Artificial Intelligence as an Engagement Tool in Digital Mental Health Interventions: A Focus Group Study

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Abstract

Mental health complaints are becoming an increasingly widespread concern worldwide. Lack of funding and access to mental health services calls for an innovative way to address this. One solution could be to employ the tools of the rapidly growing field of Digital Mental Health Interventions (DMHIs). In order for a DMHI to be effective, the user needs to be sufficiently engaged with it, and this can be achieved through the incorporation of various engagement strategies. A current tool which can possibly supplement these strategies is Artificial Intelligence (AI). This qualitative study sought to explore the attitudes of young adults towards DMHIs, primarily but not limited to those which incorporate AI features in their design in order to promote engagement. Participants were also asked about which features they would prefer in a DMHI. A focus group study was conducted with 14 participants between the ages of 20 and 25. Participants were split into three focus groups, with each session lasting around 90 minutes. This report presents the results related to DMHIs and the use of AI as an engagement tool; however, social media and human support were also explored in the focus groups. The main findings of this study revolved around ethics, data handling, human interaction, and personalisation. Participants were generally sceptical and not especially inclined to use DMHIs, in large part due to the personal data required of them, which in turn raised concerns about privacy and third-party access. Furthermore, human interaction and connection emerged as key priorities for the participants, and they were therefore less inclined to consider using a standalone DMHI or purely large language model-based intervention. The primary benefit of using AI as an engagement tool, identified by the participants, was the option of extensive personalisation. Implications of this study include the importance of human support, the possibility of implementing AI to enhance engagement strategies, and the value of transparency with users when utilising AI. This study thus contributes to the literature surrounding user perspectives and preferences concerning DMHIs and identifies issues and future actions regarding the use of AI as an engagement tool in DMHIs.

Introduction

Prevalence and Impact of Mental Health Issues

In 2023, roughly one in six university students (16%) in England were experiencing mental health problems (Sanders, 2023). In the Netherlands, the proportion was even higher, with more than a third experiencing mood problems and over one-fifth experiencing anxiety (Struijs et al., 2023). Moreover, Struijs et al. (2023) reported that 77% of university students in the Netherlands reported moderate to severe stress, and about one-third were experiencing debilitating loneliness.

Evidently, mental health complaints are widespread among university students, and these findings are also mirrored by those found in the general population. In fact, research suggests that difficulties with mental health are one of the leading overall health concerns globally (Vigo et al., 2016) and a major cause of disability for people of all ages (Fatouros et al., 2025). Specifically, Vigo et al. (2016) estimate that mental illnesses account for 32.4% of years lived with disability (YLDs) and are on par with cardiovascular disease in terms of disability-adjusted life-years (DALYs).

Despite mental health concerns being a major part of the global disease burden, funds allocated for their treatment are disproportionately low (Vigo et al., 2016). Locally, this often results in the need for treatment surpassing the availability of mental healthcare (Andrade et al., 2014). Furthermore, treatment through therapy or medication is not always available to people of lower socioeconomic status, and stigma around mental health remains an issue (Manole et al., 2024). This calls for alternative and innovative ways to tackle the disease burden; for example, by utilising the growing field of Digital Mental Health Interventions (DMHIs).

Digital Mental Health Interventions (DMHIs)

DMHIs fall under the eHealth umbrella and are programs that use technology to assist with psychological concerns (Arabian et al., 2025). Psychological treatment is delivered via various types of technology, such as a web-based intervention on a computer, virtual reality, or a mobile app (Philippe et al., 2022). A distinction can also be made between a standalone (or automated) DMHI versus a blended one. In a standalone DMHI, the patient uses the intervention as a form of self-help, and the intervention is independent from clinician involvement or other social factors (González-Robles et al., 2024). Conversely, a blended DMHI is one in which a professional, such as a therapist or coach, takes part in the intervention and supports the patient (Erbe et al., 2017; González-Robles et al., 2024). Overall, this type of intervention appears to be more effective, has

higher rates of adherence, and overall better outcomes (González-Robles et al., 2024). However, a meta-analysis conducted by Madrid-Cagigal et al. (2025) challenges this assumption, suggesting that in certain cases, automated interventions outperform their blended counterparts in reducing anxiety symptoms.

Advantages of DMHIs

Because of their digital nature, DMHIs can be more cost-effective and easier to disseminate than in-person treatment (Manole et al., 2024). For instance, once implemented, a DMHI typically requires fewer staff, lower time investment, and can extend to a greater geographical area compared to traditional treatment (Philippe et al., 2022; Andrews et al., 2018; Kim et al., 2023). In other words, DMHIs can reach individuals in remote locations with limited treatment options and can offer relief when in-person treatment is unavailable or unsafe, such as during the height of the COVID-19 pandemic (Philippe et al., 2022). There are also fewer temporal limitations associated with DMHIs, as they are normally available at all hours (Manole et al., 2024). This illustrates the accessibility and flexibility DMHIs can provide.

The flexibility of DMHIs also extends to treatment options. Research on the efficacy of DMHIs suggests that they can be effective in treating anxiety and mood disorders (Andrews et al., 2018; Ye et al., 2015; González-Robles et al., 2024; Kim et al., 2023; Garrido et al., 2019). These interventions often employ evidence-based therapies like Acceptance and Commitment Therapy (ACT) or Cognitive Behavioural Therapy (CBT), which are adapted into user-friendly digital formats, making them more approachable to individuals with no prior therapeutic experience (Madrid-Cagigal et al., 2025; Andrews et al., 2018; González-Robles et al., 2024). A meta-analysis conducted by Moshe et al. (2021) suggests there is no significant difference in the effect of a blended CBT intervention compared to a regular, in-person one, which implies that DMHIs may be a valid alternative to traditional mental health support. Additionally, Fatouros et al. (2025) suggest that data-driven DMHIs can help alleviate depressive as well as anxiety symptoms and also found a significant improvement in symptoms for patients with clinically significant anxiety and depression.

Disadvantages of DMHIs

While DMHIs may be a valid alternative to traditional therapies for certain mental health concerns, they are not appropriate for all treatments. For instance, they are less effective at assuaging the effects of social isolation and loneliness (Garrido et al., 2019). Furthermore, a barrier

that DMHIs often face is high attrition rates (Madrid-Cagigal et al., 2025). Linardon and Fuller-Tyszkiewicz (2020) refer to attrition as "failure to complete the research protocol associated with an online intervention". Furthermore, the researchers estimated attrition rates for DMHIs to range between 23%-64%, illustrating that this may be a considerable limitation of these types of interventions (Linardon & Fuller-Tyszkiewicz, 2020). Nevertheless, research suggests that increasing engagement with the intervention could possibly remedy this problem (Manole et al., 2024; Geraghty et al., 2013).

Engagement in DMHIs

Kelders et al. (2020) introduce the concept of engagement as a multidimensional construct with no standardised definition. However, Perski et al. (2017) propose this definition of engagement within DMHIs:

"Engagement with DBCIs is (1) the extent (e.g. amount, frequency, duration, depth) of usage and (2) a subjective experience characterised by attention, interest and affect" (p. 258).

Three central components of engagement are recurring in engagement literature: one behavioural, one cognitive, and one affective (Kelders et al., 2024; Kelders et al., 2020; Saleem et al., 2021). This also applies to eHealth: When investigating engagement in the context of digital health interventions (DHIs), Kelders et al. (2024) discovered that the same three components - behavioural, cognitive, and affective - are equally relevant to the engagement of health app users. However, while the aforementioned illustrates an agreement across disciplines that these three components exist, there is little consensus about what they entail.

In their 2024 study, Kelders et al. proposed a more context-specific definition of the components of engagement based on their interviews with engaged DHI participants and professionals. According to the participants, the behavioural component primarily related to incorporating the intervention into their routine rather than the frequency of use. The cognitive component pertained to the users' goals and motivations, and the affective component was related to identity and positive or negative affect around the achievement of goals (Kelders et al., 2024). While DHI users focused on all three components of engagement, the professionals consistently mentioned usage as a key aspect of engagement. However, this does not necessarily match the experience of DHI users, as correct and intentional usage of the intervention affects their engagement more than the quantity of usage (Kelders et al., 2024). Saleem et al. (2021) suggest that the behavioural component of engagement pertains to usage and can be exemplified through

measurements such as number of logins, frequency and duration of use, and rates of completion, which matches the ideas of the professionals in Kelders et al.'s study, but not the users. This implies that the definition of engagement may vary not only across disciplines, but also between individuals. Additionally, this may also extend to the weight assigned to each engagement component (Kelders et al., 2024). While most users exhibit some level of affective engagement, individuals may depend more heavily on one component than another to engage with an intervention (Kelders et al., 2024). Thus, different individuals may need different adaptations for engagement.

To accommodate individual differences, it may be useful to employ various engagement strategies. These are methods used, primarily through the design of the intervention, to increase user participation, interaction with the intervention, and reduce attrition (Winter et al., 2022; Gan et al., 2022). A possible strategy that can support individual differences is personalisation, and research indicates that DMHIs that use this strategy to adapt to the needs and preferences of the individual are more successful in fostering engagement (Saleem et al., 2021). Human interaction, however small, can also positively influence engagement (Saleem et al., 2021; Garrido et al., 2019), and therapist-guided DMHIs have considerably higher engagement rates compared to their standalone counterparts (Gonzáles-Robles et al., 2024; Kelders et al., 2020). Reminders, whether automated or from clinicians, is also a valuable strategy, and research suggests that receiving reminders or prompts can improve both adherence and engagement (Perri-Moore et al., 2016; Alkhaldi et al., 2016). Interactions with artificial intelligence (AI) chatbots and interventions utilising other types of artificial intelligence can also have a positive effect on engagement (Saleem et al., 2021; Manole et al., 2024). In fact, in their 2019 study on smoking cessation, Perski et al. discovered that implementing an AI chatbot into a standalone DMHI more than doubled engagement with the intervention. These findings highlight the potential of AI as a promising focus for engagement research.

Artificial Intelligence

Artificial Intelligence (AI) is a broad term that primarily refers to computer systems able to perform tasks that normally require human intelligence, such as language processing, learning, problem solving, and pattern recognition (Russell & Norvig, 2021). While the field has been developing for decades (Manole et al., 2024), there has been rapid advancement in recent years, especially concerning the emergence of AI chatbots and large language models (LLMs)

(Bommasani et al., 2022). A well-known, powerful type of LLM is the generative pretrained transformers (GPTs), which are the models behind programs like ChatGPT (Zeng et al., 2024). These have the ability to understand context, generate dialogue, and provide real-time responses (Bommasani et al., 2022), and are increasingly used in fields where interactive communication is imperative, such as education and healthcare (Følstad & Brandtzæg, 2017). Furthermore, AI algorithms are capable of recognising patterns in large datasets and can be used for predictive modelling and personalisation, making them uniquely user-centred (Topol, 2019). These assets are important factors for the efficacy of AI in DMHIs: In their 2024 study on interventions for anxiety, Manole et al. found that AI chatbots can help mitigate symptoms of anxiety through interactive CBT interventions with adaptive dialogue. The researchers also emphasised the added benefit of anonymity and reduced stigma in DMHIs with AI chatbots, highlighting the positive effects this appears to have on self-disclosure and engagement (Dehbozorgi et al., 2025; Manole et al., 2024).

Artificial Intelligence as an Engagement Tool in DMHIs

The implementation of artificial intelligence to promote engagement in DMHIs is being increasingly researched (Manole et al., 2024; Dehbozorgi et al., 2025). A significant benefit of AI as an engagement tool is that it can take many different forms and supplement other strategies. For example, Manole et al. (2024) direct attention to the fact that AI chatbots can also be used to increase personalisation within an intervention, as they are interactive and adaptive. Interestingly, research suggests that one of the reasons AI chatbots can increase engagement is their ability to mimic human support (Saleem et al., 2021; Perski et al., 2019). Considering that factors such as personalised feedback and support, as well as the potential for social support, are imperative in promoting engagement with DMHIs (Phillipe et al., 2022), mimicry of these by an AI chatbot or other AI features is a research avenue with much potential (Saleem et al., 2021).

