options in the questionnaire were necessary to aid response rates for this hard to engage cohort [33], there was a risk of priming participants, and many of the multiple-choice options were influenced by my own positioning within a culture that prioritises medical understandings of distress. Finally, due to the naturalistic, observational nature of this study, a number of the interview participants were current active users of the intervention. Many of these participants had overcome periods of 'non-engagement' however, and thus their insights were considered relevant for this research.

4.5 Conclusion

In this chapter an observational, mixed-methods study on the barriers that prevent uptake and early engagement with DMHIs was presented. The aim of this study was to understand the lived experiences of real, non-engaging clients from a broad, context aware perspective; hence the study was conducted across four different healthcare ecosystems in the UK and US. Findings revealed that a client's motivation for mental health support is often entwined with their perception of need for said support, and both factors exist in a complex, fluctuating rhythm. Client motivation and need are also impacted by contextual factors related to the client's circumstances and environment, and by internalised social norms and deep rooted feelings about what it means to need or seek help. Hence, when addressing the problem of low uptake and engagement with DMHIs, it might be more advantageous to focus design efforts on reconsidering the context, framing, delivery and goals of these interventions themselves, rather than by introducing new and possibly risky readiness interventions, as described in Chapter 3.

For example, the confusion surrounding DMHIs and the lack of a mental model with which to understand them necessitates more transparent, honest marketing information about what

DMHIs are, as well as guidance on how to use them. In addition, many participants perceived the DMHI as static and generalised, and therefore not sufficiently relevant to their personal needs. Customisable, flexible care models that incorporate human interaction at critical touchpoints, such as triage, was thus discussed. This chapter also highlighted that broadening our view of non-use could help facilitate better understanding of how the fluctuating needs and goals of the individual intersect with those of the technology itself, the service or ecosystem surrounding the technology, and wider society. The temporal, idiosyncratic nature of these shifting client needs is something which warrants further exploration.

This study contributes to the limited literature on non-engagers; recruiting real-world clients who experience difficulties engaging with DMHIs is a challenge, and as such, little research with this cohort exists. The interview data in particular holds a wealth of rare, experiential information about the lives and journeys of non-engagers. An important aspect of this data that I felt could be explored in more depth related to the fluctuating nature of client goals and motivation for support. Thus, an additional, complementary analysis was conducted, which forms the basis of the next chapter.

While the current study took a cross-sectional approach to analysis, investigating common barriers across participants, the following work explores the trajectory of each individual client's unique mental health journey, in order to further elucidate the temporal and contextual qualities of their experiences. The following study also takes a more focused viewpoint on the role of readiness and motivation in these client experiences, to re-situate this research within the theoretical landscape outlined in Chapter 2. Input from expert stakeholders was also included to provide pragmatic, service-level perspectives that grounded the findings in the real-world contexts of these journeys.

5 Qualitative Exploration of Client Mental Health Journeys

While the previous chapter explored the experiences of clients who had difficulties engaging with a digital mental health intervention (DMHI) from a broad perspective, using mixed-methods, this chapter takes a more nuanced, temporal approach to understanding the individual trajectories of clients. The study described in this chapter is a complementary analysis of the interview data of a subset (15) of the participants from the previous study, exploring the unique mental health journeys of these participants. Returning to the theoretical landscape of readiness and motivation for DMHIs, as discussed in Chapters 2 and 3, this chapter situates the qualitative data from the previous study in relation to the various models used to understand and address low engagement with DMHIs. A framework analysis method [349] was used to interpret the data, which allowed each participant's narrative account of their journey to first be examined as a whole. I developed an augmentation of this method, using visualised timelines as a means of articulating these client journeys. These timelines were presented to four stakeholders with service expertise, who provided feedback which was then used to develop themes. These service-level perspectives grounded the findings in pragmatic, real-world knowledge of the implementation and delivery of DMHIs.

Four themes were generated: 1) the tension between creating hope and overpromising results, 2) persisting with the effort involved in working on one's mental health, 3) situating engagement within a wider system of care, and 4) allowing clients to become ready and meeting them there. Findings indicated that when it comes to DMHIs, motivation is a more useful theoretical construct than readiness, however motivation should be viewed as relational and rooted in concrete situations rather than as an instrumental force existing only in the mind of the client. Results also suggested that taking a long-term, system-level perspective could help redefine the problem of low engagement with DMHIs, and that novel applications of both digital and human support could be explored to better address client needs across their ongoing mental health journeys.

This study was undertaken in collaboration with a multidisciplinary team of human-computer interaction (HCI) researchers and expert stakeholders. I designed the study, analysed the data, conducted the expert stakeholder feedback sessions and wrote up the findings. Camille Nadal assisted with the analysis through regular discussions and collaborative brainstorming around the developing framework and themes. The expert stakeholders (Julie Hayes, Chuck Rashleigh, Sam Lane and Douglas Hiscock) provided feedback on the mental health journeys of participants, which directly informed the theming process. This chapter contributes to answering Research Objective 3: What role should readiness and motivation play when addressing low uptake and engagement with digital mental health interventions?

5.1 Background

5.1.1 Mental Health Journeys

There is a need for further temporal, idiographic and contextualised research in the area of DMHI motivation and engagement, which has been called for both in previous literature [98,168,266,293], and throughout the preceding chapters in this thesis. Due to influences from the fields of sociology and anthropology, HCI has long since valued these more contextual, small sample approaches, such as situated action and ethnographic methodologies, over reductionist quantitative methods [354,406]. Taking a temporal approach and considering individual client experiences leads us towards mental health journeys as a useful avenue for exploration. Previous HCI work has used the concept of a mental health journey to explore behaviour change journeys for mental wellness [264] and parallel care journeys for depression and cancer [407] and obstetric and psychosocial care [161].

Outside of HCI, clinical research has seen the acceleration of 'patient journey mapping' as a method used to gain insight into how individuals experience the complex and challenging nature of navigating health systems [95]. This research was drawn upon in the current exploration of the mental health journeys of clients who have difficulties engaging with a DMHI. With this study the same DMHI was considered, but it was explored in the context of three different services, each with its own care pathways, support options and broader implementation variables. The study also incorporated expert stakeholders from each of these service sectors in the analysis, to ground the findings in practical knowledge and understanding of the implementation of DMHIs. By taking this broad position and allowing for the incorporation of both time-based and environmental factors, it is hoped that a more contextualised understanding of readiness and motivation in relation to uptake and engagement with DMHIs might be developed. This knowledge could play an important role in

efforts to make better use of digital tools in the mental health space, with relevance across multiple levels including DMHI development, service implementation and system design.

5.1.2 Research Questions

This chapter presents a qualitative exploration of the mental health journeys of clients who experienced difficulties engaging with a DMHI. The research questions for this study were:

1. What are the mental health journeys of people who experience difficulties engaging with DMHIs?

2. What is the role of readiness and motivation for DMHIs in these mental health journeys?

3. How can exploring mental health journeys inform service design and delivery of DMHIs?

5.2 Methodology

5.2.1 Secondary Analysis

This complementary analysis was a form of secondary analysis termed an 'auto-data' analysis, which involves a researcher revisiting their own data [165]. The interview data from the study in Chapter 4 was revisited to complete an analytic expansion, where new and extended questions were asked of the existing data [165,416]. This type of secondary analysis has the advantage of the researcher having deep knowledge of the data and the context from which it was derived [166,415]. Novel perspectives from expert stakeholders were also included in the theming process of analysis, to ground the study in real-world service delivery expertise.

To ensure an appropriate fit between the data and the new questions being asked, the data were sorted and only those participants who had experienced significant barriers to uptake and engagement with the DMHI were included [166]. This sorting process resulted in the exclusion of the two US interview participants. As such, this study pertains only to the three UK services from the previous study: 1) Health Service (Berkshire Healthcare Foundation Trust), 2) Not-for-profit (Ben charity), and 3) University (Nottingham Trent University). The consolidated criteria for reporting qualitative research (COREQ) checklist was used to structure this analysis [420].

5.2.2 Participants

A total of 15 participants were included in the current analysis, 11 recruited via the self-referral website notification and 4 via email. See Table 5.1 for interview participant characteristics. In

order to contextualise the participant quotes in the results section, each participant's service acronym (HS, U, or NFP) is included after the participant number.

Table 5.1. Participant characteristics (N = 15)

		n (%)
Service	Health Service (HS)	7 (47)
	University (U)	4 (26.5)
	Not-for-profit (NFP)	4 (26.5)
Age	18-24	5 (33)
	25-34	4 (26.5)
	35-44	2 (13)
	45-54	3 (20)
	55-64	1 (6.5)
Gender	Female	12 (80)
	Male	3 (20)
Ethnicity	White	11 (73)
	Asian	1 (6.5)
	Black	1 (6.5)
	Mixed	1 (6.5)
	Latino	1 (6.5)
Engagement status	Not signed up (NSU)	3 (20)
	Signed up, not using (SUNU)	7 (47)
	Signed up, using (SUU)	5 (33)

5.2.3 Qualitative Data Analysis

Data were analysed using framework analysis (FA), an approach similar to thematic analysis (TA) that has been used effectively in previous health research contexts [145,194,331,440]. The key differentiator of FA from other thematic methods is that it allows for dual focus both across or between cases, as well as within individual cases [49]. This aligned with the focus of this study (i.e., exploring the contextualised mental health journeys of participants), and allowed examination of each participant's narrative account of their journey as a whole, rather than segmenting the data, as is often the case with other qualitative methods [37,162]. Other approaches were considered, including grounded theory [74] and narrative analysis [347], but as the semi-structured interviews used to gather this data were not designed with these methods in mind, the data were not appropriately aligned with these methods. Reflexive TA was also considered [49], but the framework and charted outputs presented by FA provided a more useful structure that better suited the research questions.

While FA is not aligned with any particular theoretical approach, it is practical in nature and has therefore previously been associated with a pragmatic epistemology [151]. Pragmatism is a pluralist, critical and action-oriented stance, which asserts that human experience is our primary source for building knowledge about the world [251,357]. It focuses on how knowledge can be used as a tool for action and questions whose interests are being served with

the knowledge [7,76]. This pragmatist approach was adopted because of the need to operationalise understandings of readiness for DMHIs, in order to improve the use of digital tools in the mental health space.

The framework method was originally described as comprising five stages of analysis [349]: (1) data familiarisation; (2) identifying an analytic framework; (3) indexing all data against the framework; (4) charting to summarize and synthesize the coded data; and (5) mapping and interpretation of patterns found within the charts [151,307,349]. Further development of the method in the health research context [145] added two additional stages – transcription, and coding as a separate stage before the development of the analytic framework [140,145,440]. This coding stage was considered a useful step in the development of the framework, as it allows it to be built more inductively through engagement with the data. Six stages were therefore included in this analysis, which are described in detail in the section below.

The analysis was conducted primarily by myself, with regular input on framework development from Camille Nadal (CN). One of the benefits of FA is the summarising of data during the charting process, which produces a practical output of matrices and reduced version of the data [49,145]. These charts are an accessible way for expert stakeholders to participate in the analysis, without having to go through the lengthy process of reading or coding transcripts [145]. Input and multidisciplinary perspectives were sought from four expert stakeholders, which were integrated into the final interpretation and mapping stage of analysis. Each of these stakeholders has extensive experience working in one of the three service sectors represented in this study (university, not-for-profit and health service) on the delivery and implementation of the DMHI. See section 1.5 Research Context and Positionality for an overview of my background and position in relation to this research, and Appendix A for position statements for my collaborators.

Following recommendations for best practice FA, QSR International's NVivo 12 software was used for the coding stages of analysis [140,307], and Miro for the charting and mapping stage, as it allowed creative generation of timelines and collaboration between stakeholders. Previous researchers using the FA method reported issues when using spreadsheets to present charted data to stakeholders, as those not familiar with qualitative methods tried to quantify the qualitative data (e.g. by counting instances of different phenomena) [145]. The visualised timelines developed through this study avoided the spreadsheet view of charting and thus helped to circumvent this concern.

The Analytic Process

The **first stage** of analysis (familiarisation) involved my re-familiarisation with the data in light of the new research questions. I re-read all transcripts, made notes and created initial timeline maps based on how the individual journeys of participants progressed over time, paying

particular attention to aspects related to motivation and readiness. During the **second stage** (coding) I inductively coded (i.e. labelled key content of relevance to the research questions) a sample of three participants in NVivo and presented these codes to CN for discussion, along with the timeline maps and familiarisation notes.

During **stage 3** (identifying an analytic framework) the codes were adjusted based on this discussion and an initial analytic framework was drawn up on paper. Three coding categories were identified at this stage, based on the familiarisation process and Valsiner and Brinkman's discussion of 'variables' in psychological research [424]. For **stage 4** (indexing) I systematically applied the framework to all of the transcripts in NVivo (i.e., indexed all of the data against the framework). This was an iterative process whereby the framework was adjusted in an ongoing manner to fit the data. Once all the transcripts were coded, I met with CN again to discuss and finalise the framework, and then re-visited all the transcripts to re-adjust codes in light of the final framework (see Table 5.2 for the final framework categories and codes).

For **stage 5** (charting), the data were moved to Miro, where I created a frame for each participant and imported all of the coded quotes as sticky notes. I then summarised each participant's experiences in text boxes and linked these boxes to their relevant quotes. The text boxes were then copied to a timeline and arranged temporally, creating a journey map for each participant (see Appendix H for a screenshot of the Miro frame for one participant). After the first timeline was created, CN and I met to discuss it and the timeline structure was adjusted for clarity. CN provided ongoing feedback as the timelines were created, and we met again once all timelines were created, to review them as an entire dataset. Final adjustments were made before the last stage of analysis commenced.

Stage 6 (mapping and interpretation) involved identifying patterns of meaning within and across the timeline charts, in collaboration with the multidisciplinary team of expert stakeholders. Three separate online meetings were scheduled where I met with the stakeholders and they independently reviewed the timelines (in Miro) of participants from one service each (Julie Hayes reviewed participants from the not-for-profit service, Chuck Rashleigh those from the university, and Sam Lane and Douglas Hiscock reviewed the health service participants). As the text boxes in the timelines were linked to the relevant quotes, the stakeholders could navigate between the participant timelines and their direct quotes during this meeting (see Appendix H for a Miro screenshot). The stakeholders were first given an outline of the study, and then prompted to review the timelines in light of 1) the temporal journeys of participants, and 2) the role of readiness and motivation within these journeys. They were instructed to use their expert intuition in noticing what was important and connecting patterns of meaning, both within and across these timelines. They made their own notes on paper or using the Miro sticky note functionality to add comments to the timelines.

After the stakeholders had reviewed the timelines, they discussed their thoughts and insights with me. These meetings were recorded and subsequently transcribed.

The meeting transcripts were shared with CN; we both read the transcripts multiple times, familiarising ourselves with the stakeholder insights and highlighting commonalities and differences between the views of the different stakeholders. CN and I then met to review the transcripts together, noting down potential sub-themes on sticky notes. We then grouped and re-grouped these sub-themes together in a creative process of generating themes, which led to an initial thematic map. I subsequently wrote up the results, iterating on these themes as I interpreted their meaning further through engagement with the timelines and direct participant quotes. Finally, the results were shared with the stakeholders and other collaborators on this study, who gave feedback which I then integrated into the results. As the themes themselves were derived directly from the stakeholder insights, there are no references made to specific stakeholder viewpoints in the results section. However, certain aspects of the stakeholder conversations have been highlighted in the discussion section.

5.3 Results

5.3.1 Understanding Client Mental Health Journeys Through Charted Timelines

The mental health journeys of participants in this study were multifaceted and largely idiosyncratic. The range of experiences found and the divergence in how experiences can impact engagement and readiness for using a DMHI, demonstrates the need for understanding individual client trajectories as case studies. Four of the timelines created in the charting phase of the framework analysis are thus presented here as case studies (see Figures 5.1-5.4). These particular participant journeys were selected because they represent a range of different experiences, both in terms of past psychological support and current engagement with the DMHI.

Within these timelines, the purple, green and yellow boxes denote three categories which were identified early in the analysis process. These categories are *observable actions* (i.e., explicit actions that the participant took or did not take), *psychological phenomena* (i.e., internal processes or states) and *catalytic agents* (i.e., external influences). See Table 5.2 for a list of the codes and categories included in the analytic framework, and the colours that represent them in the participant timelines.

Table 5.2. Framework categories and codes and the colours that represent them in the timelines

Observable actions (green)	Service	Service website Service outreach Supporter
	SilverCloud (SC)	Self-referral website Onboarding & 1st use Second use No use Gap in use Ongoing use Research interview
	Other past or current help	General practitioner (GP) visit Face-to-face therapy (FTF) Online help Self-care
Psychological phenomena (purple)		Expectations Emotions Uncertainty Self-stigma Public stigma Intentions (No) perceived need (Lack of) agency (Low) self-efficacy Preferences (No) in-the-moment drive Past mental health (MH) problems Mulling it over (No) trust
Catalytic agents (yellow)		Other people Circumstances Life events Sociocultural influences Media

The timelines centre around a horizontal line which denotes the progression of time from left to right. This line is where the observable actions can be found, which highlights the centrality of these actions within typical service or design level understandings of client journeys, i.e. this is usually the only part of a client journey that we see. The psychological phenomena and catalytic agents found above this line generally influenced the observable actions below them, and any occurrences below the line were influenced by the actions above; everything that comes earlier in the timelines also has an impact on later actions and phenomena. There are no causal relationships depicted within these timelines, the dotted connection lines merely represent strong connections between elements.

