

**Exploring Users' Attitudes and Experiences with Digital Mental Health Interventions:
A Qualitative Interview Study on Engagement and Human Support**

Jana Wittlerbäumer

Department of Psychology, University of Twente

Bachelor Thesis – Positive Clinical Psychology and Technology

Faculty of Behavioral, Management and Social Sciences

1st Supervisor: Dr. Sofia Baldoni

2nd Supervisor: Dr. Saskia Kelders

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Abstract

Digital Mental Health Interventions (DMHIs) offer new and innovative solutions for addressing current mental health challenges, yet user engagement is still a critical factor influencing their effectiveness. This study explores the role of human support in influencing user engagement, attitudes and experiences with DMHIs. Using a qualitative interview design, 14 university students were recruited who showed at least mild symptoms of anxiety or depression. Participants needed to complete the PHQ-9 and GAD-7 to assess if they met the inclusion criteria and were interviewed using a semi-structured approach.

The key findings showed that human support, including supervision and personalized features, is important for sustaining engagement. Participants emphasized the importance of feeling supported and cared for, which can positively influence how they use the tools. Interventions that are tailored can address the specific mental health needs of the user which improve satisfaction and effectiveness. However, privacy concerns like data protection and transparency are significant barriers to DMHIs. Participants also mentioned different motivators, like ease of access and availability, and barriers, like cost or lack of variety, that can impact engagement and suggested different improvements for future DMHIs.

This study provides new insights into the role of human support in DMHIs, while also showing the importance of addressing disengagement and focusing on different user needs to improve effectiveness. Future research should explore how different types of human support can influence user engagement, considering diverse groups of users and long-term use. Additionally, addressing privacy concerns by ensuring transparency and data protection is important for building trust and user-friendliness.

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Exploring Users' Attitudes and Experiences with Digital Mental Health Interventions: A Qualitative Interview Study on Engagement and Human Support

According to the World Health Organization (WHO), mental health is defined as “a state of mental well-being that enables people to cope with the stresses of life, to realize their abilities, to learn well and work well, and to contribute to their communities” (Galderisi, 2024, p. 53). This also includes emotional, social, and psychological well-being. Since mental health is relevant in many aspects of human functioning, mental health disorders can lead to significant problems and have far-reaching effects on many individuals. They impact not only personal well-being but also interpersonal relationships, academic or work performance, and overall quality of life and can even lead to suicidal thoughts (Zamira Hyseni Duraku et al., 2023). Furthermore, they can affect social or economic factors which can result in further problems later in life or even poverty across generations (Ridley et al., 2020).

The scope of mental health disorders includes a wide range of conditions affecting people worldwide. According to Rehm & Shield (2019), around 16% of the worldwide burden of health issues can be assigned to mental disorders. Furthermore, depression is estimated to affect more than 264 million people worldwide (World Health Organization, 2021), and anxiety disorders approximately 300 million people (World Health Organization, 2021). This means that especially anxiety and depression have an important impact on public health since they affect a large amount of people. Yet, the burden that these disorders have globally is still underestimated (Roth et al., 2018).

Lehtimäki et al. (2021) say that at least 20 to 30% of young adults face mental health problems at some point in their lives. Moreover, Lehtimäki et al. (2021) findings revealed that

almost 50% of individuals experienced the beginning of their mental disorders before the age of 18 and 75% before the age of 24, yet they often only discovered later in life. Research highlights a significant rise in anxiety and depression among young adults due to the stressors caused by e.g. the COVID-19 pandemic, but also because of economic reasons (Vos et al., 2020). Even though the prevalence of mental health disorders is high among young adults, there is still a need for tailored solutions that specifically address the unique mental health challenges faced by them (Lehtimäki et al., 2021). Moreover, anxiety and depression often occur together, showing a high level of comorbidity (Kalin, 2020). Additionally, there might also be potential long-term consequences of increased anxiety and depression, which emphasizes the need for early intervention and mental health support.

Ridley et al. (2020) showed that mental health care, especially in countries that tend to have lower or middle income, is very short especially when thinking about the burden that these diseases can have on the individual but also the whole country. The available help can be quite different depending on the region or the community, with people from lower economic backgrounds having less access to care, even though it has been shown that these groups tend to have a higher need for mental health care (Ridley et al., 2020). These shortages result in long waiting times which was also shown by a study by Punton et al. (2022) who explored the experiences of 12 young adults, aged 18 to 25, in the UK who were placed on waiting lists for mental health services. It was shown that the average waiting time for mental health services was approximately 18 weeks.

One of the main reasons for this is the shortage of professionals who work in the field of mental health and therefore also a shortage of services such as interventions. Especially since COVID-19, the overflow of patients who seek mental health care has highlighted the gaps in the

existing services (Willems et al., 2021). Because of this high demand, it has become even more difficult to provide the care needed for all patients (Badawy & Radovic, 2020). When mental health care becomes urgent for the patient, it can often cause distress for other people involved like family members, and therefore result in even more problems (Hogan & Goldman, 2020).

With long waiting times worsening, existing problems and symptoms might arise which sometimes results in alternative forms of relief which include e.g. self-harm, quitting university or jobs but also suicide attempts (Punton et al., 2022). On the other hand, young adults try to find different ways to deal with it e.g. meditation, seeking social support, and looking for different kinds of help other than the traditional way (Punton et al., 2022) like physical activity or spiritual practices.

Even though there are interventions that want to tackle the current problems of mental health care, they are often not practical or achievable because of e.g. economic reasons but also because of the existing stigma around the topic of mental health (Ridley et al., 2020). This can result in less willingness to invest in new and different options for mental health care since the importance of care options is overlooked or dismissed (Mahomed, 2020). With growing challenges in mental health care, alternative approaches, like Digital Mental Health Interventions, have emerged as a potential solution to overcome them.

The use of Digital Mental Health Interventions

Considering the challenges that come with the mental health crisis, new and innovative approaches to mental health care are needed, which are achieved by Digital Mental Health Interventions. Digital Mental Health Interventions are defined as “Information, support, and therapy for mental health conditions delivered through an electronic medium with the aim of

treating, alleviating, or managing symptoms” (Lehtimäki et al., 2021, p.9). Most forms of DMHIs and e-health are targeted towards people who experience symptoms of depression and anxiety, therefore they can address common mental health issues (Huang et al., 2024).

Since 75% mental health issues start before the age of 24 (Lehtimäki et al., 2021), it is important to address mental health issues in younger populations. Therefore, it is very important to target this age group by providing alternative mental health care options. Digital Mental Health Interventions could be a potential solution, offering new resources and support that could help address some of the limitations of conventional care.

Since 70% of individuals around the ages of 15 to 24 are more online than others, the use of digital platforms like smartphones, computers, or other media might be a promising development in the field of mental health care (UNICEF, 2017). Additionally, the rate of media consumption is getting higher in times of increasing depression symptoms and therefore also the interest in digital interventions in solving the problem of minimal help-seeking. DMHIs offer new solutions, especially for the current shortages by providing support via e.g. apps or online therapies that are accessible to a lot of people. Therefore, they can reach diverse groups and potentially reduce waiting times. Furthermore, they could improve convenience and efficiency which can enhance the overall well-being of many people.

Research has shown that DMHIs have a lot of advantages for users. They can provide different ways of treatment and participation that can be otherwise too difficult or expensive to implement (Giovanelli et al., 2020). Garrido et al. (2019) highlighted that not a lot of people seek professional help, especially if they have symptoms of depression because of e.g. lack of motivation but also embarrassment. Furthermore, they mention that different studies have shown

the effectiveness of self-help and digital interventions since they can assure the user to stay anonymous but also because of their accessibility. Andrews et al., (2018) also showed the effectiveness of computer-based therapy which can be equally as effective and beneficial for patients as traditional face-to-face therapy.