Consequently, incorporating AI into a DMHI may positively influence engagement. For example, Perski et al. (2019) found a 101% increase in engagement with a smoking cessation DMHI when implementing an AI chatbot when compared to the non-AI alternative. The findings of a review from Dehbozorgi et al. (2025) support this: AI-driven tools, such as predictive modelling or AI chatbots, were found to be an effective way to increase user engagement, especially in student populations. The researchers also highlighted that Wysa, an AI app tailored to assuage depressive symptoms, showed high engagement and efficacy.

Additionally, AI-driven DMHIs, whether chatbot-based or otherwise, require fewer public resources, and are thus more cost-effective (Dehbozorgi et al., 2025). Furthermore, they can provide relief for mental professionals: For instance, Manole et al. (2024) suggests utilising AI tools to run initial diagnostic tests and filter through which patients may need in-person care, and who could benefit from a wholly digital intervention. Similarly, Dehbozorgi et al. (2025) mention the ability of AI to assist in the early detection and diagnosis of mental health conditions. Finally, AI chatbots can provide more holistic therapy by addressing both physical and psychological factors, for instance, by incorporating advice regarding exercise or diet in order to promote mental health (Manole et al., 2024). Thus, AI has the potential to promote engagement as well as the efficacy of an intervention.

Challenges With Implementing AI as an Engagement Tool

While AI-driven interventions may be more cost-effective and use less human resources, they may pose an environmental risk. Artificial intelligence tools and data centres use significant amounts of electricity and contribute to increased carbon dioxide emissions (World Economic Forum, 2024). Furthermore, AI data centres demand large quantities of water to cool their computers (Berreby, 2024).

An issue around AI and mental health that is more commonly discussed is how to make AI usage ethical for the patient (Dehbozorgi et al., 2025; Manole et al, 2024). AI chatbots store patients' data in order to provide better support, and this data must be adequately stored and protected from cyber-attacks (Manole et al. 2024; Arabian et al., 2025).

Furthermore, AI chatbots are not yet developed enough to adequately mimic genuine human support. They may not be able to simulate a true therapist-client relationship and can thus offer only limited connection (Manole et al., 2024). Studies suggest that true human empathy cannot at this point in time be replicated by artificial intelligence, and this may hamper user engagement and intervention efficacy (Hoermann et al., 2017; Manole et al., 2024). AI chatbots also struggle with cultural sensitivity and nuanced language (Manole et al., 2024), and this may limit the ability to effectively disseminate an intervention.

Finally, there has been recent scepticism in the media towards the use of AI as a mental health tool. In 2023, the website of the American National Eating Disorders Association (NEDA) replaced the staff manning their website with an AI chatbot that ended up repeatedly giving advice promoting eating disorders to individuals looking for help (The Journal of Clinical Psychiatry,

2023). These types of incidents raise concern about the possible inability of AI chatbots to detect dangerous behaviours and may discourage trust in AI-driven interventions. This could be a significant obstacle as trust in AI chatbots is fundamental for such an intervention to be successful (Manole et al., 2024). In other words, user perspectives can affect engagement with DMHIs. Despite a consensus in the literature that user perspectives impact engagement (Borghouts et al., 2021; Lipschitz et al., 2023), there remains a gap in literature for what exactly these perspectives are and how they shape engagement, which makes it difficult to design DMHIs that adequately reflect user needs (Boucher & Raiker, 2024; Valentine et al., 2025). Furthermore, the use of AI in DMHIs is a relatively new field where more research on user perspectives is needed (Reading Turchioe et al., 2024).

Research Questions

To summarise, mental health complaints are a growing concern globally, and new ways of tackling them are needed. A possible solution is the dissemination of digital mental health interventions, however, in order for these to be effective, sufficient engagement is imperative. To address this it is common to implement engagement strategies, which can be supplemented by the use of artificial intelligence tools such as AI chatbots or pattern recognition algorithms. However, certain engagement strategies are more effective for some individuals than others, which is why it is salient to investigate the thoughts and feelings of the target population.

The aim of this study is to explore AI as an engagement tool for DMHIs to contribute to the growing knowledge on engagement in online interventions. The goal is two-fold: first, to navigate the attitudes and preferences of young adults for DMHIs in general, and second, to investigate their attitudes and preferences towards AI chatbots and other artificial intelligence tools for mental health, and to gather data on their preferences for future AI-powered DMHIs. This study aims to answer two primary research questions, the first of which is:

1. *How do young adults perceive DMHIs, and what are their preferences for such interventions?*

This inspires the following questions:

   a. How do young adults experience DMHIs?
   b. What do young adults consider to be the advantages and disadvantages of using DMHIs?
   c. What are young adults' preferences for features of DMHIs?

The second primary research question:

2. *What are young adults' feelings and attitudes towards the use of artificial intelligence to promote engagement within DMHIs, and how can AI be used to encourage engagement with DMHIs?*

From which the following questions are derived:

a. How do young adults perceive the presence of AI when used to promote engagement in DMHIs?
b. What do young adults consider to be the advantages and disadvantages of incorporating artificial intelligence tools into DMHIs?
c. What are young adults' preferences for features of an AI intervention?

Methods

Design

This study employed a qualitative approach to data collection. The topics identified above were explored through three focus groups. Focus groups were established as the most appropriate option, as they allowed for in-depth exploration of attitudes towards DMHIs and AI as an engagement tool and provided the participants with the opportunity to build on each other's experiences and opinions. A short Qualtrics (Provo, UT) survey was also created to collect general participant data. This study was part of a larger research project on various engagement strategies in DMHIs, namely social media strategies and human support.

Participants

14 participants were recruited through convenience sampling. All participants were recruited from the Netherlands and Germany, except for one, who was recruited from England. To partake in the study, participants had to be between the ages of 18 and 30, have a basic level of English (enough to participate orally), and have previous experience with DHIs, DMHIs, or both. These were defined as any technology used to improve mental (DMHI) or physical (DHI) health, which then had an impact on the former indirectly. Examples of such technologies were step trackers, heart rate trackers, meditation and mindfulness apps, or a digital diary. The participants were divided into three focus groups of four or five. The sample consisted of 64.3% Dutch, 21.4% German, 7.1% British, and 7.1% Spanish participants. The mean age of the participants was 22.3 (SD = 1.25).

Materials

Prior to the focus group sessions, all participants were provided with an information sheet about the study and a consent form to fill out. In addition, they were asked to fill out a Qualtrics survey consisting of 11 questions inquiring about previous DHI and/or DMHI usage and general demographics such as age and previous education. The survey is included in Appendix C.

A structured focus group guide (see Appendix B) was designed to accommodate all three directions of the research project. Section 1 of the guide introduced the concept of DMHIs and included an AI-generated visual aid showcasing various types of DMHIs, as well as two general questions about participants' experiences with DMHIs. Section 2 contained four questions related specifically to engagement with DMHIs. Section 3 was edited to fit the focus group, depending on which topic it would address. The section created for the current study consisted of 14 questions about AI chatbots and other types of AI as an engagement tool, including a short introduction to the topic and two AI-generated visual aids (See Appendix B); one showing an example conversation inspired by the AI mental health chatbot Woebot (Woebot Health, 2025), and the other being a visualisation of how an app could use AI to promote personalisation. The guide incorporated questions like "How do you personally feel about AI as an engagement tool for DMHIs?", "If you were to design your own AI-based or AI-supported DMHI, what would it look like?", and "After this discussion, would you consider recommending an AI-based intervention to a friend who was struggling?". The final section consisted of questions summarising the participants' attitudes towards DMHIs in general. The focus groups all lasted between 60 and 90 minutes, and the guide included probes to encourage participants in case of lulls in the discussion.

The focus groups were recorded using the IOS mobile app "Dictation" and transcribed using Amberscript (2025), an online, GDPR-approved service.

Procedure

Ethical approval from the BMS Ethics Committee of the University of Twente was obtained before data collection (application number 250350). Two researchers were present at all times during data collection. One researcher facilitated the discussion, while the other observed the session. Prior to data collection, all participants were presented with an information sheet and informed consent form (see Appendix D). After signing the consent form, participants were directed to the Qualtrics survey before the start of the focus group. After filling out the survey, participants were introduced, and the focus group commenced. The focus group followed the

structure of the guide, and the facilitating researcher allowed space for participants to fully discuss each point before moving on. After the end of the focus group, participants were debriefed and informed of their rights to their data and to withdraw consent at any time.

Data Analysis

The transcribed data were coded using Atlas.ti (v. 25.0.1) and then interpreted using thematic analysis following the approach of Braun and Clarke (2006). These researchers identify thematic analysis as a flexible method used for "identifying, analysing, and reporting patterns (themes) within data" (Braun & Clarke, 2006, p. 6). A theme within the data in this context was considered to be a participant response that was somewhat recurring and connected to the research question. The six phases outlined by Braun and Clarke in their 2006 paper were used as a guideline when conducting the thematic analysis: familiarisation with data; initial coding of data; looking for themes; reviewing the themes; defining and naming the themes; and finally, reporting the findings. A worked example of the Braun and Clarke approach to thematic analysis was consulted before starting the analysis (Byrne, 2022). All personal data was anonymised to ensure adherence to ethical standards.

Following the guidance of Braun and Clarke (2006), data analysis was conducted as follows. The transcripts were cleaned and thoroughly read through, followed by initial coding, as part of the familiarisation and looking for themes phases. Then, the transcripts were looked over once again on Atlas.ti, at which point inductive coding was used to generate more specific codes and placing them under the correct themes. At this point, themes and codes for DMHIs overall and those for the use of AI as an engagement strategy were separated. The final step included a last review of the transcripts to fully define and name all themes. The next section includes the findings from this process.

Results

Participant Demographics and Prior Experience

The sample was recruited from the area surrounding the University of Twente in Overijssel, The Netherlands. 13 participants lived in this general area, while one was based in the United Kingdom. Eleven participants were high school graduates, one had completed a university bachelor, one, an applied science bachelor, and one had finished a master's degree. Nine were students, four were employed, and one participant was unemployed.

The focus groups provided insight into the participants' previous use of DHIs and DMHIs (see Appendix E, Table E1). The results reflected those of the survey: fitness tracking was mentioned the most times, followed by progress tracking and meditation apps. Within those, Headspace was referred to most frequently. Two participants had also experimented with online therapy to varying degrees of success.

It is important to note that one participant entered the survey and did not respond to any of the questions but still participated in the focus group. The following paragraph therefore only applies to 13 out of the 14 participants.

The survey responses indicated that all participants had used a digital health intervention at some point prior to the study. The majority of respondents had used a type of fitness tracker before, and seven had used a DMHI specifically. Meditation apps were the most widely used type of DMHI, with Headspace again cited as the most frequently used. Regarding artificial intelligence, all respondents also reported having experience with AI outside of DHIs or DMHIs (e.g. OpenAI, Grammarly, Gemini, and others).

Findings for DMHIs Overall

The complete codebook can be found in Appendix E. The results relevant to the first primary research question, "*How do young adults perceive DMHIs, and what are their preferences for such interventions?"* are explicated in the paragraphs below in the following order: first, results pertaining to the participants' attitudes, then, factors affecting engagement, their thoughts on advantages and disadvantages, and finally, their suggestions for features.

Participant Attitudes Toward and Priorities Regarding DMHIs

The following section describes the participants' attitudes toward DMHIs. Table 1 provides an overview of the most frequently mentioned codes (the number of times a topic was brought up in all three focus groups combined) for these themes. The following paragraphs endeavour to answer question a, "How do young adults experience DMHIs?".