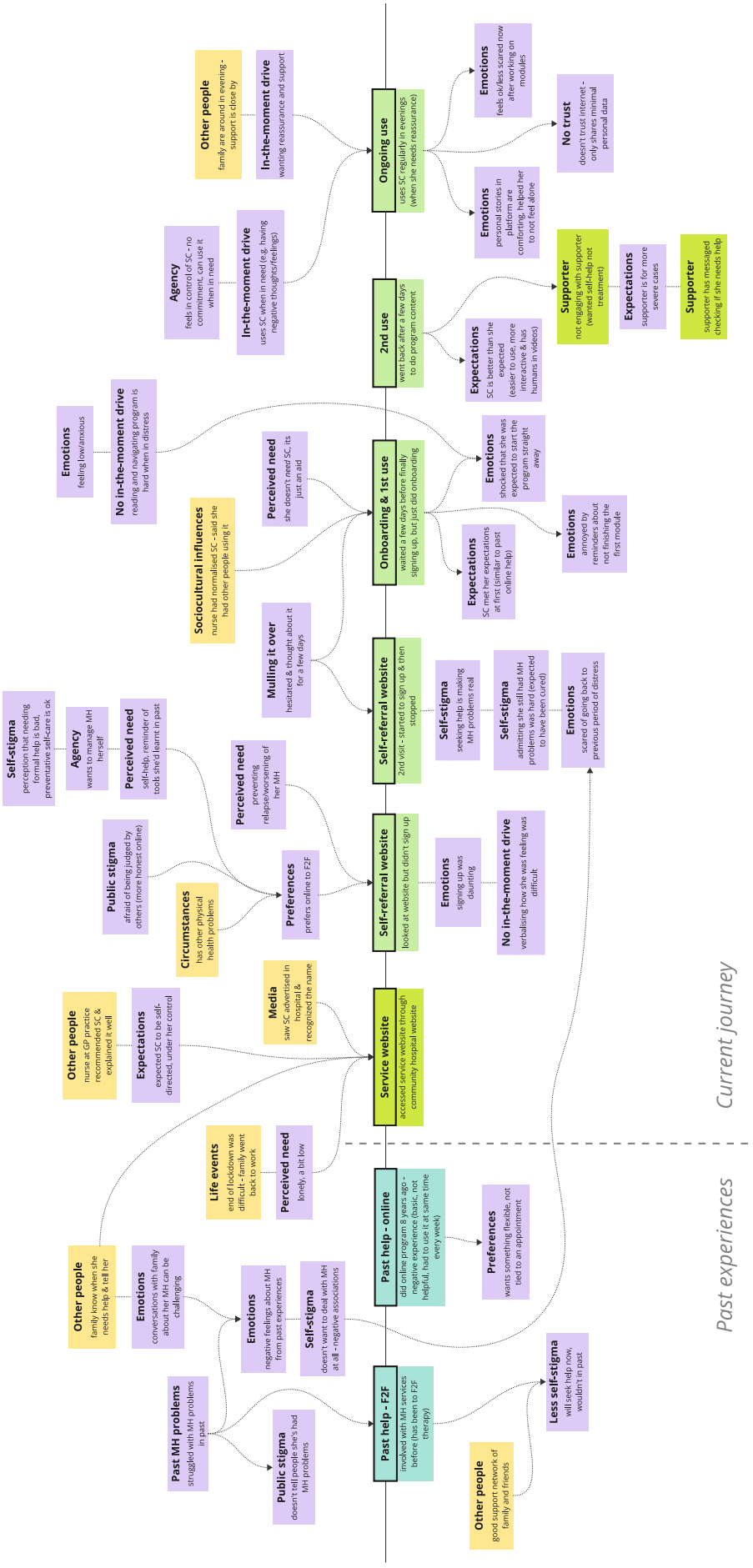


Figure 5.1. Full timeline for participant 6 (female, health service, 55-64)

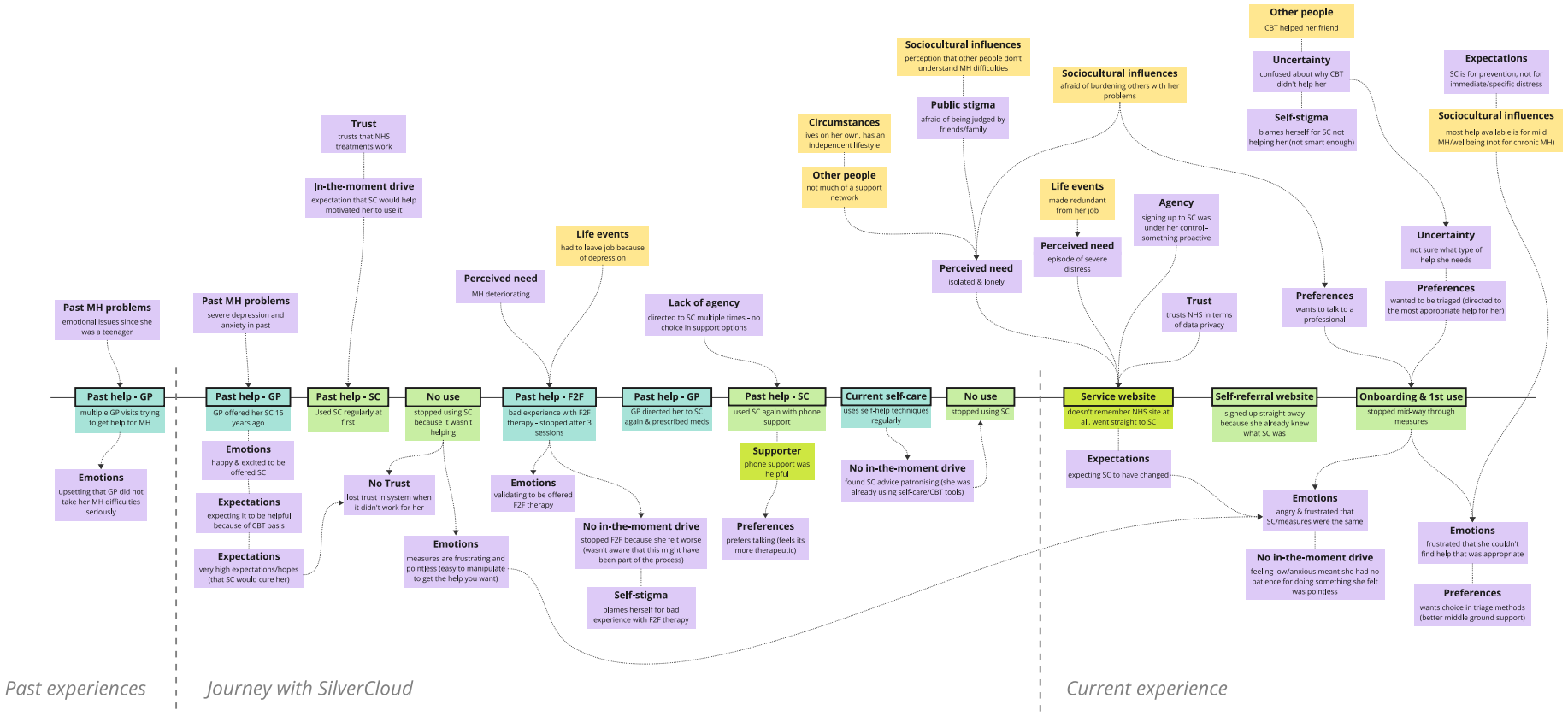


Figure 5.2. Full timeline for participant 15 (female, health service, 25-34)

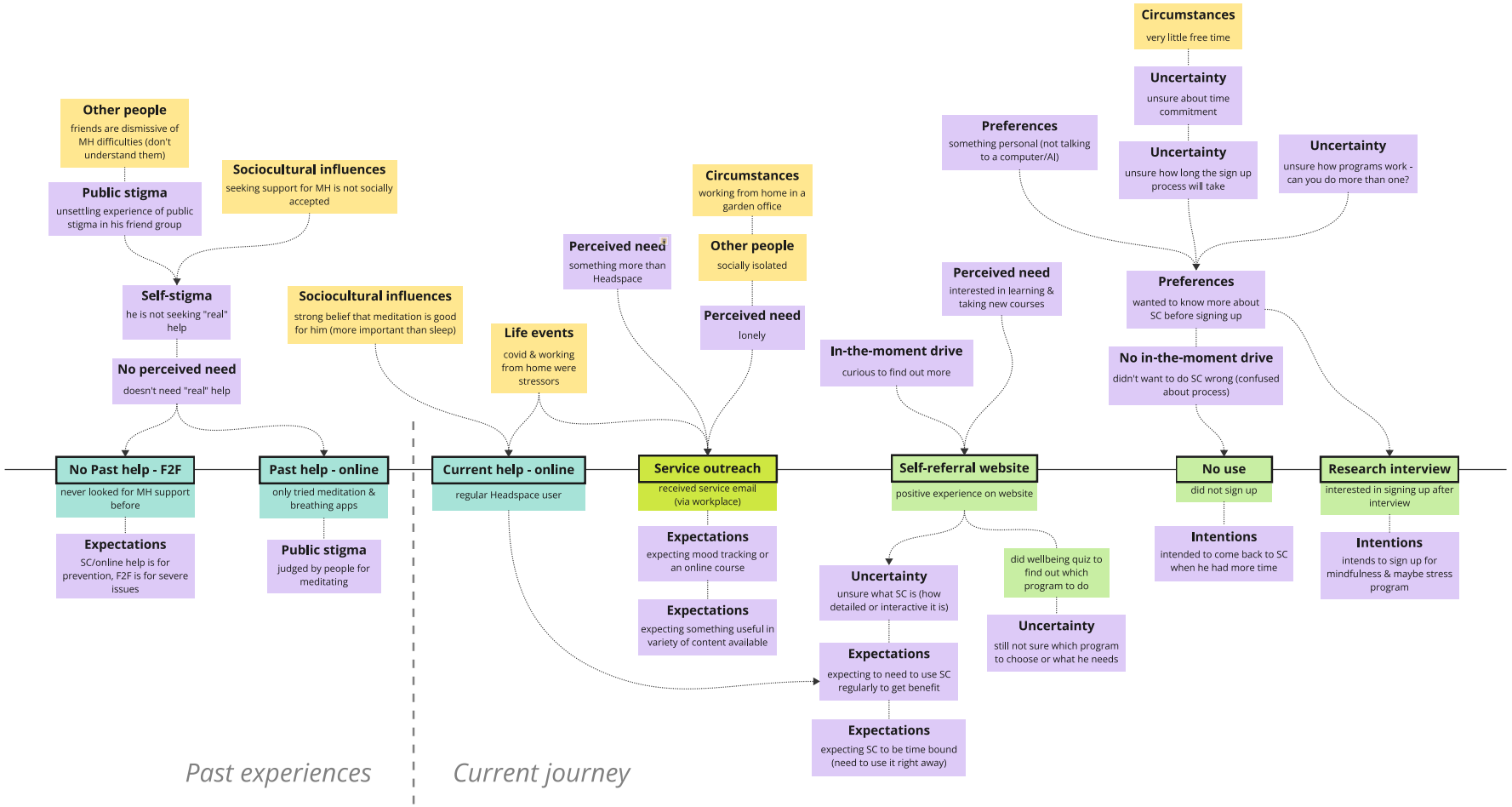


Figure 5.3. Full timeline for participant 9 (male, not-for-profit, 45-54)

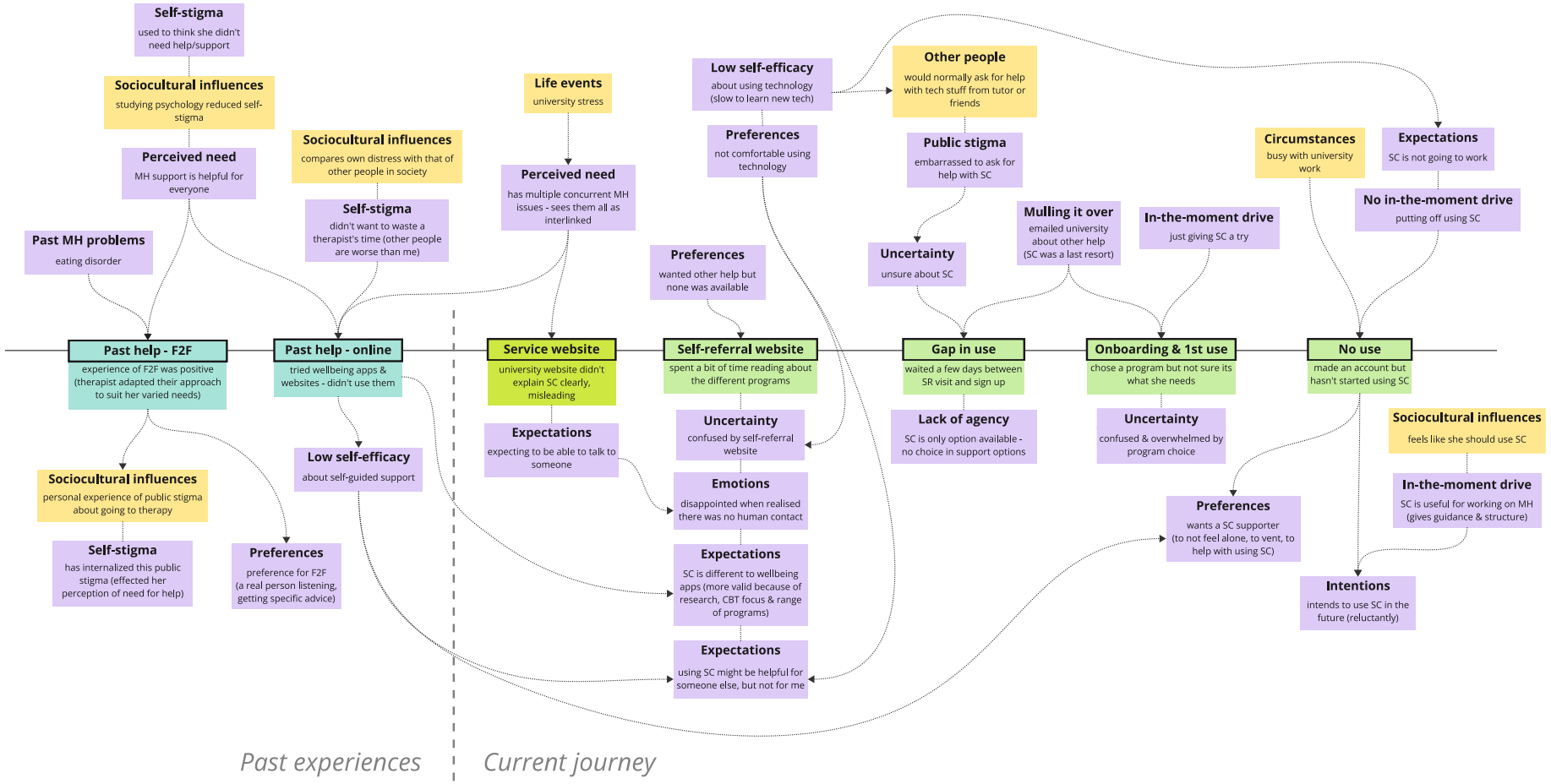


Figure 5.4. Full timeline for participant 8 (female, university, 18-24)

5.3.2 Framework Analysis with Expert Stakeholder Input

The framework analysis of the 15 participant timelines, in collaboration with four expert stakeholders from each of the service sectors represented by the participants, led to the creation of four themes; 1) the tension between creating hope and overpromising results, 2) persisting with the effort involved in working on one's mental health, 3) situating engagement within a wider system of care, and 4) allowing people to become ready for help and meeting them there. Theme one speaks to the need to legitimise DMHIs amidst doubts about their effectiveness, and the ensuing risk when clients are given hope that overshadows realistic expectations about the capabilities of DMHIs. Theme two deals with the challenging nature of therapeutic work, the difficulties clients can face prioritising it amidst the many competing demands of modern life, and the delicate balance between the motivational aspects of feeling responsible for this work and the stigma-laden burden that this responsibility can bring. Theme three explores how DMHIs can be a vital first step on more extensive help-seeking journeys, and highlights how the value of this pathway gets overlooked when we appraise DMHIs as standalone treatments, rather than as integrated components in wider networks of care. Finally, theme four describes how perceived need and motivation are fluid and interconnected, and how motivation should be seen as relational and rooted in concrete contexts rather than as an instrumental force existing only in the mind of the client.

Theme 1. The tension between creating hope and overpromising results

Many of the participants in this study experienced confusion in relation to the DMHI and there was a general lack of knowledge about digital support, which sometimes resulted in doubts about its potential usefulness or effectiveness, undermining client motivation to use the DMHI, e.g. *"I feel like I'm delaying it just because I'm like, oh yeah it's not going to work - Not work, that's not the right word but it's not going to really have much of an impact maybe"* (P8, U). Research indicates that clients may not have a realistic mental model of what the experience of using a DMHI will be like, because they are relatively novel forms of therapeutic support [45]. In the quantitative results of the original study in Chapter 4, uncertainty about the usefulness of the intervention formed the most commonly reported barrier to uptake among the cohort [185] and other studies have also suggested that a lack of belief in the effectiveness or usefulness of DMHIs is linked to low uptake [31,45].

Those who develop and promote DMHIs are aware of the doubts held about them by both clients and the clinicians and service providers who are delivering them [45,154]. To make a case for DMHIs within the entrenched domain of psychotherapeutic practice, the field of digital therapeutics established itself on a strong foundation of clinical evidence [199,444]. The RCT evidence for the DMHI in this study is strong [343,345], and it is often used to counteract

scepticism and convince service providers of the benefits of the DMHI, but it has also permeated client-facing marketing (e.g. the self-referral website states *"Based on years of clinical research, our methods are proven to help you feel better."*) This seems logical considering the impact of expectations on experience; according to Karapanos et al.'s framework of user experience over time, anticipation and expectations play a central role in shaping ongoing experiences of technology [197]. Many models explaining user acceptance of technology, including the Technology Acceptance Model (TAM) and the Health Information Technology Acceptance Model (HITAM), highlight the importance of the perceived usefulness of an intervention in determining motivation for and subsequent engagement with it [209]. Thus, there have been calls to improve public perceptions of DMHIs, in a bid to increase uptake and engagement with them [284]. Along with the doubts about the DMHI expressed in this study, many participants held strong hopes about the intervention, which spurred on their initial motivation for using it. For example, participant 10 knew about the clinical evidence base behind the DMHI from referring her own clients to it as a nurse, which seemed to outweigh any functional expectations that she might have had,

> P10: "I was hoping it would help me. I mean, that's not- that was my main expectation".
> Interviewer: "Were you expecting it to help though?"
> P10: "Well, I mean it's evidenced-based so I was hoping it would." (P10, HS)

A previous study which asked clients about their expectations of a DMHI, found that many people referred to their hopes instead of their expectations, possibly indicating that clients are optimistic, despite being ultimately unsure what to expect [184]. Without any practical expectations of what the DMHI is or how it works, clients could be using their hopes to motivate themselves for this otherwise alien process on which they are about to embark. The potential for this hopefulness to obscure realistic estimation of DMHI capabilities is however, a cause for concern. Participant 15, whose full timeline is presented in Figure 5.2, explained that the first time she was offered the DMHI, she was so excited to be finally given support after years of having her mental health needs ignored by her doctor, that this excitement and hope motivated her to use the DMHI for a number of weeks. When she eventually came to realise that the DMHI was not helping her however, she emotionally detached from the support and was left feeling at odds with it. This feeling persisted throughout her extensive journey, which involved multiple subsequent experiences with the DMHI.

The need to convince clients of the effectiveness and legitimacy of DMHIs has contributed to marketing and media coverage which potentially oversells these interventions, promising to help clients 'feel better' without any realistic expectation setting around the effort, time and reflection needed for these outcomes to be reached (an area discussed further in theme two). In addition, these promotional materials seldom include the caveat that the DMHI might not be a suitable or helpful option for some clients, as was the case with participant 15. When the

overwhelming 'proof' that these interventions have helped vast numbers of people is juxtaposed with a client's personal experience of it not helping them, clients can collapse into self-blame, shame and helplessness. This risk is underpinned by the individualising nature of the dominant biomedical narrative of mental health, which tends to isolate distress from its context, often resulting in clients bearing the sole burden of responsibility if an intervention does not help them [337,348].