Yet, there are still a lot of shortcomings when it comes to DMHIs. According to Lipschitz et al. (2023), keeping users engaged is the biggest problem for DMHIs with expected dropout rates of around 20%. Motivation to continue using the intervention is critical and studies show that only 4% of users keep using the app after the first 15 days (Kaveladze et al., 2022). Adherence to DMHIs can be influenced by factors such as time consumption, cognitive demand, and individual characteristics like age, education level, and symptom severity (Lipschitz et al., 2023). Gender and age have also been identified as predictors of engagement and response to treatment (Marinova et al., 2022). Additionally, digital interventions can make it harder for users to feel connected since they are often quite impersonal which can also result in decreased usage over time.

Therefore, exploring reasons for different user retention, meaning the number of users who keep using the app for a certain time, is very important for the success of DMHIs. Previous research suggests that including human support might be a valuable strategy for enhancing engagement since it integrates forms of social connection and encouragement that many users crave (Lehtimäki et al., 2021).

To summarize, traditional mental health care faces significant challenges, such as limited accessibility and long waiting times. DMHIs have the potential to address some of these

shortcomings by offering new opportunities and support. However, one of the major issues with DMHIs remains user engagement, which can impact their effectiveness.

The role of engagement

Engagement is an important factor for the success of DMHIs since it indicates whether the intervention will be used over longer periods. The term engagement has been conceptualized very differently by different researchers and studies. According to Kelders et al. (2020), engagement can be seen as a multidimensional construct but also as a multidisciplinary issue.

Bijkerk et al. (2022) view engagement as a dynamic interaction between the user and the intervention. When researching engagement, one will often come across the BCA model which focuses on three key components: Behavior, Cognition, and Affect. The behavior part of the model refers to the actions and participation levels of users within the intervention or app (Bijkerk et al., 2022). Cognition involves the users' thoughts, beliefs, and understanding related to the intervention, e.g. if they believe that the intervention is a suitable way to achieve their mental health goals. Lastly, affect is the emotional response of users when it comes to their subjective experience while they are interacting with the intervention (Bijkerk et al., 2022). This model emphasizes that engagement requires a balance of these three elements to sustain user interaction.

According to O'Brien & Toms (2008), there are four steps of engagement: the point of engagement, the period of engagement, disengagement, and reengagement. The point of engagement is the moment when a user first interacts with a technology, which is crucial for getting the users' attention and initial interest. The period of engagement means the duration of time that users actively interact with the technology. In this phase, sustained engagement can be explored through the features and content of the intervention (O'Brien & Toms, 2008). The third

part is disengagement which means the point when users lose interest or stop interacting with the technology. This can happen because of internal reasons, like focusing their attention on other things, or external reasons like being interrupted or usability problems. Lastly, re-engagement means the process of users returning to the technology or intervention after a period of disengagement (O'Brien & Toms, 2008). These steps can help understand the processes users go through when interacting with new interventions and show the importance of different approaches and methods at different times.

In DMHIs, engagement strategies are used to sustain the engagement of users for as long as it is needed. They often focus more on digital interactivity, personalized feedback, and integrating human support which is different from engagement approaches in fields like education or general health which often use more traditional methods like in-person attendance or active learning (Saleem et al., 2021). When looking at past research on engagement strategies, there were a lot of options that could be used in DMHIs (Daniel, 2022). For example, personalization which includes tailoring the features to fit the user and their needs, or e-coaching which means virtual guidance from a trained therapist (Saleem et al., 2021). Other examples are social forums, which are used to interact with others, reminders, or gamification through features and design.

In a qualitative study by Badawi et al. (2023), they conducted interviews and focus groups to gather in-depth insights from users, students, teachers, and stakeholders, which consisted of mental health professionals, about the importance of user experiences for engagement. They found several factors that are critical for enhancing engagement which include usability, accessibility but also aesthetic appeal (Badawi et al., 2023). Furthermore, they mentioned that customization can be essential as well as creating an emotional connection

through supportive features. Yet, human support and interaction have not been part of the findings.

The potential of human support

Garrido et al. (2019) findings showed that DMHIs that were supervised, e.g. in the form of e-coaching by a therapist, were effective compared to a control group that used no intervention. Their findings further proved that human interaction is not just beneficial but essential for enhancing engagement and the overall effectiveness of DMHIs. This important role of human support was also shown by Lehtimäki et al. (2021), who found that in-person features, meaning engagement with professionals, peers, or family, significantly increased the effectiveness of the interventions. They highlighted that human support not only increases engagement but also offers emotional reassurance and motivation, which are very important for people facing mental health challenges. Moreover, they mention that these interventions showed many benefits and could improve results for people waiting to receive mental health care. Additionally, Werntz et al. (2023) found that half of the meta-analyses they reviewed showed that human-supported DMHIs had a significantly higher effectiveness.

This evidence indicates that adding human interaction to DMHIs can be a big improvement and enhance results and satisfaction significantly. Creating a feeling of connection and responsibility through human support may help fill the gaps often found in digital interventions which can lead to longer-lasting engagement.

Even though maintaining engagement is mostly seen as the intended goal for DMHIs, it can also be seen differently. According to O'Brien et al. (2021), disengagement also plays an important role in human-computer interaction. As mentioned before, disengagement is a part of the process users might undergo when interacting with a new intervention. Therefore,

disengagement can provide different insights into user behavior and motivations that cannot be provided otherwise (O'Brien et al., 2021). It can reveal underlying issues like usability problems, but it also allows designers and researchers to make informed improvements to the technology.

Additionally, understanding the reasons for disengagement allows researchers to find new re-engagement strategies which can then help to achieve long-term engagement (O'Brien et al., 2021). Moreover, being too engaged with DMHIs can also have negative consequences like potential addiction to the intervention and leaving real-world interactions behind (Dwyer et al., 2018). Therefore, it is necessary to analyze engagement critically.

Although research highlights the importance of human support as an engagement strategy in Digital Mental Health Interventions (DMHIs), there is limited understanding of users' attitudes and opinions on this aspect. This study aims to explore users' attitudes and experiences with DMHIs and their engagement by addressing the following objectives:

1. To explore factors that influence participants' experiences and attitudes towards DMHIs and user engagement.
2. To investigate the role of disengagement in user interaction with DMHIs.
3. To examine the influence of human support on user engagement in DMHIs.

Therefore, the central research question of this study is:

"What are participants' attitudes and experiences regarding Digital Mental Health Interventions (DMHIs) and their engagement with these interventions?"

Additionally, five sub-questions will guide the research:

1. "What specific aspects of DMHIs are most valued by users and could lead to optimal engagement?"
2. "What factors contribute to disengagement from DMHIs?"

3. “What is the impact of the use of DMHIs on the participants?”
4. “How can aspects of human support influence user engagement and outcomes in DMHIs?”
5. “What improvements can be made to support engagement with DMHIs?”

This study aims to fill the gaps in existing research and provide new insights into how human support affects engagement, disengagement, and the effectiveness of DMHIs.

Methods

Design

A qualitative interview design was used with a semi-structured interview scheme.

Participants

In this study, 14 participants were recruited through convenience sampling. The participants' study level ranged from 2nd-year bachelor's to a Master's, with most participants being either a 3rd-year Bachelor's or a Master's student. Out of the 14 participants, 7 were women, 6 were men, and one person identified as non-binary. The following inclusion criteria were used for the sampling procedure: the participants had to be university students, and needed to have at least mild symptoms of anxiety and/or depression, as indicated by the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) scores and needed some sort of experience with DMHIs.

Procedure

Ethical approval was obtained through the Ethics Committee of the Behavioral Sciences Faculty at the University of Twente (number: 240900). Before the interviews, informed consent was obtained from all participants through the platform 'Qualtrics' (see Appendix). Additionally,

demographic questions were asked, including gender, nationality, study field, and level. Furthermore, participants had to fill out the PHQ-9 to administer depression scores and the GAD-7 to administer anxiety scores before the interviews. The questionnaire scores were used to determine whether participants met the inclusion criteria, which required a PHQ-9 score > 4 and a GAD-7 score > 4 , indicating mild symptoms. If they met the inclusion criteria, an interview was scheduled. The interviews were conducted by two researchers and took between 25 and 62 minutes.