Table 1

Table Representing Attitudes Toward DMHIs

Theme	Code	Explanation	Frequency
Feelings, thoughts, and attitudes	Addition to therapy	Participants felt that DMHIs were best used as an addition to therapy rather than an alternative	9
	Scepticism	Participants expressed scepticism towards the efficacy and trustworthiness of DMHIs	16
	Superficial needs	Participants felt that DMHIs were best equipped for less serious, superficial tasks	6
	Supportive	Participants felt that DMHIs had the potential to be supportive	4

For participant attitudes, the most frequently mentioned code was scepticism, which appeared 16 times. To a lesser extent, DMHIs were seen as supportive, with the code appearing four times. Participants agreed that DMHIs would best be used for superficial needs (mentioned six times), and suggested they could act as an addition to therapy rather than an alternative, though they considered that a DMHI may be a good alternative for some: *"I think for some people, [they are] too scared to go to a real life therapist, and this is a good alternative"* (Participant 6). Lastly, participants had a tendency to assume that the DMHI was an app, which is reflected in the drawings they submitted (see Appendix F).

Factors Influencing Engagement

The following section explains the participants' thoughts on factors affecting their usage and engagement. Table 2 illustrates and the most important codes for this topic.

Table 2

Factors and Priorities Influencing Engagement

Theme	Code	Explanation	Frequency
Factors influencing usage and engagement	Advertising	Participants suggested advertising as a way to promote initial use, but stated that advertising inside the DMHI would cause them to disengage	9
	Improvement	Participants mentioned improvement in mental health as a reason for disengagement	2
	Non-expertise	A DMHI that is not professional or evidence-based would hinder engagement	11
	Notifications	Participants suggested that notifications would promote engagement, but stressed that too many would cause them to disengage	10
	Peer usage and recommendation	Reason for use and continued engagement	15
	Professionality	Participants were more interested in an intervention made by professionals	13
	Rewards or incentives	Increased likelihood of engagement if present	16
	Short time commitment	Less time needed for the DMHI would increase engagement	5
	Too much work or time needed	Reason for disengagement	5
Participant priorities	Financial accessibility	No or low paywall	19
	High quality	A well-thought-out, professional intervention	4
	Human interaction	Suggested as a major component in mental health care	27
Participant priorities	Social aspect	A DMHI with a social component	25

The participants also provided ample examples of facilitators and barriers to engagement with a DMHI. The most relevant reasons for engagement were, in order of most frequently mentioned; a social component (mentioned 25 times), financial accessibility (19 times), rewards or incentives (16), peer usage or recommendation (15), personalisation (14), professionality (13), and notifications (10).

Financial accessibility was considered an instrumental factor in whether participants would initially engage, as well as if they would disengage over time. Participant 3 explained: *"for headspace specifically, I started using it when like around one third of their content was free, and then they slowly moved to making it less and less"*. The participants also felt that DMHIs could be a financially accessible alternative to traditional therapy, although they stressed that it would not provide the same level of benefits: *"I don't think an app [is] the same thing as really talking to someone. To a person and to someone who has studied to be that person"* (Participant 6). Five of the 14 participants also expressed the need for visual stimulation (visual progress, videos of other people's experiences, a pretty interface, or perhaps a visual social aspect).

All 14 participants agreed on the importance of human interaction (mentioned 27 times) regarding mental health treatment - for instance, Participant 5 emphasised that *"I think it's always better to have more human connection".* Furthermore, many also prioritised a social aspect in a DMHI, suggesting that this could be a way of implementing human interaction in a digital space, and that *"community helps"* (Participant 4). When discussing this, the participants also brought up peer usage and recommendation: *"maybe [if] you know someone who's also using it, and then you can be friends"* (Participant 10). However, some participants stressed that a social aspect could bring a new set of issues: *"it could create a sense … That you're maybe not doing well enough or not trying hard enough"* (Participant 4). In the words of Participant 11, *"it depends on the person"*.

Reasons for disengagement included improvement in mental health or no longer feeling a need for the DMHI: *"I think my mental health just got better"* (Participant 11). A DMHI not made by professionals was also considered unattractive. For example, Participant 14 had, while looking for mental health applications, *"seen a considerable amount of, uh, junk apps, you know, that were just really bad and also just apps that were complete scams".* One participant also mentioned requiring a break from the intervention on occasion as a reason for (temporary) disengagement. Finally, requiring too much effort in order to make use of the intervention was provided as a reason

for the users to disengage: *"I think if it's too much work to use, like I mentioned, if it takes too much time"* (Participant 6).

Participants also stressed the importance of context - a DMHI can be useful, but it depends on how it is used, the purpose of use, and who is using it. Some aspects were considered both positive and negative, depending on the participant or context. For example, some participants found reminders and notifications helpful: *"maybe like a text, like, how is your day going and how was work?"* (Participant 8). Conversely, others thought reminders would be bothersome and foster disengagement: *"a nightmare intervention would, I think would be something where, uh, I'm really confronted with or that's really invasive, like the Duolingo stuff with all the notifications"* (Participant 3). The same was true for advertising: while it was considered useful to prompt initial usage, advertisement in the DMHI itself was considered unattractive. Furthermore, some participants expressed the need for frequent renewal, while others would prefer to have a familiar interface.

Advantages and Disadvantages of DMHIs

Table 3 illustrates the most important codes when considering question b, "What do young adults consider to be the advantages and disadvantages of using DMHIs?". The table is further elucidated in the section below.

Table 3

Perceived Benefits and Participant Concerns Regarding DMHIs

Theme	Code	Explanation	Frequency
Perceived benefits	Accessibility	DMHIs are more accessible and widespread than traditional therapy	9
	Anonymity	DMHIs are ideal for maintaining anonymity and can make the user more comfortable	5
	Availability	A DMHI can be available at any time, as opposed to a regular therapist	7
	Bridge to therapy	Participants suggested that DMHIs can bridge the gap between no care and regular therapy and can encourage users to seek help	5
Perceived benefits	Personalisation	A DMHI tailored to the user	14
	Support for professionals	DMHIs can lessen the load put on mental health professionals	2
Participant concerns	Comparison	A user might compare themselves to others if a DMHI had a social aspect	5
	Data handling and privacy	Participants consistently brought up the dangers of data handling and misuse	10
	Hyper-independence	Users may rely on the DMHI too much and not ask for help if they needed it	4
	Negative spiral	In a DMHI with a social aspect	7
	Overuse	Participants suggested this could lead to worsened mental health	4
	Pressure	A DMHI may inadvertently make users feel pressured to work harder on their mental health, resulting in feelings of guilt	8
	Virtual	Participants reported feeling that a DMHI would not feel real to them	4

Advantages

The most frequently mentioned advantage was personalisation (mentioned 14 times), for example in the form of "*mood tracking or adaptive content*" (Participant 11). Another benefit was accessibility: "*I think it's really good that it's easily accessible. Everyone has phone, and everyone could use it if they want to.*" (Participant 8). Participants also mentioned availability: "*just having someone or something … for whenever you need the help, like not actively asking you to engage with it, but just being there and just knowing that you have the presence there*" (Participant 2). The participants also pointed out the safety anonymity could provide, illustrated by Participant 10: "*you, uh, don't have the feeling that the therapist is judging you or something like that*". Two participants also felt that a DMHI could be a bridge to therapy and suggested that a DMHI could thus be an initial step for users toward more traditional types of treatment. Finally, the possibility of using DMHIs as a supportive tool for mental health professionals was highlighted.

Disadvantages

The most frequently mentioned disadvantage was related to data handling and privacy (mentioned 10 times). A concern was that sensitive data may be sold to third parties or otherwise shared without the user's consent: *"I mean if it's free then you're paying with privacy. And if you're paying money then you're still probably paying with like, private data that you're throwing away to some random company."* (Participant 11). Participants were positively inclined to potential DMHIs with social features, as long as it would be possible to avoid an excessively negative environment. This is well illustrated by Participant 5: *"Maybe it will also become like a place of like people only dumping their trauma"*. Furthermore, they raised concerns about a social aspect inadvertently putting pressure on the users and promoting unhealthy comparison between individuals. The participants also reported that a DMHI would not feel real to them: "*But it's still like digital. There's nothing tangible about it. So there's no real reward for like keeping up with it*" (Participant 11). Finally, the participants brought up hyper-independence and overuse as risks of using DMHIs, suggesting that "*maybe [you] go on too long with [the DMHI], and then maybe make your mental health a bit worse*" (Participant 9).

Suggested Features of DMHIs

Table 4 outlines the most frequently suggested features that the participants would find helpful, thereby endeavouring to answer question c, "What are young adults' preferences for features of DMHIs?". The table is further explained below.

Table 4

Most Frequently Mentioned Codes for Suggested Features

Theme	Code	Explanation	Frequency
Participant suggestions for features, other advice	Gamification	Adding a challenge or competition element to incentivise users to engage with the intervention	9
	Planning	Day-to-day planning as well as the ability to plan in-person therapy appointments	5
	Progress tracking	Tracking improvements, also visually (i.e. through a map)	10

The most frequently suggested feature was progress tracking (mentioned 10 times): "*to track your progress. I think that's very good. To always challenge yourself and see where you're at.*" (Participant 12). This was followed by gamification - participants frequently suggested implementing challenges or competitions to promote engagement. Participant 12 proposed "*something like a double XP uh, event or something. I would use that more*". Finally, participants also implied that they would appreciate a planning feature: "*for me, I think it might be nice to have my calendar involved with it and just, like, have my appointments there*" (Participant 3).

AI as an Engagement Tool

The following sections pertain to the results relevant to the second primary research question, "*What are young adults' feelings and attitudes towards the use of artificial intelligence to promote engagement within DMHIs, and how can AI be used to encourage engagement with DMHIs?"*. The findings are explored in the following order: first, attitudes towards AI in DMHIs, then, advantages and disadvantages, and finally, preferences and suggested features.

Attitudes Towards AI in DMHIs

Table 5 includes participant attitudes towards the use of AI as an engagement tool in DMHIs. The table is explained further in the sections below, which are relevant to question 2.a, "How do young adults perceive the presence of AI when used to promote engagement in DMHIs?".

Table 5

Participant Attitudes to AI as an Engagement Tool in DMHIs

Theme	Code	Explanation	Frequency
Attitudes towards AI	Curiosity	Willingness to try out a DMHI with AI features	1
	Scepticism	Participants were sceptical towards efficacy and trustworthiness	7
	Scepticism – AI chatbots	Participants were sceptical towards AI chatbots as DMHIs	10
	Supportive	Participants felt that DMHIs with AI features could provide support	2

When initially introduced to the concept of AI as a tool in DMHIs, most participants were again highly sceptical. However, one participant mentioned the benefit of AI in DMHIs unprompted: *"talking to ChatGPT also sometimes counts in my opinion. That's something I've done. So AI is something useful in this case"* (Participant 11). Another participant was sceptical but not completely opposed, suggesting that using AI for mental health *"might be better than nothing"* (Participant 3). Some participants expressed curiosity, and towards the end of the focus group, they communicated that they would be interested in a DMHI that incorporated AI in other forms, for example, through personalisation features.

Advantages and Disadvantages of AI in DMHIs

Table 6 outlines the main perceived advantages and disadvantages of AI in DMHIs according to participants and is further explicated below. The findings in the following section are relevant to question 2.b, "What do young adults consider to be the advantages and disadvantages of incorporating artificial intelligence tools into DMHIs?".