Theme 2. Persisting with the effort involved in working on one's mental health

For most people there is considerable effort involved in actively engaging with therapeutic support [102,141,153]. The process of therapy itself, whether FTF or online, can bring up difficult feelings that can temporarily enhance distress, and the actions recommended within many therapeutic protocols (e.g. adjusting established patterns of behaviour or thought, setting boundaries in relationships etc.) are often challenging pursuits [153,311]. As such, it can be difficult to find the motivation to work on your mental health, as participant 2 here describes,

> "I mean when I think about doing it, I feel a bit almost [pause] I don't know, kind of like ergh, can I really be bothered to bring up all those feelings again? If I'm not feeling them right now, do I really want to start feeling them again by reading about them and thinking about them and trying to work on them? It feels like a bit of a chore almost but I know that in the long term it would be positive" (P2, U)

Participant 2 was aware of the long-term benefits of therapeutic change, and the work necessary to achieve this change, but without the motivator of feeling low she was reluctant to engage with what she perceived as a burdensome process. She had rational goals and an intention to act (reflective motivation according to the COM-B system [267]), but her emotional response to the demanding prospect of working on her mental health left her with little automatic motivation for the task at hand. Participant 10 recognised that finding motivation to do therapeutic work was challenging, but she found the DMHI an effective way of ensuring that this work was accomplished,

> "When it's online you've got to do it there and then, rather than going away because if you see a therapist or counsellor and they say, right go away and do this. By the time you've got home the chances are that probably - it's a bit like going to a physiotherapist. You know, they give you the exercises but the majority of people don't do all the exercises." (P10, HS)

As evidenced in the timeline excerpt below (Figure 5.5), participant 10 was conscious that therapeutic change required effort and persistence, and she believed that people need to take responsibility for managing their own mental health, but she also experienced considerable self-stigma and embarrassment at the prospect of seeking help. As mentioned in theme one, our current societal discourse around mental health tends to individualise and decontextualise distress, putting pressure on individuals to change themselves in order to be healthy, happy

citizens [104,337,348]. This has been termed *healthism*, and it can lead to self-blame, self-stigma and a decreased likelihood in people seeking external support [23,83,337]. Clients who understand the effort involved in therapeutic work and feel a sense of responsibility for managing their own mental health may have more motivation to persist with the DMHI, but they also might blame themselves if the intervention doesn't help them and be less likely to seek further support if they need it.

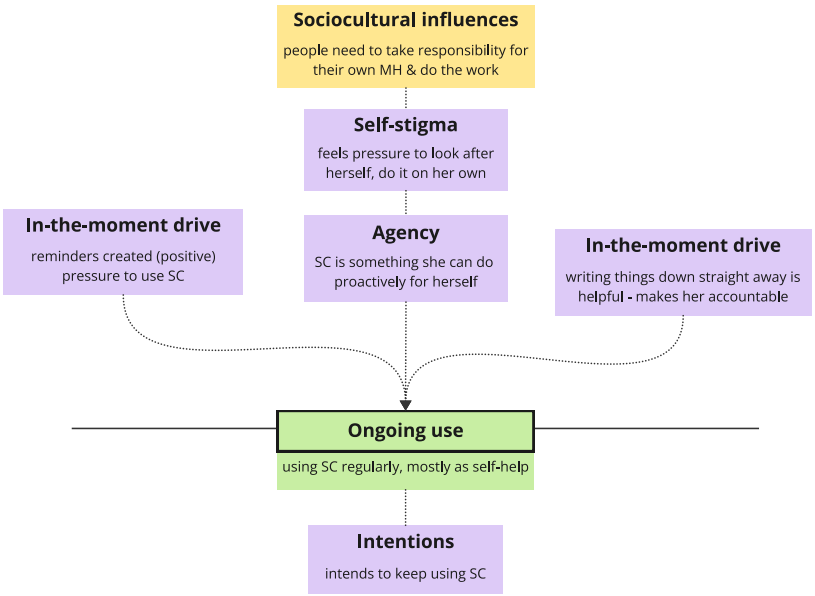


Figure 5.5. Excerpt from timeline of participant 10 (female, health service, 45-54)

There were also participants in this study who took on less personal responsibility or were less aware of the effortful nature of working on their mental health. Some participants believed that when it came to psychological therapy, therapists were the core agent of change, *"you need that someone to guide you through to, to initiate any changes in your life. To make you see things different"* (P13, HS). Many participants wanted to talk to someone about their distress, often because they believed this process of talking was enough to help them feel better, *"I sort of feel like I need to actually talk to someone and maybe just vent about it or to have someone to listen to me"* (P8, U).

These perceptions were often influenced by media representations of FTF therapy, but in terms of the DMHI, client facing marketing (described in theme one) also portrays DMHIs as an effortless route to feeling better. This pitch is common amidst the wider digital self-care industry [348,400], and in fact much modern technology centres around a quick-fix mentality, where digital products, designed fundamentally to be easy to use, promise to also make daily living increasingly simplified [389,441]. In line with this, some participants in this study expected signing up for the DMHI to be quick and straightforward, *"I was expecting it to just be like a simple process but it turned out being a bit more complicated*" (P4, U). The UTAUT includes

the construct of effort expectancy, but it does not explain the longitudinal process of what happens to engagement when expectations around effort do not match with reality [426].

An aspect connected closely with effort is time; finding the time and psychological space necessary to engage with therapeutic work is increasingly challenging in modern contexts, where productivity focused work cultures and technologies propagate burnout [56,231] and overworked lifestyles have become an aspirational status symbol [34]. Participant 9 was aware of the potential effort and persistence required to get benefit from the DMHI, but he was unsure what to expect in terms of the time commitment involved, *"what length of a time overall and also what sort of on a daily basis, what sort of length of time would I need to dedicate to it to get the most out* of it" (P9, NFP). With little free time due to work and family obligations, this participant was unsure how he could fit the DMHI into his already overloaded schedule.

Busyness was something that came up for many participants, some of whom did not even have time to consider the DMHI properly and make a decision about whether or not to use it, *"at that time, I had an assignment due and I was also focusing on my assignment. I was also trying to get a job. There was just a lot going on at the time"* (P4, U). Others had signed up with intentions to use the DMHI but found that they had little to no time available in the day to engage with it, *"I just sort of, I kept thinking oh, I'll do it when I get to bed or you know, sit and have a bit of time and I just kept falling asleep and just not bothering"* (P7, NFP). People only have so much time and energy in the day, and without an urgent need to reduce immediate distress, long-term goals understandably take a back seat to higher priority tasks and activities [187].

Theme 3. Situating engagement within a wider system of care

The DMHI was not a suitable option for many participants in this study, either because their distress was too severe, they had a preference for FTF therapy or because they were not comfortable using technology. However, for many of these people, engaging with the DMHI, even briefly, helped them move towards getting help that was suitable for them. For example, some participants who were experiencing social anxiety preferred the DMHI because they didn't have to meet anyone in person, *"if you have social anxiety or if you're scared of meeting new people or going to new places it's easier for you to just do it from the comfort of your own home"* (P4, U). This might seem counterintuitive (i.e., the digital solution allows them to continue to isolate themselves from others, exacerbating the problem) but for some people this easier route to seeking help was an important first step on a journey which continued after the DMHI.

When considering her options, participant 14 initially had a strong preference for the anonymity that came with the DMHI, *"If there were other options on there, like oh sign up for*

group therapy or sign up to see someone in person, I definitely would have gone for the online version" (P14, HS). After signing up for the DMHI however, this participant was assessed by a clinician and, as per the stepped care model used by the health service in this study, she was stepped up to FTF therapy because her levels of distress were considered too severe for the DMHI. As we can see in the following excerpt from the end of her timeline (Figure 5.6), despite having an initial preference for an online intervention, she was reassured and satisfied with the personalized human contact she received.

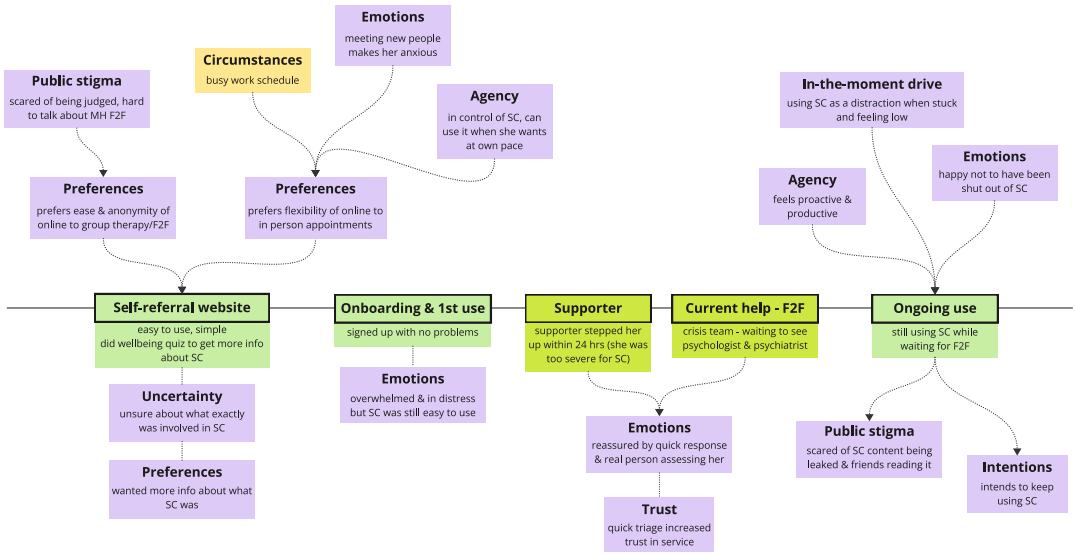


Figure 5.6. Excerpt from timeline of participant 14 (female, health service, 18-24)

Other participants, who experienced significant stigma around the prospect of seeking help, also found the lack of direct human contact needed to sign up for the DMHI appealing. Participant 12 had been suffering for many months after her mother died, and the fact that the DMHI was immediately accessible to her at a specific low point when she finally took the step to reach out for help, was a pivotal moment in her journey,

> "I got to that point in an evening and it was the ease of the access to something, where I could write something and tell somebody actively, what I felt like, without one, no one being available, two, feeling like I was going to have to phone 111 and tell somebody, who could have been dealing with someone so much more important, and three, not feeling like I'm calling somebody that I probably wouldn't normally talk to but was going to make me feel like an absolute fruit cake." (P12, NFP)

This participant put herself forward to take part in the research interview, despite never having spoken to anyone about her mental health before. This is a considerable milestone for someone who, before the DMHI, was terrified of opening up or expressing her emotions to others. The experience of these participants highlights that DMHIs can act as a crucial first step for many clients who would otherwise be reluctant to seek help. This reinforces the Cycle of Avoidance (COA) model's multidirectional interpretation of help-seeking, where the type of help sought

influences client readiness by shaping the meaning attached to both the client's own distress and the act of seeking help [37]. The value of this pathway can get overlooked however, when we situate and evaluate DMHIs as standalone 'treatments' with specific expectations around engagement and outcome levels, rather than as components in a larger system or network of care.

Taking a system level viewpoint, it becomes apparent that helping clients to find what will ultimately be the most suitable intervention for them at this specific timepoint is key. Many participants in this study mentioned wanting to talk to a qualified professional who would direct them to the most appropriate support, *"I was looking for some kind of help or advice or an appointment to kind of you know, discuss something with someone who knows what they're talking about"* (P1, HS). Some participants explicitly mentioned that they did not want a digital tool to perform this task, either because they did not trust automated suggestions, or because it was important that a human being heard them and understood what they were experiencing. While clients such as those discussed above may wish to access help without human contact, for other people the lack of human contact when they first sought help decreased their motivation for engaging with the system,

> "when you look for support is when you really need someone because if you have, I don't know, maybe if you have supportive family, friends, you will speak to them. But if you don't have that's when you often look for help" (P13, HS)

Participant 13 was among the handful of participants who did not have a support network that they felt comfortable discussing their mental health with; many others were seeking help due to loneliness. The importance of the relational aspect of therapy becomes apparent here, and having an option for clients to talk to someone as soon as possible, because often when clients reach out for help is when they are at their lowest and most in need of support. The comfort provided by non-judgemental human contact helps clients to feel safe after taking the vulnerable step of reaching out for help, *"I feel that sometimes it's also as a way to reassure us and to calm us down is just talking with someone there you know, it's a professional"* (P11, U). In addition, being able to verbalise how you are feeling and having your experiences acknowledged and validated by another human being can provide immediate relief, which can be a crucial turning point for clients in their mental health journeys. Furthermore, humans can easily assess and manage expectations, balancing the tensions described in theme one, in order to motivate clients without burdening them with responsibility. A number of participants who persisted with the DMHI, despite significant emotional barriers, did so because the intervention had been recommended and explained to them by a person,

> "it was my [colleague] who had done it herself. She said, 'Actually, I've done this and this will be alright for you because you need someone to talk to, you need someone to tell how you feel, but you're busy, you've got a lot going on'." (P12, NFP)

Others, who did not sign up or engage with the DMHI, explained that they would have used it if they had the option of speaking to someone at the start. Some participants even said they volunteered to take part in the research interview because it provided an opportunity to talk to someone, *"then I then filled in my email for the interview hoping to get to ask you to explain to me what it is."* (P4, U); these participants were interested in signing up after a short conversation about DMHI. Viewing DMHIs as dynamic components in a much wider network of care, and shifting the focus to evaluating the success of the entire system rather than assessing how DMHIs function in isolation, can help us to better utilise the accessibility of digital support and make more effective and timely use of the limited human support available.

Theme 4. Allowing people to become ready for help and meeting them there

Client needs for mental health support are ongoing and fluctuate over time [184,185]. Many participants in this study had experienced previous periods of distress for which they had sought help, some had been dealing with ongoing or intermittent distress for decades. Despite the perennial nature of their suffering, most participants sought help via the DMHI because a particular life event precipitated a more urgent need for support,

> "I have been suffering with anxiety and depression for like long time, even before Uni. And it's something that is controlled but I felt that lockdown was a little bit troubling for me because I was alone. I'm not from the UK and I didn't have anyone here with me so I felt lonely" (P11, U)

Just as the need for support can emerge due to contextual stressors, it can equally dissipate because of a myriad of external factors. Some participants mentioned that they stopped using the DMHI because they felt better and no longer needed it. For example, participant 7 was experiencing considerable stress due to a family dispute which involved the police when she signed up for the DMHI, but when the situation resolved itself her distress eased and she no longer had a reason to use the DMHI, *"then actually, things kind of improved a little bit you know, in the way I was feeling and stuff anyway so, I didn't really feel the need to go back to it"* (P7, NFP).

Previous research indicates that a lack of perceived need is one of the main factors impacting client motivation to engage with therapy [10,33,279,326,374], yet none of the theoretical models described in this thesis include perceived need for support as a construct. The SMHC model contains 'subjective sense of illness' and Rickwood et al.'s help-seeking model and the TTM include awareness of the problem within their initial stages [257,328,346], but they do not acknowledge the intricate and ongoing relationship between need, motivation and action. An individual's need for mental health support exists among countless other needs which compete for priority on a daily basis; often what was a pressing need one day becomes eclipsed by an even more pressing need the next. Participant 5 had intentions to use the DMHI regularly, but shortly after he signed up he experienced a traumatic event that overshadowed all of his previous needs and routines,

> "I've not done anything on it as yet, I mean it was only a few weeks ago. I mean since then I've had stuff going on, my [close relative] committed suicide about 12 days ago so, I've not obviously, been looking through a lot of work stuff I'll be honest with you." (P5, NFP)

The DMHI took a back seat while participant 5 was trying to make sense of this shocking loss, but as we can see in the excerpt presented below (Figure 5.7), he was planning to engage with the DMHI again when he needed it. This was also the case with many other participants who intended to use the DMHI in the future, despite the difficulties they initially experienced.

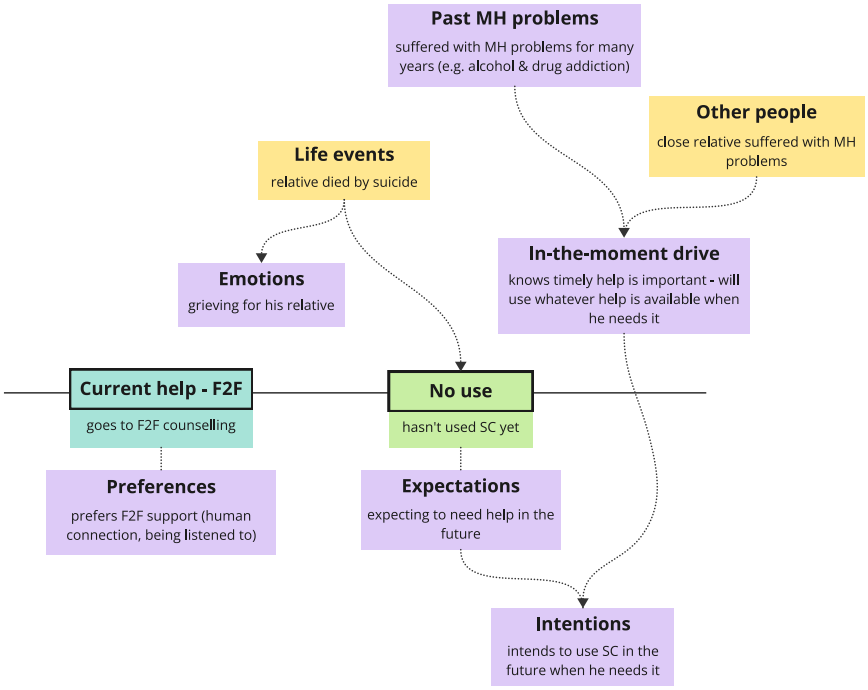


Figure 5.7. Excerpt from timeline of participant 5 (male, not-for-profit, 45-54)

The flexibility inherent in digital interventions means that clients can access them when the need (and motivation) for support arises, and if life gets in the way, clients can prioritise other activities and still return to the DMHI when they have the physical and psychological space. Clients recognise the adaptable nature of the DMHI and perceive this as a benefit, *"it does feel like something you could just dip into if you needed it you know for a while or, it doesn't feel like, yeah it just feels easily accessible, so yes, it's nice to know it's there"* (P7, NFP). A number of clients mentioned that it was comforting to know they could use the DMHI when they needed it and desired support that would be accessible long-term, but some clients were uncertain how long they would have access for,

> "At this moment, I should give credit to my mental health but I'm just, just not giving any attention to it anymore because after Covid I was able to improve my mental health so I'm not in need of it. But of course, if I relapse to a worse state of my anxiety, it would be something that- it would be good for me. I'm not sure if I will still have access to it." (P11, U)

Participant 11 was cognisant of the perpetual yet irregular nature of her mental health because she had been suffering intermittently for many years, but she was also aware that her motivation to work on her mental health followed the same oscillating trajectory. Despite this self-awareness, participant 11 mentioned feeling like she 'should' be focusing on her mental health when she was feeling well, which highlights how motivation works as the driving force behind the moral imperative to be healthy [245,275]. Health, motivation and responsibility are thus linked and manifest in implicit societal pressures towards being a citizen who is both motivated to be healthy and feels responsible for their own health; Møller calls these 'health pro-motivated' subjects [98]. Other participants also felt this pressure to be motivated to use the DMHI, which persisted in spite of their negative experiences with it and their belief that it wasn't appropriate for them,

> "okay, I'll do this because I should do it and you know, maybe it will help me and maybe there will be something that sticks in my brain but at the moment it wasn't- I don't think it was right for me in that time." (P15, HS)

There is a tension here, similar to that found in theme two, between the need to encourage clients to stick with what can be a difficult but rewarding process, and the risk in doing this of reinforcing the norm that they should be 'health pro-motivated', which can lead to guilt and self-blame if clients do not feel like they live up to these idealised standards [2,104,400]. The problem perhaps stems from viewing motivation as a malleable force that exists exclusively in the mind of the client, which should be instrumentalised for their own good, rather than, as was found in the previous theme, a relational process rooted in concrete social or situational contexts [275]. Taking the latter perspective can help us to shift our focus from indiscriminate attempts to increase client motivation and readiness as a means of addressing *insufficient* engagement with DMHIs [236], to adjusting the design and delivery of DMHIs to better fit the relational, fluctuating nature of motivation. Allowing clients to become ready and motivated to get help and work on their mental health on their own terms may involve multiple attempts and touchpoints over a number of years; DMHIs can be there for clients as they go through this challenging process, but only if they are designed and delivered as such.