Materials

To administer the depression and anxiety scores of the participants, the PHQ-9 questionnaire and the GAD-7 questionnaire were used. The responses to these questionnaires were collected through Qualtrics. Additionally, a semi-structured interview guide was developed in English to explore the participants' experiences with DMHIs. The interviews were conducted either in person and recorded via phone apps, or through Microsoft Teams using the recording function. All interview recordings were transcribed using Amberscript, and the transcriptions were then reviewed and manually edited to ensure accuracy.

The interview guide was designed to be broad at first, focusing on general attitudes, experiences, and engagement with DMHIs, and then it moved toward specific topics including different engagement strategies. In the context of this thesis, only the results related to human support in DMHIs will be reported. The interview consisted of four sections:

The first section administered the participants' general perspectives, like attitudes and experiences, on digital tools for mental health care. The opening question asked, "What are your thoughts and feelings on digital tools/ apps for mental health support?". Further questions were

asked about their reasons for starting to use DMHIs which provided an understanding of their initial engagement.

The second section focused on participants' experiences with engagement while using DMHIs. Questions in this section were more specific and explored the features of the tools that helped maintain user engagement, such as "What features or aspects of such app (or tool) keep you engaged and encourage you to use it regularly?". Other questions were asked about the participants' thoughts, feelings, and behaviors while using or not using the tools.

In the third section, the focus shifted to how participants interacted with the DMHIs during typical sessions with questions like "Can you describe a typical session or interaction you have with that technology?". Additionally, the section explored how the tools contributed to their mental health goals, asking questions such as "How do these apps or tools help you with your mental health and well-being goal?".

The last section addressed the topic of human support in digital mental health tools. To begin, participants were shown screenshots of different mental health apps that included human support features. The questions then focused on participants' attitudes toward having access to human support as part of their DMHI experience, including: "How would you feel about having access to human support as part of your experience with mental health apps?". Participants were also asked about how human support would influence their thoughts, feelings, and behaviors when using the tools, for example: "How would having human support influence your behavior when using the tool?" or "What thoughts do you have about the role of human support in your digital mental health experience?".

Additionally, follow-up questions were asked if needed. At the end, the interviewees were invited to ask any questions or to provide additional comments. The complete interview guide can be found in the appendix (see Appendix C).

Data Analysis

The data was analyzed using thematic analysis, following the approach of Braun & Clarke (2006). This method consists of six steps, beginning with familiarization with the data (Byrne, 2021). At first, the transcribed interviews were read to understand the content and possibly identify important patterns.

In the second step, the interviews were coded by one researcher. This was done by identifying segments of the text that aligned with the questions in the interview scheme and the research questions (Byrne, 2021). The researcher focused on recurring experiences, themes, and ideas from the participants' responses. Once the relevant segments were identified, specific codes were assigned to them. These codes were used to label different topics and concepts, to be able to categorize and analyze the data. This process helped to break down the data into smaller, manageable parts. Following this, the second researcher reviewed the codes for accuracy and consistency which ensured that the codes were appropriate and complete. Both researchers then discussed their findings.

In the third step, similar codes were grouped to form potential themes by identifying patterns and connections between different codes. Afterward, these themes were reviewed by both coders and refined to ensure that each theme represented an important aspect of the data.

In the fifth step, the themes were named and clearly defined to ensure that they were distinct and could be differentiated from one another. Finally, the main findings were concluded using the themes (Byrne, 2021).

Results

In this section, the findings from the thematic analysis of participants' experiences with DMHIs will be presented, focusing on their engagement with and attitudes toward the tools, as well as the influence of human support features. The analysis revealed several themes and sub-themes that highlight both the positive and negative aspects of using DMHIs for mental health support.

Table 1 provides a summary of the demographics of the participants in this study. It includes information on the participants' country of origin, gender, field, and level of study, as well as their scores on the PHQ-9 and GAD-7 questionnaires.

Table 1.

Demographics and Scores of Participants

Participant	Country of Origin	Gender	Study Field	Study Level	PHQ-9 Score	GAD-7 Score
1	Lithuania	Male	BIT	3rd year Bachelor	21	17
2	Nigeria	Female	Communication	Master	20	16
3	Germany	Female	Psychology	3rd year Bachelor	14	17
4	Germany	Female	Psychology	3rd year Bachelor	14	14
5	Netherlands	Male	Psychology	Master	15	11
6	Netherlands	Male	Technical Medicine	2nd year Bachelor	17	17

7	Netherlands	Male	Mechanical Engineering	Master	16	16
8	Netherlands	Female	Applied Computer Science	2nd year Bachelor	21	21
9	Netherlands	Male	Computer Science	Master	21	20
10	Germany	Female	Psychology	3rd year Bachelor	16	17
11	Germany	Female	Management, Society & Technology	2nd year Bachelor	17	16
12	Germany	Non-binary/Third Gender	Psychology	2nd year Bachelor	22	17
13	Netherlands	Male	Physics	Master	13	14
14	Germany	Female	Psychology	3rd year Bachelor	15	13

Tables 2 to 7 provide an overview of the themes and sub-themes identified during the analysis. These include experiences with the tools, motivational factors for continued use, barriers to engagement, and the emotional and behavioral impact of using DMHIs. Additionally, the analysis highlighted several aspects that can be improved which could enhance user engagement and effectiveness. It also showed different human support elements that were deemed as most important for the participants.

Experience with Digital Tools

Table 2.

Subthemes and codes addressing the research question: “What are participants’ attitudes and experiences regarding Digital Mental Health Interventions (DMHIs) and their engagement with these interventions?”

Sub-theme	Name of the Code	Definition of the Code	Frequency
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Experience with Digital Tools	Initial Motivation	The reason or/and motivation why the participant started to use DMHIs	27
	Judgments of DMHIs	The overall opinion and judgment the participant mentioned about DMHIs	17

Participants' experience with digital tools varied based on their *initial motivation* for using DMHIs. Some mentioned that their motivation was influenced by external recommendations from a therapist or employer, “I started using it because it was recommended by the company I used to work for” (P6). Others said they started because of personal struggles with mental health issues like anxiety or other struggles like overthinking, “I had anxiety and I wanted to go do something against it. So I started using this” (P2).

Participants also had different *judgments of DMHIs* based on their experiences and attitudes toward technology and therapy. Some found digital tools helpful, “I think it’s helpful in some ways” (P1). Others compared them to real-life therapy and questioned their effectiveness, “For me personally, I didn't find it as useful” (P5).

Motivators for App Use

Table 3.

Subthemes and codes addressing the research question: “What specific aspects of DMHIs are most valued by users and could lead to optimal engagement?”

Sub-theme	Name of the Code	Definition of the Code	Frequency
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Motivators for	Reminders	How reminders from the app	23
App Use		influenced the participant's behavior, thoughts and feelings	
	Ease of Use	How the participant experienced the user-friendliness interface with the DMHI	5
	Accessibility	Descriptions about how attainable and accessible the DMHI is	28
	Autonomy in tailoring	Participants talking about the ability to customizable features to their own preferences in their DMHI	26
	Tailoring to personal needs	Needs of the person recognized by DMHI and tailored interface to need	11
	Targeting Mental Health Goals	How DMHI fits with participant's overall mental health goal	32
	Perceived Usefulness	Judgment or comments on the effectiveness of DMHI	36

A recurring theme was the significance of *reminders* and push notifications, which effectively encouraged consistent use, helping users remember the app and stay motivated. One participant explained, “I think something like push notifications like ‘hey you have not used the

app in a while like do you want do an exercise or something' I think that could help me in case I had kind of like forgotten that I have the app.” (P2).

