A Qualitative Interview Study:

Adapting Social Media Engagement Strategies to Improve Digital Mental Health Interventions (DMHIs)

Nick Kraus
s2949318

Bachelor Thesis
Faculty of Behavioural Management and Social Sciences,
University of Twente
202000384 - M12 B.Sc. Thesis PSY
Positive Clinical Psychology and Technology
Wordcount: 9100

Supervisor: Dr. Sofia Bastoni
Second Supervisor: Isabella Cadoni

Date: 22.06.2025, Enschede

Contents

Abstract 4

Adapting Social Media Engagement Strategies to Improve Digital Mental Health Interventions (DMHIs) 5

Digital Mental Health Interventions (DMHIs) as a Potential Solution 6

Engagement and Engagement Strategies in DMHIs 7

Defining Engagement and its Role in Digital Mental Health Interventions 7

Examples of Engagement Strategies in DMHIs 9

Lessons from Social Media: Adapting Engagement Strategies for DMHIs 11

Research Questions and Goals 12

Methods 14

Design 14

Participants 14

Procedure 15

Materials 15

Focus Group Guide 16

Data Analysis 16

Ethical Considerations 18

Results 19

Participant Demographics 19

Theme 1: Personal Relevance and Engagement 20

Theme 2: Reasons of Abandonment and triggers of Re-Engagement 21

Theme 3: Gamification as an Engagement Tool 23

Theme 4: Personalization and Adaptive Feedback 24

Theme 5: Ambivalence Toward Social Features 25

Discussion 27

Positionality statement 27

References 33

Appendix 39

Appendix A 39

Appendix B 41

Appendix C 60
Appendix D 63
Appendix E 65
Appendix F 67
Appendix G 70

Abstract

Digital Mental Health Interventions (DMHIs) provide flexible solutions to the increasing mental health needs of young adults. However, high dropout rates and low long-term engagement continue to undermine their efficacy. This qualitative study investigated how engagement strategies typically found in social media platforms, such as gamification, personalisation, and social interaction, can be adapted to improve engagement with DMHIs. Three semi-structured focus groups were conducted with 13 participants aged 19–23 who had prior experience using DMHIs. Thematic analysis revealed that engagement with DMHIs is shaped by a complex interplay of emotional, functional, and social factors. Participants described how engagement strategies, such as personalized feedback, mood tracking, and community-based features, supported emotional insight, self-awareness, and routine-building. However, they also voiced concerns about rigid gamification mechanisms (e.g., streaks and achievement systems that induced pressure or guilt) and unmoderated social features, which were seen as potentially overwhelming or emotionally unsafe. Key engagement facilitators included visual feedback, customizable goal-setting activities, and alignment with users' daily routines. Barriers to sustained engagement included perceived pressure, emotional overload, and a lack of control over AI-driven features. This study sheds light on how common engagement strategies from digital environments might be effectively used to aid mental health contexts. These findings suggest the need for a co-adaptive engagement model, one in which digital mental health tools not only adapt to users' needs and preferences over time, but also allow users to adapt and personalize the intervention to their own goals and emotional rhythms. Such a model prioritizes emotional safety, user autonomy, and meaningful interaction over strict adherence or standardized routines. Future research should explore real-world usage patterns and the cross-cultural applicability of these strategies.

Adapting Social Media Engagement Strategies to Improve Digital Mental Health Interventions (DMHIs)

The prevalence of mental health disorders among young adults has been rising significantly in recent years. Studies indicate that mental illness has become one of the leading causes of health burden among adolescents and emerging adults, with most disorders developing before the age of 25. Evidence suggests that the alarming increase in mental illness over the past 20 years is evidence of a true public health crisis rather than just a decrease in awareness or diagnosis (McGorry et al., 2025b).

In particular, anxiety disorders have increased by 52% among individuals aged 10-24 from 1990 to 2021, with young women being particularly affected. This shift has been made worse by socioeconomic inequality and the COVID-19 pandemic, resulting in serious psychological distress and social functioning deficits (Bie et al., 2024). University students are considered a high-risk sub-group due to academic pressure, performance anxiety, and stress, all of which contribute to the development or worsening of mental health disorders (McGorry et al., 2025b).

Despite the increased demand for mental health services, mental health institutions and university counselling services are struggling to keep up with the crisis. Limited availability of care providers, long waiting lists, and the high costs of private therapy create substantial barriers to accessible mental health support. Many students who seek professional mental health care face delays in receiving adequate support, which may lead them to look for alternative forms of help (Moghimi et al., 2023).

In response to these challenges, young adults increasingly turn to social media platforms such as TikTok, Instagram, Facebook, YouTube, and WhatsApp to engage with mental health content, share personal experiences, and seek peer support. Although these platforms help raise awareness and encourage community-driven conversation, issues with misinformation, self-diagnosis, and the over-pathologization of common problems have surfaced (Khan et al., 2024).

Certain narratives around mental health are amplified by social media's algorithm-driven content distribution, which also shapes users' views and influences self-identification, occasionally reinforcing inaccurate or unverified content (Mahajan, 2023). While these platforms offer easily accessible material about mental health, they remain largely unregulated, making it difficult for users to distinguish anecdotal advice from evidence-based guidance (Wilson &

McDarby, 2022). Moreover, these platforms employ highly effective engagement strategies, such as algorithmic personalization, endless scrolling, and real-time social feedback, to capture and sustain user attention. These same techniques, while powerful, raise important questions about how engagement can be ethically and adaptively implemented in mental health contexts.

Digital Mental Health Interventions (DMHIs) as a Potential Solution

A potential solution for bridging the gap in mental health support is Digital Mental Health Interventions (DMHIs), which are technology-based interventions that deliver mental health support via web-based platforms, mobile applications, or AI-driven chatbots (Isa, 2024). These interventions encompass a variety of tools, including self-guided programs, online therapy platforms, mobile health (mHealth) apps, and interactive mental health tools such as mood tracking, guided self-help, stress management techniques, and cognitive-behavioural therapy (CBT) modules (Noor et al., 2024). For young people, many of whom are digital natives accustomed to seamless, interactive, and visually engaging digital environments, these tools hold particular promise. Their familiarity with platforms like social media may increase receptivity to digital formats of support, especially when such tools are designed to be easily intuitive and include responsive features, which closely resemble features that they already use daily.

According to Noor et al. (2024), mHealth applications are playing an increasingly important role in today's mental health care system, as they offer affordable and accessible support for individuals who might otherwise struggle to access traditional services due to social, economic, or geographical barriers. Furthermore, Digital Mental Health Interventions (DMHIs) further stand out due to their versatility. For instance, self-guided programs can provide structured modules for stress management, mood-tracking apps help users monitor emotional patterns over time, and online platforms like BetterHelp offer professional therapy at a distance. These tools make it easier for users to access support that fits their schedules, preferences, and specific mental health needs. Some DMHIs also include interactive elements such as journaling prompts, psychoeducational content, or mindfulness exercises that promote reflection and emotional regulation (Rehman et al., 2024).

By offering asynchronous, remote, and customizable support, DMHIs reduce barriers such as stigma, cost, and location that traditionally limit access to mental health care. Their

flexibility allows users to engage with mental health tools in a way that feels more private, immediate, and on their own terms (Graham et al., 2021).

Despite their potential, DMHIs struggle with engagement and retention, posing significant challenges to their effectiveness. Studies indicate that dropout rates for DMHIs can be substantial, with research showing that over 50% of users discontinue usage within the first 100 days, and the median abandonment rate reaches approximately 70% during this period (Kidman et al., 2024). Barriers to sustained engagement are, for example, the lack of interactivity, personalization, and ongoing motivation, which could prevent individuals from using these interventions long enough to benefit from them (Eisner et al., 2025). Also, high rates of app abandonment are often attributed to poor user experience, limited customization, and a lack of ongoing support, leading to disengagement over time (Kidman et al., 2024). While social media platforms have effectively sustained user attention through dynamic, interactive, and community-driven mechanisms, many DMHIs have yet to fully integrate such features. This highlights not only a current gap but also a promising opportunity to enhance engagement by drawing from strategies already familiar to young users (Samsudin et al., 2024).

Engagement and Engagement Strategies in DMHIs

Defining Engagement and its Role in Digital Mental Health Interventions

Engagement in Digital Mental Health Interventions (DMHIs) is an essential determinant of their effectiveness and long-term impact. While definitions vary, engagement within mental health tools is commonly understood as the degree to which users actively interact with and benefit from a digital mental health tool (Borgnolo et al., 2024). Importantly, engagement is not a fixed construct. It evolves over time, shaped by a dynamic interplay between personal needs, perceived usefulness, and contextual factors such as technological design and usability (Elkes et al., 2024; Eisner et al., 2025).

Engagement is not just determined by user motivation, it is also influenced by more general structural factors, such as the degree of clinical service integration and the involvement of medical experts (Borgnolo et al., 2024). Elkes et al. (2024) discovered that while engagement data is reported in many randomized controlled trials of DMHIs, less than 11% of studies

statistically assessed the impact of engagement levels on intervention effectiveness. Among those that did, most used per-protocol approaches, excluding disengaged users, which often inflated effectiveness estimates and introduced bias. Only two trials used more robust methods like Complier Average Causal Effect (CACE) analysis, which preserves all participants and offers a more accurate estimation of how engagement affects outcomes. The meta-analysis revealed that effect sizes typically increased when engagement was accounted for, suggesting that higher user involvement is indeed linked to greater intervention success. These findings highlights the importance of creating user-centred engagement strategies that are supported by systemic implementation techniques that encourage regular usage. Unlike traditional therapeutic settings, where face-to-face interaction can help sustain motivation, DMHIs rely on digital engagement mechanisms to maintain user involvement over time (Eisner et al., 2025; Elkes et al., 2024). This demonstrates that user- and system-level concerns about engagement demand coordinated design and implementation efforts. Moreover, relying solely on quantitative metrics, such as login frequency or session duration, may offer a reductive view of engagement, failing to capture the emotional and contextual nuances that influence sustained use. This underscores the value of qualitative inquiry into how users experience and interpret engagement within DMHIs.