5.3.3 Summary of Novel Insights

This study was a complementary analysis of interview data also used in the study in Chapter 4, which focused more broadly on barriers to engagement and uptake. The reflexive TA in Chapter 4 found that uptake and engagement were intricately linked with factors including the need for human contact and personally relevant care, self-stigma, confusion around what seeking help means and what DMHIs are, and the fluctuating nature of client goals and motivation for support. The current companion analysis could be seen as an expansion on the final theme in

the initial study; taking a temporal perspective allowed the fluidity of motivation and engagement to be understood with more nuance.

Through exploring the full trajectories of participant journeys as complete pictures, and in relating them back to the theories commonly used in this area, it became clear that motivation is not one homogenous or consistent state that clients can be categorised into (e.g., as in relation to measures which define a client's 'stage of change'). Rather, motivation arises through nuanced, contextual instances, wherein clients decide or are driven to engage. Accordingly, motivation is rooted in concrete situations and contexts, (e.g., it can be mood or need dependent, related to an external stressor, influenced by people in the client's life, or dependent on the amount of free time the client has on a particular day). This foregrounds a substantial concern with common framings and theories that treat readiness and motivation as a single, manipulable force situated entirely within the mind of the client, to be instrumentalised in the pursuit of higher engagement with DMHIs.

Furthermore, the visualised timelines produced through the framework analysis helped to connect certain aspects of the participant journeys which were not explored in previous study. For example, as described in Themes 1 and 2, expectations about the DMHI were found to be both shaped by diverse influences (e.g. past experiences of help-seeking, relational interactions, framing and marketing of the DMHI, media representations of therapy, and self-efficacy) and to go on to shape subsequent experiences in complex ways (e.g., overly hopeful expectations can stimulate initial uptake and motivation, but negatively impact engagement further along the client's journey). Similarly, this study found that motivation can sometimes be accompanied by self-stigma if clients take on sole personal responsibility for their mental health, which can ultimately be damaging to their self-worth. This is indicative of certain types of motivation being more helpful and healthy than others, which again emphasizes the complexity and nuance of this topic. Thus, indiscriminately attempting to increase client motivation, in order to increase engagement with a DMHI, may have adverse effects (this could have contributed to the problematic impacts of some of the readiness interventions examined in Chapter 3).

Finally, examining whole participant journeys and including service-based insights from expert stakeholders allowed for a more contextualised, systemic perspective of the problem of low uptake and engagement with DMHIs. While the previous study in Chapter 4 exposed the need for expanding our definitions of non-engagement, the current study went further to explore the evolution of engagement over time. Hence, these findings indicate that a client's engagement touchpoints or *observable actions* (e.g., self-referral website visits, sign-up, logins) can be misleading if not considered in context. These interactions play a part in a much longer and more complex lifecycle, and thus the longer-term benefits (and harms) of DMHIs do not always

equate with levels of engagement; clients can get benefit from minimal engagement and harm from sustained engagement (e.g., in the case of perpetuated pressure, self-stigma or blocked progression to more appropriate care). This is an alternative viewpoint to experimental studies reporting a dose-response relationship between usage and outcomes [127,201], indicating that the DMHI *engagement problem*, as it is typically understood, should perhaps be reconsidered at the level of system design and delivery.

5.4 Discussion

5.4.1 Overview

The aim of this study was to explore the mental health journeys of participants who had difficulties engaging with a DMHI, paying particular attention to the role of readiness and motivation, and considering service-level factors. Two key findings from this study are that client motivation for digital support is rooted in concrete situational factors, and that low engagement with DMHIs is not necessarily a problem when viewed from the long-term, system-level perspective of ongoing client mental health journeys. Implications for the design and delivery of DMHIs are hereafter provided, centering around expectation setting and the flexibility of DMHIs in light of the shifting nature of motivation. As many of the findings elucidated by this research relate to the evaluation and positioning of DMHIs, the findings will also be discussed from a system design perspective. First however, the results will be examined in relation to the theoretical landscape around readiness and motivation and the value of staying with the complexity inherent in exploring client mental health journeys.

5.4.2 Complementing Generalisable Models with Transferable Journeys

Despite the construct of readiness being a core part of the design and aims of the study, it is evident from the results that it did not surface frequently in this analysis. Readiness and the stages of the Transtheoretical Model (TTM) were not found to be relevant in understanding the intricate mental health journeys of participants, other than the somewhat redundant observation that those who were 'ready' signed up and used the DMHI and those who weren't ready did not. The TTM, and the notion of 'readiness for change' were originally developed to describe the processes involved when people try to stop engaging with discrete problematic behaviours such as smoking or drinking alcohol [294,328]. Readiness may be a helpful concept in this context, but when it comes to more general mental health support, where there is no single, overtly damaging behaviour to change, it is perhaps less applicable. Motivation was found to be a more useful concept which better fit the nuanced experiences of the participants in this study.

Across this study and the primary analysis in Chapter 4, aspects of several theories were found to be of use, including the construct of perceived usefulness from the TAM and HITAM [97,209], the distinction between reflective and automatic motivation in the COM-B system and the broader implementation focus of the Behaviour Change Wheel [267], the fluid, multidirectional nature of help-seeking as described by the COA [37], and the framing of expectations as an ongoing influence in Karapanos et al.'s framework [197].

While considering the theory around motivation can help us to understand the landscape, it often stems from a desire to instrumentalise motivation in order to change people's behaviour, and thus fosters an overall sense that motivation is something contained exclusively within the mind of the client [275,436]. This mindset can result in a focus on increasing overall client motivation as a means of increasing their engagement with a DMHI (i.e. adjusting the client to better fit the established system), rather than understanding the precise situational and relational instances wherein clients decide or are driven to engage, and adjusting the system to better fit the client [275]. A recent review of engagement with DMHIs highlighted the need for consideration of client, intervention and system level factors, however their call for a consolidated theory of DMHI engagement, based on robust 'engagement-driving' constructs, is again grounded in the same individualising paradigm of client motivation [236]. Taking a more contextual, case-by-case approach to understanding motivation can help us to shift our attention from whether the client is ready, to whether the intervention and the service are ready to be there when the client needs and asks for help.

This speaks to broader issues around the value placed on small-scale qualitative research for informing and improving practice in the domain of mental health. As mentioned by one of the **expert stakeholders**, psychologists and those trained in the health domain are often more comfortable acting on the results of large quantitative studies, which are seen as more generalisable to the substantial client populations that clinicians are tasked with helping. Statistically generated evidence on human functioning is never universally generalisable however, and it does not help us to understand the underlying reasons *why* humans act the way they do [75]. This is even more pertinent when we consider human psychological processes as open and relational systems, rather than as predictable mechanisms based on linear causality [424].

Qualitative research aims to provide a rich, contextualised understanding of a particular aspect of the experiences of a small number of humans, which is why it is often considered insufficiently generalisable to inform practical improvements to services [322]. Transferability [322], reader generalisation [219] and communicative generalisation [75] all provide a different perspective on generalisation, which places the power to judge in the hands of the person reading and using the research. The reader's role is to determine whether and how the

findings apply to new contexts, which involves actively absorbing and engaging with the findings [322].

It is through this process of immersion that the value of this study's mental health journey timeline methodology can be seen. The **expert stakeholders** found the process of reviewing and discussing the timelines to be a valuable and insightful exercise. They suggested that a similar process could function as a way to help clinicians and staff working on the delivery of DMHIs to develop a more nuanced understanding of client engagement, to stimulate conversations around implementation improvements within services, or even at a strategic level to help guide the positioning of digital tools within care systems. By staying with the complexity inherent in these case studies, and transferring the knowledge to each practitioner's particular context, a certain depth of understanding must be achieved [402]. According to Flora Cornish, the value of this process comes when *"that expertise is applied to a new case, with greater insight, finesse, attention to the important details, ability to anticipate events and to act on them if relevant. This is a kind of 'practical generalisation': it makes the reader better equipped to act in the next messy situation"* [75].

From a **HCI and design perspective**, mapping user journeys is a familiar practice [177], but translating the visualisation of health journeys into clinical settings is an area that needs further consideration. Advances are being made in this direction, with innovative companies like *Pictal Health* [254] helping clients and providers to identify and communicate the links between their health and contextual factors such as environment, incidents, and their long-term history. Future transdisciplinary research could also investigate motivation in light of the recent re-emergence of Roger Barker's groundbreaking research on *behaviour settings* [167]. Behaviour settings are nested, eco-behavioural structures that allow us to go beyond the linear, mechanistic view of psychological phenomena, to recognise instead the reciprocal, emergent relationship between behaviour and environment [21,167].

5.4.3 Implications for Design and Delivery

In order to increase engagement with DMHIs, design efforts could focus on adapting DMHI design, delivery and system structures to better suit the oscillating, contextual nature of client need and motivation, instead of considering motivation as the client's responsibility and instrumentalising it in the pursuit of higher engagement with DMHIs (as was done with many of the readiness interventions explored in Chapter 3). Potential areas where these efforts could be directed are henceforth discussed.

The results from Themes 1 and 2 highlight the unrealistic expectations held about DMHIs by clients and those who develop and deliver these interventions, and the issues that surface when the reality does not match the fantasy. There are a number of tensions that need to be balanced

in addressing this problem, which may be particularly relevant to the framing and marketing of DMHIs. For example, convincing clients that the DMHI will be easy may increase the chances of them signing up, but if their experience does not match this expectation, their ensuing engagement may falter. Alternatively, emphasising the effort involved and the potentially challenging nature of working on the DMHI may discourage people from signing up in the first place, but those who do sign up may have a better experience and stay engaged for longer.

Another related tension involves either helping clients to take on responsibility for working on their mental health, which can motivate them to persist with the burdensome process, but lead to shame and self-blame if the intervention does not help them, or helping clients to see that their distress is based on external factors. This second option might reduce their impetus to expend effort on the intervention, but it might also reduce their self-stigma and make them more likely to seek help again in the future. In general, this study advocates for a balance between these extremes, but decisions about how to approach these tensions are best made within the context of the specific intervention, population and ecosystem in question [402].

In terms of the design of DMHIs themselves, Theme 4 showcased a number of areas for consideration. An individual's need for mental health support was found to compete for priority on a daily basis with countless other shifting needs. Many DMHIs are designed and delivered with the ideal use case being similar to FTF therapy, (i.e., relatively high intensity usage for a number of consecutive weeks), with human support provided weekly during this time [199,444]. While this style of delivery may suit some clients, it undermines one of the inherent benefits of digital support; the accessibility of DMHIs means that clients can (and do) access them on a more sporadic basis, when the need and motivation for support arises and when external conditions allow space for DMHI use. DMHIs could be designed in a way that better aligns with the variable nature of client motivation, need and context, (e.g., by utilising smartphone based ecological momentary intervention (EMI) strategies, such as sensor-based or user-initiated prompts, and bite-sized or question-based delivery of content [14,169]). In addition to facilitating shorter or more ad-hoc interactions, the design of DMHIs could also allow for support over more extensive durations. The DMHI examined in this study is only accessible to clients for one year from the date they sign up, but participants were not aware of this cut-off point, and expressed the desire for long-term support via the DMHI.

The **expert stakeholders** noted the potential of the DMHI as a reliable presence for clients, that allows them to move and change and keep coming back as they navigate through their mental health journeys. Many of the participants in this study mentioned the comfort they felt knowing the DMHI was there for them when they needed it, yet this meaningful, emotional connection is not captured by existing engagement metrics or outcome measures. The need for 'evidence-based' digital tools may have contributed to the widespread use of standardised

metrics and the predominantly structured delivery of DMHIs, as this facilitates their clinical validation via RCTs [134,237,444], whereas more flexible, light-touch, and long-term tools are harder to assess and therefore less appealing to healthcare services [14]. System-level factors are clearly integral to the design and delivery of DMHIs in practice, as they govern the ultimate aims of the DMHI and shape the boundaries of what is possible.

5.4.4 System-level Implications

Theme 3 explored how the DMHI, despite being ultimately unsuitable for some of the participants in this study, played an integral role in their help-seeking journeys. Viewing DMHIs as standalone 'treatments' with specific expectations around optimum levels of adherence and clinical outcomes discounts their value as accessible entry points into larger systems of care. As the **expert stakeholders** noted, this practice of defining the value of DMHIs entirely based on effectiveness and engagement metrics tends to be the conventional method, despite other interventions (e.g. FTF therapy) not being exposed to the same levels of scrutiny [127,343,405]. Taking a high-level, systemic perspective, we can see that low engagement with DMHIs is not necessarily a problem, if the goal of the entire system is to help people find the care they need, feel better and improve their mental health. The fundamental objectives of mental healthcare systems and services is a contentious area, which brings to mind debate about the pathologisation of normal distress via the biomedical model of mental health [53,171,172,403].

The positioning of the DMHI as either a treatment for an illness or a supportive aid for the normal woes of life is something that emerged in the **expert stakeholder** discussions, particularly in relation to overdiagnosis [96,350]. Emerging research on the *prevalence inflation hypothesis* gives cause for concern regarding clinical framings of distress [137]. This theory proposes that current mental health literacy and awareness campaigns can lead individuals to interpret milder forms of distress as diagnosable 'mental health problems', which can then lead to a self-fulfilling prophecy whereby the individual's behaviour and self-concept change in line with the label, which exacerbates their distress [137]. DMHIs can help people to understand normal distress and situate what they are experiencing in relation to their context, but care must also be taken here to avoid reinforcing the moral imperative for clients to optimise themselves as 'health pro-motivated' subjects [83,275,348,400].

Reconsidering mental health support from a system design level may help uproot previously engrained patterns of operation, allowing for innovative new strategies that make better use of both human care and digital tools. For example, the results of this study indicate that care or service navigation is a key area in need of attention, research and design at the systems level [282,428]. People need help making sense of their mental health needs and understanding the different options available to them, in order to develop realistic expectations about the processes involved in therapy.

Another area for system-level consideration is the use of non-diagnostic mental health narratives and success metrics; Ireland's National Centre for Youth Mental Health, Jigsaw, operates its nation-wide services from a contextual approach to mental health, using non-diagnostic and goal-based outcome measures [1,298]. Situating distress in relation to external stressors and aligning the purpose of therapy to what is personally meaningful for each client can reduce self-stigma and make clients more likely to stay engaged with help [23,337].

Finally, alternative approaches to the delivery of human therapeutic support could be explored, such as single session therapy, which has been shown to be acceptable and helpful for clients in improving their presenting problems [176]). Systems could combine this brief human care with more long-term digital support, providing clients with human contact when they are most in need of this connection, as well as accessible, ongoing support that can be available as needed throughout the fluctuating course of a client's mental health journey.

5.4.5 Limitations

The participant sample was predominantly composed of white women, and while this is typical of service users within high-income countries [350], the relative privilege of this participant pool is acknowledged. Future studies should aim to explore the perspectives of more diverse groups of clients, as their experiences are likely to be different [277]. Furthermore, the timelines were not presented back to participants for clarification and confirmation, which is best practice in qualitative patient research [95,420]. Stakeholder input from across the service sectors formed the basis of the theme generation process however, which grounded the analysis in real world expertise. The timeline visualisation method developed here could be used in the future as a means of collaborating with participants and other diverse stakeholder groups.

5.5 Conclusion

This chapter presented a qualitative, complementary analysis of the mental health journeys of clients who experienced difficulties engaging with a DMHI. A refinement of the framework analysis method was described, where visualised timelines were used to gather feedback from expert stakeholders; four of these timeline journeys were presented as case studies. When considering these journeys in relation to the theories most commonly used to understand and address readiness and motivation for DMHI use, motivation was found to be a more useful construct than readiness. Yet, while motivation is often conceptualised as an instrumental force contained entirely within the mind of the client, this study found it to be relational and rooted in concrete situational factors. This research therefore stressed the need for a shift in focus from making the client ready and motivated (i.e., fixing the client) to adjusting the wider healthcare ecosystem to fit the organic, contextual nature of client motivation.

When viewed from the long-term, system-level perspective of ongoing client mental health journeys, it was suggested that low engagement with DMHIs is not necessarily a problem. The evaluation and positioning of DMHIs within care systems is an area for further consideration, as is the framing and marketing of DMHIs in light of the motivational and stigmatising tensions that surround unrealistic expectations and where the burden of responsibility for improving one's mental health is placed. The subsequent chapter will consolidate the findings from throughout this thesis, reflecting on the research objectives and contributions of this work. It will also provide an overview of the application of this research in practice, discuss some broader critical reflections, and outline some potential directions for future work.

6 Discussion

"everything should be made as simple as possible, but not simpler"
Albert Einstein

This thesis investigated the role of readiness and motivation in relation to uptake and engagement with digital mental health support. In the work described in this thesis, consideration has been given to how clients experience difficulties engaging with a digital mental health intervention (DMHI), along with the role of readiness and motivation in their ongoing mental health journeys. Starting with an extensive review of the existing literature on barriers to uptake and engagement with DMHIs, and the various theoretical frameworks used to understand motivation and readiness, the thesis then moved on to examine the current landscape of digital interventions aimed at increasing client engagement with therapy. This work underlined a gap in our knowledge about what prevents people from, and motivates people towards, using digital mental health support in the real-world.

This led to a mixed-methods, observational study of the barriers experienced by non-engaging DMHI clients and the reasons why they showed initial interest in the DMHI, across four different healthcare ecosystems. Building on this work, a complementary analysis of the interview data from this mixed-methods study was conducted, looking more specifically at the constructs of readiness and motivation within individual client mental health journeys. Service-level perspectives from expert stakeholders were also included in this analysis, to ground the findings in practical knowledge of the implementation of DMHIs.

This final chapter first revisits the research objectives and reflects on the contributions of this thesis. Then, it describes how the findings from this thesis have already been applied in practice, and presents some overarching implications for the design and delivery of DMHIs. This chapter then explores some critical reflections around the use of technology in the mental health space, and finally concludes by calling for the future evolvement of digitally enhanced mental health support as a truly transdisciplinary practice, and further qualitative research to revise and advance theory on engagement and motivation for DMHI use.

6.1 Research Objectives & Contributions

The three research objectives stated in Chapter 1 aimed to 1) understand readiness and motivation as they are construed in theory and addressed in practice, 2) explore uptake and engagement issues from the client's perspective, and 3) examine and reconsider the role of readiness and motivation when addressing low uptake and engagement with DMHIs. This section details how the work of this thesis has addressed these research objectives within the context of digital mental health support, and describes the contributions to the human-computer interaction (HCI) field, and the associated fields of digital therapeutics and psychology.