Table 6

Advantages and Disadvantages of AI in DMHIs

Theme	Code	Explanation	Frequency
Perceived Benefits	Accessibility	More accessible than traditional therapy	4
	Accountability	AI could help keep the user accountable when pursuing their goals	1
	Addition to therapy	Participants felt that DMHIs with AI were best used as an addition rather than alternative to traditional therapy	6
	Anonymity	The user can remain anonymous behind the screen	1
	Availability	AI chatbots are always available	6
	Bridge to therapy	AI can help the user access traditional therapy or encourage them to seek help	3
	Goal setting	AI can assist in setting achievable and personalised goals	2
	Government regulation	Regulating one AI program may be easier than regulating many therapists	1
	Pattern Recognition	AI's ability to recognise patterns can contribute to the personalisation aspect of DMHIs	10
	Personalisation	AI can be flexible and make personalisation easier and quicker	34
	Planning	AI-driven DMHIs can help the user with planning and lessen administrative load	7
	Routine	AI can help establish a routine in the user's life	4
	Short time commitment	Less time needed, especially for administrative tasks	3

Theme	Code	Explanation	Frequency
	Support for professionals	Can lessen the load put on mental health professionals	6
Perceived Drawbacks	AI oversaturation	Too many AI features would lower engagement	3
	AI Chatbot - training	The quality of an AI chatbot intervention will depend on the content used to train the AI chatbot	6
	AI Chatbot - usage barrier	Some people, especially the elderly, may struggle using AI chatbots	3
	Data handling and privacy	Concerns with what the data gathered is used for, and whether it is used to train the AI	24
	Insufficient humanity and/or empathy	Participants stressed that AI chatbots are not human and cannot empathise	23
	Non-expertise	A DMHI implementing AI is not necessarily evidence-based or professional	6
	Overdependence	The unlimited availability of AI may cause dependence to the point of detriment	3

Advantages

In total, thirteen advantages of using AI in DMHIs were identified during the focus groups. The most frequently mentioned advantage was the possibility of personalisation - the topic came up 34 times, even when excluding the general parts. This advantage goes hand in hand with the AI's pattern recognition skills, which were mentioned ten times. On the topic, Participant 5 suggested that *"you could really make it really personalised like, oh, I saw you're spending like seven hours on YouTube yesterday… like at 3 a.m"*. Other advantages mentioned were accessibility and availability, more specifically, that an AI intervention may be more accessible to a diverse range of users, and that it would always be available if the user needed support. For instance, when speaking about availability, Participant 4 emphasised that *"if you really need to talk to someone, you know, like, AI will always be there"*. Another perceived advantage was an AI's ability to aid in planning and creating routine; one user mentioned that this feature could be useful for patients with attention deficit hyperactivity disorder: *"maybe for like people with ADHD or something, that need help scheduling stuff. Pretty plain technical stuff like that. That could be maybe nice for AI to do"* (Participant 3). Additionally, participants suggested that an AI-driven intervention might help lessen the load on mental health professionals and could act as a support tool for them, or, in the words of Participant 3, *"Less workload on the therapists"*. Finally, similar to the general findings, participants mentioned that DMHIs incorporating AI could provide a bridge to traditional therapy, or perhaps be a useful addition: *"if, say, in-person therapy was being supplemented by some sort of digital mental health type thing, then I guess that accountability from the actual therapist might help me"* (Participant 1).

Disadvantages

The main perceived disadvantage of AI-driven DMHIs was data handling and privacy issues. Participants expressed concerns about who was seeing the data or whether it was used to train the AI further. The second most frequent concern was that an AI chatbot would not adequately mimic the humanity and empathy normally observed in a therapeutic relationship. One participant also tied this to the machine learning language model used to train AI: *"I mean, you're losing the human touch, right? So like, AIs can emulate empathy, for example, by mirroring empathic speech… If you're looking at the large language model, but they're not actually empathic"* (Participant 11). Furthermore, several participants stressed that a DMHI with AI was not

necessarily professional or evidence-based and suggested that this would be based on the data used to train the AI: *"you're talking to an AI. So it could be negative for like what the AI tells you based on what its training [is]"* (Participant 11). They also paid special attention to usage barriers that may occur with AI chatbots, as in the case of elderly people, where there would be the risk that *"they don't understand how to use AI bots and how to ask the question"* (Participant 7). Another concern was potential overdependence on the intervention due to its constant availability: *"if you have access 24 seven to some AI chatbot it's not the best idea ... Like, maybe you're not an overthinker, but then you start becoming an overthinker, or you need to always check before doing something with the chatbot"* (Participant 2). Finally, participants were concerned about AI oversaturation, stressing that AI would not be necessary in every aspect of an intervention.

Preferences and Suggested Features of AI in DMHIs

Table 7 describes the main findings regarding participant preferences, factors influencing usage, and features suggested by the participants. These results are relevant to question 2.c, "What are young adults' preferences for features of an AI intervention?" and are further explained below.

Table 7

Table Overview of Preferences, Usage Factors, and Suggested Features

Theme	Code	Explanation	Frequency
Factors Influencing Usage	Advertising	Would foster disengagement	1
	AI Chatbot	Participants were sceptical towards AI chatbots as or in DMHIs	10
	Financial accessibility	No or low paywall	3
	Fun and entertainment	An entertaining product would increase engagement	2
	Quality	A high-quality intervention was more attractive	2
Preferences and Suggested Features	Live conversation	Conversation with an AI chatbot	1
	Personalised advice	AI can tailor advice to the user's situation	17

Theme	Code	Explanation	Frequency
Preferences and Suggested Features	Personalised notifications	AI can help personalise notifications, thereby increasing engagement	6
	Progress tracking	AI-powered progress tracking	2
	Prompts	Questions about mental health, notifications	2
	Reminders and Notifications	Reminders to keep up engagement, but not too many	7
	Resources	AI can suggest resources based on the user's concern	3
	Social aspect and Social facilitation	AI can facilitate community or other social aspects of a DMHI, for example, by connecting users based on their data	12
	Specificity	AI can contribute very specific features for the user	1
	Superficial needs	Participants felt that DMHIs were best equipped for less serious, superficial tasks	5
	Transparency	DMHI is transparent with data use and the reasons behind features	3
	User centred	AI that is easy and pleasant to use	2

Generally, factors influencing usage and engagement were similar to those for DMHIs in general; however, some were mentioned in regard to AI specifically. The most prominent finding was that all participants except one were uninterested in pursuing AI chatbots in isolation as a form of therapy *"like having a chatbot that really tries to talk like a therapist. So to, um, really have this emotional discussion with an AI chatbot would also kind of be a nightmare for me"* (Participant 3). However, many were open to using it as a tool in a more comprehensive DMHI with multiple integrated features: *"I think that would also be kind of … helpful if it's like actually, um, honestly analysing the situation and then what is nice to say in that specific [situation]"* (Participant 3). Participants also emphasised financial accessibility, an entertaining product, and high quality.

Regarding features, participants were primarily interested in the potential of AI to personalise their experience with the intervention. Specifically, participants suggested features

such as progress tracking and prompts based on previously obtained data (see especially Appendix F for participant drawings). Another suggestion was the use of AI to suggest mental health resources to the user. Most frequently mentioned was the concept of personalised advice (17 times). In the case of AI chatbots, Participant 11 stated that *"you can brainstorm or like talk about your situation. Um, and you can make it as specific as you want to"*. An example of personalised advice from other types of AI can be illustrated by this quote from Participant 5: *"Maybe it'd be a good idea to go outside or ... you [say] that you have like anxiety because of what is going on in the world. Maybe like, it may be a good idea to check your news app less often"*. Participants also mentioned the option of personalised notifications based on user data: *"if it notices that you're in the evening always online on YouTube and then you go to sleep always at 3 a.m., then it could help noticing that and be like, hey, send the Duolingo message here"* (Participant 4).

The participants also came up with six other features. Many were excited about the possibility of using AI as a social facilitator in DMHIs by employing user data, and this is reflected in their drawings (see Figure 1). For instance, one participant's ideal DMHI included *"the community tab. It'll tell you how many people are using [the app]. Uh, how many people are experiencing the same issue? Uh, or the same sort of cluster of, of issues"* (Participant 1). The same participant also valued specificity: *"So I put 14. So that's like that would be shorthand for maybe 14 would be social anxiety. And then the D would be some sort of subset of some particular subset of social anxiety or something. So it's really specific as to what people are dealing with"* (for the drawing in question, see Appendix F, Figure F1). Like for DMHIs overall, the participants recommended that the interventions should only be used for superficial needs. Participant 8 summarised this idea nicely: *"I don't think it will help if you [really have] mental health problems."*. Finally, the participants appreciated transparency and user-centredness if AI were to be implemented in a DMHI.

Figure 1

Drawing by Participant 5 of their Ideal DMHI Incorporating AI

Note. The above drawing was made by participant 5 in response to the question "If you were to design your own AI-based or AI-supported DMHI, what would it look like?". The upper left of the drawing is an illustration of the home-screen of the app. From there, the user can go to different sub-pages: the daily check-in, a digital journal, AI insight, and "thera-connect". AI insight, as illustrated on the top right, is an AI-powered tool that provides personalised advice based on user data. "Thera-Connect" (bottom left) is a social feature that connects like-minded individuals or the user to a therapist.

Discussion

The principal findings of this study concern the two primary research questions, "*How do young adults perceive DMHIs, and what are their preferences for such interventions?*", and "*What are young adults' feelings and attitudes towards the use of artificial intelligence to promote engagement within DMHIs, and how can AI be used to encourage engagement with DMHIs?*". These are summarised below, followed by the elucidation of three substantial themes: the role of human connection in engagement, artificial intelligence as a supportive tool in personalisation, and the ethics and possible consequences of incorporating AI in mental health interventions.

Participants generally voiced scepticism regarding the use of digital mental health interventions. While they felt that DMHIs could provide support, they stressed that this would only apply to less severe cases. A DMHI would best be used as an addition or bridge to therapy and an aid for professionals, and there was a consensus that it would not compare to traditional therapy. The participants also valued an evidence-based, expert-approved intervention, and accordingly indicated they would be less likely to utilise a DMHI they perceived as unprofessional. Furthermore, they prioritised an intervention that was easy to use and time-efficient. Rewards or incentives were suggested as a possible engagement strategy; however, several participants expressed their concerns that these rewards were not real or tangible and therefore less attractive. The most recurring theme of the current study was the value the participants placed on human interaction. The most frequently suggested feature was a social aspect, which illustrates just how essential the interactional aspect of mental healthcare is to users. The participants in the study also appreciated aestheticism, a personalisation aspect, and being able to track their progress.

Participants were especially sceptical of the use of AI chatbots in therapeutic settings, however, some participants were curious about the added insight AI features could provide. A considerable amount of scepticism stemmed from the participants' concerns that an AI chatbot was not human. As aforementioned, this illustrated the value placed on human interaction and connection. Furthermore, the participants indicated that it would be difficult for them to trust an AI, whether chatbot or otherwise, with their mental health, and gave particular weight to data handling, privacy concerns, and the training used for the model behind the AI chatbot. Additionally, they called into question the ethics surrounding this strategy as well as how it would be operationalised. They were also concerned that extensive use could result in overdependence.

Regarding engagement, the most frequently suggested feature was personalisation, followed by pattern recognition, accessibility, and availability. Furthermore, it was suggested that an AI tool could help users who struggled with planning and routine or provide personalised advice that a mental health professional may not have the time or resources to do.

The Role of Human Connection in Engagement

One of the most important takeaways from the current study is that users value human interaction in connection with mental health. While there is evidence to support the efficacy of standalone DMHIs (Moshe et al., 2021), these findings do not appear to translate to users' ideas of the ideal mental health intervention. Notably, the participants were more open to trying out a DMHI that included a social aspect. There is evidence to suggest that digital interventions which include human support may be more effective than standalone ones (Werntz et al., 2023), thereby supporting the outlook of the participants. In particular, a 2023 study by Wright et al. suggests that human-supported interventions were especially effective for individuals with a higher degree of symptom severity, which also implies that, standalone DMHIs may be better used for patients with less major mental health concerns.

These findings also extend to participant attitudes regarding AI chatbots. The participants consistently pointed out their concern with the lack of human connection present in AI chatbots. The participants also noted that some DMHIs failed to disclose that their conversational agents were artificial intelligence and not human. This is not only an ethical concern, but the disclosure of AI use can affect outcomes: A 2024 study by Jain et al. suggests that not only does disclosure impact trust in DMHIs using AI, but it also affects perception. Users were more positively inclined to human responses and felt that they were more authentic and emotional (Jain et al., 2024). Rubin et al.'s (2024) paper also states that human connection is essential to users of mental health care. These findings further corroborate the perspective of the participants: that an AI chatbot cannot, at this point in time, replace traditional human therapy.