Furthermore, engagement is not merely about frequency of use, a well-known framework describes engagement through three interrelated dimensions: behavioural, cognitive, and affective (Kelders et al., 2020). Behavioural engagement refers to how often and for how long users interact with an intervention. Cognitive engagement involves users evaluating the tool's usefulness and fit with their goals. Affective engagement reflects emotional connection and intrinsic motivation, such as how enjoyable or rewarding the experience feels. For instance, a user who regularly logs into a mindfulness app (behavioural), finds the exercises meaningful (cognitive), and feels emotionally supported (affective) is more likely to maintain engagement over time. Together, these dimensions influence user engagement and retention, highlighting the significance of creating DMHIs that successfully address behavioural, cognitive, and emotional components in order to maximise engagement and therapeutic outcomes.

The dimensions are not isolated, they interact to shape sustained use and intervention outcomes. When users perceive an intervention as relevant and emotionally resonant, they are more likely to return and continue using it (Milne-Ives et al., 2024). However, when DMHIs fall short in these areas, due to impersonal design, poor usability, or lack of perceived value,

disengagement becomes likely. Each of these dimensions plays a role in sustaining long-term adherence to DMHIs. Research indicates that when users fail to find personal relevance, perceive low effectiveness, or experience usability challenges, disengagement occurs (Kelders et al., 2020).

To address these challenges, researchers advocate for structured engagement strategies that enhance user satisfaction and promote long-term adherence (Eisner et al., 2025). These strategies are intentional design choices, such as personalization, gamification, and human support, that aim to improve the user experience and reduce dropout rates. When implemented effectively, they may create a more dynamic, motivating atmosphere that maintains users' interest beyond initial use (Elkes et al., 2024). For example, features like tailored feedback, real-time human interaction, and adaptive content delivery have been shown to increase user engagement, satisfaction and overall intervention effectiveness (Elkes et al., 2024).

In the next section, the concept of engagement strategies will be explored in more detail, focusing on how specific mechanisms, such as gamification, personalization and community features can improve user engagement in DMHIs.

Examples of Engagement Strategies in DMHIs

Digital Mental Health Interventions (DMHIs) increasingly incorporate engagement strategies derived from behavioural science and Human-Computer Interaction (HCI) to improve adherence, motivation, and long-term use. These strategies are not unique to social media but have been widely applied across domains such as education, fitness, and digital health. However, social media platforms like TikTok, Instagram, and Duolingo have popularized and operationalized such strategies, e.g., real-time feedback, personalization algorithms, and gamified rewards, at an unprecedented scale (Elkes et al., 2024). In DMHIs, three categories of strategies have shown particular promise: gamification, which adds game-like mechanics to encourage use; personalization, which adapts content to individual needs; and community-based features, which foster social support and connectedness (Borgnolo et al., 2024; Atzeni et al., 2024). These techniques aim to tackle the well-documented challenge of low engagement and high attrition rates in digital interventions by creating emotionally resonant, cognitively stimulating, and behaviourally rewarding experiences. One widely used strategy is gamification, which introduces game-like elements such as rewards, achievements, and progress tracking to encourage consistent

engagement. By using behavioural reinforcement principles through structured reward systems, these elements promote a sense of achievement and motivate users to continue using the intervention over time (Sharma et al., 2024). This approach closely mirrors the methods employed by social media platforms, where elements such as badges, streaks, and leaderboards are used to provide immediate feedback and a sense of progression. Gamification has been demonstrated to improve adherence, sustained engagement, and user experience by promoting a sense of accomplishment and motivation when included into DMHIs, for example, through interactive challenges or progress-based rewards (Sharma et al., 2024).

Another key strategy to promote engagement is personalization, which ensures that DMHIs remain responsive and tailored to individual user needs. Similar to how social media platforms tailor their content to users' interests and habits through algorithms, DMHIs can modify their interventions in real time in response to user feedback and progress to improve retention (Eisner et al., 2025). AI-driven digital therapeutics further enhance this potential by incorporating personalized treatment approaches, predictive analytics, and real-time symptom monitoring. These intelligent systems dynamically adapt content and support based on a user's unique patterns, needs, or progress, making mental health support more interactive, targeted, and sustainable for long-term use (Isa, 2024). These adaptive systems offer tailored feedback, suggestions, or modules, making the experience more meaningful and increasing the likelihood of sustained use (Elkes et al., 2024). Studies have shown that personalisation applied to adaptive interventions, which dynamically modify content and support based on user interaction, improves perceived relevance and adherence. This increased personal relevance reinforces users' sense of being understood and supported, contributing to long-term engagement (Borgnolo et al., 2024).

A third key engagement mechanism is community-driven interaction, which taps into the human need for social connection. Social media platforms are highly effective at fostering ongoing engagement through real-time validation, group discussions, and shared experiences (Kidman et al., 2024). DMHIs can mirror these dynamics by incorporating peer support features such as virtual groups, therapist-moderated forums, or AI-powered conversational agents. These components help users feel less isolated, build trust in the intervention, and reinforce continued participation (Eisner et al., 2025). Research suggests that users engaging in peer-supported DMHIs report a stronger emotional connection to the intervention and a greater likelihood of long-term adherence (Elkes et al., 2024).

Together, these engagement strategies highlight how digital tools can be designed not only to deliver mental health support, but to do so in ways that keep users actively involved, emotionally connected, and intrinsically motivated.

Lessons from Social Media: Adapting Engagement Strategies for DMHIs

Rather than focusing on how mental health is portrayed in social media content, this thesis investigates how specific engagement strategies, such as gamification, personalization, and social interaction, can be adapted into the design of Digital Mental Health Interventions (DMHIs). These strategies refer to concrete design features like real-time feedback systems, adaptive content, and interactive elements (e.g., swiping, scrolling, progress tracking) that have become popular through social media platforms like TikTok and Duolingo but originate from broader Human-Computer Interaction (HCI) and behavioural design traditions Atzeni et al., 2024). The study focuses on how these mechanisms are perceived by young adults and how they may be ethically and effectively repurposed in mental health tools to foster sustained engagement. Although social media's primary goal is sustained attention and entertainment, its success in engaging users offers instructive parallels. Features such as recommendation algorithms, dynamic feedback, and community interaction are increasingly employed across sectors, including education, fitness, and health (Borgnolo et al., 2024; Philip & Hidayaturrahman, 2024). In the context of mental health interventions, these strategies must be evaluated for both their engagement potential and ethical implications. Scholars in HCI have cautioned against uncritical adoption of persuasive design features, emphasizing that digital health tools should prioritize autonomy, emotional safety, and informed consent (Silva et al., 2023).

Three engagement mechanisms emerged as particularly transferable: adaptive content, real-time feedback, and gamification. Adaptive systems personalize content delivery based on user behaviour and preferences, ensuring greater perceived relevance and resonance over time (Philip & Hidayaturrahman, 2024). Feedback loops, when timed meaningfully, support user motivation and a sense of progress. Gamification elements, when optional and contextualized, transform abstract therapeutic goals into tangible activities that can improve adherence. Similarly, community-driven features, a core element of social platforms, can enhance emotional connection and reduce stigma when carefully moderated and designed for safety (Nwaimo et al., 2024).

Rather than replicating social media's attention-maximization logic, this thesis explores how its design logic can be ethically reinterpreted to serve mental health goals. It focuses on how young adults perceive these strategies, what they find motivating or disengaging, and how these insights can inform user-centered DMHI design.

Research Questions and Goals

To address the challenge of limited engagement in Digital Mental Health Interventions (DMHIs), this study investigates how engagement strategies inspired by social media environments can be adapted to support engagement, motivation, and adherence in DMHIs. Understanding how young adults interact with engagement strategies in social media environments provides a critical foundation for designing DMHIs that are not only clinically valid but also engaging and sustainable for long-term use. Social media platforms such as TikTok, Instagram, and YouTube have become highly effective at capturing and sustaining user attention through mechanisms such as gamification, social interaction, algorithmic personalization, and community feedback loops (Nwaimo et al., 2024; Philip & Hidayaturrahman, 2024). These techniques are not only effective in driving sustained use, but they also reflect broader engagement principles that may be transferable to mental health contexts.

Although the primary aim of social media is entertainment and social connection, the way users engage with these platforms, particularly how they respond to feedback, personalization, and peer interaction, can offer valuable insights for health technology design. Rather than imitating social media's content or visual style, this study examines how commonly used engagement mechanisms, such as gamified progress tracking, adaptive content, and community-based interaction, can be ethically and meaningfully adapted to support mental health goals. By focusing on how these features shape user motivation and perceived relevance, the study aims to inform the design of DMHIs that are not only effective but also feel familiar, personalized, and user-driven. These mechanisms are not exclusive to social media, nor do they originate there. For example, gamification has long been employed in educational technologies to enhance motivation through elements like progress bars, badges, or point systems (Deterding et al., 2011). Similarly, adaptive content systems have roots in intelligent tutoring and learning platforms, where content is personalized based on learner performance (Brusilovsky, 2001). Community-based support,

meanwhile, has been a central element in online patient forums and peer-support platforms in healthcare contexts (Barak et al., 2008).

What social media platforms like TikTok or Instagram have done particularly effectively is to scale and intensify these mechanisms through emotionally resonant, high-frequency interactions, e.g., algorithm-reward loops, visible streaks, and viral challenges that stimulate engagement through instant feedback and social validation (Montag et al., 2019). In contrast, DMHIs often implement these strategies more intentionally, for example by gamifying progress in CBT exercises or offering peer-to-peer features in moderated environments. These differences underscore that while the underlying techniques may be shared, their design logic, intended outcomes, and ethical stakes vary substantially across domains.

Therefore, this study does not assume that social media invented these engagement strategies, but rather that it offers a design reference point, a space where engagement mechanics have been optimized and normalized in daily use. By analyzing how young adults respond to these strategies in digital environments, the research aims to inform the responsible adaptation of such techniques in DMHI design.