By shedding light on the multiple complex systems (i.e., the client's life, the service setting, wider society) which effect how DMHIs are perceived, delivered and used, this thesis resulted in a more detailed understanding of readiness, motivation and engagement in relation to digital mental health support. Through examining and describing some of these intricacies, it is hoped that this thesis will help those researching and designing DMHIs to make more informed decisions when navigating this challenging design space.

6.1.1 Understanding Readiness and Motivation in Theory and Practice

Research Objective 1: What is the theoretical and practical landscape of readiness and motivation for therapy in a digital context?

Readiness and motivation are constructs currently being operationalised in efforts to understand and address the issue of low uptake and early engagement with DMHIs [119,120,149,418]. A large range of different theoretical models underpin these efforts, however none of these models specifically concern *digitally* delivered *mental* health support. Chapter 2 presented an outline of the most prevalent static and temporal theoretical models used in this area, which pertain to motivation, behaviour change, technology acceptance, health behaviour change and mental health help-seeking.

The literature critiquing these models was also considered, which questions the linearity of stage-based models in light of the fluctuating, dynamic nature of need and motivation, the appropriateness of these theories for use in a digital mental health context, and the centrality of intentions within these theories [36,60,260,433]; research on the intention-behaviour gap suggests that motivation is perhaps more subconscious or automatic, and intentions are therefore not adequate indicators of behaviour or engagement [27,86,384,431]. Chapter 2 also contributed an exploration of the constructs of readiness and motivation in more detail, finding that both are contextual and involve multifaceted goals. This chapter concluded that the theories currently used in this space do not adequately describe or explain the complex

processes involved in motivation for and engagement with digital mental health support, and therefore stressed the need for further qualitative research to deepen our knowledge of this area.

In order to further elucidate the current efforts being made to address readiness and motivation digitally and in practice, Chapter 3 involved a scoping review of the landscape of digital interventions to enhance readiness for therapy. This chapter contributed a description of the multifarious types of readiness interventions currently being used, which range from brief, simple videos and advertisements to supported, interactive online programs. It also outlined the therapeutic components which constitute these interventions (e.g. psychoeducation, self-assessments, information about support options and referral, testimonials etc.) and revealed the design strategies used to develop them (e.g. expert or user engagement), noting that information about the design of these interventions was scarce in the included studies.

Finally, Chapter 3 explored the feasibility of digital readiness interventions, finding that while digital approaches do show potential as a means of preparing people for therapy, there are risks that need to be considered. These interventions have the potential to decrease the client's subsequent engagement with therapy and worsen their outcomes, and depending on how they are framed and situated within care pathways, they can form an additional barrier to care. What's more, the light touch nature of these interventions makes them particularly sensitive to trial effects, so evaluating their impact is challenging. Thus, this chapter concluded that efforts to increase uptake and engagement with DMHIs might be best placed elsewhere. To understand where design efforts should be directed, this chapter highlighted the need for better understanding of the contextual, lived experiences of clients who don't use or engage with DMHIs.

6.1.2 Exploring Uptake and Engagement Issues from the Client's Perspective

Research Objective 2: What are the experiences of people who have difficulties engaging with digital mental health interventions?

Chapter 2 explored the literature on common barriers to uptake and early engagement with DMHIs, finding that attitudinal barriers are frequently reported as the main source of engagement issues [10,121,230,257], and that attitudes are interlinked with perceived need, culture, stigma, technology acceptance and factors related to the implementation of DMHIs [31,33,45,185,261,279,326,374]. Chapters 2 and 3 highlighted the dearth of research directly with DMHI non-engagers (i.e., those who do not sign-up or engage with the intervention) and

the consequently limited knowledge we have about what these clients want or need, or what prevents them from engaging [412].

In Chapter 4, the aim was to fill this gap in the literature via a mixed-methods study with real-world, non-engaging clients. Results revealed that client needs and motivation for mental health support are complexly interlinked and impacted, in a fluctuating manner, by factors related to the client's unique context and circumstances. As many participants perceived the DMHI to be a fixed, generalised intervention, they subsequently believed it was not sufficiently relevant to their unique, shifting needs. The inherently personal nature of human support was discussed, along with the need that many participants expressed for human connection, particularly at the critical touchpoint of seeking and selecting help. This study also indicates that despite improved societal awareness and education around the importance of mental health, self-stigma about needing and seeking help is still a concern. Some participants found it difficult to admit to themselves that they needed help, and hence perceiving the DMHI as 'not real help' was a substantial benefit for a number of participants. In general, there was much confusion about what the DMHI was and how to use it, which suggests that developing a mental model of this relatively novel type of support is a challenge for clients. Overall, this study highlighted that non-engagement is multifaceted and complex. Broadening our view of engagement could help facilitate a better understanding of how the fluctuating needs and goals of the individual intersect with those of the technology itself, the service or ecosystem surrounding the technology, and wider society.

By contributing a holistic, contextualised understanding of uptake, engagement and motivation for digital mental health support, this chapter indicated that when addressing the problem of low uptake and engagement with DMHIs, an alternate avenue to digital readiness interventions could be adjusting the design, context, framing, delivery and goals of these interventions themselves. This chapter outlined key challenges and opportunities for this adaptation of DMHI design and implementation, as well as exploring future transdisciplinary opportunities for the delivery of digitally enhanced mental health care.

6.1.3 Reconsidering Readiness, Motivation and Non-engagement

Research Objective 3: What role should readiness and motivation play when addressing low uptake and engagement with digital mental health interventions?

As described in Chapters 2 and 3, readiness and motivation are complex, sensitive constructs, yet they are currently being employed, often via a range of approximate theoretical models, as a means of enhancing engagement with digital mental health support. While Chapter 3 indicated that tailoring digital readiness interventions in line with the stages of the Transtheoretical Model (TTM) [294] could be useful (i.e., distinguishing between those who

are aware that they need help and those who are unaware, and providing different readiness interventions to each group), the results from Chapter 4 demonstrated that this awareness of the need for help and its relationship with help-seeking is often tied up with self-stigma, and is an ongoing process that can fluctuate over time. What's more, Chapter 3 showed us that trying to help clients become ready or motivated for therapy can sometimes have the opposite effect, and can even reduce the effectiveness of the therapy itself [24,190,203,418].

Considering these findings, Chapter 5 explored readiness and motivation in greater detail, centring the temporal nature of client mental health journeys and incorporating service-level perspectives from expert stakeholders. This chapter concluded that, in relation to engagement with DMHIs, motivation is a more useful construct than readiness because it more adequately represents the nuanced, contextual instances wherein clients decide or are driven to engage. Rather than being one broad category or state, motivation was found to be rooted in concrete situations and contexts, (e.g., it can be mood or need dependent, related to an external stressor, influenced by people in the client's life, or dependent on the amount of free time the client has on a particular day). Thus, in order to increase engagement with DMHIs, design efforts could focus on adapting DMHI design, delivery and system structures to better suit the oscillating, contextual nature of client need and motivation, instead of considering motivation as the client's responsibility and instrumentalising it in the pursuit of higher engagement with DMHIs.

Further to this, Chapter 5 illustrated that, when viewed from the long-term, system-level perspective of ongoing client mental health journeys, the entire problem of low engagement with DMHIs can be reconsidered. The value of the DMHI as an accessible entry point into a larger system of care, or as a comforting, supportive presence for clients, is overlooked when the success of the DMHI is assessed solely based on client adherence and outcome metrics. The evaluation and positioning of DMHIs within wider care systems was therefore suggested as an area for further consideration. In addition, this chapter highlighted how breaking down this individualising paradigm of uptake, engagement and motivation also bears significance on the framing and marketing of DMHIs; realistic expectation setting should be prioritised above opaque, over-optimistic pitches aimed at increasing uptake. Finally, Chapter 5 contributed a refinement of the framework analysis method, where visualised timelines were used as a means of presenting client mental health journeys as condensed, accessible case studies; the transferable knowledge generated through this method was proposed as a means of complementing the more generalisable theoretical models used in this area.

6.2 Applying the Current Research in Practice

This PhD work was conducted as part of an employment-based partnership with the digital therapeutics company SilverCloud Health (acquired by Amwell in 2021). Through

collaboration with the SilverCloud Design, Content and Product Management Teams, and the dissemination of the research across the company and to various partner services delivering the DMHI, the research was implemented in the real-world in an ongoing manner throughout the course of the PhD. One valuable area that this research contributed to was the development of user archetypes and personas (see Appendix I) based on different engagement patterns, underpinned by the mixed-methods study in Chapter 4. I collaborated with the Design Team in creating these archetypes and personas, and they have subsequently been used to aid a variety of different design projects, including a substantial re-design of the platform that focused on improving mobile visibility.

Other design decisions supported by this research include the development and trial of a direct sign-up pathway, where clients can sign up without needing to choose a program (they are instead assigned to one after an initial interaction with their supporter), and the addition of further client testimonials to the self-referral website. New testimonial videos are also currently being produced, using the real voices of clients talking about their journeys with the DMHI. Further to this, I worked with the Content Team reviewing an update of marketing outreach content and the self-referral website, and writing copy to help reframe the language in line with the findings from this PhD research. I have also written copy for an FAQ style chatbot intended for the self-referral website, which has been proposed as a way of helping clients to navigate some of the uncertainties surrounding the DMHI before they sign up.

In addition, I presented the results from the study in Chapter 4 at various internal design workshops, (e.g., one around the potential and risks of introducing AI to the platform, and another based on reconsidering self-referral care pathways) and to specific services (e.g., NHS Wales) who used the findings to implement their own service level improvements. Two of the expert stakeholders from the mental health journeys study in Chapter 5 were from services that deliver SilverCloud, and they both discussed changes they might make to the delivery of the DMHI based on this study. The other two stakeholders were Product Managers in SilverCloud, who had both previously worked in NHS IAPT services; they expressed the desire to share the research with strategic decision-makers in the NHS, to help them understand the complex role that the DMHI is playing in client mental health journeys, a view not afforded by standard engagement and outcome metrics.

Perhaps the most important contribution that this research has made within SilverCloud however, can be measured in terms of what was not designed or implemented, rather than what was. By communicating the complexities of engagement with services and strategic business and sales teams across the company, the focus was shifted away from “making the DMHI more engaging” as a means of addressing concerns around low uptake and engagement in certain services. Thus, this research substantiated the Design Team’s efforts to avoid implementing

persuasive, engagement-driving strategies which can be problematic when used in the mental health space [66,68,157,242,380,446]. Discussions moved instead to changing how and when engagement with the DMHI is measured, reiteration of the importance of the human support element when it comes to engagement, and exploring care pathways and the initial stages of the client's journey in more detail. The research generated throughout the course of this PhD has made a significant impact on the design and delivery of the SilverCloud platform, impacting the lives of many clients in the real-world. In light of these contributions and the findings from this thesis as a whole, an overarching set of design guidelines for digital mental health support was compiled.

6.2.1 Platform, Service and System Design Guidelines

Consolidating insights gathered throughout this thesis and the real-world implementation of this research, the following implications for platform, service and system design are presented.

1. *Maximise Human Support*

This PhD research adds to the expansive evidence that human to human connections, relationships, and relatedness are essential for therapeutic support [218,264,314,444]. In light of this, we should move away from the misleading rhetoric that digital interventions will replace humans in the therapeutic care process, and look instead towards novel ways that digital and human support can complement each other. Blended care models are gaining traction in this area [436], but human touchpoints could be considered from a more systemic lens across the client's entire journey, (e.g., as the initial help-seeking stage is a critical point where brief human contact could go a long way, human referral, triage, and single session therapy could be explored more extensively [176]). Providing DMHI clients with options for the frequency and delivery of support (e.g., written or telephone) could also help to make the most out of the limited human resources available, as not all clients want regular support. Finally, in order to change the rhetoric and reassure clients, it is vital to emphasise the presence of human support in marketing and outreach efforts. This is particularly important considering the rise of Artificial Intelligence (AI) and automated chatbots in the mental health space [150,333].

2. *Consider Shorter Interactions Over a Longer Timescale*

The findings from Chapter 4 and 5 show that motivation and need for mental health support are linked and oscillate within the context of the client's life. While many clients prefer an intervention with a controlled structure and predetermined length, this could be facilitated alongside momentary interactions and the ability for the DMHI to be accessible for extended timeframes [14,169]. Breaking down preconceptions about what is an acceptable structure for a DMHI, reconsidering the goals of these interventions (i.e., recovery, skill learning, long-term management), and innovating on diverse ways to evaluate the success of more flexible

interventions could help liberate DMHIs from being merely a digital counterpart to face-to-face therapy. For example, as low mood is a strong motivator for seeking help and using a DMHI [184], designers could explore the integration of emotion regulation strategies to help bring people out of severe distress, along with more future oriented skills-based education [391]. DMHIs could thus be used intensively for a small amount of time, when the client is in crisis, and then be happily forgotten about for months at a time. The client could set check-in dates (e.g., every 3 months) to remind them that the intervention is still there for them, without forcing engagement in any predefined, impersonal manner.

3. Be Transparent and Honest when Marketing DMHIs

While we might think framing DMHIs in a positive light will encourage people to sign up, this research has shown that unrealistic expectations can have adverse effects on the client's engagement and experience later on, and can even lead to self-blame if the intervention does not accomplish all it purports to. Contrary to popular marketing strategies, research shows that expectation setting around the challenging, ongoing or long-term nature of therapeutic work can actually increase engagement with therapy [153,410]. Marketing and outreach efforts should therefore be transparent about what exactly is involved in the DMHI (e.g., using concrete, practical examples rather than vague statements), so that clients can make fully informed choices about their own care [82,400]. In addition, while clinical evidence is helpful for some clients in terms of understanding the potential of the intervention, many others would prefer real-world client testimonials and recommendations as a means of demonstrating the validity of a DMHI [76]. Finally, being honest with clients about the fact that DMHIs are not suitable for everyone is crucial to helping them manage their expectations, and could prevent them blaming themselves in the event that the intervention is not helpful for them.

4. Frame Distress in Terms of External Stressors

The social determinants of distress are becoming increasingly widely accepted [8,63,72,80,104], yet dominant biomedical approaches to mental health tend to mask these factors and instead treat distress as an individual, internal debility [53,336,337]. Designers should question the established paradigms which underpin the clinical interventions they are developing, and at the very least make explicit these metanarratives of distress, rather than assuming they are universal, objective facts [104]. Exploring the use of non-diagnostic, non-medical framings of distress is an area for consideration [171,192,313], as is the development of DMHIs specifically based around managing situational stressors, life transitions or difficult circumstances. Rather than treating distress in these contexts as pathological, i.e. as an 'adjustment disorder' [246,403], these interventions and the services surrounding them could be designed so as to make visible the links between structures, contexts, and emotional distress

[351], and connect clients with further social and political resources, helping them to effect change in the external situations causing their distress [80,96].

5. *Focus on Care Navigation Pathways*

This thesis has shown that people need help making sense of their mental health needs and understanding the different care options available to them, before they engage with support. In Chapter 3 it was noted that digital systems could serve as stepping stones between information gathering and formal support [39,324,367]. Thus, rather than having to chose a side of the 'help or not help' fence, as described in Chapter 4, expanding the scope of DMHIs to include care navigation could bridge the gap between these two sides, supporting clients as they move through their mental health journeys [282,428]. These systems could include information on support options, self-assessments and link clients with further support, however, as was mentioned in the first guideline, human contact and referral is an important element to consider. If we understand mental health from a non-medical viewpoint, General Practitioners (GPs) should perhaps not be the first port of call for people experiencing distress; mental health care navigators are an important role that is currently missing from mainstream care systems [428].

6. *Reimagine the Success Metrics of DMHIs*

The mental health journeys study in Chapter 5 highlighted that the problem of low engagement with DMHIs can be seen as a problem with how DMHIs are appraised, rather than a client-centred concern. Short, simple interactions such as a visit to a self-referral website or completing a self-assessment could be an important stage in a client's journey, however these metrics are often not captured in systems which value digital support only in terms of optimal, sustained engagement and subsequent clinical outcomes. While standardised outcome measures can be important tools for service evaluation purposes, expanding the definition of success regarding DMHIs could mean paying closer attention to client satisfaction ratings and exploring more personally meaningful ways to assess benefits, such as goal-based outcome measures [18].

6.3 Critical Reflections on Mental Health Technologies

During the course of this PhD project, a number of critical and ethical concerns emerged around the role of digital support in the mental health space. Along with the many benefits of digital interventions for users and services alike (e.g., population level accessibility and immediacy), there are also serious risks to consider, including missed care opportunities, social isolation, data protection and literacy issues, and data misuse engendering discrimination [130,414]. In

addition, there is a growing body of research on the overall negative impacts of digital technologies on physical and mental health (e.g., through worsening sedentary lifestyles [441], aggravating bullying [452], disrupting traditional social networks and increasing loneliness [44,163,186,204], fostering digital addiction [147,262,380], and impacting cognition, mood, social skills, empathy and self-motivation [32,60]).

Beyond these explicit influences, the mushrooming digital technology industry is also having indirect effects on mental health though its grave environmental impact [29,54,193], and disruption of democratic stability (e.g., by facilitating radicalisation [305], undermining trust [423] and propagating misinformation and conspiracy theories [229]). While many of these adverse impacts are unforeseen consequences of sociotechnical development, some products are harmful by design (e.g., persuasive design which adopts psychological techniques to promote compulsive behaviour [66,135] and engagement focused social media algorithms that push damaging content to people in distress [292]).

One of the primary ways the technology industry has sought to address the mental health risks of its products is to focus on excessive technology use through promoting 'digital wellbeing' and the development of 'digital self-control tools' [276]. This practice centres accountability on the users and their own (lack of) self-control, rather than on the designers developing these technologies, the companies producing and profiting from them, or the governments allowing the industry to distend without regulation [104]. This process is common in our neoliberal capitalist system, where entire industries have been known to shift responsibility for their unethical practices onto the consumer (e.g., in the case of recycling as a polluter-sponsored initiative brought about by the American beverage industry [126]).

While movements towards positive and responsible technology have called for designers to be more cognisant of the impact of their designs [62], recent research shows that potential unintended consequences are often deliberately overlooked by computer scientists [103], and software engineers do not feel they have the power to address their ethical concerns [435]. In the world of academia, HCI genre conventions promote the design of new technologies, even when they are not necessarily the best path forward for users [111]. The development of policy and regulations to curb the harmful effects of technology currently fails to match the pace dictated by the technology industry [366]; this rapid advancement means that future developments (e.g., AI) are projected to further harm human health and even threaten our very existence [128]. Despite claims from some researchers that future AI technologies will *"avert the mental health crisis"* [333], a paradox emerges here when we consider that digital mental health support is being delivered via a medium that can cause or worsen distress.

One of the most concerning aspects of the use of technology in the mental health space relates to the reification and propagation of the psychiatric or biomedical metanarrative of distress

[53,243,244]. As explained in Chapters 2, 4 and 5 of this thesis, the biomedical model individualises distress and decontextualises it from its social determinants, treating many normal human emotions and reactions as pathological [53,192]. In the ceaseless quest for ridding ourselves of ill-health, the medicalised discipline of psychiatry expanded our understanding of illness to include normal, functional emotions such as sadness, anger and anxiety [241]. This spread of the medical field's zone of focus to include normal populations has been termed *Surveillance Medicine* [12], and its remapping of illness spaces has had a significant impact on the management and regulation of emotional life under the ever expanding ideal of health [178].