Closely tied to reminders was the importance of *ease of use*, as participants preferred simpler and more intuitive interfaces that were appealing to them, “Yeah, it has to be designed nicely so it looks appealing for me and it has to have a user-friendly surface and it should run smoothly because otherwise I would get annoyed by it quickly, I think.” (P1).

In addition to these functionality factors, *accessibility* was also important for participants. One participant explained “So it helps in a way that I have something on demand. So if I have a problem right in that moment, I can just start the app and use it.” (P3). The ability to use the app anytime and anywhere increased its practicality and value.

Beyond functionality, all participants strongly emphasized the importance of *tailoring*. Apps that could be tailored to individual needs and preferences were seen as significantly more engaging and effective. One participant shared, “I think that would be really good because you would feel like you could set goals more effectively and actually achieve them. It would feel more relevant to you, as it would be based on your own experiences and activities, and how you felt about them.” (P4). Having *autonomy in tailoring* allowed the users to focus on what features, exercises or information mattered most to them, like anxiety management, stress relief, or journaling. One participant noted, “It makes me think that I have the freedom to choose how to go about my goals. It’s not about picking something from a list of categories but deciding for myself how I want to work on something.” (P4). This was seen as a motivator, since it made the app feel more relevant to them and therefore also more helpful for *targeting mental health goals*.

Finally, these factors also contributed to the app's *perceived usefulness*, which was seen as an important motivator. This was mentioned as a direct effect when using the app after a short period, "Well, first of all, it helped. I already saw that it was improving my overall anxiety after the 1st day." (P7) but also when the participant realized an effect after longer use, "And sometimes it also did not feel helpful right away. But maybe I felt effect later when I was actually like incorporating the methods." (P2). Additionally, participants also mentioned that they realized changes when they stopped using the intervention for some time which then resulted in them reengaging with it: "I can see the real impact between my mood when I use it and when I don't use it." (P6).

Barriers to App Use

Table 4.

Subthemes and codes addressing the research question: "What factors contribute to disengagement from DMHIs?"

Sub-theme	Name of the Code	Definition of the Code	Frequency
Barriers to App Use	Cost	How financial cost of DMHI interfered with engagement and usage	10
	Time constraint	How time that DMHI takes interfered with engagement and usage	8
	Lack of Variety	The usage and engagement of the DMHI was stopped or reduced due	15

lack of variety in options that the app
offered

Privacy	Concerns about data privacy when interacting with DMHI	17
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While there were strong motivators, several barriers were mentioned that prevented or discouraged the participants from using the app. A key barrier was *cost*, especially for participants who were unable to afford subscriptions. One participant explained, “So I think payment was a barrier for me. I think it was, like, €90 for the year or something, which is not quite steep.” (P9). For students or those on fixed incomes, it prevented them from using the apps long-term or even from starting to use them in the first place.

Time constraints also prevented consistent app use. Participants found it challenging to consistently set aside time for the exercises within the app. As one participant explained, “Most of the exercises took like half an hour or 45 minutes and sometimes when I had 10 minutes to go it would be nice if I had one for, like, 5 minutes. But they didn’t, so then I wouldn’t do that.” (P7). The inability to complete exercises due to time restrictions often led to users disengaging with the app.

The *lack of variety* of exercises or features discouraged the participants from using the intervention. One participant noted, “So I feel like the diversification of an app could definitely help with using it.” (P5). Some participants also mentioned specific features that the app did not have that eventually stopped them from integrating it into their routine “Maybe it would have

been also helpful then for example if the app would have had like daily like check ins or don't forget to do your activity today.” (P2).

Privacy concerns also played an important role in engagement. Ten participants expressed concerns about how their personal data, especially sensitive mental health information, was being collected, stored, and used. Privacy concerns were raised by the use of algorithms or the potential integration of coaches or peers: “That it's not very private and I think especially for things like mental health it's good if everyone can disclose it with people that they want to disclose it with and not that all the information goes out in the open.” (P2). The fear of misuse or mishandling of their data acted as a barrier for the participants to keep using the app.

Cognitive, Emotional and Behavioral Impact

Table 5.

Subthemes and codes addressing the research question: “What is the impact of the use of DMHIs on the participants?”

Sub-theme	Name of the Code	Definition of the Code	Frequency
Cognitive Impact	Self-reflection	Participant mentions self-reflection in connection with or because of the DMHI	22
	Organizing thoughts	Participants indulged into structuring their thoughts in connection with using a DMHI	20

	Overthinking	When participant was indulging in overthinking, they used the app	6
Emotional Impact	De-stress	Using the DMHI to de-stress or mentioning that they felt de-stressed after usage	16
	Positive Outlook	The DMHI helped participant to gain a more positive outlook on their life and mental health	4
	Mood	The DMHI affected or changed participant's mood or/and participant uses DMHI when they are in a specific mood	38
	Pressure	Participant feels pressured to use DMHI	16
Behavioral Impact	Meditation	Participant indulges in meditation because of DMHI	22
	Journaling	Participant indulges in journaling because of DMHI	25
	Tracking	Tracking activities, emotions or progress	50

Behavioral	Participant mentions to be more	30
Awareness	behavioral aware because of the	
	DMHI	

The use of DMHIs had clear impacts on participants' well-being, feelings, thoughts, and behaviors. Participants reported enhanced *self-reflection* and better *organization of their thoughts*. They shared, "I'd be able to reflect on what made me happiest, and what I should do more in my daily life or avoid because it didn't make me feel good." (P4). This also led to less *overthinking*: "I have a problem with overthinking, so it helps me get other ways of thinking. If I ran down a problem in my head and then opened the app, it helps me stop thinking that way." (P3).

Emotionally, the apps helped the participants to *de-stress* and resulted in an overall more *positive outlook and mood*. One participant said "So even at the beginning, if the meditation doesn't really work, I think, in general, you just start the app, and it already relaxes you a little." (P11). Others also mentioned that the app "helps you realize that the day wasn't as bad as you thought it was." (P4) or "I think it helps because I can see the real impact between my mood when I use it and when I don't use it" (P6). Participants also mentioned that they experienced *pressure* when they did not engage with the app as regularly as they had planned, as one participant shared, "I could compare it to, like, having a strict, let's say, gym schedule and missing a day and knowing that you missed a day and you just feel a little guilty, and you feel bad that you didn't do it." (P5).

Behaviorally, the apps helped users incorporate *meditation* and *journaling* into their daily lives. “I would just do the meditation for the day, and I would then listen to the guided meditation.” (P6), said one participant. Another mentioned “If I was trying to fall asleep and had a lot on my mind, I might write down my thoughts. That way, I wouldn’t keep thinking about the same thing over and over.” (P4). The participants changed their daily behavior by integrating mental health practices into their routines. Features that involved *tracking* like mood or activity tracking were another popular aspect. Participants liked being able to reflect on their mental health journey, which helped increase motivation. “On the first page you can see like selecting mood but also you can track your process, you can indicate how you're feeling over a long period of time.” (P2).

Lastly, *behavioral awareness* was mentioned by the participants since they recognized certain behaviors and were also able to incorporate behaviors they learned through the app more consciously: “I tried to incorporate what I learned from the app throughout my day.” (P2).

Human Support

Table 6.

Subthemes and codes addressing the research question: “How can aspects of human support influence user engagement and outcomes in DMHIs?”