Artificial Intelligence as a Personalisation Tool

The capacity for extensive personalisation was regarded by participants as the most valuable aspect of an AI-integrated DMHI. They were particularly intrigued by the possibilities of a personalised interface, tailored notifications or reminders, and personalised advice. These insights are particularly useful because personalisation is often successfully used in DMHIs to increase engagement (Hornstein et al., 2023). Furthermore, the findings of the current study

suggest that artificial intelligence could play a pivotal role in refining personalisation features further. While the majority of research on this topic revolves around AI chatbots (Omarov et al., 2023; Oh et al., 2021), Yu et al. (2024) recently introduced CAREForMe, a promising AI tool which delivers personalised recommendations and can be used by patients and providers alike. Olawade et al. (2024) also identify the use of AI in mental healthcare in general as an emerging trend.

AI chatbots have also been used to provide personalised psychological advice, and evidence suggests that this has a positive effect on engagement (Jelassi et al., 2024). Furthermore, Torous et al. (2025) indicate that although there is no standard protocol for the use of AI chatbots in DMHIs, initial results are promising, and so is their personalisation potential. On the other hand, ethical issues may arise if the AI chatbots are not catered to mental health use.

Ethics and Consequences of using Artificial Intelligence in Mental Healthcare

Existing research suggests that the ethics around AI as mental health support is seen as a considerable barrier (Dehbozorgi et al., 2025; Manole et al., 2024; Arabian et al., 2025). This is reflected by the attitudes of the participants in the study, as they were sceptical about the use of AI, especially concerning privacy and data handling. This scepticism may pose a challenge for future interventions implementing AI, as trust in AI interventions is essential to their success (Manole et al., 2024). Participants were also sceptical of the data used to train AI chatbots, which may complicate the issue further. There have also been recent cases where AI chatbots have encouraged mentally ill individuals to commit suicide or murder (Samuel, 2025). These incidents raise concern about AI's possible inability to detect dangerous behaviours and may discourage trust in AI-driven interventions.

Additionally, participants raised the issue that the availability of a DMHI with a basis in AI could result in overdependence in the user. They were concerned that this could breed insecurity and diminish the user's trust in themselves. According to the literature, another complication emerges: dependence on AI may have social consequences. A Microsoft literature review suggests that overreliance on AI negatively impacts the ability of the individual to work effectively in a team (Liao et al., 2022). Furthermore, a longitudinal study by Huang et al. (2024) on adolescents' use of AI revealed that as many as 25% of the participants experienced AI dependence to some degree. The researchers also found a link between this dependence and negative developments in interpersonal connections (Huang et al., 2024). While they did not find a direct link between AI

use and a reduction in mental health, an individual's psychosocial environment is essential to their mental health, and this is especially true for adolescents, whose neurodevelopment can also be affected by social factors (Whittle et al., 2024; Stepanous et al., 2023). Finally, like the participants in the current study suggested, overdependence on AI has been linked to diminished decision-making abilities as well as reduced critical thinking skills (Gerlich, 2025; Zhai et al., 2024). These findings illustrate the importance of balancing the pursuit of user engagement with the risk of unintended negative consequences.

Implications and Practical Applications

The results of this study imply that human connection is a highly valued aspect in therapeutic setting. By extension, this may be a possible explanation as to why standalone DMHIs tend to be less effective than human-supported ones. This is also reflected in the literature: Several studies have shown that users prefer the presence of empathetic, human-like interaction, even in digital settings (Fitzpatrick et al., 2017; Bickmore et al., 2005). While AI offers promising opportunities for increased engagement and personalised support, especially in the forms of tailored interventions and adaptive feedback, (Laranjo et al., 2018; Inkster et al., 2018), these tools may be best be implemented in conjunction with professional oversight.

Additionally, the findings suggest that the use of AI in therapeutic settings is best approached with caution. Transparency regarding the non-human nature of AI chatbots and the way personal data is processed is integral to ensure user trust (van der Goot et al., 2024). Furthermore, the datasets used to train large language models (LLMs) for mental health purposes must be thoroughly vetted to avoid harmful or undesired outcomes (Bender et al., 2021), so as to not undermine the efficacy and credibility of DMHIs.

Strengths and Limitations

A key strength of this study is that the qualitative design allowed for an in-depth exploration of young adults' feelings and preferences around DMHIs. Furthermore, the study explored attitudes and preferences for AI features specifically, thereby contributing to the literature on the use of AI chatbots in mental health, and filling a gap in literature regarding AI features which are not chatbots. Another strength is the incorporation of Braun & Clarke's (2006) well-established form of thematic analysis, which ensures better replicability. Furthermore, the use of focus groups facilitated collaborative discussion, enabling participants to build upon one another's perspectives. Additionally, the focus groups all followed a predetermined structure, including an

established script with identical questions for the investigation of DMHIs. Furthermore, three focus groups were conducted with three different pools of participants. Finally, participants within each focus group were largely familiar with each other as well as the primary researcher, which may have allowed for more openness around the topics that were discussed.

A limitation of this study is its relatively small sample size. Ideally, the sample could be larger and more diverse in terms of age group, culture, and nationality. Another disadvantage is the use of convenience sampling. The researchers knew the participants, and most of the participants knew each other. Because of this, there is a risk that social desirability bias, conformity, or demand characteristics may have skewed the results, thereby reducing the validity of the results. Additionally, since the researchers knew the participants, this may also have affected the interpretation of data. There is also a risk that results could be skewed due to some participants contributing more to the discussion. Finally, since the data were analysed using inductive coding, it is possible that another researcher would have interpreted the data differently.

Suggestions for Further Research

This study contributed to the literature surrounding engagement in DMHIs and attitudes toward the use of AI features to promote engagement. While the results provided an idea of what features young adults may prefer in DMHIs, more research is needed on how these preferences can realistically and ethically be implemented.

A limitation of current DMHIs that are integrating AI chatbots is the language models that they use. These are often very specific to the culture in which they are created, and thus an AI mental health tool that is effective in one culture may not be so in another (Manole et al., 2024). Manole et al. (2024) caution that AI may reinforce pre-existing biases from the LLM's training. It would therefore be interesting to compare the effect of AI chatbots on engagement in different cultures. Furthermore, it may also be prudent to investigate whether there is a difference in the efficacy of personalised interventions using other type of AI between individualistic and collectivistic cultures.

Moreover, this study identified a gap in the literature regarding the implementation of AI features other than chatbots for promoting engagement. Therefore, more research should be conducted on the efficacy of the use of various AI features in DMHIs specifically, especially those which may be used to enhance individual tailoring.

Furthermore, considering the emphasis the participants in the current study put on human interaction, more research should be conducted on DMHIs and mental health, especially long-term, as excessive phone and social media use has been shown to negatively affect mental health (Khan et al., 2023; Wang et al., 2025).

Finally, it would be prudent to conduct another study on a larger, more diverse sample, and incorporating different questions to further expand knowledge, especially on the topic of AI features as enhancement for engagement strategies.

Conclusion

This study explored the attitudes and preferences of young adults pertaining to DMHIs and the use of AI as an engagement strategy. Personalisation emerged as an important feature in DMHIs, both AI-powered and in general, with participant suggestions such as progress tracking or personalised advice. The participants in this study were largely sceptical towards the use of AI, especially LLMs, in DMHIs. They raised concerns about ethical issues, in particular regarding data handling and privacy. Additionally, there was a consensus that DMHIs and AI would not measure up to the human connection present in traditional therapy or among peers. Participants also brought up the risk that a user may become overly dependent on AI, which could negatively affect their decision-making abilities. Finally, participant data supported the findings of existing research on the concept of engagement, especially concerning the role of motivation and the idea of engagement as more than a temporary state of being.

Implications for further research includes the importance of human interaction and the utility of blended interventions, AI chatbot efficacy in different cultures, and the effectiveness of non-chatbot AI forms on engagement in DMHIs specifically.

In conclusion, young adults are not convinced about the utility of DMHIs, and especially not of AI, in part due to privacy concerns and a perceived lack of humanity; however, they see the use of AI as a personalisation tool in order to enhance engagement.

Positionality Statement

I would like to note the impact my background may have on my research. My name is Linnea Daae Opdahl, and I am now in my last year of my Bachelor of Psychology. I am 23 years old and grew up in Bergen, Norway, on a small island with a lot of privacy and few people.

While I have experience with meditation apps such as Headspace and Calm, and frequently use online resources to practice yoga nidra, I initially went into this project with a negative view

of DMHIs. Like my participants, I found it hard to believe that a DMHI would be nearly as effective as traditional therapy. I also believed that human connection was crucial, and that a patient would not benefit from more screen time, as I felt screen time may be contributing to poor mental health in the first place. Furthermore, when OpenAI released ChatGPT a few years ago, I was highly sceptical. In truth, while I have since warmed to the possibilities of AI, I still find myself avoiding it whenever I can - and yet, I have now written my bachelor thesis on it. While I endeavoured to stay objective, my initial biases may be reflected somewhat in the report. Furthermore, English is not my native language, which may have impacted my interpretation of the data. I also knew my participants very well, and thus I may have exerted influence on them without knowing.

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Appendix A

AI Statement

No artificial intelligence tools were used to generate any part of this work. The exception is, as mentioned earlier, the use of AI to generate visual aids for the focus groups to avoid copyright issues. This was done using OpenAI's ChatGPT image generation tool (OpenAI, 2025).

Appendix B

Focus Group Guide

Section 1 **15 minutes**

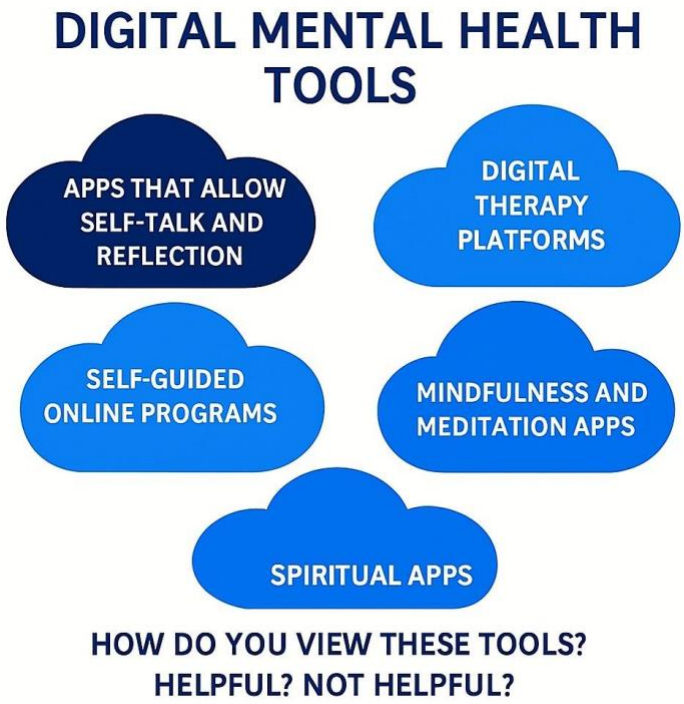
General Attitudes and Experiences with DMHIs

Hello, and thank you for joining today's focus group!
We're going to explore your thoughts and experiences with Digital Mental Health Interventions (DMHIs) — things like mental health apps, self-guided online programs, or therapy platforms. These tools are designed to help with mental well-being, and we'd like to understand how you use them, what you think about them, and what makes them helpful or not.

There are no right or wrong answers — we're simply interested in your experiences and opinions. Feel free to share whatever comes to mind.