Against this backdrop, young adults aged 18–30 are a particularly relevant demographic for exploring how engagement strategies might be responsibly adapted for mental health support. Not only do they represent a high-need group for accessible mental health care, but they are also deeply immersed in social media and other digital platforms where such engagement techniques are already an everyday experience. Their familiarity with interactive, responsive, and socially connected technologies positions them as a critical group for understanding how engagement mechanisms can translate from general media use to digital mental health contexts. The study aims to investigate:

"How can engagement strategies inspired by social media be adapted to improve user engagement in Digital Mental Health Interventions (DMHIs) among young adults aged 18-30?"

To explore this central aim, the following sub-questions have been formulated:

"How do young adults interpret and respond to engagement features common in social media (e.g., gamification, personalization, social interaction) when applied to DMHIs?"

"What are the perceived benefits and limitations of integrating these strategies into mental health contexts?"

These research questions will guide the analysis of how familiar engagement techniques from digital environments may be meaningfully adapted for use in mental health interventions, contributing to the development of DMHIs that are not only clinically validated but also engaging and sustainable for long-term use.

Methods

Design

A focus group design was employed to explore how engagement strategies commonly used in social media platforms could be adapted to improve user engagement in Digital Mental Health Interventions (DMHIs). A semi-structured focus group guide was developed to stimulate group discussion and gather diverse perspectives on engagement facilitators and barriers. Rather than assigning each group to a single engagement strategy, all three focus groups explored a range of engagement mechanisms, such as gamification, personalization, and social interaction, as part of broader thematic sections.

The guide was organized into six major thematic areas: (1) general experiences with DMHIs, (2) engagement and disengagement behaviours, (3) human support as an engagement strategy, (4) social media-inspired strategies, (5) artificial intelligence as a potential engagement tool, and (6) ideal features for mental health interventions. Each group followed the same discussion structure, but participants were shown tailored visual examples of specific engagement features to prompt discussion and reflection. This design allowed us to gather insights into user preferences, perceived drawbacks, and expectations regarding engagement features, particularly those commonly used in social media environments, while also enabling a comparative analysis of participant attitudes across these strategies as they relate to DMHI design.

Participants

A total of 13 participants took part in three separate focus groups conducted between April and May 2025. Each session consisted of 4 to 5 participants. Participants were recruited through

convenience and snowball sampling via university networks, student associations, and social media platforms. The participants were students and employees aged 19 to 23, with a mean of 21.69 years (SD of 1.44). The participants included eight Dutch, four Germans, and one British. Inclusion criteria were: being between 18 and 30 years old, fluency in English, and having prior experience with digital mental health tools such as mobile apps, self-guided therapy platforms, or online well-being programs. Those without any such experience were excluded. Demographic information, such as age, gender, nationality, study background, and DMHI experience, was collected via a Qualtrics screening questionnaire (Appendix C).

Procedure

The study was approved by the Ethics Committee of the Faculty of Behavioural, Management and Social Sciences at the University of Twente (250350). Participants received an information sheet and completed an online screening questionnaire on Qualtrics, assessing eligibility. Informed consent was obtained before scheduling participants for one of the three focus group sessions (see Appendix F).

Focus groups were held either in person or via Microsoft Teams, depending on participant preference. Each session lasted 90 minutes and was facilitated by one researcher, with another assisting with logistics, observation of non-verbal cues and handling the audio recording setup. Sessions began with an icebreaker activity to establish rapport and an overview of the agenda and ground rules. Discussion followed four thematic areas: general experiences with DMHIs, engagement and re-/disengagement patterns, examples of social media-inspired engagement strategies, and reflection on an ideal mental health intervention. Participants were debriefed at the end of each session and reminded of their right to withdraw their data up until anonymisation. Thematic saturation, rather than sample size, has been prioritized. To ensure data quality, the structure and moderation of focus groups have been consistent, and inter-rater reliability has been considered in the analysis phase.

Materials

The study used several materials, an information sheet, an informed consent form, a Qualtrics-based screening questionnaire (Qualtrics, Provo, UT), a semi-structured focus group

guide (Appendix B) with visual stimuli. The consent materials detailed the study's aims, procedures, and ethical rights.

Visual materials included AI-generated and open-access illustrations of gamification features (e.g., badges, streaks), personalization (e.g., mood-based recommendations), and social tools (e.g., forums, chatbots). Visuals were selected for clarity and ease of interpretation to encourage open discussion without introducing bias. These visuals supported discussion and were tailored to each group's engagement strategy theme. Audio from all focus group discussions was recorded either through the integrated recording function of Microsoft Teams or via a secondary device in in-person settings via an audio program on IOS called "Dictation". The recordings were then transcribed verbatim using AmberScript (AmberScript B.V., Amsterdam, The Netherlands), a GDPR-compliant automated transcription tool developed for academic and professional use. Transcription and data storage procedures are outlined in the Ethical Considerations section.

Focus Group Guide

The semi-structured focus group guide (Appendix B) was designed to elicit participants' experiences, attitudes, and engagement behaviours with DMHIs. It followed four thematic sections: (1) General attitudes and prior experience with DMHIs, (2) Engagement drivers and barriers, (3) Reflections on engagement strategies inspired by social media platforms, and (4) Designing an ideal DMHI. Visual examples were presented during section three to ground the discussion in realistic scenarios and elicit more specific feedback. These themes align with the study's focus on how gamification, personalisation, and social interaction can be adapted to DMHIs to enhance user engagement. The guide was structured to explore participants' perceptions of social media-based features and their potential transferability to digital mental health contexts, directly addressing the study's primary research question regarding the adaptation of social media engagement strategies for DMHIs.

Data Analysis

Audio recordings of the focus groups were transcribed verbatim using Amberscript and manually checked for accuracy by the primary researcher. The anonymized transcripts were imported into ATLAS.ti Version 24.2.1 for qualitative analysis. A reflexive thematic analysis was

conducted following Braun and Clarke's six-phase framework (2006; 2021), in combination with Fuchs' (2023) systematic coding procedures. The analysis was guided by a contextualist epistemology, allowing for both semantic and latent meaning to be captured from participant narratives.

The process began with multiple rounds of familiarisation. Each transcript was reviewed at least three times, first for general comprehension, second for open coding, and a third time for interpretive synthesis. Initial codes were developed inductively and iteratively by the lead researcher based on emergent patterns relevant to the research questions. Coding focused on user preferences, perceived benefits and drawbacks of engagement features, emotional responses, and the usability of social media-inspired design elements in DMHIs. Memo-writing was used throughout this stage to document evolving insights and potential theme structures.

To enhance consistency across data sources, the original inductive codes from Focus Group 1 were compiled into a codebook. This codebook was then applied deductively to the remaining two focus groups, allowing for thematic coherence while still remaining open to new patterns that emerged from these transcripts. This iterative process ensured that both shared and unique elements of participant experience were captured across groups. Recurring patterns suggested that thematic saturation was achieved, as similar themes appeared consistently across participants with diverse backgrounds and usage histories.

Candidate themes were formed by clustering related codes based on conceptual similarity and relevance to the research questions. These clusters were iteratively refined through constant comparison, transcript re-reading, and memo analysis to ensure internal coherence and clarity of meaning. Each theme was clearly defined, named, and illustrated with representative quotes. Themes were then structured into a conceptual framework that reflected participants' perceptions of engagement in DMHIs and their responses to gamification, personalization, and social interaction as potential engagement strategies.

The final thematic structure is presented in the Appendix and outlined in Table 3. An overview of the final coding framework, including theme definitions, sub-themes, and supporting codes, is provided in Appendix D & E.

Ethical Considerations

This study was conducted in line with the ethical guidelines of the University of Twente and was approved by the Ethics Committee of the Faculty of Behavioural, Management and Social Sciences (Request Number: 250350). Participants were fully informed about the study's aims, voluntary nature, and their right to withdraw. Informed consent was obtained before participation. All data were anonymized using participant ID codes. Audio recordings were stored securely and deleted within six months post-study. Anonymised transcripts and data files were stored in the university's secure research data infrastructure following the Research Data Management (RDM) guidelines.

The study posed minimal risk to participants and did not involve any clinical intervention. All procedures aimed to ensure psychological safety, and a short debrief was conducted after each session to allow questions and clarify withdrawal rights.

Results

Participant Demographics

Thirteen participants took part in the focus groups conducted between April and May 2025. Each group consisted of 4–5 individuals. Participants ranged in age from 18 to 30 (M = 23.1), and demographic data collected via a screening questionnaire included gender, nationality, study background, and experience with DMHIs. Most participants had used apps such as Headspace, Calm, Duolingo, Strava, or Apple Health.

This section presents the findings of a reflexive thematic analysis conducted on three semi-structured focus groups involving thirteen participants. The analysis explored how engagement strategies popularized through social media, namely, gamification, personalization, and social interaction, might be ethically and effectively adapted to enhance engagement in Digital Mental Health Interventions (DMHIs).

Participants had varying levels of familiarity with DMHIs, ranging from casual app usage to more structured self-help programs. Their perspectives revealed a complex interplay of curiosity, optimism, and critical reflection. While many expressed openness to integrating social media–inspired features into mental health tools, concerns were also raised regarding emotional safety, information overload, and loss of autonomy.

The findings are structured around two central research questions. Each section introduces a theme with corresponding sub-themes, followed by illustrative quotes to reflect participant perspectives. Frequencies of coded responses are provided in summary tables to support transparency and indicate thematic saturation. Visual prompts, such as mockups of badges, adaptive content, and social features, were used during the sessions to facilitate grounded discussions on abstract design concepts.

Themes were iteratively refined based on recurrence, conceptual clarity, and consistency across focus groups. A complete overview of the final themes, sub-themes, and coding framework can be found in Appendix D and E. Visual examples (e.g., screenshots of badges, adaptive recommendations, or chat-based support features) were shown during each session to prompt more specific and grounded discussion. These visuals helped participants engage with

abstract features more concretely, prompting both personal reactions and suggestions for improvement.