Sub-theme	Name of the Code	Definition of the Code	Frequency
Human Support	Supervision	Participant mentions supervision of human in connection to DMHI	10

Presence of Person	How the presence of a person interacts with usage and engagement of DMHI	39
Comfort	How comfortable it is to use the DMHI and how it can be increased	30
Availability	Comments about giving availability for planning through DMHI	16
Quality and Qualification of support	Comment about Quality or Qualification of human support in DMHI	8
Accountability	How participants felt responsible towards DMHI when Human Support was present	13

Participants emphasized the role of *supervision* and support during the use of DMHIs. They reported that they would be much more likely to stay engaged if they had access to a person who is supporting and guiding them, such as a therapist. Eleven out of the 14 participants emphasized that while the app was helpful in some ways, the *presence of a person* would make a significant difference in their motivation to keep using it and therefore also their progress. For instance, one participant explained, “But what I think is it would be very important that while you use the mental health app you're being supervised by a mental health professional like a therapist.” (P2). They also clarified that it would provide them with *comfort* and encourage

openness: “I’d feel more comfortable talking about them and not just trying to push them away. I think knowing that someone is listening and wants to help would help me to open up more.” (P4).

Moreover, the *availability* of support plays a key role. It can help the user more effectively and immediately when needed and could act against negative behaviors: “Knowing that there’s someone there who I can reach at all times would give me more confidence. If you can talk about a problem right away, it won’t escalate into something bigger later.” (P4).

Important considerations of the participants for the use of human support in DMHIs are the *quality and qualification of support*. Participants emphasized that interacting with a qualified mental health professional, as opposed to unqualified support, was essential for the app to be helpful. One participant said, “But what I also heard about BetterHelp, for example, is that they had a lot of people that were not actually qualified psychologists, who offered the services, which then was not useful. Again, for the client, it is also pretty dangerous.” (P8).

Eight participants also highlighted the role of *accountability*. Knowing a real person was monitoring their progress motivated participants to stay engaged. Without this support system, participants noted that the app might not have had the same impact: “Maybe if I would have just done it by myself but because I was kept accountable for it by an actual person, I don't really feel like I lost interest.” (P3).

Suggestions for Improvement

Table 7.

Subthemes and codes addressing the research question: “What improvements can be made to support engagement with DMHIs?”

Sub-theme	Name of the Code	Definition of the Code	Frequency
Suggestions for Improvement	Gamification	Participants mention gamification in relation to DMHI	12
	Educative information	Mentioning or suggesting increase of specific or educative information	11

While many participants were generally satisfied with their digital interventions, they suggested several improvements. *Gamification* was often mentioned as an option for improving future apps since participants expressed a desire for more interactive features. One participant stated, “I feel like implementing gamification is very important. So, if it's with some type of reward system.” (P5).

Participants also desired more *educative information*, especially related to their specific mental health issues. One participant said, “But I would like little information each day that you could read, you know? Some articles about anxiety or refer to newspaper articles or just some facts about it would be very nice.” (P8). One participant mentioned that they received information in the app, but they would prefer more advanced and in-depth content, “I think I was hoping that as I did more days, I would get more content. Because as I said I wanted something more advanced.” (P9).

Discussion

Main findings

This study aimed to explore participants' attitudes and experiences with DMHIs and engagement as well as human support as an engagement strategy. The key findings show that human support, especially in the form of supervision and personalized features, can play a significant role in sustaining engagement in DMHIs. Participants emphasized the importance of feeling supported and cared for by a human or coach when using a DMHI, which can influence their use. Furthermore, the ability to tailor interventions to specific mental health needs, also through human involvement, was seen as a big factor in engagement. Privacy concerns, especially regarding data protection and the role of algorithms, were found to be significant barriers to engagement. Furthermore, other motivators and barriers were found which can influence user engagement as well as different improvements that were suggested by the participants.

Participants shared different perspectives on their experiences with DMHIs. While some found DMHIs effective for managing stress and improving well-being, others mentioned their limitations that influenced their use. Similarly, Sifat et al. (2022) stated different motivations for users to start to engage with DMHIs. Being influenced by others was an important factor for trying a DMHI, which was also shown in the results of this study.

Participants in this study emphasized that supervision and support by another person, such as a therapist or professional, were key motivators for maintaining engagement with DMHIs. Most participants reported that having a person who provides support throughout their

use made them feel cared for which can positively influence their motivation to continue to use the tool.

This aligns with findings by Hollis et al. (2016) who highlighted the critical role of supervision in enhancing the effectiveness of DMHIs for young people. Specifically, they found that interventions that include human support, whether from trained professionals or peer support, lead to better engagement and higher adherence and also improved mental health outcomes. They claim that the presence of a supervisor, either in real-time through e.g. video calls or messages or through feedback, can help maintain young people's motivation and accountability (Hollis et al., 2016).

Similarly, a systematic review by Lehtimäki et al. (2021) highlighted the positive effects of human support features in digital mental health tools for adolescents and young adults. The findings showed that these features could increase engagement and adherence as well as lower disengagement rates. Opie et al. (2024) also found that guided interventions significantly improved socioemotional outcomes such as depression, anxiety, and stress. These findings are in line with this study in showing that the presence of human support is not only a motivational factor for DMHIs but it can also affect their outcomes.

Participants of this study expressed concerns about privacy and data protection. Particularly, they mentioned hesitations about using DMHIs due to worries about how their personal data would be handled, especially in the light of sensitive mental health information. This is consistent with existing literature since it was shown by Torous et al. (2018) that mental health apps that do not address user privacy show lower engagement. Similarly, Borghouts et al. (2021) highlighted that while some users were comfortable with recording information about

their health, like mood or sleep, others were hesitant and limited it to only recording less personal data.

This study also highlights that privacy concerns may lead to disengagement, as participants reported that they felt unsafe or uncertain about the data handling and confidentiality when using DMHIs. Scholars have suggested possible ways to address privacy concerns, emphasizing the importance of transparency in data handling. Borghouts et al. (2021) recommended clearly disclosing how user information will be managed and ensuring that it remains private and will not be accessible to others to help users feel secure and build trust. Connected to this, Wadden et al. (2020) suggested that moderation in interventions was found to be a motivator for users and it helped to create an environment that increased engagement. However, technological barriers to secure and private communication remain an issue, as highlighted by Collins-Pisano et al. (2023), who found that these issues can also lead to users feeling less comfortable engaging with an app. Therefore, this study aligns with previous research, showing that addressing privacy concerns is important for maintaining engagement. Participants highlighted that these factors can decrease trust and contribute to them disengaging with DMHIs.

The importance of tailoring interventions to fit the participants' specific mental health needs, symptoms, and preferences was also an important insight from this study. Participants highlighted that having the ability to tailor the intervention, either themselves or through a professional from the tool, would make them more satisfied and engaged. This aligns with previous findings, such as Moe-Byrne et al. (2022), who found that tailored interventions led to improved outcomes for users, e.g. mental health improvements and higher adherence. Tremain et al. (2020), also emphasized that tailoring digital interventions can strengthen the relationship

between the users and the app since it can provide a more relevant treatment according to the individuals' needs and goals. Additionally, it is important to ensure that the interventions feel personalized to build trust and encourage engagement (Tremain et al., 2020). Borghouts et al. (2021) further emphasize the importance of considering different personality traits, mental health statuses, or symptoms when personalizing interventions. In line with these findings, participants in this study emphasized the importance of having the option to personalize their experience to align it with their needs and goals.

In contrast, participants of this study who felt like the intervention they used was more generic and did not have the option to tailor it often mentioned a lack of relevance to their specific symptoms and goals. This was also found by Berry et al. (2018) who mentioned that when apps feel too generic or not suited to the user, it can prevent a strong connection and discourage engagement. Through qualitative interviews with 19 service users who had experience using digital tools for mental health support, the researchers identified that a lack of personalization made apps feel impersonal and less engaging since it is harder to connect with them. Furthermore, they found a decrease in the perceived relevance to the user and a lower overall effectiveness (Berry et al., 2018). This study seems to show similar results, as the participants valued tailoring to make the intervention feel relevant and therefore wanting to engage with it.