Figure B1

Visual Aid: "Digital Mental Health Tools"



Note. This image was created using OpenAI's ChatGPT image generation tool (OpenAI, 2025), based on a prompt written by one of the researchers.

1. Can you describe your experience using mental health apps or online platforms?
    a. Probing: What made you decide to try one?
    b. Probing: What kind of expectations did you have beforehand?
2. What do you think about digital mental health tools in general?

   a. Probing: Do you see them as a valuable addition or alternative to traditional therapy or in-person support?
   b. Probing: Can you think of any benefits you noticed?
   c. Probing: What about any drawbacks or challenges you've experienced?
3. How does the idea of using these tools make you feel?
   a. Probing: Do they make you feel supported, skeptical, overwhelmed… or something else?

Section 2 **15 minutes**

Engagement with DMHIs

In this section, we want to talk about how you interact with digital mental health tools — what makes you use them more often, and what might make you stop. This isn't about being "hooked" or addicted but simply what keeps you interested and what pulls you away.

You can also think about this as a timeline of your journey — from when you first started using a tool, to how long you used it, and what eventually happened (e.g., continued use, boredom, deletion, etc.).

1. What features or aspects of a mental health app encourage you to keep using it?
   a. Probing: Can you remember anything specific that really motivated or encouraged you?
   b. Did anything about the design or experience keep you engaged?
2. Have you ever lost interest in a mental health app?
   a. Probing: Were there particular elements that made you stop using it?
   b. Probing: What contributed to that change? (e.g., lack of variety, repetition, not feeling helpful?)
   c. Probing: Was it related to how the app worked, how it looked, or something about your life at the time?
3. Have you ever re-started using a mental health tool after stopping for a while?
   a. Probing: What made you go back — was there a new feature, reminder, or change in your situation?
4. What would help you stick with a DMHI over time or use it more consistently?
   a. Probing: What would make the experience feel more reliable, personal, or helpful?

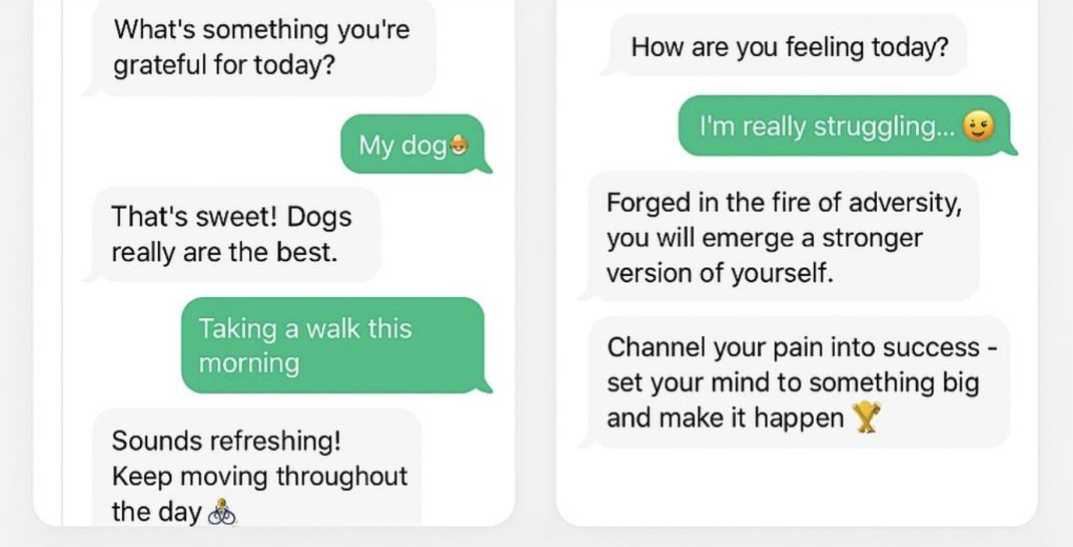
Section 3.0 **5 minutes**

Now we are going to discuss artificial intelligence as a way of increasing engagement with digital mental health interventions.

AI is very versatile and can be used in DMHIs in many different forms. For example, there are several types of "mental health chatbots" where the idea is that you can talk to a chatbot that is programmed to talk about mental health issues. One of these is called Woebot, and uses techniques inspired by cognitive behavioural therapy to provide mental health assistance. Here are some AI-generated pictures that illustrate what a conversation with a mental health chatbot like Woebot could look like:

Figure B2

Image inspired by Woebot (Woebot Health, 2025)



Note. This image was created using OpenAI's ChatGPT image generation tool (OpenAI, 2025), based on a prompt written by one of the researchers.

Figure B3

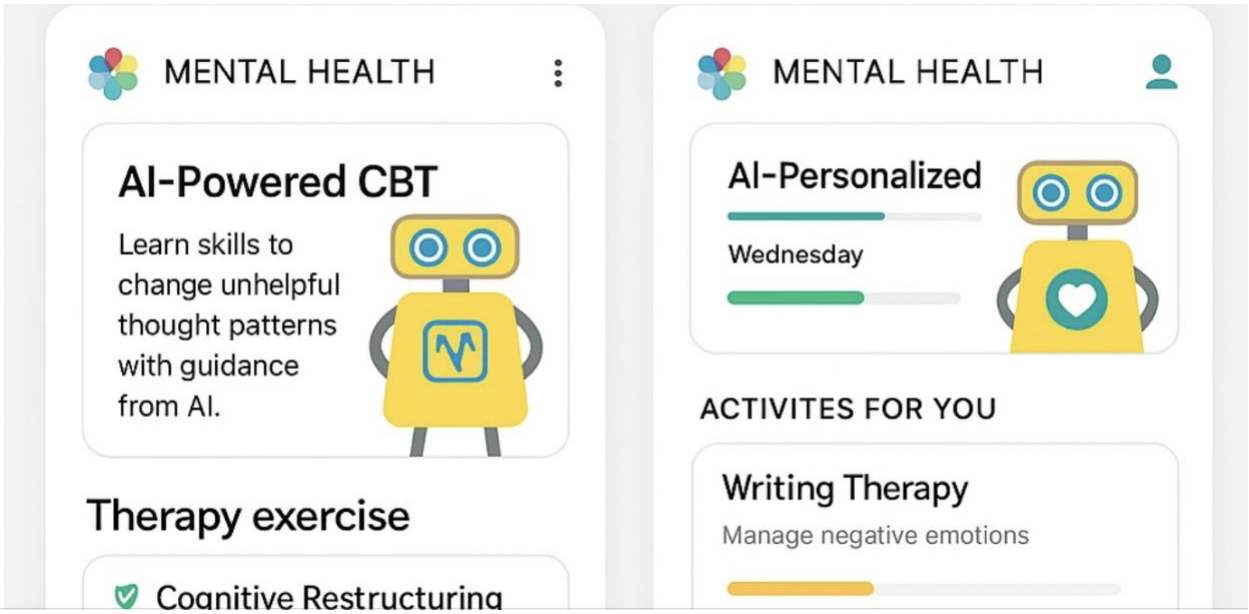
Image inspired by Woebot (Woebot Health, 2025)

Note. This image was created using OpenAI's ChatGPT image generation tool (OpenAI, 2025), based on a prompt written by one of the researchers.

Another way of incorporating AI is through personalisation features. One way this could work is that a mental health app has an AI feature that analyses your data input and adapts the app experience to you specifically:

Figure B4

Image of Personalised DMHI



Note. This image was created using OpenAI's ChatGPT image generation tool (OpenAI, 2025), based on a prompt written by one of the researchers.

Now that you have an idea of what using AI to promote mental health can look like (although these are only a couple of examples and do not represent the full range of features) we can move on to discussing this topic.

1. Poll question: raise your hand if you think you have ever used a DMHI that incorporated AI in some form
    a. What did this look like?
    b. How did you feel about this feature?
2. Have you heard about AI-driven mental health interventions from other people or in the media?
    a. What have you heard?
    b. What do you think the attitude towards AI as a mental health aid is in these cases?

Sub-section 3.1 Feelings about AI - **5 minutes**

1. How do you personally feel about AI as an engagement tool for DMHIs?
    a. What would you like about it?
    b. What would you not like?

Sub-section 3.2 Advantages and disadvantages - **10 minutes**

1. Can you think of any advantages of using AI in DMHIs?
    a. Probe: what about accessibility?
    b. Probe: how do you think it might benefit a patient?
    c. Probe: how do you think it might benefit the government?
    d. Probe: how do you think it might benefit a mental health institution?
2. What about disadvantages?
    a. Probe: any ethical concerns?
    b. Probe: how do you think it might negatively affect a patient?
    c. Probe: how do you think it might negatively affect the government?
    d. Probe: how do you think it might negatively affect a mental health institution?

Sub-section 3.3 Brainstorm - **10 minutes**

1. How do you feel that AI can best be used to improve mental health?
2. How do you think AI can best be used to improve engagement with mental health interventions?
3. What features of AI in a DMHI would make you more likely to engage?
4. What features of AI in a DMHI would make you more likely to *disengage?*
    a. What would encourage you to return to a DMHI?
    b. Why do you think people disengage with an intervention?
        i. Good things?
        ii. Bad things?

Sub-section 3.4 Drawing - **10 minutes**

5. If you were to design your own AI-based or AI-supported DMHI, what would it look like? [provide drawing supplies]
    a. What features would you include?
    b. Are there any things you think you would need to be aware of?
    c. What would the ideal AI intervention look like to you?
6. What would a nightmare AI intervention look like to you?

Sub-section 3.5 Summary and Last Inputs - **10 minutes**

1. Is there anything we have not discussed on this topic that you would like to bring up or talk about?
2. After this discussion, would you consider recommending an AI-based intervention to a friend who was struggling?
    a. Why or why not?
    b. Is there a specific type of intervention/AI feature you would be more or less likely to recommend?
3. Would you consider seeking out such an intervention yourselves?
    a. Why?
    b. Why not?

Section 4 **10 minutes**

Reflections and Suggested Improvements

This focus group is part of a larger study on different ways of encouraging engagement. I will now ask you two short questions related to two other potential ways to increase engagement.

First, a way of increasing engagement could be incorporating human support. This means that human contact is a part of the intervention or interface. For example: chat rooms, contact with a therapist or coach etc.

- How do you feel about incorporating human support in DMHIs?
    - How do you think this could best be done?

Another strategy that is being investigated is incorporating features from social media.

- Are there any specific features from social media that you think could be helpful in the context of digital mental health interventions?
    - What features could improve the use?

Finally, let's think about how mental health apps could be improved.

2. What features do you think would be most useful or motivating in helping people engage regularly with a mental health tool?
    a. Probing: What features do you think would be most useful or motivating in helping people engage regularly with a mental health tool?
    b. Probing: What would help you feel supported without feeling overwhelmed?
3. How would you personally combine different types of features to create a tool that works for you?
    a. Probing: For example, a mix of short daily check-ins, guided exercises, or community chat.
4. Do you have any final thoughts or suggestions regarding digital mental health tools?
    a. Probing: Is there anything else that would make you more likely to engage with a mental health app?

End of Focus Group

Thank you for your participation! Your insights will help improve digital mental health tools by making them more engaging and user-friendly. If you have any further questions or thoughts after today, feel free to reach out. Your responses will remain anonymous, and you can withdraw your participation at any time before data analysis begins.