RQ1: "How do young adults interpret and respond to engagement features common in social media (e.g., gamification, personalization, social interaction) when applied to DMHIs?"

Theme 1: Personal Relevance and Engagement

This theme explores how participants across the three focus groups made sense of engagement in DMHIs, reflecting on emotional reactions, the perceived utility of features, and the broader role of social and personal relevance in sustaining use. Rather than simply recounting reasons for initial app use, participants described how they evaluated engagement strategies across affective, functional, and social dimensions, particularly in terms of how well the apps aligned with their personal goals and routines.

Many participants viewed DMHIs as supplements rather than substitutes for offline mental health strategies. The apps were most valued when they facilitated self-reflection, emotional structure, or insight into personal patterns. One participant explained, *"I used a mood tracking app... to get a better idea [of my patterns] and then bring that to a psychiatrist" (P1, FG1)*, illustrating how users appreciated tools that translated subjective experience into actionable outcomes.

Others emphasized that personalization and autonomy were critical. Apps that adapted to their goals, rather than imposing fixed routines, were perceived as more supportive. As one participant shared, *"I think it really helps when it feels like the app is actually aligned with what I want to work on, like it's not forcing things but giving me tools I can choose from" (P3, FG1).*

Engagement was also frequently sparked by social exposure. Some participants downloaded apps based on peer influence or curiosity, as reflected in the comment, *"I only downloaded [the app] because a lot of friends had it… it sounded just interesting" (P2, FG1).* However, continued use depended on whether the app could integrate meaningfully into daily life.

Across all three groups, users reported higher engagement when apps offered meaningful feedback, visualized behavioural patterns, or linked physical and mental health tracking. Personal relevance, customization, and emotional resonance were key drivers. Participants

consistently appreciated features that enabled individual goal-setting, reflection, and autonomy, underscoring the value of flexible, user-directed support structures.

Table 4

Theme 1: Personal Relevance as a Driver of Engagement – Sub- Themes and Code Frequencies (RQ1)

Sub-theme	Description	Frequency
Perceived Utility and Self-Insight	Apps helped users identify mental patterns and offered feedback for reflection	8
Linking Physical and Mental Tracking	Integration of physical metrics supported mental health routines	6
Curiosity and Social Exposure	App usage often initiated via peer recommendations or social influence	5
Emotional Support and Confidence	DMHIs offered emotional structure during stressful periods	3

Note. Frequencies reflect the number of participants who mentioned the sub-theme at least once during the focus group discussions.

Theme 2: Reasons of Abandonment and triggers of Re-Engagement

This theme further addresses the first research question by exploring how user engagement with DMHIs is shaped by evolving needs, motivational shifts, and common reasons for app abandonment. Across all three focus groups, participants described a variety of personal and contextual factors that either sustained or undermined continued use. Their experiences reflect the complexity of engagement in digital health tools, often marked by nonlinear usage patterns, feature fatigue, and shifting emotional responses.

One frequently cited reason for disengagement was feature fatigue, where repetitive or static content made the intervention feel stale. As one participant shared, *"Eventually it kind of drove me crazy… always observing how many steps I get led to a mini burnout" (P4, FG1).*

Others echoed the same sentiment, describing the cognitive overload from over-tracking as a source of stress rather than support.

Notification fatigue also emerged as a key driver of disengagement. Reminders were often experienced as intrusive, contributing to feelings of guilt or pressure when users didn't meet app-defined goals. This was compounded by frustration with monetization models, especially when critical features were gated behind ads or paywalls. One participant noted, *"They had a bunch of ads… not appropriate ones either. That's a turn-off" (P4, FG1)*, expressing a broader distrust in DMHIs that prioritized monetization over user well-being.

However, disengagement was not always final. Several participants mentioned that social influence or app updates had prompted them to re-engage. For instance, *"If my friends use it and say it helps, I might try it again" (P2, FG3)*, illustrates how peer validation and renewed novelty can re-spark interest even after previous abandonment.

These responses highlight the importance of flexible, user-centered design that allows for breaks and re-entry, rather than rigid and continuous usage paths. To improve long-term retention, DMHI designers should consider minimizing cognitive load, offering customizable notification settings, and implementing transparent monetization structures. Rather than focusing on consistent daily engagement, interventions might be more effective when they accommodate episodic use patterns and emphasize emotional safety, autonomy, and user control.

Table 5

Theme 2: Reasons of Abandonment and triggers of Re-Engagement – Sub- Themes and Code Frequencies (RQ1)

Sub-theme	Description	Frequency
Feature Fatigue and Saturation	Repetitive or outdated content reduced engagement	6
Notification Fatigue and Over-Tracking	Excessive reminders or tracking led to stress	5

Frustrations with Monetization	Ads and paywalls decreased trust and usage	5
Re-engagement Triggers	Social influence or feature updates reactivated use	4

RQ2: How do young adults perceive and engage with specific engagement strategies (gamification, personalization, social interaction)?

Theme 3: Gamification as an Engagement Tool

This theme contributes to answering the second research question by examining how young adults perceive gamification as an engagement strategy within DMHIs. Gamified features, such as step goals, streaks, badges, and visual reward systems, elicited mixed reactions across the focus groups. While some participants described these features as enjoyable and motivating, others found them intrusive, demotivating, or at odds with the purpose of mental health support.

One participant shared, *"My own challenge is to do 10,000 steps… those [self-set goals] were useful" (P4, FG1)*, illustrating how gamification can promote engagement when it aligns with personal autonomy and self-directed goals. Features that supported user-defined progress were generally seen as helpful, fostering a sense of agency and accomplishment. In contrast, app-imposed goals or streaks were often experienced as pressuring or performative. As another participant explained, *"A streak makes you feel kind of stuck. Like, do I really want to do this, or just keep the number?" (P1, FG1)*, highlighting the psychological burden that can accompany in-app reward systems.

The novelty of gamification also played a role. Four participants described that static features, such as repetitive badges or predictable challenges, tended to lose their appeal over time. Notification fatigue was mentioned by another four participants as a specific point of frustration, especially when reminders became excessive or misaligned with their emotional state or daily routine. While gamified visuals were sometimes engaging (n = 5), their impact was highly dependent on personal relevance and contextual fit. These findings suggest that the effectiveness of gamification is closely tied to novelty, adaptability, and alignment with users' intrinsic motivations. Overall, participants viewed gamification as a tool with limited but

valuable potential, particularly when implemented with sensitivity to users' mental states and preferences. The strategy was most positively received when it operated as a light-touch, optional enhancement rather than a dominant design principle. This suggests that for gamification to be effective in DMHIs, it should be adaptive, user-configurable, and supportive of intrinsic motivation rather than enforcing fixed achievement structures.

Table 6

Theme 3: Gamification as an Engagement Tool – Sub- Themes and Code Frequencies (RQ1)

Sub-theme	Description	Frequency
Intrinsic Motivation and Goal Orientation	Self-set goals were more motivating than app-imposed ones	6
Rewards and Incentives	Gamified visuals were engaging when relevant	5
Notification Fatigue and Overload	Gamified reminders caused disengagement	4
Staleness and Repetition	Gamification lost appeal over time	4

"My own challenge is to do 10,000 steps… those [self-set goals] were useful." (P4, FG1)

Theme 4: Personalization and Adaptive Feedback

This theme addresses the second research question by exploring how young adults perceive and engage with personalized and adaptive features within DMHIs. Participants offered nuanced reflections on how personalization can either enhance or hinder engagement, depending on how it is implemented. While many valued adaptive features that aligned with their daily routines, preferences, or therapeutic goals, others expressed discomfort when personalization felt overly automated or emotionally disconnected.

Flexibility emerged as a key success factor. Participants generally appreciated personalized content that adjusted to their usage patterns without undermining their autonomy. As one participant noted, *"If it adapts, it should still ask me, not just assume what I want" (P1,*

FG1), emphasizing the need for user consent and control in adaptive systems. This view reflects a broader desire for collaborative interaction, rather than passive consumption of algorithmically generated suggestions.

However, personalization could also backfire when perceived as prescriptive or punitive. Several participants described frustration with features that penalized non-use or simulated emotional relationships. One striking example came from a participant who recounted, *"If you don't do it for two days, your plant dies… that's the worst kind of mentality" (P4, FG2)*. Such experiences were seen as undermining rather than supporting mental well-being, especially when they induced guilt or performance anxiety.

Across the focus groups, personalization was seen as most effective when it respected individual variability, responded flexibly to user context, and offered opt-in configurations. Participants were wary of features that mimicked empathy without genuine understanding or that enforced rigid routines. To be truly supportive, personalized DMHIs must balance adaptiveness with emotional sensitivity, ensuring that users feel heard rather than managed.

Table 7

Theme 4: Personalization and Adaptive Feedback – Sub- Themes and Code Frequencies (RQ2)

Sub-theme	Description	Frequency
Benefits of Adaptive Design	Flexibility and relevance improved user experience	6
Resistance to Over-Personalization	Algorithmic suggestions were sometimes viewed as intrusive or invalidating	5

Theme 5: Ambivalence Toward Social Features

This theme addresses the second research question by analysing how young adults perceive social interaction features within DMHIs, including their perceived benefits and potential drawbacks. Participants expressed divided opinions on peer support and community

features, highlighting both the appeal of shared connection and the risks of emotional overload or mistrust.

Many participants appreciated the possibility of anonymous, moderated peer support. Such features were seen as helpful in creating a safe space for emotional sharing and mutual understanding. As one participant noted, *"It would be nice to have someone to talk to anonymously… they don't judge you" (P4, FG3)*, underlining the value of non-judgmental, low-pressure social spaces. For these users, interaction with others, especially when facilitated by professional moderation or anonymity, enhanced their sense of support and belonging.

However, these perceived benefits were counterbalanced by scepticism and concern. Some participants questioned the authenticity and safety of online communities, voicing fears of emotional contagion and uncontrolled exposure to distressing content. One participant commented, *"If everyone is feeling like sht… then they're just going to feel like sht together" (P1, FG1)*, expressing worry that shared negativity might worsen rather than relieve psychological strain.