Strengths and limitations

One of the main strengths of this study is that it opens a discussion about DMHIs and the different ways to engage users. By asking about participants' attitudes, motivations, and experiences, the study provides different insights into what users want and need from these tools. It highlights common preferences that were mentioned by most participants but also differences,

which can help to design more user-friendly and effective interventions. Moreover, the study contributes to DMHIs and their understanding and how they can work alongside traditional mental health services. The findings can provide insights for developers but also mental health workers. By looking into real user experiences, it can show how to make DMHIs more effective by meeting the needs of different users in different situations.

Yet, the study also showed some limitations. The population lacked diversity because the recruitment relied on convenience sampling, which often results in a group that does not fully reflect the diversity of the whole population. This means that certain demographic groups, such as individuals from different socioeconomic, cultural, or geographical backgrounds, may have been underrepresented or excluded. As a result, the findings may not represent the full range of experiences and perspectives that are important to DMHIs. Moreover, it was not known what amount of experience the participants had with DMHIs, which could also add to a more diverse group of participants or more extensive answers from long-term users. Additionally, the participants used different apps for different reasons, and most only engaged with tools short-term.

Recommendations for future research

Future research should explore how different types of human support, e.g. video calls, chats, feedback or supervision, influence engagement across diverse user groups. Understanding which types of strategies are most effective is important for the success of DMHIs. This can be done by performing longitudinal studies to assess the long-term impact and effectiveness of these interventions. Furthermore, it would also be valuable to investigate the frequency of interactions with the support. Research could compare the methods that were found to be most effective and

successful to other engagement strategies, to determine if they are consistently one of the most effective approaches.

In this context, clear guidelines for supervision are needed to increase effectiveness by ensuring supportive and non-judgmental relationships built on trust, emotional support, and guidance. Users need clarity about what to expect, such as regular check-ins and communication, to increase active engagement. Additionally, concerns about unqualified support also highlight the need for proper training guidelines to avoid potential harm.

Similarly, further research is needed on the relationship between privacy concerns and engagement. Identifying important privacy features and understanding the role of trust and transparency could help design more effective and user-friendly DMHIs. Clear privacy policies, customizable privacy settings, secure communication, and transparency about data handling are essential for building trust and can encourage long-term engagement.

Conclusion

This thesis aimed to explore participants' attitudes and experiences with DMHIs and user engagement. Participants generally expressed a positive view of DMHIs, highlighting accessibility and positive impacts. The findings indicate that human support, such as supervision, can play an important role in sustaining engagement and improving outcomes. Participants reported higher motivation and trust when they had the option to personalize the tools they were using. The findings emphasize that data handling and privacy issues can affect the trust of participants and therefore promote disengagement. Future research should focus on longitudinal studies to assess the long-term effects of human support in DMHIs and explore how different types of support can help to ensure lasting engagement and success. In conclusion, this thesis

shows the potential of human-supported DMHIs for current mental health challenges. By including supervision, personalization, and transparency, these tools can play an important role in supporting mental health worldwide.

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Appendix A

AI statement

During the preparation of this work, the author (Jana Wittlerbäumer) used ChatGPT in order to

1. Brainstorming and ideation
2. Testing argumentation
3. Copy-editing, including minor revisions for conciseness and clarity of writing.

After using this tool/service, the author reviewed and edited the content as needed and takes full responsibility for the content of the work.

Appendix B

Informed consent form

Study Information Sheet

Dear Participant,

We are inviting you to participate in a study aimed at assessing students' attitudes and preferences towards personalization, human support, and supervision as engagement strategies in Digital Mental Health Interventions (DMHIs). Below, we outline the purpose of the study, the interview process, data collection, and data storage procedures.

Study Information:

The purpose of this study is to explore how students perceive and engage with DMHIs, particularly in relation to personalization and human support.

Before the interview, you will be asked to complete two screening questionnaires. During the interview, we will ask open-ended questions about your opinions on digital mental health interventions, your experiences with them, and your attitudes toward their use. The interviews will be transcribed and analyzed to gain understanding of how these strategies might influence your engagement.

Please note, there are no right or wrong answers—we are interested in your experiences and opinions.

Data Collection and Processing:

Participation in this study is entirely voluntary. Demographic information such as age, study status, and nationality will be collected before the interview, and your responses to the questionnaires will be anonymized.

The interview will be recorded, and the recording will be deleted once it has been transcribed. The transcribed interview will be used for data analysis, and after the research is completed, the transcription will also be deleted. All data will be securely stored in the University of Twente's online database. You are free to withdraw from the interview or questionnaire at any time without any consequences.

Consent Form for Students Attitudes on Engagement Strategies for DMHI

YOU WILL BE GIVEN A COPY OF THIS INFORMED CONSENT FORM

Please tick the appropriate boxes

Yes

No

Taking part in the study

I have read and understood the study information dated [DD/MM/YYYY], or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction.

I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions, and I can withdraw from the study at any time, without having to give a reason.

I understand that taking part in the study involves an audio recorded interview, which will be transcribed as text but stored anomalously without identification of participant.

Use of the information in the study

I understand that information I provide will be used for research outcomes, including a bachelor dissertation.

I understand that personal information collected about me that can identify me, such as [e.g., my name or where I live], will not be shared beyond the study team.

I agree that my answers (anonymized) can be quoted in research outputs.

Future use and reuse of the information by others

I agree that my information may be shared with other researchers for other research studies that may be similar to this study. The information shared with other researchers will not include any information that can directly identify me. Researchers will not contact me for additional permission to use this information. (Note: This separate consent is not necessary if you will only store and share deidentified data.)

Appendix C

Interview guide

Section 1

General attitudes and experience with DMHIs

Hello, thank you for taking the time to give this interview. As a first step, we want to explore your thoughts and feelings about digital mental health interventions (DMHIs). Since you mentioned that you've tried using technologies such as apps and online services for mental health, we'd like to hear more about those experiences.

- When deciding to participate to this study, you stated you have tried using technologies, such as apps or online services, for mental health and wellbeing, can you tell me about that experience?
 - Prompt: Why did you decide to start using it?

What are your thoughts and feelings on digital tools/ apps for mental health support?

Section 2

Engagement with DMHIs

Thank you for sharing, now I am going to ask you a few more questions about your experience with using these kinds of technologies. Throughout the interview, please feel free to refer to your past experiences with [app that they previously mentioned] as well as general experience or hypothetical scenarios.

- What features or aspects of such app (or tool) keep you engaged and encourage you to use it regularly?
 - Probing: “Can you provide specific examples of what makes you want to continue using the tool/app?”

What were you thinking, feeling and behaving like while you were actively using it?

Probing: it can be about your thoughts about the app, the feelings that came with it, or your actions and interactions with it

What were your thoughts, feelings and behaviors related to the app, while you were NOT actively interacting with it, during the rest of your day?

Probe: it can be about your thoughts about the app, the feelings that came with it, or your actions while you were doing something different/ not using the app

- Have there been times when you lost interest in the app or tool? If so, what contributed to that?
 - Probing: Were there particular elements or experiences that made you stop using the tool?
- What would encourage you to return to such an app or a tool after a period of nonuse?
 - Probing: Are there specific features or changes that would make you want to re-engage with the tool?

Section 3

Big E and little e

How do these apps or tools help you with your mental health and well-being goal?

Can you describe a typical session or interaction you have with that technology?

- Did any of your experiences or interactions with the app make you more committed to using it?
(Or are there other experiences you haven't mentioned that influenced your decision to keep using it?)
 - ☐ Prompt: It could be about how keeping a certain habit helped you achieve your goals?