Appendix C

Qualtrics Survey Initial Data

Participiant characteristics

Start of Block: Default Question Block

Q1 Please indicate your age in numbered years (i.e. "23")

_____

Q2 What is your nationality?
- ○ Dutch (1)
- ○ German (2)
- ○ Other; please indicate below (3)
  _____

Q3 What is your highest form of completed education?
- ○ High school (1)
- ○ University Bachelor (2)
- ○ University Master (3)
- ○ Other: (4) _____

Q4 What is your current study level (if relevant)?
- ○ High school (1)
- ○ University Bachelor (2)
- ○ University Master (3)
- ○ Other: (4) _____
- ○ I am not studying currently (5)

Q5 If you are currently studying, please indicate your field of study
- Psychology (1)
- Other: (2) _____
- I am not currently studying (3)

Q6 What is your employment status?
- Employed (1)
- Unemployed (2)
- Student (3)

Q7 If you are in employment, what is your field of work?
- I work with: (1) _____
- I am currently unemployed/a student (2)

Q8 Please indicate which social media platforms, if any, you use regularly
1. Instagram (1)
2. Tiktok (2)
3. Youtube (3)
4. Reddit (4)
5. Rednote (5)
6. Whatsapp (6)
7. Snapchat (7)
8. Discord (8)
9. I do not use social media (9)

Q9 If you have used any form of Artificial Intelligence in the past month, please indicate which one(s):
10. OpenAI (ChatGPT) (1)
11. Grammarly (2)
12. Mental health chatbot (3)
13. Other chatbot (4)
14. Type of AI not mentioned above: (5)
    _____
15. I think I have used AI in the past month, but I can't think of an example/I am not sure (6)

16. I have not used any form of AI in the past month (7)

Q10 Have you, at any point in time, used a type of health-promoting or mental-health-promoting technology (i.e., meditation app, smart watch, step tracker)

- Yes (1)
- No (2)

Q11 If you at any point in time have used a type of health-promoting or mental-health-promoting technology, please indicate which one(s)

17. Headspace (1)
18. Calm (2)
19. Betterhelp (3)
20. Smart watch (4)
21. Step tracker (5)
22. Health and fitness tracker (i.e. MyFitnessPal, Strava) (6)
23. Other: (7) _____
24. I have never used these types of technologies (8)

End of Block: Default Question Block

Appendix D

Figure D1

Informed Consent Form

Consent Form for Research to the Engagement with Digital Mental Health Interventions

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 a focus group that will be recorded via audio. These recordings will be transcribed to text and then the recording will be deleted.	○	○
Use of the information in the study		
I understand that information I provide will be used for a research purposes in a research report.	○	○
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.	○	○
I agree to be audio recorded.	○	○
Future use and reuse of the information by others		
I agree that my anonymized information may be shared with other researchers for future 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 give the researchers permission to keep my contact information and to contact me for future research projects.	○	○

Signatures

Name of participant [printed]	Signature	Date

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

Researcher name [printed]	Signature	Date

Study contact details for further information: Meike Jannink, m.jannink@student.utwente.nl

UNIVERSITY OF TWENTE.

Contact Information for Questions about Your Rights as a Research Participant

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-hss@utwente.nl

Appendix E

Complete Codebook

Table E1

Previous Usage of DMHIs

Code	Explanation	Frequency
Calorie tracking	Calorie-tracking apps	5
Fitness tracking	Step counting apps, smartwatches, and other ways of tracking activity	9
Intervention app	One participant had participated in a study that employed a DMHI	1
Meditation app	Applications like Calm or Headspace	5
Mood tracking	Tracking mood over time	2
Online therapy	Platforms like BetterHelp, and therapy online during the Covid-19 pandemic	3
Progress tracking	Participants used DHIs for various tracking purposes	8
Sleep tracking	Tracking sleep quality	2
Spiritual app	One participant had used a personalised astrology app	1
Tracking (general)	Other types of tracking	2

Table E2

Table Representing Attitudes Towards DMHIs

Theme	Code	Explanation	Frequency
Feelings, thoughts, and attitudes	Addition to therapy	Participants felt that DMHIs were best used as an addition to therapy rather than an alternative	9
	Alternative for some	For a minority of users, DMHIs could be an alternative to traditional therapy, according to participants	3
	Curiosity	Some participants expressed curiosity toward trying out a DMHI	3
	Scepticism	Participants expressed scepticism towards the efficacy and trustworthiness of DMHIs	16
	Superficial needs	Participants felt that DMHIs were best equipped for less serious, superficial tasks	6
	Supportive	Participants felt that DMHIs had the potential to be supportive	4
Factors influencing usage and engagement	Advertising	Participants suggested advertising as a way to promote initial use, but stated that advertising inside the DMHI would cause them to disengage	9
	Fame	Participants were more inclined to try a well-known intervention	5
	Fun	Participants mentioned entertainment as an initial reason for use and would be more likely to be engaged with an intervention they perceived as fun	6

Theme	Code	Explanation	Frequency
Factors influencing usage and engagement	Improvement	Participants mentioned improvement in mental health as a reason for disengagement	2
	Intrinsic motivation	Participants stressed the importance of intrinsic motivation to engagement	3
	Negative feedback	Participants did not appreciate receiving negative feedback, or anything that may cause guilt, from a DMHI	2
	No longer necessary	Discontinuation of DMHI due to lack of necessity	7
	Non-expertise	A DMHI that is not professional or evidence-based would hinder engagement	11
	Notifications	Participants suggested that notifications would promote engagement, but stressed that too many would cause them to disengage	10
	Peer usage and recommendation	Reason for use and continued engagement	15
	Professionality	Participants were more interested in an intervention made by professionals	13
	Reminders and notifications	Notifications were perceived as positive in moderate amounts only	10
	Renewal	Occasional DMHI renewal could increase engagement	4
	Rewards or incentives	Increased likelihood of engagement if present	16

Theme	Code	Explanation	Frequency
Factors influencing usage and engagement	Rigidity	A DMHI with little variation was seen as unattractive	4
	Routine or habit	A DMHI could aid in creating routine or forming habits	4
	Short time commitment	Less time needed for the DMHI would increase engagement	5
	Too much work or time needed	Reason for disengagement	9
	Unachievable goals	Reason for disengagement	2
Perceived benefits	Accessibility	DMHIs are more accessible and widespread than traditional therapy	9
	Accountability	A DMHI could be used to hold the user accountable to their goals	2
	Anonymity	DMHIs are ideal for maintaining anonymity and can make the user more comfortable	5
	Availability	A DMHI can be available at any time, as opposed to a regular therapist	7
	Bridge to therapy	Participants suggested that DMHIs can bridge the gap between no care and regular therapy and can encourage users to seek help	5
	Goal setting	A valued feature of DMHIs	6

Theme	Code	Explanation	Frequency
Perceived benefits	Personalisation	A DMHI tailored to the user	14
	Support for professionals	DMHIs can lessen the load put on mental health professionals	2
Participant concerns	Comparison	A user might compare themselves to others if a DMHI had a social aspect	5
	Data handling and privacy	Participants consistently brought up the dangers of data handling and misuse	10
	Hyper-independence	Users may rely on the DMHI too much and not ask for help if they needed it	4
	Negative spiral	In a DMHI with a social aspect	7
	Overuse	Participants suggested this could lead to worsened mental health	4
	Pressure	A DMHI may inadvertently make users feel pressured to work harder on their mental health, resulting in feelings of guilt	8
	Virtual	Participants reported feeling that a DMHI would not feel real to them	4
Participant priorities	Aestheticism	A pleasant and entertaining interface	7
	Autonomy	The ability to choose the extent of personalisation	1

Theme	Code	Explanation	Frequency
Participant priorities	Community	Participants were interested in DMHIs with a community function	11
	Familiarity	A desire for a DMHI that did not change too often	2
	Financial accessibility	No or low paywall	19
	High quality	A well-thought-out, professional intervention	4
	Human interaction	Suggested as a major component in mental health care	27
	Low effort	A DMHI that did not require a lot of effort to be effective	10
	Novelty	Occasional changes in the DMHI	1
	Social aspect	A DMHI with a social component	25
Participant suggestions for features, other advice	Check-ins	Shorter and lighter interactions with the DMHI	2
	Experience of others	Having the opportunity to see others' experiences and successes, written or visual	3

Theme	Code	Explanation	Frequency
Participant suggestions for features, other advice	Gamification	Adding a challenge or competition element to incentivise users to engage with the intervention	9
	Progress tracking	Tracking improvements, also visually (i.e. through a map)	10
Participant suggestions for features, other advice	Planning	Day-to-day planning as well as the ability to plan in-person therapy appointments	5
	Progress tracking	Tracking improvements, also visually (i.e. through a map)	10
	Skill learning	Opportunity to learn skills and receive an explanation of their functionality	2

Table E3

Participant Attitudes to Artificial Intelligence as an Engagement Tool in DMHIs

Theme	Code	Explanation	Frequency
Attitudes towards AI	Better than nothing	Talking to an LLM chatbot would be preferable to nothing	1
	Curiosity	Willingness to try out a DMHI with AI features	1
	Scepticism	Participants were sceptical towards efficacy and trustworthiness	7
	Scepticism – AI chatbots	Participants were sceptical towards AI chatbots as DMHIs	10
	Supportive	Participants felt that DMHIs with AI features could provide support	2

Table E4

Perceived Advantages and Disadvantages of Artificial Intelligence in DMHIs

Theme	Code	Explanation	Frequency
Perceived Benefits	Accessibility	More accessible than traditional therapy	4
	Accountability	AI could help keep the user accountable when pursuing their goals	1
	Addition to therapy	Participants felt that DMHIs with AI were best used as an addition rather than alternative to traditional therapy	6
	Anonymity	The user can remain anonymous behind the screen	1
	Availability	AI and chatbots are always available	6
	Bridge to therapy	AI can help the user access traditional therapy or encourage them to seek help	3
	Goal setting	AI can assist in setting achievable and personalised goals	2
	Government regulation	Regulating one AI program may be easier than regulating many therapists	1
	Live conversation	One participant mentioned the possibility of having a live voice conversation with an LLM chatbot	1
	No judgment	One participant suggested that AI would be less likely to judge	1
	Pattern Recognition	AI's ability to recognise patterns can contribute to the personalisation aspect of DMHIs	10
	Personalisation	AI can be flexible and make personalisation easier and quicker	34
	Planning	AI-driven DMHIs can help the user with planning and lessen administrative load	7
	Routine	AI can help establish a routine in the user's life	4

Theme	Code	Explanation	Frequency
Perceived Benefits	Short time commitment	Less time needed, especially for administrative tasks	3
	Support for professionals	Can lessen the load put on mental health professionals	6
Perceived Drawbacks	AI oversaturation	Too many AI features would lower engagement	3
	AI Chatbot - training	The quality of an AI chatbot intervention will depend on the content used to train it	6
	AI Chatbot - usage barrier	Some people, especially the elderly, may struggle using AI chatbots	3
	Data handling and privacy	Concerns with what the data gathered is used for, and whether it is used to train the AI	24
	Inflexible		3
	(Lack of) humanity and/or empathy	Participants stressed that AI is not human and cannot empathise	23
	Non-expertise	An AI or LLM-based DMHI is not necessarily evidence-based or professional	6
	Not genuine		1
	Overdependence	The unlimited availability of AI may cause dependence to the point of detriment	3
	Regular therapy	Participant suggested that a fully automated DMHI would not compare to traditional therapy	1

Table E5

Table Overview of Preferences, Usage Factors, and Suggested Features for DMHIs with AI

Theme	Code	Explanation	Frequency
Factors Influencing Usage	Advertising	Would foster disengagement	1
	AI Chatbot	Participants were sceptical towards AI chatbots as or in DMHIs	10
	Financial accessibility	No or low paywall	3
	Fun and entertainment	An entertaining product would increase engagement	2
	Quality	A high-quality intervention was more attractive	2
Preferences and Suggested Features	Personalised advice	AI can tailor advice to the user's situation	17
	Personalised notifications	AI can help personalise notifications, thereby increasing engagement	6
	Progress tracking	AI-powered progress tracking	2
	Prompts	Questions about mental health, notifications	2
	Reminders and Notifications	Reminders to keep up engagement, but not too many	7
	Resources	AI can suggest resources based on the user's concern	3
	Social aspect and Social facilitation	AI can facilitate community or other social aspects of a DMHI, for example, by connecting users based on their data	12