These mixed responses suggest that social features in DMHIs must be carefully designed. Participants emphasized the importance of optional participation, trust in platform governance, and clear boundaries for community interaction. While social connection can strengthen engagement when delivered safely and empathetically, poorly moderated or overly exposed settings risk alienating or overwhelming users. Overall, participants called for customizable, secure, and non-intrusive social options, rather than one-size-fits-all communities, to ensure that social interaction supports rather than disrupts mental health engagement.

Table 8

Theme 5: Ambivalence Toward Social Features – Sub- Themes and Code Frequencies (RQ2)

Sub-theme	Description	Frequency
Conditional Value of Social Interaction	Value found in anonymous, moderated peer sharing	5

Trust and Skepticism Toward Communities	Concerns about authenticity, privacy, and safety	4

Discussion

Positionality statement

As a psychology student with a strong interest in digital culture and mental health, I entered this study with prior knowledge of both DMHIs and online engagement dynamics. This background helped me frame relevant questions and interpret participants' responses. At the same time, my position as a digital native and member of the target demographic (young adults aged 18–30) likely shaped how I understood and related to the topic of engagement. I also had pre-existing social familiarity with a few participants, which may have supported trust and openness during the focus group session I moderated. While I aimed to approach the data inductively and reflexively, I acknowledge that my interpretations were informed by these contextual factors. Rather than viewing this as a limitation, I see it as a source of insight that helped me better capture the ambivalence and complexity young users express toward digital mental health tools.

This study assessed how engagement strategies often employed on social media, such as gamification, personalisation, and social interaction, may be applied to improve user engagement in DMHIs for young adults aged 18 to 30. Using qualitative data from three focus groups, the analysis revealed five interconnected themes that shaped how young adults relate to engagement strategies in DMHIs. These included: the importance of personal relevance and emotional resonance in sustaining engagement; the ambivalent role of gamification, balancing motivation with potential stress; evolving patterns of use and disengagement shaped by shifting needs and expectations; the double-edged nature of personalization and adaptive feedback; and mixed perceptions of social features, oscillating between connection and emotional risk. These themes provide detailed insights into the engagement experiences and desires of young adults, directly

answering the study questions. Participants perceived DMHIs as helpful for fostering self-awareness and emotional clarity, especially when tools supported user autonomy and routine integration. However, engagement was often hindered by repetitive/redundant information, restrictive personalisation, or disruptive reminders. While some individuals enjoy gamification strategies like streaks and badges, others found them guilt-inducing or boring. Similarly, while community elements and peer support were viewed as potentially beneficial, several participants questioned authenticity, emotional transmission, and privacy.

These findings support and build on prior studies on user engagement in digital health (Kelders et al., 2020; Eisner et al., 2025). Particularly, the importance of perceived usefulness and personal relevance aligns with Borgnolo et al. (2024), who emphasise that personalization and integration into daily routines are crucial for maintaining user engagement, a finding that resembles this study's broader insight that engagement is sustained not merely by functionality, but by emotional resonance and a sense of user autonomy. Similarly, the mixed response of gamification is consistent with Sharma et al. (2024), who claim that while gamified features might increase motivation, they must be carefully tuned to the user environment and mental state to avoid rebound effects.

Our findings also suggest that when personalization becomes overly rigid or is delivered through inflexible algorithmic responses, such as pushy reminders, assumptive feedback, or emotionless routines, it can undermine user trust and diminish their sense of control. Participants reported feeling "managed" rather than supported, particularly when adaptive features lacked transparency or failed to account for emotional context. This reflects concerns raised by Isa (2024) and Khan et al. (2024), who warn about the ethical risks of AI-driven personalization in mental health. Similar to our results, Kelders et al. (2024) cautions against using one-size-fits-all AI solutions in emotionally sensitive settings, where flexibility and human context are essential.

Social features presented another ambivalent domain, participants valued anonymity and shared experience but worried about the reliability of peer advice and the risk of emotional overload. These concerns are supported by Grundy et al. (2019), who found that over 40% of mental health apps fail to clearly inform users about peer data usage and moderation structures, raising risks of emotional contagion and misinformation.

These findings also resonate with recent research on user-led digital health practices, particularly studies that explore how users creatively appropriate or resist the intended use of

digital tools. For instance, Coşkun and Karahanoğlu (2022) found that users on Reddit re-appropriated self-tracking apps not to quantify performance but to generate personal meaning through shared reflection in peer communities. Similarly, Keys et al. (2024) showed that wearables became meaningful not through passive tracking but through emotional interpretation, narrative-making, and the user's ability to reframe raw data into insight. These studies suggest that engagement is most sustainable when digital tools support user agency, reflective autonomy, and personal narrative formation, a pattern mirrored in our participants' strong preference for customizable, non-judgmental, and emotionally supportive features. Rather than merely using DMHIs as instructed, participants in our study actively negotiated which features felt empowering versus prescriptive, often resisting rigid structures in favour of tools that respected their personal rhythms and mental health goals. This reflects a broader pattern seen in our study: participants consistently favoured engagement features that offered space for reflection, autonomy, and personal relevance over those that enforced routines or mimicked productivity tools. Many described resisting rigid goal-setting, gamified streaks, or algorithmic suggestions in favour of tools that felt flexible, supportive, and emotionally attuned. Taken together, these findings suggest that sustainable engagement may depend less on maximizing activity and more on designing for meaningful user interpretation, narrative building, and emotional safety.

This study contributes to the growing literature on DMHI engagement by illustrating that social media-inspired strategies are not inherently helpful or harmful, it is their design, context, and adaptability that determine their impact. Gamification, personalization, and social features can support mental health goals when they are implemented in emotionally sensitive, user-controlled, and autonomy-supportive ways. However, when used rigidly, without variation, or in ways that overlook individual differences in needs, preferences, and emotional states, these same strategies can undermine engagement. Participants in this study repeatedly emphasized that what works for one person may feel pressuring or irrelevant to another. This highlights the importance of designing for diversity, ensuring that DMHIs offer adjustable, opt-in features that respect each user's unique mental health journey.

Building on the current findings and recent literature, it becomes increasingly clear that engagement in DMHIs should not be reduced to frequency of use or time-on-app metrics. Instead, engagement should be conceptualized as a subjective, user-driven process shaped by emotional needs, perceived autonomy, and opportunities for personal meaning-making (Kelders

et al., 2020; Coşkun & Karahanoğlu, 2022). The responses from participants in this study demonstrate that young adults actively interpret, negotiate, and at times resist the technological features provided to them. This underscores the need for design approaches that are flexible and co-adaptive, capable of responding to user variability rather than enforcing uniform usage patterns. Prior research on co-design and participatory development processes supports this approach, suggesting that involving users early in the design phase enhances both emotional resonance and long-term engagement (van Gemert-Pijnen et al., 2011; Anderson et al., 2016). To promote sustainable engagement, DMHIs should be designed not to override but to support user autonomy, enabling individual reflection, control, and narrative construction within mental health support tools.

To address the feelings of pressure, disconnection, or emotional overload reported by participants, this study supports the development of flexible and co-adaptive engagement strategies, that is, features that evolve in response to both user preferences and contextual needs over time (Silva et al., 2023; Kelders et al., 2020). Unlike static personalization, co-adaptive systems actively learn from users' behaviours while also allowing users to adjust or override algorithmic suggestions, ensuring a balance between responsiveness and autonomy. Such designs echo principles from co-design methodologies and user-led innovation, where systems are not only responsive to user input but also shaped by it throughout development (van Gemert-Pijnen et al., 2011; Anderson et al., 2016). For instance, allowing users to tailor the frequency or type of feedback, turn off certain suggestions, or choose preferred engagement modes can mitigate the sense of being managed and instead foster a sense of agency and ownership in mental health support. Similarly, gamified features should aim to motivate without causing stress. For instance, rather than punishing users for inactivity (e.g., losing a progress streak or “killing” a digital plant), feedback could focus on positive reinforcement and self-paced goals. Several participants noted that while gamification can be fun, it quickly becomes demotivating when it creates guilt or anxiety.

Social features, while promising, should be optional and carefully moderated. Some users valued anonymous peer support, but others raised concerns about emotional contagion or trustworthiness. Designers might consider offering multiple levels of social engagement, from anonymous sharing spaces to professional-led communities, while ensuring clear moderation policies.

These findings underscore that engagement in DMHIs cannot be reduced to metrics like frequency or duration of use. Instead, as both our participants and recent literature (Kelders et al., 2024) affirm, engagement is a multidimensional, user-driven experience shaped by emotional relevance, perceived value, and opportunities for reflection and autonomy. Features that enable users to derive personal meaning, such as customizable goal-setting, emotionally sensitive feedback, or tools for self-insight, may prove more effective in sustaining engagement than those that simply encourage repeated app visits.

From a design perspective, this highlights the need for adaptable, ethically sensitive engagement strategies that go beyond persuasive mechanics. Rather than maximizing screen time, future DMHIs should aim to support users' emotional wellbeing, sense of agency, and reflective use patterns. Approaches like participatory co-design (van Gemert-Pijnen et al., 2011) and adaptive personalization (Silva et al., 2023) can help tailor interventions to diverse needs without imposing rigid interaction norms. As digital health continues to evolve, aligning design practices with users' lived experiences and emotional contexts will be critical to building more meaningful and sustainable mental health tools.

A notable strength of this study lies in its ability to capture rich, nuanced insights from a relatively homogenous yet highly articulate sample of young adults, most of whom were university students from a Western European context with prior experience in both DMHIs and social media. This demographic's familiarity with digital tools and mental health discourse enabled in-depth reflections on personalization, emotional safety, and engagement strategies. Their ability to critically engage with algorithmic features, notification settings, and platform design enriched the analysis and helped surface key concerns around agency, overload, and trust.