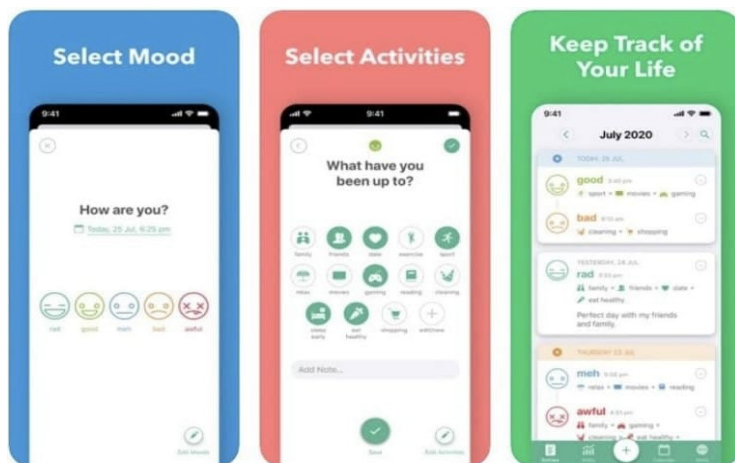
Section 4:

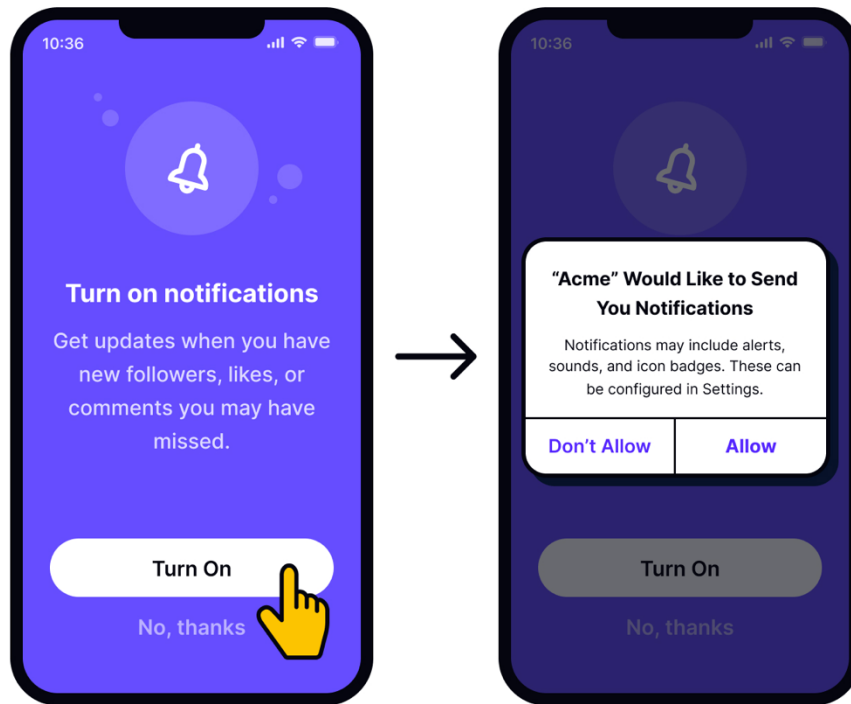
Strategies

Personalization:

Personalization in digital mental health tools means tailoring the intervention to fit your unique needs, preferences, and personal information. This could include things like setting customized goals, receiving feedback based on your progress, or content being adapted to your current mood or mental state.

Examples: First you see a mental health app, that allows the user to track their process and mental health by indicating continuously over a longer period of time how they are feeling and the app collecting that data and then visually portraying it.

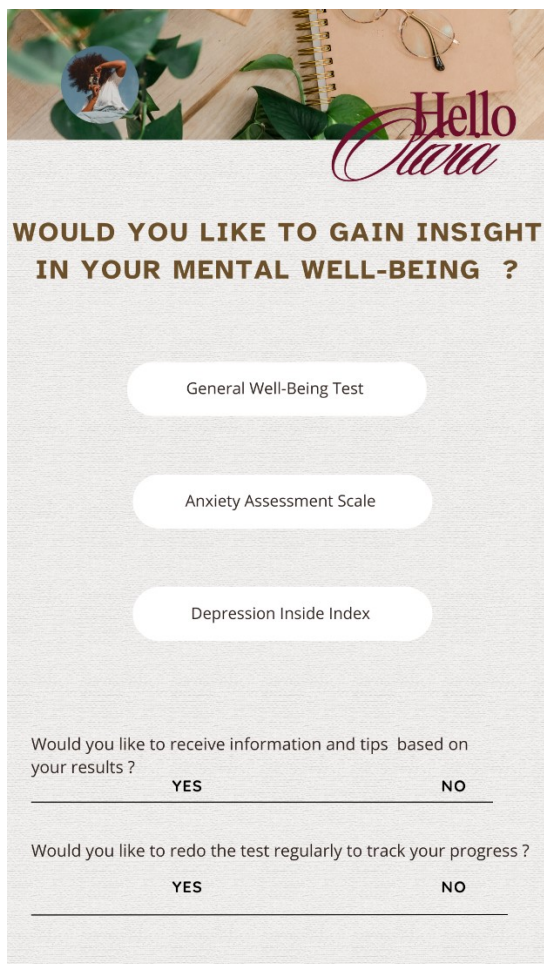




In

The second example you see is the function in the app to control when and when not to receive notifications.

In the last pictures, you see a tool that allows you to take tests that tell you how your mental health scores.



Hello Clara

**WOULD YOU LIKE TO GAIN INSIGHT
IN YOUR MENTAL WELL-BEING ?**

General Well-Being Test

Anxiety Assessment Scale

Depression Inside Index

Would you like to receive information and tips based on your results ?

YES **NO**

Would you like to redo the test regularly to track your progress ?

YES **NO**

How would it you feel when a mental health app or tool is personalized to your specific needs or preferences?

Prompt: what were your feelings?

In what ways would personalization affect how you use the tool?

Prompt: feel free to share examples of your behaviors

When thinking about a personalized tool, what thoughts come to mind?

Prompt: what would be your thoughts?

In the previous examples you saw how you could personalize apps according to your preferences, what if this process happened without you in the loop, for example by using algorithm data?

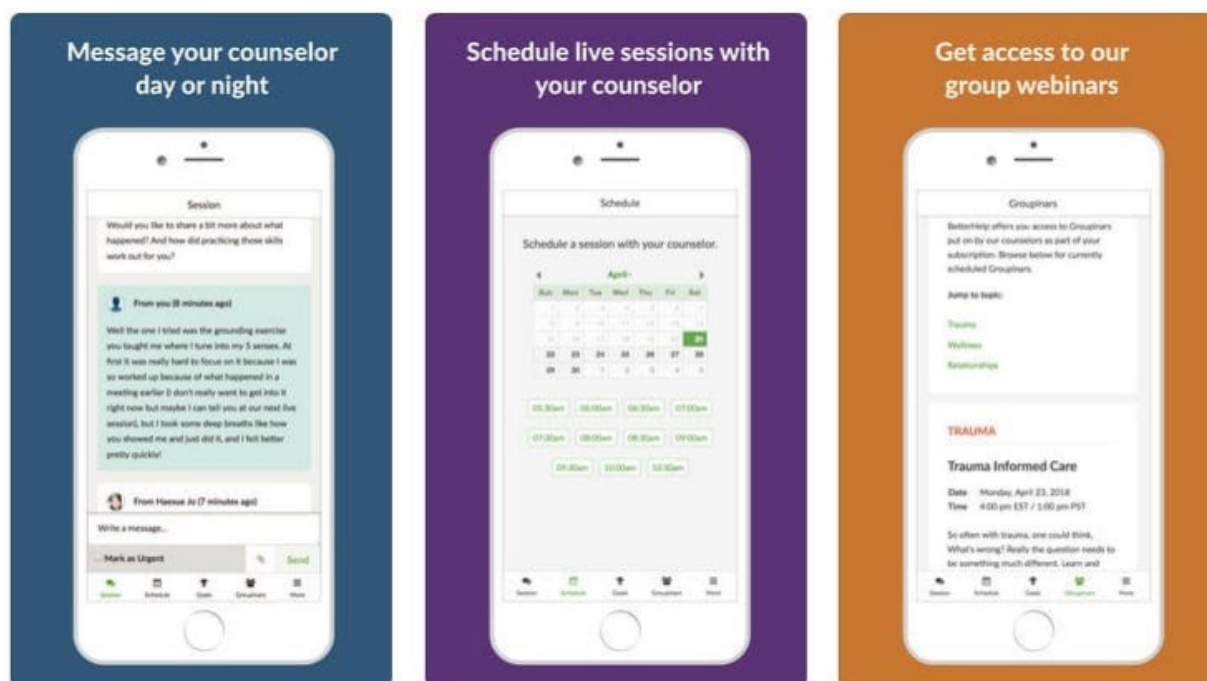
Prompt: is it a possibility that the app could send you notifications based on their algorithms or previous data and how do you evaluate both options?