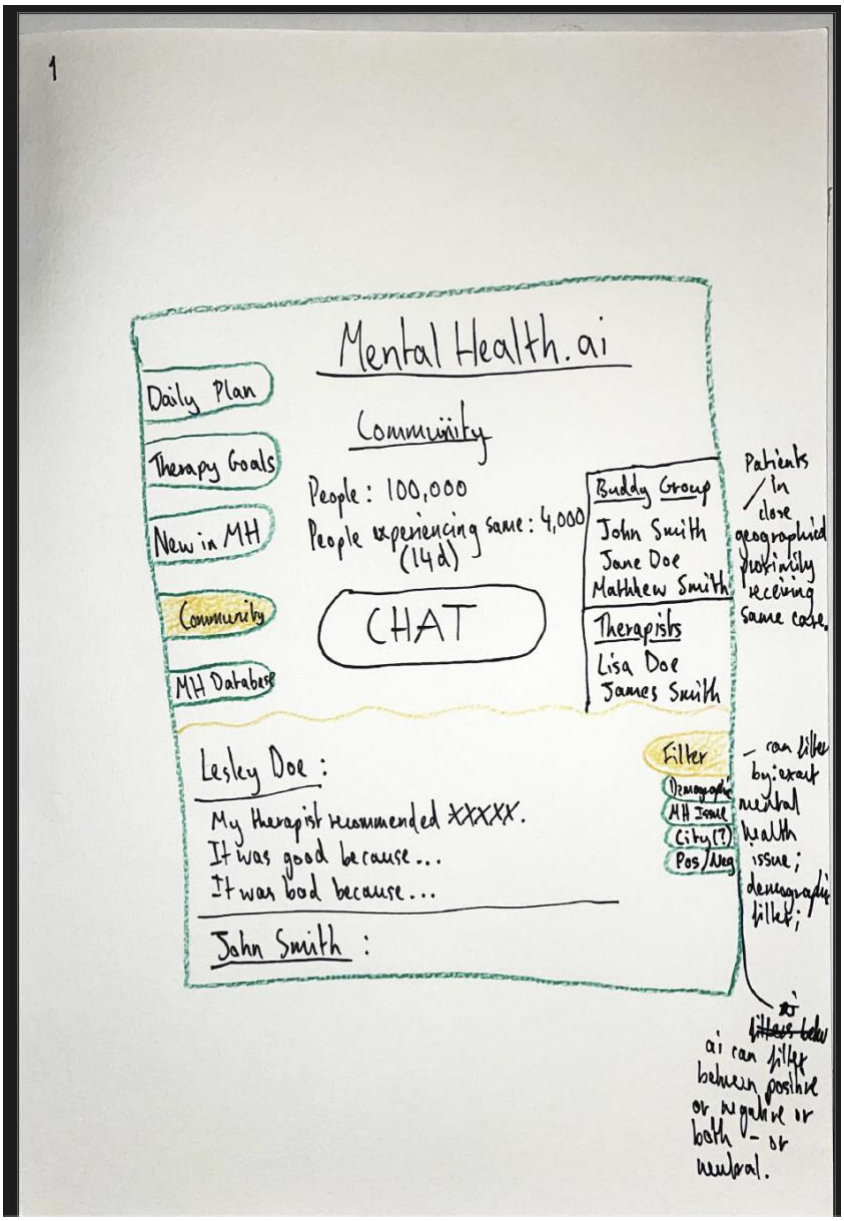
Theme	Code	Explanation	Frequency
Preferences and Suggested Features	Specificity	AI can contribute very specific features for the user	1
	Superficial needs	Participants felt that DMHIs were best equipped for less serious, superficial tasks	5
	Transparency	DMHI is transparent with data use and the reasons behind features	3
	User centred	AI that is easy and pleasant to use	2

Appendix F

Participant drawings

Figure F1

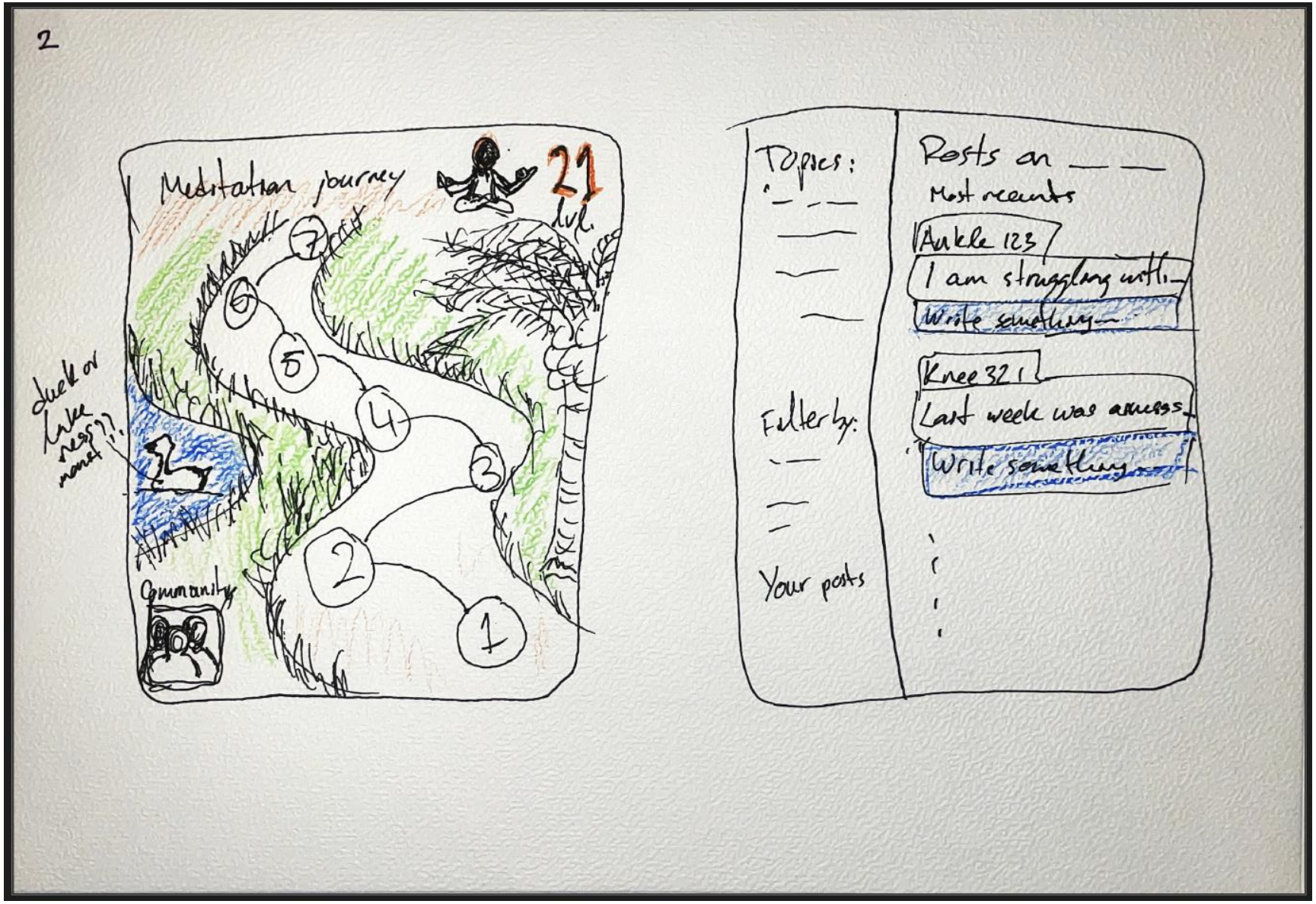
Drawing by Participant 1



Note. Drawing of "the ideal mental health intervention incorporating AI" by Participant 1.

Figure F2

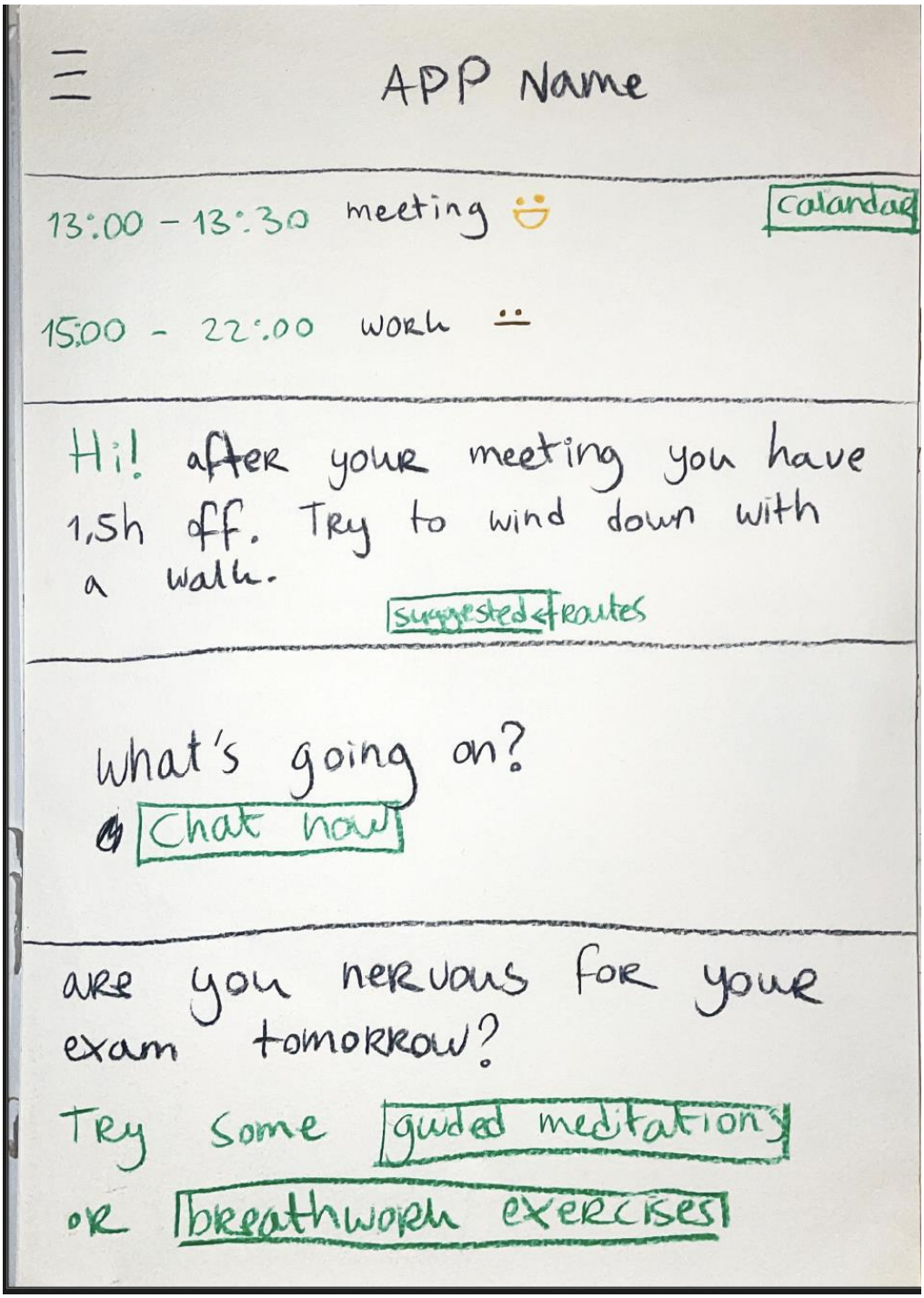
Drawing by Participant 2


2
Meditation journey
21
lvl
7
6
5
4
3
2
1
Community
duck or lake nest??
Topics:
Filter by:
Your posts
Posts on ___
Most recents
Ankle 123
I am struggling with...
Write something...
Knee 32
Last week was amazing
Write something...

Note. Drawing of "the ideal mental health intervention incorporating AI" by Participant 2.

Figure F3

Drawing by Participant 3



Note. Drawing of "the ideal mental health intervention incorporating AI" by Participant 3.