Psychiatry defines certain behaviours as disorders, but these definitions rest on cultural judgements about the meaning of normality and what is deemed appropriate behaviour [228]; the western ideal of the mentally healthy, happy, self-actualised individual acts as a reference point for these definitions – if this ideal is normal, then any behaviours not in line with this ideal are abnormal and unhealthy [2,178]. Overdiagnosis has been suggested as one of the factors associated with the rise in reported mental health difficulties [137,350], and this pattern has been linked to the evolution of neoliberal capitalism, popularised by Reagan and Thatcher in the 1980s, which aimed to depoliticise suffering by shifting focus from the social and structural determinants of distress to the disordered individual [96,353]. Thus, diagnoses have been used as tools to medicalise and trivialise societal problems such as poverty, inequality, racism, violence, oppression, and discrimination [8,213,292,313]. In this way, collective experiences of suffering have been dispersed into discrete, individual dysfunctions, dissolving the solidarity which drives social activism and change [96,348].

Digital interventions have been heralded for their population-level reach, however this ability to scale means that DMHIs are disseminating this singular viewpoint of distress to ever larger audiences, allowing governments to claim they are addressing the mental health crisis, while they simultaneously avoid structural reforms [313]. In a review of the 2018 Lancet Commission on Global Mental Health and Sustainable Development, the authors noted how recent UK government policies (e.g., welfare reform) violated the rights of certain people, despite the report acknowledging the social determinants of mental health [80]. They also highlighted the continued dominance of the medicalised and market-based approach to mental health; the biomedical model has become so pervasive that it is often accepted as fact, even when it is at odds with the increasingly apparent social causes of distress [80].

It is not just governments endorsing this viewpoint, the therapeutic, self-care and wellness industries have built their empire around the individualisation of mental health [178,348,400]. The pervasive social norm that individuals need to *work on themselves* is thus met time and again with a simple, cheap, digital solution; individuals are confronted from all angles (e.g.,

from governments, employers, insurance companies, institutions and the industry itself) by these digital 'disciplinary tools' [244]. And when people don't engage with these tools, the underlying narrative becomes that these authoritative, intervening actors know what is in people's best interests better than they do themselves [59,245].

Despite these concerns, it is important to remember that DMHIs can be hugely helpful for many people [123,184,444]. Medical treatments are effective in alleviating distress for certain mental health difficulties, and sometimes medicalisation is the only acceptable way to help people because the political system is often too threatened by social change for it to be addressed on any practical level (e.g., transforming alcoholism and smoking into medical problems led to effective prevention and intervention programs which have had a huge impact on morbidity and mortality) [213]. In the words of Ann Cvetkovich, *"saying that capitalism (or colonialism or racism) is the problem does not help me get up in the morning"* [87]. In her book, *Depression: A Public Feeling*, Cvetkovich notes that the biomedical model translates to popular imagination because it implies that depression is manageable and therefore a simple solution can be found, which contrasts with the overwhelming, diffuse complexities of social or cultural analysis [87]. Cvetkovich calls for a re-politicisation of distress, both on an individual and collective level, through creative forms of activism that are based in domestic, daily living (e.g. art, music, craft, manual labour or habit, spirituality, writing, memoir) [87]. Thus the individual can take back control and autonomy over their own life and their own healing.

Within the field of HCI, researchers have called for awareness of the power differentials present in treatment-focused mental health care, and also advocate for this shift in attention from 'treating' individuals to what might bring healing to individuals and their wider communities [104,313]. However, the inherently interventionist, technosaviourist nature of the field means that harms can be produced and sustained, even when HCI researchers see themselves as doing socially transformative work [437]. There have been various movements within HCI to promote critical engagement with the norms of the field itself, including works on undesign and non-design, which advocate for consideration that the implication of much of our research, particularly in relation to complex problems, could be *not* to design technology [29,318]. Similarly, unmaking proposes the intentional dissolution of technology (either physically or epistemologically) to actively evaluate socio-ecological impacts and social justice goals [364,365]. Movements towards design activism and social justice-oriented interaction design focus on political responsibility, positionality and personal ethics [108,138], whereas anarchist HCI proposes, *"radically remaking our field to prioritise autonomy, self-determination and the justification or reconfiguration of power"* [205]. Other critical approaches include feminist HCI [20], postcolonial computing [179], humanistic HCI [19], post-capitalist HCI [129], post-growth HCI [383] and punk HCI [235]. The field is evidently teeming with ideas for alternative modes of operation, but in the mental health space innovation requires collaboration and buy-in from

the field of psychology, as the future of digital mental health support should be a fundamentally transdisciplinary practice.

6.4 Future Work

6.4.1 Transdisciplinary Research on Mental Health

Combining knowledge from the medical and social sciences and bridging the epistemological differences between these fields is no easy task [40,53,180,353,359]. Yet we need to harness both viewpoints in order to address the global mental health crisis at the crucial root level of societal and structural change, while simultaneously providing tangible and timely solutions for those who are suffering [83,87,213,309,443]. HCI has much to offer in this space, outside of the design and development of new technologies. Being itself an innately interdisciplinary field, HCI researchers understand the value of critical reflection and readily question established norms and values, practices which are essential to the dissolution of the entrenched paradigms that surround mental health [313].

HCI, as a largely design based discipline, also offers a range of critical, creative design methods and strategies (e.g., Value Sensitive Design [143], participatory design [52,283,368], co-design [369], design fiction [42,116], speculative design [146,188], and fabulation [396,422]), that can facilitate intersectoral collaboration and innovation. In order to take a holistic perspective on mental health, future transdisciplinary research could shift focus away from improving individualised interventions, and towards broader, society and humanity-level perspectives [80,296]. Taking a political, decolonial outlook on mental health, which forefronts the many contextual, social factors that can cause and perpetuate emotional distress, could open up new possibilities for global mental health movements and positive social change [8,213,292,313]. Pluralistic collaboration, advocacy and activism across multiple sectors and fields is needed to develop mental healthcare strategy and wider social policies that forefront human welfare and sustainability over profit, productivity and social control [80,96,313].

6.4.2 Qualitatively Informed Theory Development

As noted in the literature review in Chapter 2, there is currently no theoretical framework specific to understanding motivation and engagement in relation to digitally delivered mental health support. There is clearly a gap here for theory and model development, however there was a reason why no new theory was proposed during the course of this thesis. This research, across all of the included chapters, highlights the serious lack of deep understanding around mental health and the psychological processes that energise and direct behaviour in relation to distress and wellbeing. I was hesitant to develop a theory or model in this area because it would have involved prematurely defining, categorising and simplifying the complexities uncovered

within the findings of this research. The discussion section of Chapter 5 outlines the aspects of existing theories which have been most relevant and useful in understanding this subject; perhaps that chapter could be a jumping off point for future research and theory development.

A key area for future consideration is how we perceive and use models and theories, and how they can come to shape our reality [321,442]. While many researchers and practitioners are aware of the epistemic fallacy and thus recognise models simply as tools that do not accurately reflect reality, the way models are often used in research and practice negates this seemingly evident perception. Models are regularly employed without critical reflection of the limits or boundaries of their representation, and outdated and inappropriate models are used because they are familiar or are seen as having more robust evidence behind them [98]. The general trend is often towards consolidation and streamlining of models in order to increase parsimony and reduce redundancy [236,299]. Jane Odgen notes that theory variability is essential to the creative thinking, flexibility and paradigm-shifting ability of the scientific method, hence we should be striving for more diverse theories in relation to health behaviour change, and celebrate, in particular, those that challenge dominant views [299].

In order to develop these bold, multifarious theories, there is a need for much more in-depth knowledge gathering around *why* humans act the way they do [75]. From a transdisciplinary perspective, HCI and the social sciences again have much to offer; HCI centres its research largely on the experiences of human beings [251], valuing insight development through situated action and contextual, qualitative approaches such as ethnographic investigation [117,354,406] and action research [139,164]. These methods are essential if we are to move towards a more contextualised and systemic understanding of human psychological processes, exploring the dynamic, reciprocal relationships between humans and our environment [21,167,249,424].

7 Conclusion

This thesis examined the role of readiness and motivation in relation to uptake and engagement with digital mental health support. Digital mental health interventions (DMHIs) have been developed as a way to provide accessible, immediately available support for the vast number of people around the world experiencing distress and in need of care. While DMHIs are being successfully implemented in many real-world settings, low client uptake and engagement rates are seen as an issue undermining the potential reach and utility of these interventions. A lack of readiness or motivation for DMHIs has been proposed as a core client factor leading to low uptake and engagement, however, there is a dearth of research directly with clients who have difficulties engaging with DMHIs, as they are inherently hard to reach. This thesis asked how clients experience DMHIs and where efforts should be directed in addressing the prevalent, real-world challenge of client non-engagement with DMHIs. Through interdisciplinary collaboration with human-computer interaction (HCI) and digital mental health researchers, clients, and service stakeholders, this thesis attempted to bridge the gap between theory and practice.

The first contribution of this thesis was to advance our knowledge of how readiness and motivation are framed in terms of existing theory and research practice. The theoretical landscape of readiness and motivation for digital mental health support includes a wide range of frameworks and models, from the domains of general motivation and behaviour change, health-related behaviour change, technology acceptance and help-seeking for mental health. Critique of the use of these models in the digital mental health space centres around the linearity of temporal models and the lack of accounting for change processes in static models, the relevance and applicability of these theories for use in a digital mental health context, and the centrality of intentions within these theories (i.e., they do not account for automatic motivation). Thus, the theories currently used in this space do not adequately describe or explain the complex, contextual processes involved in motivation for and engagement with digital mental health support.

Despite these significant gaps in our knowledge and theory, digital interventions and strategies aimed at increasing client readiness and motivation have been developed and deployed as a means of tackling *the engagement problem*. The scoping review in Chapter 3 thus aimed to understand the concrete actions and interventions currently being developed and deployed in this area. Findings from this review indicated that while digital readiness interventions do show potential as a means of increasing uptake and engagement with therapy, there are risks involved (e.g., a potential decline in engagement or outcomes and increased barriers to care). This review therefore highlighted the need for an expansion of our understanding of real-world client uptake and engagement with DMHIs, to better direct design efforts in this space.

Chapter 4 consequently described an observational, mixed-methods inquiry into the barriers that prevent uptake and early engagement with DMHIs. As the literature review in Chapter 2 highlighted a considerable gap in our understanding of the real-world *context* of client non-engagement, which has predominantly been explored via narrow, quantitative, experimental studies, the aim of this study was to understand the lived experiences of real, non-engaging clients from a broad, context aware perspective. Hence, this study was conducted across four different healthcare ecosystems in the UK and US. Findings revealed that client needs and motivation for mental health support are intricately connected, fluctuating phenomena, impacted by internalised self-stigma about mental health and the client's unique circumstances. This study suggested that when addressing the pressing issue of non-engagement with DMHIs, an alternative to focusing design efforts on discrete readiness interventions, could be to reconsider the design, context, framing, delivery and goals of these interventions themselves.

Building on these findings, this thesis finally described a complementary, temporal analysis of the interview data from the previous study. This analysis explored the mental health journeys of individual participants, examining the role of readiness and motivation in more detail and incorporating service-level perspectives from four expert stakeholders. Findings indicated that clients decide or are driven to engage with DMHIs in unique, relational instances, which implies that motivation is a more useful construct than readiness when thinking about engagement with DMHIs. Instead of viewing motivation as one homogenous force to be instrumentalised in the pursuit of higher engagement with DMHIs, however, design efforts could focus on adapting DMHI design, delivery and system structures to better suit the relational, contextual nature of client need and motivation. Furthermore, this thesis suggested that low engagement with DMHIs is not necessarily a problem when viewed from the long-term, system-level perspective of ongoing client mental health journeys. The evaluation and positioning of DMHIs within wider care systems was therefore proposed as an area for further consideration, along with transdisciplinary research on mental health, and the expanded use of qualitative methods to develop a more contextualised and systemic understanding of human psychological processes.

DMHIs function within multiple intricate systems, which effect how they are perceived, delivered and used. By exploring and mapping these complexities, this thesis broadens our understanding of the much debated issue of low client uptake and engagement with DMHIs, and the role that client readiness and motivation play in this space. With this contribution to knowledge, this thesis helps researchers and designers of DMHIs and wider mental healthcare systems to make more informed decisions when navigating this complex and sensitive topic.

Appendices

APPENDIX A: Position Statements for Collaborators

Chapter 3: Scoping Review

Collaborators: Robert Bowman and Gavin Doherty.

Robert Bowman is a PhD student in the School of Computer Science and Statistics at Trinity College Dublin, under the supervision of Prof Gavin Doherty. His PhD is supported by Microsoft Research Cambridge and explores the design of conversational user interfaces for more effective mental health status reporting. He has a background in Computer Science and Human-centred Interactive Technologies and he did his PhD internship at SilverCloud.

Gavin Doherty is a Professor in the School of Computer Science and Statistics at Trinity College Dublin, where he leads the Health Technology Design Group. He has a background in Computer Science and HCI, and led the development of the SilverCloud digital health platform. The focus of his work in digital health has been on supporting and extending the reach of mental health professionals, with a strong interest in designing innovative and engaging systems which can be implemented in routine clinical environments.

Chapter 4: Mixed-methods Study

Collaborators: Camille Nadal, Sarah Robinson, Angel Enrique, Marcus Hanratty and Gavin Doherty.

Camille Nadal is a Postdoctoral Research Fellow at Trinity College Dublin, under the supervision of Prof Gavin Doherty, where her research focuses on human-centred technology for health and mental health care. Her background is in HCI and Computer Science, with a focus on research that benefits vulnerable or underprivileged populations and improves research practices within the HCI field. She is currently leading research on the SilverCloud product in

partnership with Amwell and has previously collaborated with the company during her doctoral research.

Sarah Robinson works as a Senior Postdoctoral Researcher with Lero (Science Foundation Ireland's Research Centre for Software), in University College Cork. She has a background in sociocultural and community psychology, and HCI. She is interested in cultural understandings of emotional distress, and how these understandings inform practice and experience.

Marcus Hanratty is a Lecturer in Product, Interaction, and Service Design in the National College of Art and Design, Dublin. His background is in industrial design and interaction design, with a strong focus on Human-Centred Design approaches. His research focuses on the role design and technology play in shaping people's behaviours, with a particular interest in design for behaviour change and design for health and wellbeing.

Angel Enrique works as a Senior Manager Digital Health Scientist at Amwell. He holds a Psychology degree and PhD in Clinical Psychology from Jaume I University (Spain). His background is in the development and research of clinical and positive psychological interventions, face-to-face and internet delivered, among different psychological conditions, such as anxiety and depression disorders. He has been working in the digital health space for over a decade, through a combination of academic and industry experience across Europe and the US.

Chapter 5: Qualitative Exploration of Client Mental Health Journeys

Collaborators: Camille Nadal, Julie Hayes, Chuck Rashleigh, Sam Lane, Douglas Hiscock and Gavin Doherty.

Julie Hayes is a dedicated leader with over 15 years of experience in the not-for-profit sector, currently serving as the Head of Specialist Service and deputy Suicide and Self-Harm lead (SaSH) at the charity Ben. She has been instrumental in leading and implementing a variety of innovative services at Ben, including their mental health pathway, digital CBT (SilverCloud), health & wellbeing platforms, and life coaching and training. She has a background in Strategic Approaches to Wellbeing, Safeguarding, Management & Leadership, and Information, Advice, and Guidance.

Chuck Rashleigh is a Chartered Counselling Psychologist and the Outreach & Prevention Coordinator at the Trinity College Dublin Student Counselling Service (SCS), where he has worked since 2003. His interest in DMHIs began with the SCS's early adoption of the SilverCloud digital health platform during its development in 2012. Since then, he has managed a team of clinicians that have supported nearly 7,000 clients on SilverCloud.

Sam Lane is a senior SilverCloud Product Manager and a trained clinician experienced in the delivery of low-intensity psychological treatments for depression and anxiety, including digital interventions. His career spans over 15 years, initially working in a range of mental health roles within the NHS and Public Health services in England. He joined SilverCloud in 2018 in a customer facing role with responsibility for implementation of SilverCloud in new services, clinician training and ongoing support. He moved into product management in 2021.

Douglas Hiscock is a Chartered Occupational Psychologist and Behavioural Lead at Amwell, with a wealth of experience developing Healthcare Services spanning the private, charity and public sectors. This ranges from sitting as an advisor on trustee boards, to managing national and international projects, to running local voluntary services and managing large NHS contracts. His work in the public sector includes working for NHS England within the Regional Performance Team to deliver the NHS national targets and working alongside the Central NHSE teams to improve the regional delivery of NHS Talking Therapy Services. He also worked as the Head of Psychological Therapies for Rethink Mental Illness and the Head of Performance for East London NHS Foundation Trust, and was instrumental in the implementation of SilverCloud across these services.