OK great, now let's talk about another feature.

Human support:

Human support in digital mental health tools means having access to a real person—like a coach, therapist, or peer support—who helps guide you, provides feedback, and offers encouragement. This might happen through messages, calls, or even face-to-face video chat.

Here are some examples of how human support can be implemented into digital tools or apps. The first one shows the possibility of messaging with a counselor through the app which can be done all day. The second picture shows the option to schedule a live session with a counselor through the app. The last one shows that you can also access group webinars, meaning that you can be informed about specific things regarding your mental health that you are interested in while also communicating with other people.



Now that you have seen some examples of features that include human support...

How would you feel about having access to human support as part of your experience with mental health apps?

Prompt: What are your emotions?

-> Depending on what they talked about in their answer for the question

Prompt: What do you think about including a coach/therapist/one-on-one conversation? OR

Prompt: What do you think about including group interactions/community?

How would having human support influence your behavior when using the tool?

Prompt: For example, are you more likely to stick to the program or complete tasks when you know someone is checking in?

What thoughts do you have about the role of human support in your digital mental health experience?

Prompt: Do you think it adds value?

End

We have reached the end of the interview. Do you have any more questions?

Are there any additional comments or thoughts you would like to share?

Thank you for participating!

Appendix D

Questionnaire Qualtrics

Welcome to our study about technology for mental health! As mentioned earlier, the study consists of two parts. The first part is this brief questionnaire, which will take approximately 15 minutes to complete. It covers general information about your eligibility for the study and your demographics. The second part is a one-hour interview, where we'll explore your attitudes and opinions on technology to improve mental health. Next, we will present our informed consent form. Please read the details carefully. If you agree, indicate your consent in the question below. If you do not agree, simply close the questionnaire—any information you've provided so far will not be saved.

Dear Participant,

We are inviting you to participate in a study aimed at assessing students' attitudes and preferences towards personalization, human support, and

supervision as engagement strategies in Digital Mental Health Interventions (DMHIs).

Below, we outline the purpose of the study, the interview process, data collection, and data storage procedures.

Study Information: The purpose of this study is to explore how students perceive and engage with DMHIs, particularly in relation to personalization and human support. Before the interview, you will be asked to complete two screening questionnaires. During the interview, we will ask open-ended questions about your opinions on digital mental health interventions, your experiences with them, and your attitudes toward their use. Additionally, we will present two designs with different engagement strategies and ask for your feedback on these designs. The interviews will be transcribed and analyzed to gain an understanding of how these strategies might influence your engagement. Please note, that there are no right or wrong answers—we are interested in your experiences and opinions.

Data Collection and Processing: Participation in this study is entirely voluntary. Demographic information such as age, study status, and nationality will be collected before the interview, and your response questionnaires will be anonymized and linked to your interview by a code (e.g., Questionnaire 1 and Interview 1). The interview will be recorded, and the recording will be deleted once it has been transcribed. The transcribed interview will be used for data analysis, and after the research is completed, the transcription will also be deleted. All data will be securely stored in the University of Twente's online database. You are free to withdraw from the interview or questionnaire at any time without any consequences.

Informed Consent

1. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions, and I can withdraw from the study at any time, without having to give a reason.
2. I understand that taking part in the study involves an audio recorded interview, which will be transcribed as text but stored anomalously without identification of participant
3. I understand that the information I provide will be used for research of a bachelor dissertation. I understand that personal information collected about me that can identify me, such as [e.g., my name or where I live], will not be shared beyond the study team. I agree that my information can be quoted in research outputs.
4. I give permission for the transcribed interview that I provide to be archived on an online database so it can be used for future research and learning. I agree that my information may be shared with other researchers for other research studies that may be similar to this study. The information shared with other researchers will not include any information that can directly identify me. Researchers will not contact me for additional permission to use this information.

I confirm that I have read the above stated information

I consent to participating in this study

Study contact details for further information:

Sofia Bastoni, s.bastoni@utwente.nl Contact Information for Questions about Your Rights as a Research If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Secretary of the Ethics Committee/domain Humanities & Social Sciences of the Faculty of Behavioural, Management and Social Sciences at the University of Twente by ethicscommittee-bms@utwente.nl

Thank you for reading and approving the informed consent. To begin, we'd like to ask you a few questions about your demographic information.

1. To start with, where are you from?

The Netherlands

Germany

Other

2. What gender do you identify with?

Male

Female

Non-binary / third gender

Prefer not to say

Prefer to self disclose

3. What year of your study are you currently in?

1st year Bachelor

2nd year Bachelor

3rd year Bachelor

Master

4. What do you study?

Thank you for providing your information. In the following, you will complete two questionnaires that assess any depressive or anxious symptoms you may have experienced. Your responses are anonymous and will help identify individuals with at least mild symptoms for further screening in the interview process.

Please indicate how often, in the last two weeks, you have been bothered by the following problems.

The scale is as follows:

0: Not at all

1: Several days

2: More than half the days

3: Nearly every day

Had little interest or pleasure in doing things

Not at all

Several days

More than half the days

Nearly every day

Feeling down, depressed, or hopeless

Not at all

Several days

More than half the days

Nearly every day

Trouble falling or staying asleep, or sleeping too much

Not at all

Several days

More than half the days

Nearly every day

Feeling tired or having little energy

Not at all

Several days

More than half the days

Nearly every day

Poor appetite or overeating

Not at all

Several days

More than half the days

Nearly every day

Feeling bad about yourself — or that you are a failure or have let yourself or your family down

Not at all

Several days

More than half the days

Nearly every day

Trouble concentrating on things, such as reading the newspaper or watching television

Not at all

Several days

More than half the days

Nearly every day

Moving or speaking so slowly that other people could have noticed. Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual

Not at all

Several days

More than half the days

Nearly every day

Thoughts that you would be better off dead, or thoughts of hurting yourself in some way

Not at all

Several days

More than half the days

Nearly every day

Feeling nervous, anxious, or on edge

Not at all

Several days

More than half the days

Nearly every day

Not being able to stop or control worrying

Not at all

Several days

More than half the days

Nearly every day

Worrying too much about different things

Not at all

Several days

More than half the days

Nearly every day

Trouble relaxing

Not at all

Several days

More than half the days

Nearly every day

Being so restless that it is hard to sit still

Not at all

Several days

More than half the days

Nearly every day

Becoming easily annoyed or irritable

Not at all

Several days

More than half the days

Nearly every day

Feeling afraid as if something awful might happen

Not at all

Several days

More than half the days

Nearly every day

Lastly, we would like to ask you a few questions about your general experience with Technology for Mental Health, such as wellness apps, health apps, or other related platforms.

1. Have you ever used any technology to support your mental health and wellbeing? (e.g., mental health apps such as Headspace or Calm, teletherapy

platforms such as BetterHelp or Talkspace, online mood trackers, mindfulness apps or similar technologies?)

Yes, please indicate which one(s)

No

Thank you for all your given answers, we appreciate your participation in our study.

Lastly, could you please write your email address below, so we can contact you to arrange an interview time?