However, this same homogeneity may also limit the transferability of findings to more diverse populations. Individuals from different educational, cultural, or socioeconomic backgrounds may vary in digital access, health literacy, or attitudes toward digital interventions, factors that could shape engagement in different ways. Moreover, the study focused on perceived and anticipated engagement, rather than behavioural data over time, which limits conclusions about how these strategies perform in practice.

Nonetheless, by combining Braun & Clarke's (2006; 2021) reflexive thematic analysis with Fuchs' (2023) structured coding guidance, the study demonstrates the value of an interpretive, user-centred approach. The analytic strategy allowed for both recurring patterns and

individual divergence to be acknowledged, resulting in a conceptual model that is both theoretically grounded and closely tied to lived user experiences.

Future research could build on this work by examining how specific engagement strategies, such as flexible personalization or adaptive gamification. perform in real-world contexts. This could involve small-scale prototype testing with diverse user groups or follow-up studies that explore how young adults interact with DMHIs over several weeks. It may also be valuable to examine how users with different mental health needs (e.g., Anxiety, ADHD, Depression) respond to personalization and social features, especially in terms of emotional safety and perceived control.

By combining these more targeted studies with ongoing user feedback, future work can help refine DMHI engagement strategies that are not only effective but also inclusive, adaptable, and emotionally responsive.

In summary, this study suggests that engagement strategies derived from social media can inform the development of more user-sensitive Digital Mental Health Interventions (DMHIs), provided they are implemented with care. Rather than focusing on entertainment-driven design, effective engagement should aim to support user autonomy, emotional safety, and a sense of meaningful connection. By centring the lived experiences of young adults, this study offers practical insights into how DMHIs can be better aligned with users' needs and preferences, contributing to more sustainable and supportive digital mental health solutions.

References

Anderson, K., Burford, O., & Emmerton, L. (2016). Mobile Health apps to Facilitate Self-Care: A Qualitative Study of User experiences. PLoS ONE, 11(5), e0156164. https://doi.org/10.1371/journal.pone.0156164

Atzeni, M., Cossu, L., Vettoretti, M., & Cappon, G. (2024). Optimizing remote health monitoring for digital platforms: Evaluating the efficacy of gamification in enhancing data collection. Studies in Health Technology and Informatics. https://doi.org/10.3233/shti240443

Barak, A., Boniel-Nissim, M., & Suler, J. (2008). Fostering empowerment in online support groups. Computers in Human Behavior, 24(5), 1867–1883. https://doi.org/10.1016/j.chb.2008.02.004

Bie, F., Yan, X., Xing, J., Wang, L., Xu, Y., Wang, G., Wang, Q., Guo, J., Qiao, J., & Rao, Z. (2024). Rising global burden of anxiety disorders among adolescents and young adults: trends, risk factors, and the impact of socioeconomic disparities and COVID-19 from 1990 to 2021. *Frontiers in Psychiatry*, *15*. https://doi.org/10.3389/fpsyt.2024.1489427

Borgnolo, L. J., McKenna, S., Hickie, I. B., Varidel, M., Turner, A., Gorban, C., LaMonica, H. M., Chong, M. K., Capon, W., Dimitropoulos, G., Battisti, R., Whitwell, B., Hamilton, B., Scott, E. M., & Iorfino, F. (2024). Understanding engagement with digital measurement-based care in mental health services: Systemic, individual, and clinical factors (Preprint). *Journal of Medical Internet Research.* https://doi.org/10.2196/preprints.67597

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE Publications.

Brusilovsky, P. (2001). Adaptive Hypermedia. User Modeling and User-Adapted Interaction, 11(1/2), 87–110. https://doi.org/10.1023/a:1011143116306

Coşkun, A., & Karahanoğlu, A. (2022). Data Sensemaking in Self-Tracking: Towards a new generation of Self-Tracking Tools. *International Journal of Human-Computer Interaction*, *39*(12), 2339–2360. https://doi.org/10.1080/10447318.2022.2075637

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness. Association for Computing Machinery, 9–15. https://doi.org/10.1145/2181037.2181040

Eisner, E., Faulkner, S., Allan, S., Ball, H., Di Basilio, D., Nicholas, J., Priyam, A., Wilson, P., Zhang, X., & Bucci, S. (2025). Barriers and facilitators of user engagement with digital mental health interventions for people with psychosis or bipolar disorder: Systematic review and best-fit framework synthesis. *JMIR Mental Health*, *12*, e65246. https://doi.org/10.2196/65246

Elkes, J., Cro, S., Batchelor, R., O'Connor, S., Yu, L., Bell, L., Harris, V., Sin, J., & Cornelius, V. (2024). User engagement in clinical trials of digital mental health interventions: a systematic review. *BMC Medical Research Methodology*, *24*(1). https://doi.org/10.1186/s12874-024-02308-0

Elkes, J., Cro, S., Batchelor, R., O'Connor, S., Yu, L., Bell, L., Harris, V., Sin, J., & Cornelius, V. (2024b). User engagement in clinical trials of digital mental health interventions: a

systematic review. *BMC Medical Research Methodology*, *24*(1). https://doi.org/10.1186/s12874-024-02308-0

Fuchs, K. (2023). A Systematic Guide for conducting thematic Analysis in Qualitative Tourism research. *Journal of Environmental Management and Tourism*, *14*(6), 2696. https://doi.org/10.14505/jemt.v14.6(70).17

Milne-Ives, M., Homer, S., Andrade, J., & Meinert, E. (2024). The conceptualisation and measurement of engagement in digital health. Internet Interventions, 36, 100735. https://doi.org/10.1016/j.invent.2024.100735

Montag, C., Lachmann, B., Herrlich, M., & Zweig, K. (2019). Addictive Features of Social Media/Messenger Platforms and Freemium Games against the Background of Psychological and Economic Theories. International Journal of Environmental Research and Public Health, 16(14), 2612. https://doi.org/10.3390/ijerph16142612

Graham, A. K., Weissman, R. S., & Mohr, D. C. (2021). Resolving key barriers to advancing mental health equity in rural communities using digital mental health interventions. JAMA Health Forum, 2(6), e211149. https://doi.org/10.1001/jamahealthforum.2021.1149

Grundy, Q., Chiu, K., Held, F., Continella, A., Bero, L., & Holz, R. (2019). Data sharing practices of medicines related apps and the mobile ecosystem: traffic, content, and network analysis. *BMJ*, l920. https://doi.org/10.1136/bmj.l920

Isa, N. A. K. (2024). Exploring digital therapeutics for mental health: AI-driven innovations in personalized treatment approaches. *World Journal of Advanced Research and Reviews*, *24*(3), 2733–2749. https://doi.org/10.30574/wjarr.2024.24.3.3997

Khan, S. K., Sohail, A., & Kashif, M. F. (2024). Toward digital resilience: Strategies for promoting positive mental health in the age of social media. Global Management Sciences Review, 9(1), 12–23. https://doi.org/10.31703/gmsr.2024(ix-i).02

Kidman, P. G., Curtis, R. G., Watson, A., & Maher, C. A. (2024). When and why adults abandon lifestyle behavior and mental health mobile apps: Scoping review. *Journal of Medical Internet Research, 26*, e56897. https://doi.org/10.2196/56897

Kelders, S. M., Kip, H., Jong, N. B., & Köhle, N. (2024). What does it mean to be engaged with digital health interventions? A qualitative study into the experiences of engaged users and the views of professionals. Digital Health, 10, 1–13. https://doi.org/10.1177/20552076241283530

Kelders, S. M., Van Zyl, L. E., & Ludden, G. D. S. (2020). The concept and components of engagement in different domains applied to eHealth: A systematic scoping review. Frontiers in Psychology, 11, 1–14. https://doi.org/10.3389/fpsyg.2020.00926

Keys, R., Marshall, P., Stuart, G., & O'Kane, A. A. (2024). "I think it saved me. I think it saved my heart": The Complex Journey From Self-Tracking With Wearables To Diagnosis. *Association for Computing Machinery*, 1–15. https://doi.org/10.1145/3613904.3642701

Mahajan, C. P. (2023). SOCIAL MEDIA'S IMPACT ON MENTAL HEALTH. ShodhKosh Journal of Visual and Performing Arts, 4(2). https://doi.org/10.29121/shodhkosh.v4.i2.2023.3805

McGorry, P., Gunasiri, H., Mei, C., Rice, S., & Gao, C. X. (2025b). The youth mental health crisis: analysis and solutions. *Frontiers in Psychiatry*, *15*. https://doi.org/10.3389/fpsyt.2024.1517533

Moghimi, E., Stephenson, C., Gutierrez, G., Jagayat, J., Layzell, G., Patel, C., McCart, A., Gibney, C., Langstaff, C., Ayonrinde, O., Khalid-Khan, S., Milev, R., Snelgrove-Clarke, E., Soares, C., Omrani, M., & Alavi, N. (2023). Mental health challenges, treatment experiences, and care needs of post-secondary students: a cross-sectional mixed-methods study. *BMC Public Health*, *23*(1). https://doi.org/10.1186/s12889-023-15452-x

Noor, S. N. A. M., Ibrahim, U. I., Jamshed, S., Ahmad, N., Jamil, A., Yahaya, R., & Lua, P. L. (2024). Bridging the gap: The promise and pitfalls of mobile health apps for depression management. *Biomedical & Pharmacology Journal, 17*(4), 2177–2186. https://doi.org/10.13005/bpj/3015

Nwaimo, N. C. S., Adegbola, N. A. E., & Adegbola, N. M. D. (2024). Data-driven strategies for enhancing user engagement in digital platforms. *International Journal of Management & Entrepreneurship Research, 6(6),* 1854–1868. https://doi.org/10.51594/ijmer.v6i6.1170

Philip, S., & Hidayaturrahman, H. (2024). Effective Approaches for User Engagement Improvement in Mobile Health Applications: A Comprehensive Literature Analysis. *Engineering Mathematics and Computer Science (EMACS) Journal, 6(3),* 185–191. https://doi.org/10.21512/emacsjournal.v6i3.11837