APPENDIX B: Screenshots of SilverCloud Platform & Self-referral Website

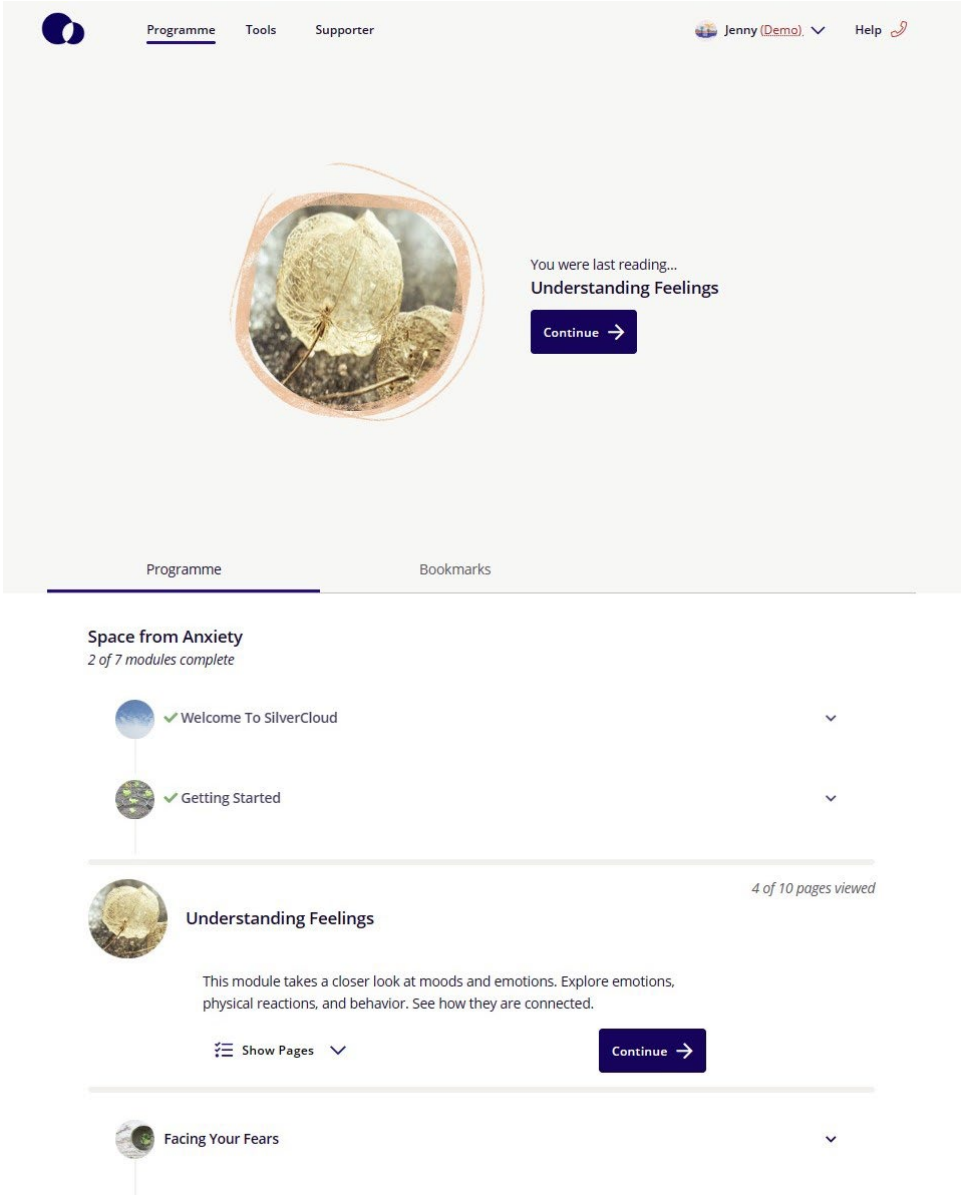


Figure B.1. Screenshot of the SilverCloud platform program page (desktop version)

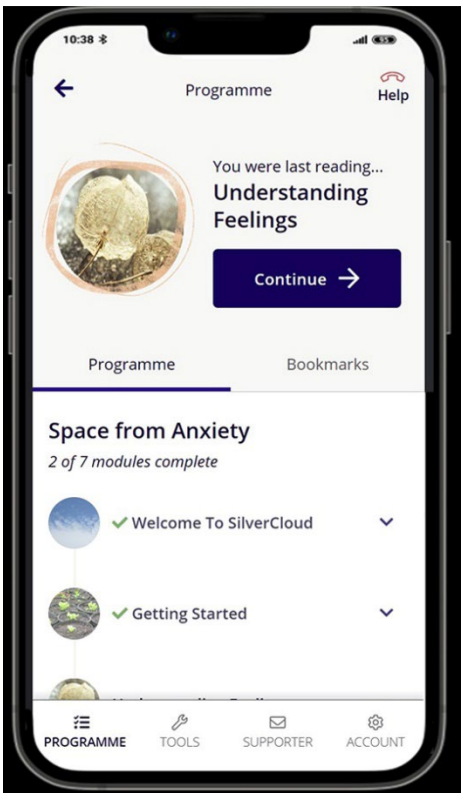


Figure B.2. Screenshot of the SilverCloud platform program page (mobile version)

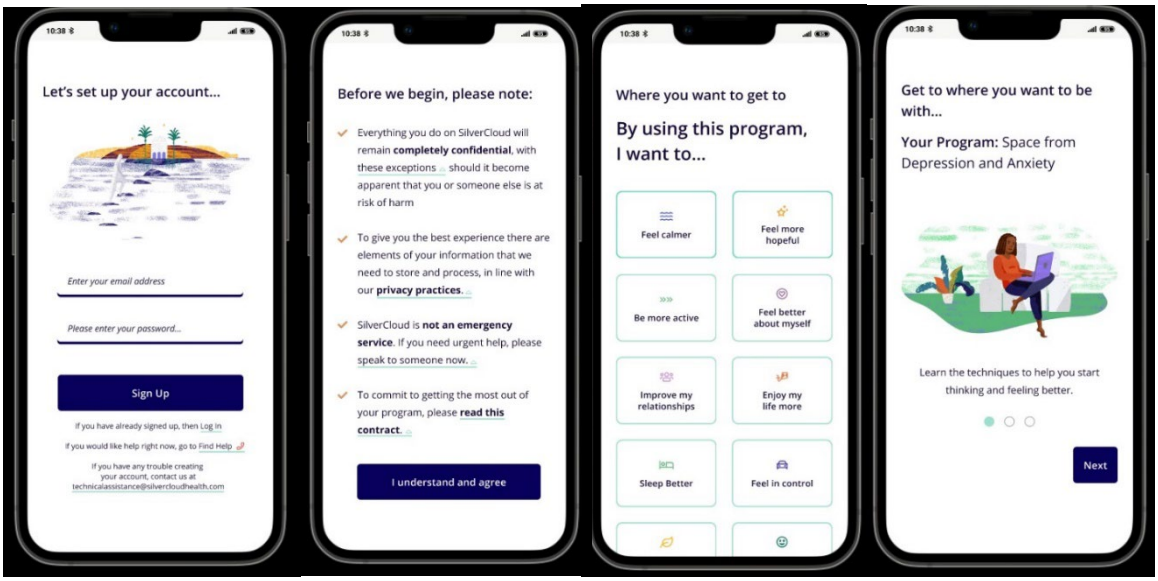


Figure B.3. Screenshots of the SilverCloud onboarding pages (mobile version)

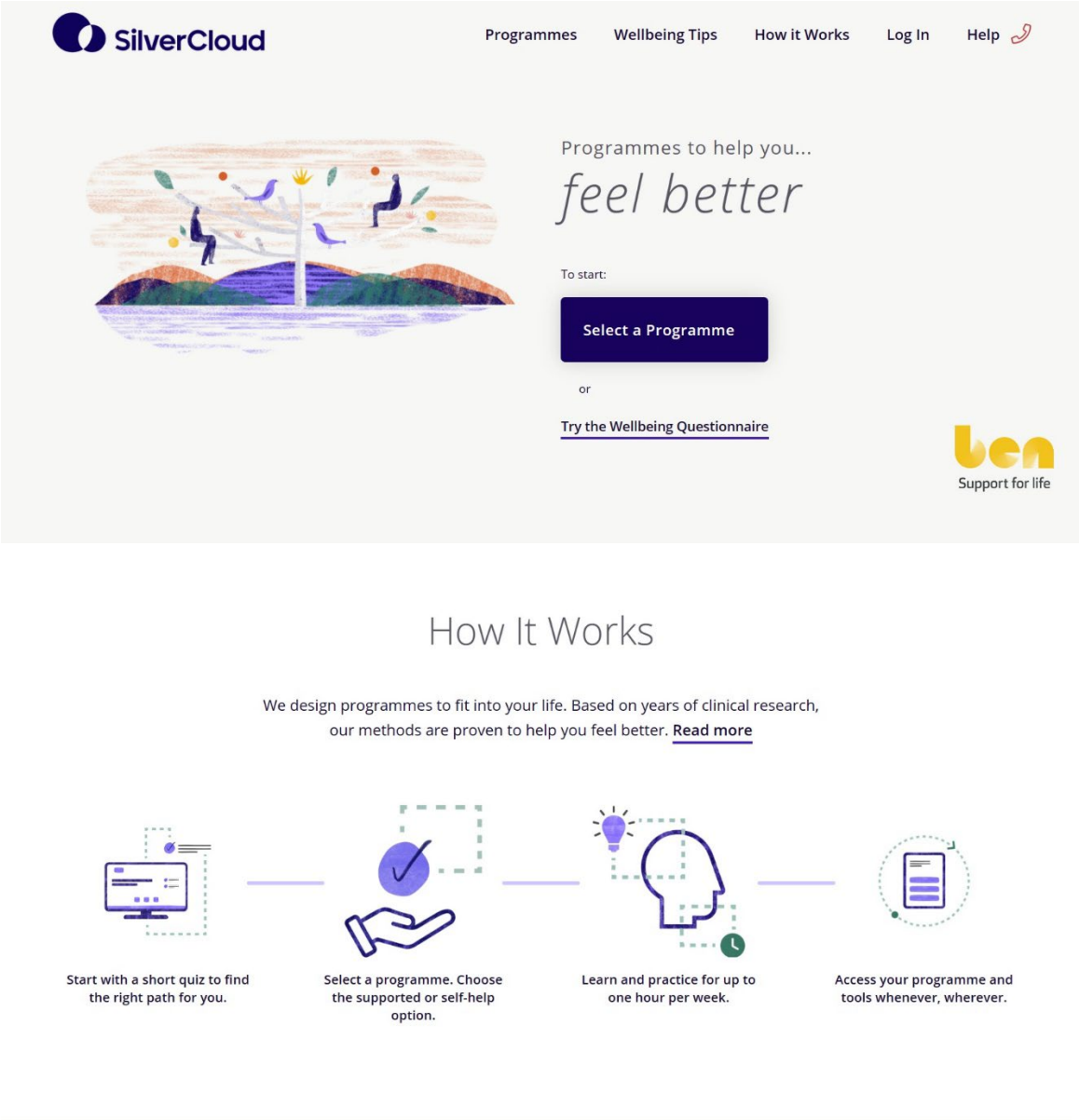


Figure B.4. Screenshot of the SilverCloud self-referral website (desktop version)

APPENDIX C: Questionnaire (mixed-methods study)

Firstly, we'd like to know a little more about you.

1. Age group:

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

2. Gender:

- Female
- Male
- Non-binary
- Prefer not to say
- Prefer to self-disclose: *free text box*

3. Ethnicity:

- Asian
- Latino
- Black
- White
- Arab
- Indian
- Native American/Alaskan Native
- Mixed
- Other: *free text box*

4. Highest level of education:

- Elementary/Junior/Primary
- High School/Secondary
- College/University
- Postgraduate masters/doctorate

5. Employment: please select all the options that apply to you

- Employed (50 + hrs per week)
- Employed (30 - 50 hrs per week)
- Employed (less than 30 hrs per week)
- Furloughed/temporarily out of work
- On sick leave
- On maternity/paternity leave
- Unemployed
- Retired
- Student (full-time)
- Student (part-time)
- Caring for someone sick or elderly
- Parenting young children (under age 12)

Please tell us about your experience with SilverCloud so far.

6. Why did you decide to check out SilverCloud?

Please select as many options as you like, or write your own

- To feel better
- To cope with a stressful life event
- To improve my relationships
- To improve my work, study or home life
- Because my mental health is important to me
- I was just curious
- To help someone else with their mental health
- It was recommended to me
- Other (describe below): *free text box*

Notification group

7. Why are you unsure about signing up for SilverCloud?

Please select as many options as you like, or write your own

- I'm not sure if I will be able to fit it into my life
- My mental health isn't a priority for me right now
- My mental health isn't important to me
- I'm not sure if I need it
- I need more support than this

- I wouldn't want anyone to find out I was using it
- I should be able to deal with my problems by myself
- I'm not sure how useful it will be
- I'm worried my data won't be secure
- I'm not sure how to use it
- I can't decide which program to choose
- Other (describe below): *free text box*

Email group

7. Do you plan on logging back in to SilverCloud?

- Yes
- No
- Undecided

<u>If Yes:</u>

7a. What has been preventing you so far?

Please select as many options as you like, or write your own

- I'm finding it hard to fit it into my life
- My mental health isn't a priority for me right now
- I forgot about it
- I've been feeling better
- I wouldn't want anyone to find out I was using it
- I should be able to deal with my problems by myself
- I haven't found it useful so far
- I'm worried my data won't be secure
- I'm not sure how to use it
- I can't decide which program to choose
- Other (describe below): *free text box*

<u>If No:</u>

7b. Why not?

<u>If Undecided:</u>

7c. What is affecting your decision?

Please select as many options as you like, or write your own

- I'm not sure if I can fit it into my life
- My mental health isn't a priority for me right now

- My mental health isn't important to me
- I don’t need it
- I got what I needed from it already
- I need more support than this
- I wouldn’t want anyone to find out I was using it
- I should be able to deal with my problems by myself
- I haven’t found it useful so far
- I’m worried my data won’t be secure
- I’m not sure how to use it
- I can’t decide which program to choose
- Other (describe below): *free text box*

8. Do you have any further comments or thoughts on this topic?

- *Free text box*

We’re interested in hearing more about your experience.

Would you be available for a 20-30 minute online interview on this topic? We will reimburse you £/$50 for your time. Please enter your **email address** if you would like to be contacted with further details on the interview: _____

Your participation in this research will help us improve SilverCloud for thousands of other people, thank you.

Submit

Debriefing Page

Thank you for taking part in our research.

If you are experiencing any distress caused by this survey, please visit the ‘Help’ page of the SilverCloud website.

APPENDIX D: Reflexive Journal Excerpts

Interview period (21 April 2022)

Some of these interviews feel like therapy sessions, I'm not sure if my participants consciously realised it or not but it felt like some people took part because they just wanted someone to talk to. Or they wanted more information – I think one or two people actually signed up at the end of the interview because I explained how the DMHI works! There is so much going on here in terms of barriers, so many layers to unpick, more than I even imagined. There definitely seems to be a lot about human connection coming through (or is that just what is resonating with me?) and about people not really understanding what digital treatments are or having a mental model for what they might be like.

Familiarisation (28 July 2022)

Coming to the end of the familiarisation period has felt overwhelming, my brain is muddy with bits of information. How can I make sense of so many different opinions and experiences? What does it all mean? Do I have enough time to do the data justice? I feel overcome by the state of the world and all the suffering out there - so many of these people were just lonely. How did we get here, as a species that relies so much on social connection? I think covid catalysed this disconnection, we all suddenly don't see our colleagues, miss family gatherings, would rather stay home than go out. Is this permanent damage, or can we go back? I can see that this is something I'm particularly interested in and concerned about, I need to be mindful of this and try not to get too bogged down in the emotional side of this research. I know I have a tendency to get side-tracked by the bigger picture, even when the bigger picture isn't the point. I do think there is value in understanding the root of the problem though, even if you can't do anything about it. Its what researchers are supposed to do, right?

TA discussion group (25 August 2022)

We just had out first TA discussion group and its so interesting to hear different opinions on the process and how it can be construed. We talked about philosophical perspectives and its funny how much easier it is to know what your position is on something when you discuss it with others. I definitely think critical realism makes the most sense for my data, it fits so well with the layered realities of mental health and what my participants said about outward *"truths"* not matching up with their inner experiences.

Coding – first round (5 September 2022)

I'm finding it hard to be reflexive and understand how my particular perspective is shaping the coding process. I almost have to force myself out of my head at intervals, to look at what I'm doing and thinking from the outside. I am sceptical of digital mental health support, even

though I know that it can work and has worked for thousands of people. I feel that there is something fundamental missing from it. It's a feeling I also have about society in general and the rise of technology use, it sort of all misses the point, of what's important. I wonder would someone else, someone who is less of a luddite, have coded this very differently? To me it seems like a core part of the interviews, but then again there is so much in them, there are so many barriers. Coding around ideas of the uniqueness of mental distress and the causes of problems has been interesting, it makes me think about how we understand and interpret mental health, often as something that the individual is responsible for and can control, rather than as a reaction to external stressors or circumstances.

Coding – second round (12 October 2022)

I recognise that I have this certain narrative in my head that individualism is bad for our mental health, isolation is the root of much of our distress and technology is making this worse; disconnection in a hyper-connected world. I definitely felt this before I began this research, but sitting in the interviews listening to those confused, lonely people brought a certain sense of emotional resonance to this viewpoint. But now I'm worried that this emotional resonance could overpower my analysis. I mean, I think it is important and it was definitely there in the data, I didn't make it up. And I suppose that is the benefit of this method, I don't have to be objective because, as a human, its impossible to be objective anyway. This element that I picked up in the data is important, it resonates emotionally, and what is wrong with that? I think I'm slowly relinquishing the fear of subjectivity instilled in me from studying psychology and finally starting to grasp the beauty of reflexive TA. It feels more like my fine art training, with all its fluidity and critical awareness. It's exciting to combine both sides now in this research.

Theme development (29 November 2022)

Working more on theming I am coming across two things I'm wary of – 1) That some people close to me have been struggling with getting help and I'm wondering how dealing with this in my personal life is affecting the work, and 2) I'm aware of the impact of my own understanding of mental health on this research and how hard it is to comprehend these things from outside of the emotional/relational paradigm (and wider worldview) that I exist within. This is frustrating because I can see that the paradigm is part of the problem, but its really hard to see from outside of it. It is fundamental to the very core of how I see myself and how I relate to other people. Thinking about all of that changing or being different somehow seems impossible. I suppose even the fact that I'm aware of it as a paradigm and not an objective fact is useful.