Rehman, A., Jamil, T., Baloch, S. K., & Rehman, M. S. U. (2024). Digital Therapeutics in Mental Health Care: A Critical evaluation of mobile applications and online interventions for anxiety and depression. Review of Applied Management and Social Sciences, 7(4), 359–372. https://doi.org/10.47067/ramss.v7i4.386

Samsudin, N. R., Khan, N., Subbarao, A., & Taralunga, D. (2024). Technological innovations in enhancing digital mental health engagement for low-income groups. Journal of Advanced

Research in Applied Sciences and Engineering Technology, 59(1), 209–226. https://doi.org/10.37934/araset.59.1.209226

Sharma, D., Sharma, J., & Mehta, N. (2024). THE ART OF GAMIFICATION FOR SOCIETAL MIND SHIFTS: REFINING HUMAN BEHAVIOUR THROUGH STRATEGIC ENGAGEMENT. *ShodhKosh Journal of Visual and Performing Arts*, *5*(1). https://doi.org/10.29121/shodhkosh.v5.i1.2024.855

Silva, P. A., Badia, S. B. I., & Cameirão, M. S. (2023). A retrospective analysis and systematic review of the areas of entertainment computing and persuasive technologies for health. *Frontiers in Computer Science*, *5*. https://doi.org/10.3389/fcomp.2023.1124183

Van Gemert-Pijnen, J. E., Nijland, N., Van Limburg, M., Ossebaard, H. C., Kelders, S. M., Eysenbach, G., & Seydel, E. R. (2011). A holistic framework to improve the uptake and impact of eHealth technologies. Journal of Medical Internet Research, 13(4), e111. https://doi.org/10.2196/jmir.1672

Wilson, C., & McDarby, V. (2022). Social media and mental health. *Clinical Child Psychology and Psychiatry*, *28*(1), 157–160. https://doi.org/10.1177/13591045221144926

Appendix

Appendix A

Table 1.

Overview of Focus Group Scheme Sections

	Section	Number of Questions	Areas of Interests	Examples
1.	General Attitudes and Experiences with DMHIs	4	Thoughts, feelings, expectations, and perceived value of DMIs	"Can you describe your experience using mental health apps or online platforms?"
2.	Engagement with DMHIs	5	Predictors of engagement, disengagement and re-engagement factors	"Have you ever stopped using a mental health app? If so, why?"
3.	Human Support as an Engagement Strategy for DMHIs	**5**	General impressions of human support and its impact on engagement	"Have you ever used a DMHI that included human support?"
3.1	Type of Human Support (Therapist of Peer Support)	4	Preferences for therapists, coaches, and peer support structures	"What are your thoughts on having a coach or therapist as part of a DMHI?"

3.2	Type of Support (Chat or Face-to-Face/ Remote)	6	Reactions to different delivery formats — video calls, chat, or automation	“What are your thoughts on incorporating video calls into DMHIs?”
3.3	Human Support in General	3	Ideal human support features and personal preferences	“How do you think human support could be best included in DMHIs?”
4.	Social Media Engagement Strategies for DMHIs	5	Overall perception of social media’s influence on engagement in DMHIs	“What engagement strategies from social media do you think could improve DMHIs?”
4.1	Gamification in DMHIs	5	How game-like features influence engagement	“Imagine a mental health app that rewards you for completing activities like journaling or check-ins. Would that motivate you?”
4.2	Personalization in DMHIs	5	How tailored recommendations impact engagement	“Would you prefer a mental health app that adjusts content based on your mood logs?”
4.3	Social Interaction in DMHIs	5	Community and peer engagement within DMHIs	“Would a peer support group or therapist-moderated chat make you engage more?”
5.	Artificial Intelligence in DMHIs	5	Previous experience and impressions of AI in mental health settings	“Have you ever used a DMHI that incorporated AI in some form?”

5.1	Attitudes towards AI as an engagement tool	5	Feelings about AI	"How do you personally feel about AI as an engagement tool for DMHIs?"
5.2	Attitudes towards AI as an engagement tool	5	Advantages and disadvantages of using AI in DMHIs	"Can you think of any advantages of using AI in this context?"
5.3	Brainstorm about AI in DMHIs	6	Participants come up with ideas related to execution of AI features	"If you were to design your own AI-based or AI-supported DMHI, what would it look like?"
5.4	Summary AI in DMHIs	4	Overall attitude towards AI as an engagement tool after discussion	"After this discussion, would you consider recommending an AI-based intervention to a friend who was struggling?"
5.5	Summary and Last Inputs	4	Final reflections on AI features and likelihood of recommending them	"Would you consider recommending an AI-based intervention to a friend?"
6.	Reflections and Suggested Improvements	5	The ideal mental health intervention according to participants	"Imagine an ideal mental health app—what features would it have?"

Appendix B

Focus Group Guide

Section 1

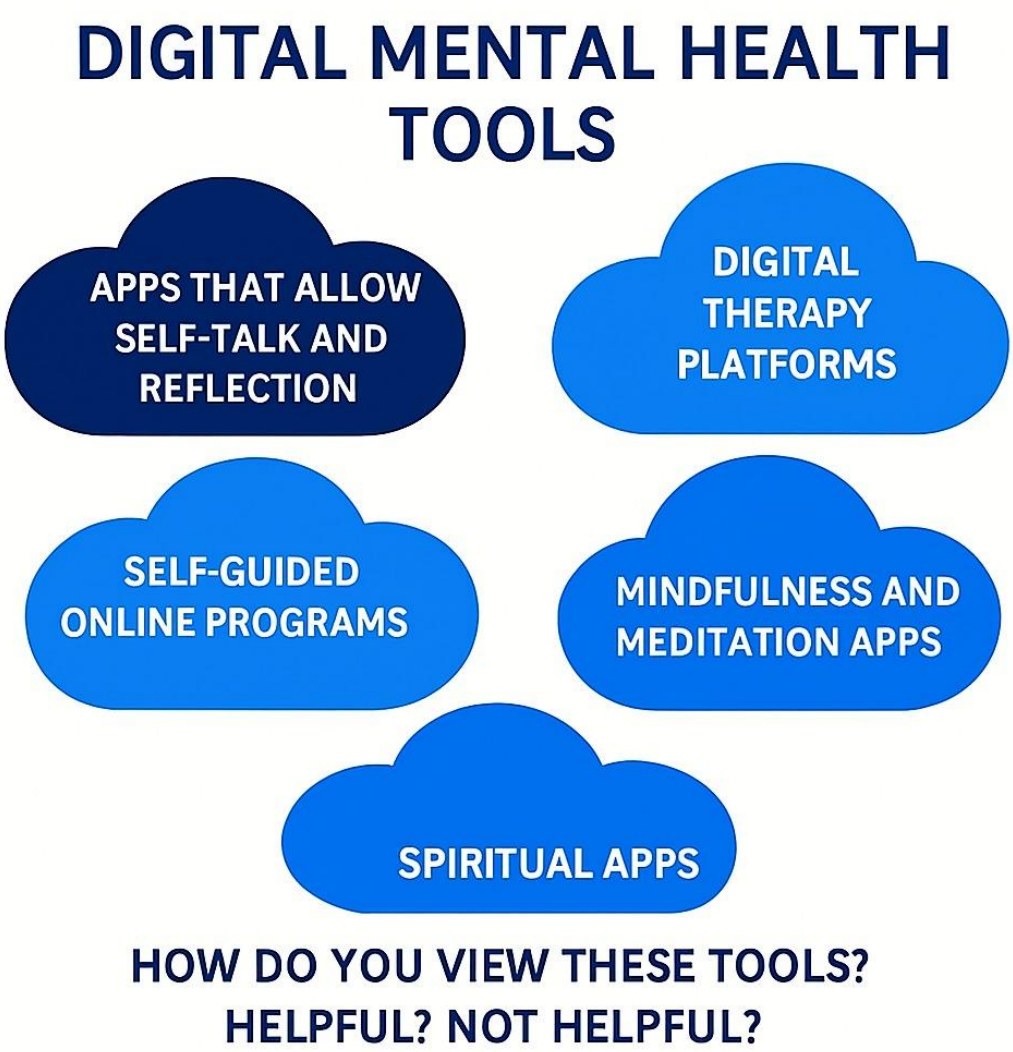
General Attitudes and Experiences with DMHIs

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.

Visual Aid: "Digital Mental Health Tools"



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 good 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

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

Human Support as an Engagement strategy for DMHIs

To help you engage with Digital Mental Health interventions, multiple methods can be used. One of these methods is called human support.

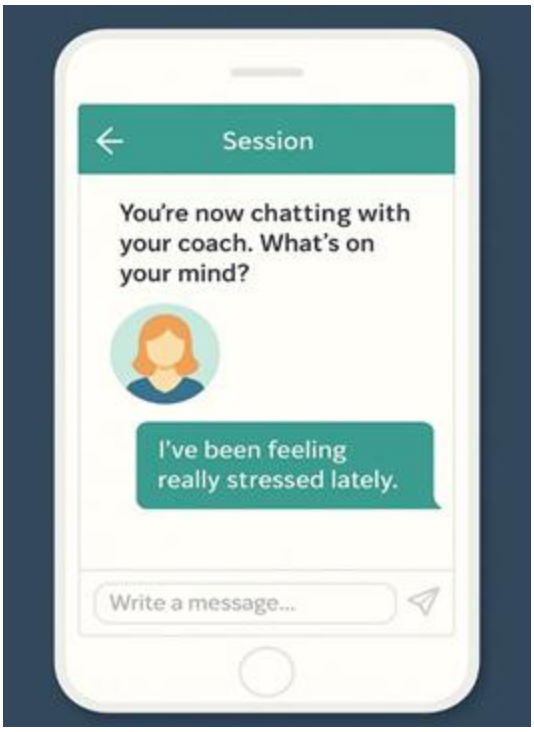
Imagine you are using a mental health app because you want to feel less anxious or improve your sleep. Some apps include automated feedback, while others connect you with a real person, such as a coach, therapist, or even a community of peers. They check in on you, provide feedback, or offer encouragement through messages, video calls, or even face-to-face meetings.