APPENDIX E: Images of Reflexive TA Process

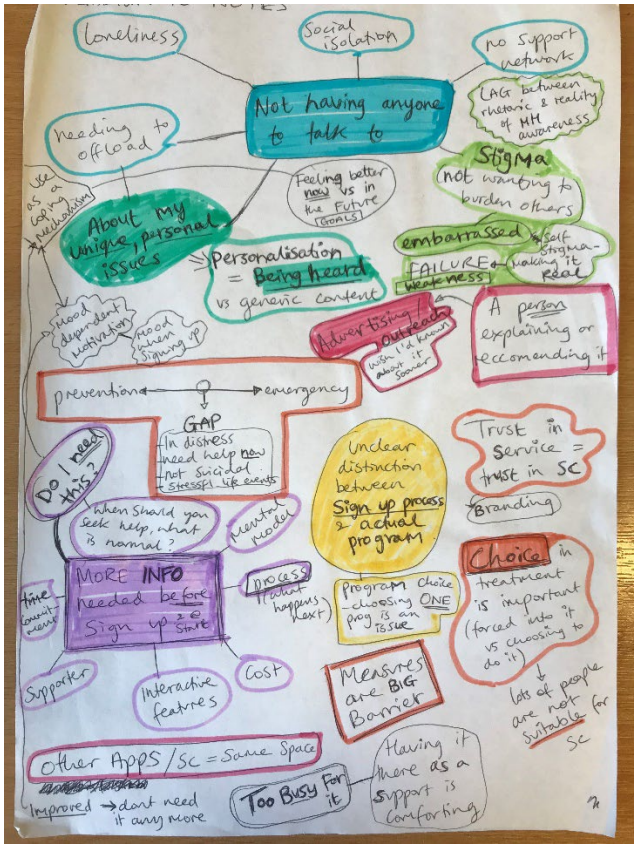


Figure E.1. Familiarisation mind map

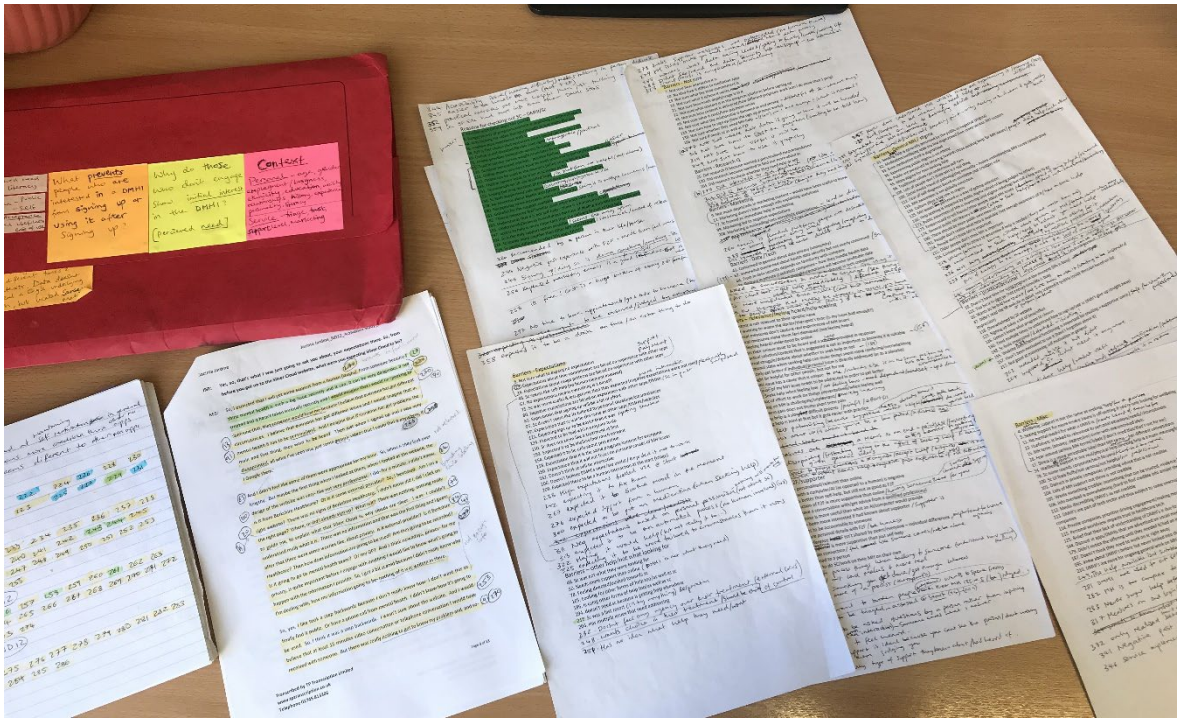


Figure E.2. First round coding process

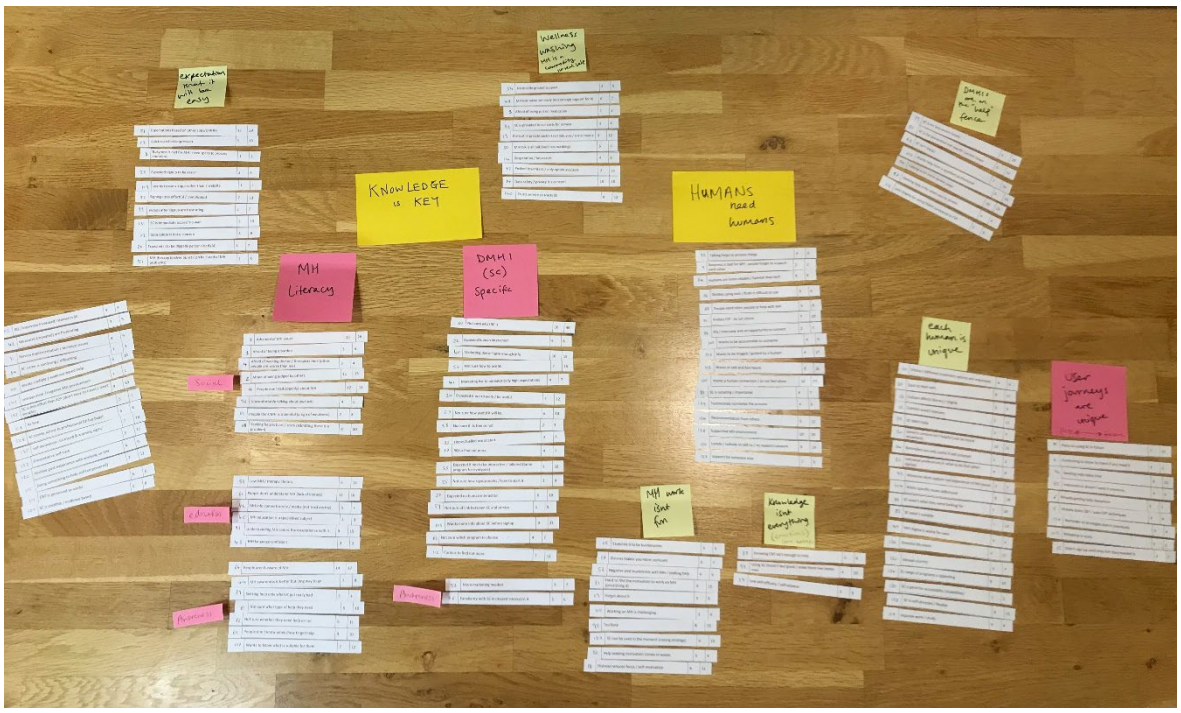


Figure E.3. Candidate theme creation

APPENDIX F: Employment Characteristics

Table F.1. Full table of employment characteristics for questionnaire participants. This question was multiple choice with a 'select all that apply' response (N=205).

One option chosen only	n (%)	Multiple options chosen	n (%)
Employed (30-50 hrs per week)	83 (40.5)	Employed (<30 hrs per week) & student (full time)	21 (10.2)
Student (full time)	40 (19.5)	Employed (30-50 hrs per week) & student (full time)	3 (1.5)
Employed (<30 hrs per week)	14 (6.8)	Employed (30-50 hrs per week) & student (part time)	3 (1.5)
Employed (50+ hrs per week)	12 (5.9)	Employed (<30 hrs per week) & student (part time)	2 (1.0)
Unemployed	8 (3.9)	Employed (30-50 hrs per week) & student (full time) & parenting	1(0.5)
Student (part time)	2 (1.0)	Employed (30-50 hrs per week) & parenting & caring	1(0.5)
Retired	3 (1.5)	Employed (30-50 hrs per week) & caring	1(0.5)
On sick leave	3 (1.5)	Employed (<30 hrs per week) & caring	1(0.5)
On maternity/paternity leave	1(0.5)	Student (full time) & parenting	1(0.5)
Parenting a young child (under age 12)	1(0.5)	Student (part time) & on sick leave	1(0.5)
Caring for sick or elderly	1(0.5)	Unemployed & parenting	1(0.5)
		On maternity/paternity leave & parenting	1(0.5)

APPENDIX G: Reflexive TA Theme & Code Tables

Table G.1. Theme and Code Tables for Theme 1: Humans need humans

Codes	**No. of Participants**	**No. of References**
Afraid of being a burden	3	4
DMHI is isolating/impersonal	4	7
Expected human interaction	5	8
Humans are more reliable/familiar than tech	6	6
Lonely (no support network)	8	20
People forget to support each other	2	2
People need other people to help with mental health	6	8
Recommendation from others	5	12
Research interview was an opportunity to connect	2	7
Talking helps to process things	4	5
Testimonials normalise the process	4	6
Wants a human connection (to not feel alone)	12	27
Wants support for someone else	1	3
Wants to be accountable to someone	4	5
Wants to talk and feel heard	9	26

Table G.2. Theme and Code Tables for Theme 2: Needing help means I'm weak or I've failed

Codes	**No. of Participants**	**No. of References**
Admitting you have a problem is scary	7	19
Afraid of being judged by others	11	15
Afraid of wasting doctor/therapist's time (other people are worse than me)	3	4
Ashamed of mental health issues	13	26
Culture affects knowledge and stigma	3	5
Stigma to cope/not express emotions	5	8
Mental health awareness is better but long way to go	7	8
Mental health stigma is worse for men	3	4
Mental health talk is all talk (wellbeing washing)	5	6
Not sure whether they need help or not	9	11
People aren't aware of mental health	14	17
People don't know when to get help	10	13
People don't talk (openly) about mental health	12	14
People think mental health is shameful	7	8
Seeking help takes time	3	4
Uncomfortable talking about own mental health	5	6

Table G.3. Theme and Code Tables for Theme 3.1: Getting the right help is confusing: What is "help"?

Codes	**No. of Participants**	**No. of References**
Afraid of being put on medication	1	2
DMHI isn't help (don't need to admit you need help to do it)	7	16
DMHI is for general prevention not specific current issues	5	12
DMHI is for less severe issues	6	10

Less stigma for using DMHI compared to fact-to-face	5	9
Little knowledge about/experience of getting support	5	10
Mental health education is a specialised subject	2	3
Mental health info comes from tv/media (not trustworthy)	3	7
Mental health therapy is silver bullet (can be cured)	3	5
Negative past experience with mental health/seeking help	5	11
Not sure what type of help they need	8	10
People don't know how to get help	5	5
People don't understand mental health	13	16
Seeking help is for when you're severe	4	6
Talking is for more severe cases	10	13
Understanding mental health comes from experience with it	9	15
Wants credible/evidence-based help	6	10
Wants help from a qualified professional	5	13
Wants to be triaged/guided by a human	6	17
Wants to know what is suitable for them	7	12

Table G.4. Theme and Code Tables for Theme 3.2: Getting the right help is confusing: What the hell are DMHIs?

Codes	**No. of Participants**	**No. of References**
Curious to find out more	7	12
Decision/opinion based on quick first impression	5	13
Did questionnaire to find out more	4	7
Distrust in private sector tech industry/social media	3	12
DMHI is provided to cut costs for service	3	4
Expectations based on other apps/DMHIs	13	29
Expected it not to be interactive/tailored (same program for everyone)	5	10
Expected it not to work/be useful	7	12
Expected no human interaction	6	10
Expected signup to be easier	2	4
Familiarity with DMHI name increased interest in it	5	6
Marketing doesn't give enough info	10	15
Marketing led to unrealistically high expectations	4	7
More marketing needed	3	7
Not sure how signup works/how to start it	3	9
Not sure how to use DMHI	7	15
Not sure how useful it will be	6	10
Not sure if its free or not	2	3
Not sure of link between DMHI and service	3	9
Not sure what the DMHI is	16	48
Not sure which program to choose	4	7
Questionnaire/interview increased interest in DMHI	4	4
Signing up is effortful/complicated	7	13
Trusts service so trusts DMHI	8	12
Wants more info about DMHI before signup	9	21

Table G.5. Theme and Code Tables for Theme 4: ‘One size fits all’ fits few

Codes	No. of Participants	No. of References
Already done CBT/uses CBT techniques	6	9
Already getting help elsewhere	5	7
CBT content isn't enough to help	5	9
Choice/different treatment options are important	4	6
Content wasn't relevant	5	11
Dislikes using tech/finds it difficult to use	3	6
DMHI is good for accessibility (disabilities)	1	2
DMHI is less effort than FTF (don't have to travel/meet people)	9	19
DMHI is self-directed/flexible	8	15
DMHI wasn't suitable	7	17
DMHI wasn't what they were looking for	7	21
Each to their own	8	11
Generic content isn't helpful (can be found anywhere)	10	21
Individual preferences in what to do first (after signup)	4	8
Low self-efficacy/needs accountable other	5	9
Prefers fact-to-face (its 1st choice)	7	20
Pushed towards DMHI/only option available	7	15
Range of programs is appealing	8	10
Videos after signup are frustrating	2	7
Wants specific issues addressed	8	18
Wants to deal with a stressful life event	7	18
Wants to improve work/study	4	4

Table G.6. Theme and Code Tables for Theme 5: Accounting for changing needs

Codes	No. of Participants	No. of References
Comforting to know its there if you need it	4	5
Desperate for help	3	4
Didn't sign up until they felt they needed it	2	5
Distress makes you more confused	6	7
Distress reduces focus/self-motivation	8	11
DMHI can be used in the moment (coping strategy)	6	13
DMHI is immediate access/no wait	9	13
Expected it to be burdensome	3	5
Forgot about it	3	3
Getting the help you need takes time (waitlists)	7	8
Hard to prioritise/find the motivation to work on mental health	9	15
Help seeking motivation comes in waves	3	4
Improved so doesn't need it anymore	4	6
Measures don’t capture real experience of mental distress	3	7
Mental health isn’t taken seriously (not enough support for it)	6	7
No middle ground support	4	5
Plans on using DMHI in future	7	12
Signing up is doing something to help self (empowered)	7	12
Sought help only when it got really bad	3	4
Too busy to use it/sign up	8	15
Using DMHI doesn't feel good/make them feel better now	4	10
Working on mental health is challenging	3	4

APPENDIX H: Screenshot of Timeline in Miro

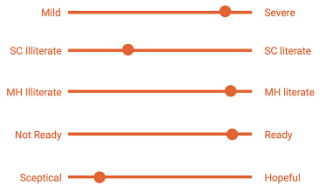
Figure H.1. Overview of frame for one participant in Miro

APPENDIX I: SilverCloud Archetypes & Personas

CLASS 1

Archetype

Class 1 are low engagers. They understand the importance of mental health and have severe symptoms. SilverCloud is the only option available to them, so they sign up even though they would prefer face-to-face support. They engage highly with the review page and their supporter, ignoring most of the content and tools because they are confused by how to navigate the site.



Persona

Name: Lisa

Demographic: Female, 20s. Student.

Motivation: Wants to offload and talk to a real human

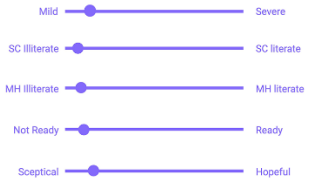
User Story: Lisa has a history of mental health difficulties and has been to therapy a number of times before. She seeks help via her university health centre, but the waiting list for face-to-face therapy is 6 months long, so she signs up for SilverCloud out of desperation. Lisa generally dislikes using technology, she finds it confusing and often gets overwhelmed. She gets frustrated when her supporter keeps referring her back to the program instead of responding to her specific problems. She is sick of reading content because she spends all day doing that as part of her studies.

Figure I.1. Class 1 archetype and persona: *'Not what I wanted'*

CLASS 2

Archetype

Class 2 are late engagers and show the lowest improvement rate. They perceive their own mental health to be of low importance. They don't think that they have enough time to dedicate to SilverCloud and may only first engage after a few email reminders. Their initial expectation of SilverCloud is very high and unrealistic, so they are slightly disappointed when they don't see results immediately.



Persona

Name: Liam

Demographic: Male, 30s. Administrator. Middle income.

Motivation: Wants to see results immediately with minimal input

User Story: Liam is a busy 33 year old who struggles to make time for himself. His partner suggested he try SilverCloud when they noticed his sleeping had been disturbed and he was not acting like himself. They thought SilverCloud would be a good fit because of Liam's proficiency with technology and his busy lifestyle. Liam doesn't really think he has mental health issues and as such struggles to motivate himself to continue using SilverCloud.

Figure I.2. Class 2 archetype and persona: *'Passive'*

CLASS 3

Archetype

Class 3 are initially high engagers with rapid disengagement. They have an understanding of their mental health issues and are informed on what SilverCloud is, which allows them to quickly access what they need from the program. They have a specific issue that they are seeking help with, so once they access the relevant content and put the skills they have learned into practice, they improve substantially and no longer feel the need to log in.

Persona

Name: Sarah

Demographic: Female, 30s. Nurse. Middle income.

Motivation: Doesn't want to spend too long on the program, would rather get in and get out.

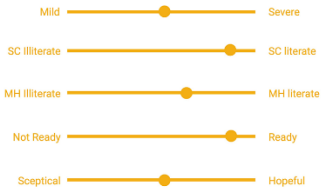
User Story: Sarah is a 34 year old nurse who recently lost her mother to illness. Sarah is knowledgeable about mental health issues because of her experience in the healthcare sector, so when her symptoms started to impact on her daily life she knew she needed more support. Sarah hears about SilverCloud from a colleague who has used it before, so she understands exactly what it entails before signing up. She is a busy mother so she is delighted to be able to use it in the evenings after her kids are asleep. Sarah hits the ground running as soon as she signs up and immediately starts using the tools. After a few weeks she feels a lot better.

Figure I.3. Class 3 archetype and persona: *'Get and go'*

CLASS 4

Archetype

Class 4 have a high rate of engagement and good outcomes. They work their way through tools and content equally. SilverCloud has been explained well to them so they have realistic expectations of how to proceed through their program. They are informed about mental health issues so will gladly devote time to their own. They are methodical and make a clear mental map for themselves of what is expected, both of them and the program. They dedicate a lot of their time to activities that can be useful outside of SilverCloud such as goal setting and mood tracking.



Persona

Name: Laura

Demographic: Female, 50s. Teacher. Middle income.

Motivation: Wants to feel better and is willing to spend time doing so

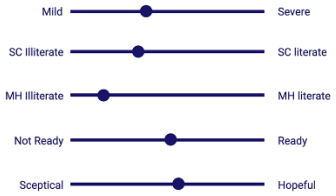
User Story: Laura is a secondary-school teacher who likes to do things by the book. Seeing her students struggle with their mental health issues allowed her to become educated in the subject so that she can recognise the signs. When she noticed her own mental health declining, she knew it was time to take action. Her doctor, who is a great advocate of SilverCloud, referred her to the platform and she took to it immediately. She made a plan to allocate at least 1 hour per week to her program and made sure to track her mood everyday.

Figure I.4. Class 4 archetype and persona: *'Right place, right time'*

CLASS 5

Archetype

Class 5 have the highest rate of engagement with SilverCloud, predominantly with tools like the journal and mindfulness exercises. They log in when they are feeling low and use these tools as a coping mechanism, but have minimal interaction with the core content modules. Because they are not making any changes or addressing what is causing their difficulties, they have high engagement but not necessarily high outcomes.



Persona

Name: Thomas

Demographic: Male, 70s. Retired.

Motivation: Filling in his journal makes him feel better

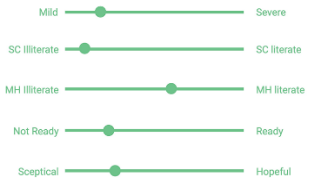
User Story: Thomas has never really thought he needed much help when it comes to his mental health. After he moved into a retirement home however, his daughter noticed his mood deteriorating. She had heard about SilverCloud and thought Thomas might like it because he enjoys using his tablet. After completing the first module Thomas quickly realised that filling in his journal made him feel better immediately and that the breathing exercises calmed him. He now uses SilverCloud whenever he's feeling low, with little engagement with the content besides the journal.

Figure I.5. Class 5 archetype and persona: *'Low mood user'*

CLASS 6

Archetype

Class 6 are users with the pending status. They believe that mental health is important, but they have no experience with mental health support and find it hard admitting that they need help. Their symptoms are mild. They come across SilverCloud online and don't know a lot about what it is or how it works, so they sign up out of curiosity.



Persona

Name: Jack

Demographic: Male, 40s. Finance. High income.

Motivation:

User Story: Jack is a 45 year old that works as a consultant. He has a high performance job which has taken a toll on his mental health. He first learns about SilverCloud through his employee assistance program, and spends a few months contemplating whether to sign up. Jack recognises that he might need help, but he is afraid of what his colleagues and friends will think if they know he is seeking support for his mental health. He is also afraid of admitting to himself that there is something wrong, and what the consequences of this might be. He finally signs up, and feels like a weight has been lifted. Jack then forgets about SilverCloud due to a busy period in work.

Figure I.6. Class 6 archetype and persona: *'Not ready yet'*

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