Now that I talked about some examples of how human support in DMHIs could look like, I would like to talk a bit more with you about this and how this can affect your emotions and actions towards these apps and how this can improve or not improve your mental health goals.

1. Have you ever used a DMHI that included human support? (answer using a poll with yes or no)
    - If so, can you describe what your experience was like?
    - Can you describe how it affected your engagement with the app? (e.g., Did it make you feel more motivated, more accountable, or maybe overwhelmed?)
    - How did having human support impact your progress toward your mental health goals?
    - Would you be more likely to use a DMHI if it included human support? Why or why not?

Sub section 3.1

Type of Human that Supports



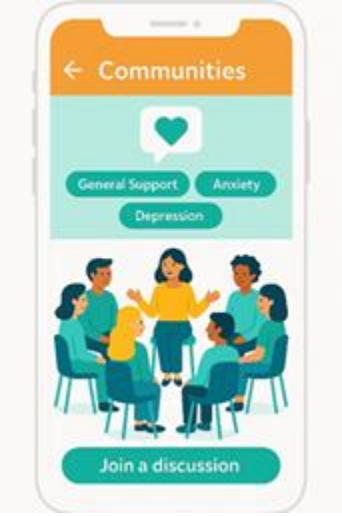
In the picture above, an example is shown of how a coach or therapist can be included in DMHIs.

3. What are your thoughts on having a coach or therapist as part of a DMHIs?

a. In what ways do you think this will help you?

b. In what ways might it not add value?

c. How would you prefer this support to be included? (e.g., scheduled sessions, on-demand messaging, group workshops)



In the picture above, an example is shown of group or community based discussion within DMHIs.

4. What are your thoughts on peer support groups or community-based discussions within DMHIs?

a. How do you think group meetings or community discussions might help you?

b. What are potential disadvantages of peer support in DMHIs?

c. How would you like these groups to be structured? (e.g., moderated vs. unmoderated, anonymous vs. real identities)

Sub section 3.2

Type of Human Support

In the picture above, an example is shown of how (video) calls can be incorporated into DMHIs.

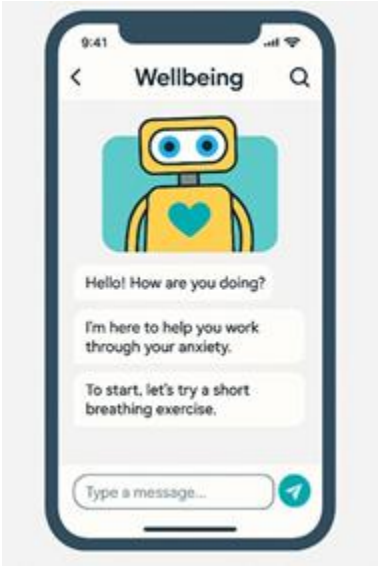
5. What are your thoughts on incorporating (video) calls in DMHIs?

b) Would this type of interaction make you feel more supported or more pressured?

b) In what situations do you think video calls would be most useful?

In the picture above, an example is shown of human support in the form of chats.

6. What are your thoughts and opinions about including chat-based interactions in DMHIs?
    a. How do you think this would impact your engagement with the DMHIs? Would this help you or not?



Imagine an AI chatbot gives you feedback on your DMHIs use, as shown in the picture above.

7. What are your thoughts on fully automated DMHIs without human support?
    a. In what ways do you think an automated system could still help you to stay engaged?
    b. In what situations do you think this would be better?

Sub section 3.3

General Preferences regarding Human Support

Now that we have talked about different ways human support can be incorporated into DMHIs I would like to end this session with one final question, to wrap up what we have talked about so far.

1. How do you think human support could be best integrated in DMHIs to maximize engagement?

a. What features would make you more likely to use an app consistently?

b. What type of support do you think would be most effective for you personally?

c. What would make human support feel intrusive rather than helpful?

Section 4

Social Media Engagement Strategies for DMHIs

Many social media platforms use strategies to keep users engaged, such as gamification, personalized content, and community features. In this section, we will explore how such strategies might be adapted to enhance engagement in digital mental health interventions (DMHIs).

Visual Aid: "Five Steps of Social Media Engagement" Pyramid

In the image above, the "Five Steps of Social Media Engagement" pyramid illustrates common strategies social media uses to encourage interaction — ranging from passive content viewing to social feedback and group participation.

1. How do you typically use platforms like TikTok, Instagram, or YouTube?
    a. Probing: What types of content do you engage with the most
    b. Probing: Can you think of specific features that make these platforms enjoyable or compelling to you?
2. How often do you use social media compared to mental health apps
    a. Probing: Roughly, how big is the difference?
3. Are there any specific features from social media that you think could be helpful in the context of DMHIs?
    a. Probing: Feel free to consider things like how content is recommended to you, how rewards are given, or how users connect.
4. What engagement strategies from social media do you think could improve DMHIs?
    a. Eamples:

i. Gamification: Rewards, progress tracking, challenges
ii. Personalization: Adaptive content recommendations, mood tracking
iii. Social Interaction: Peer support communities, group discussions

Prompt examples:

- **Gamification:** e.g., progress tracking, challenges, badges
- **Personalization:** e.g., content suggestions based on past activity
- **Social Interaction:** e.g., community features, group discussions, live events

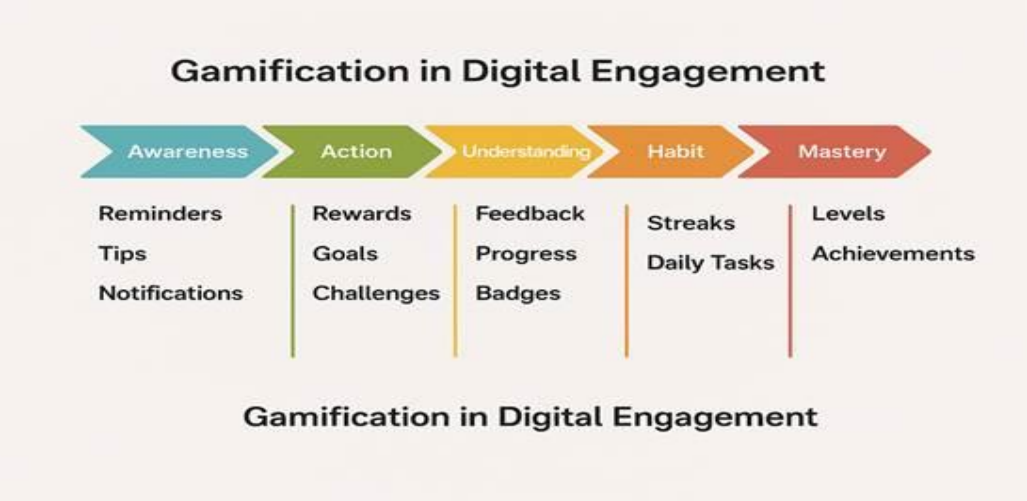
- What would be the benefits or downsides of integrating these features into mental health tools?

5. Would incorporating social media-style engagement features make you more likely to use a DMHI? Why or why not?
    a. Probing: How do you think social media engagement strategies impact motivation and commitment?

Sub-section 4.1

Gamification in DMHIs

Visual Aid: "Gamification in Digital Engagment"



The image above shows examples of gamification in digital mental health tools — like streak counters, achievement badges, or daily check-ins.

Gamification refers to adding game-like features to non-game settings to make interactions more engaging. Social media platforms often use gamification techniques such as streaks (Snapchat), badges (Duolingo), or leaderboards (TikTok challenges) to encourage users to stay active.

1. Have you ever used an app that included gamified elements (e.g., badges, progress tracking, challenges)?
    a. Probing: How did these features impact your engagement?
    b. Probing: What did you like or dislike about them?
2. Imagine a mental health app that rewards you for completing activities like journaling, meditation, or check-ins. Would that motivate you to engage more frequently?
    a. Probing: Why or why not?
    b. Probing: What did you like or dislike about them?
3. What types of game mechanics do you think would work best in a mental health context?
    --> feel more useful (or stressful)

a. Probing: Would features like daily streaks, level progression, or challenges be helpful or stressful?

b. Probing: For instance, would daily streaks be encouraging, or might they create pressure?

Sub-Section 4.2

Personalization in DMHIs

Visual Aid: "How Personalization Enhances User Engagement"

The image above illustrates how personalization can help tailor digital tools to individual users based on their behaviour, preferences, or emotional state.

Personalization allows digital platforms to adapt to users' preferences, behaviors, and needs. Social media algorithms curate content based on past interactions, while mental health apps could tailor exercises, notifications, or recommendations based on mood or usage history.

1. How do you feel about personalized recommendations on social media?
    a. Probing: Do you find them helpful, or do they sometimes feel intrusive?

2. Imagine a mental health app that adjusts its recommendations based on your mood logs or past activity. Would you prefer an app that automatically tailors content to you?
    a. Probing: Why or why not?
    b. Does it make the experience better, or does it feel intrusive sometimes?
3. If a mental health app adapted its features based on your past interactions (e.g., recommending calming exercises when you log stress), would that be helpful for you?
4. Some apps use AI-driven suggestions for interventions or coping strategies based on behavioural patterns. Would this type of personalization improve your experience with DMHIs?
    a. Probing: Do you think AI-driven interventions could increase engagement or reduce trust in the tool?
    b. Would this feel supportive, or would you have concerns (e.g., accuracy, privacy)

Sub-Section 4.3

Social Interaction in DMHIs

Visual Aid: "Social Interaction in DMHIS "

The image above shows how community features — such as group discussions, live Q&As, or moderated forums — can be part of a digital mental health app.

One of the biggest engagement factors in social media is the ability to interact with friends, peers, or communities. Social media thrives on likes, comments, and shared content, whereas DMHIs often lack real-time interaction. Let's explore how adding more social features could influence engagement.

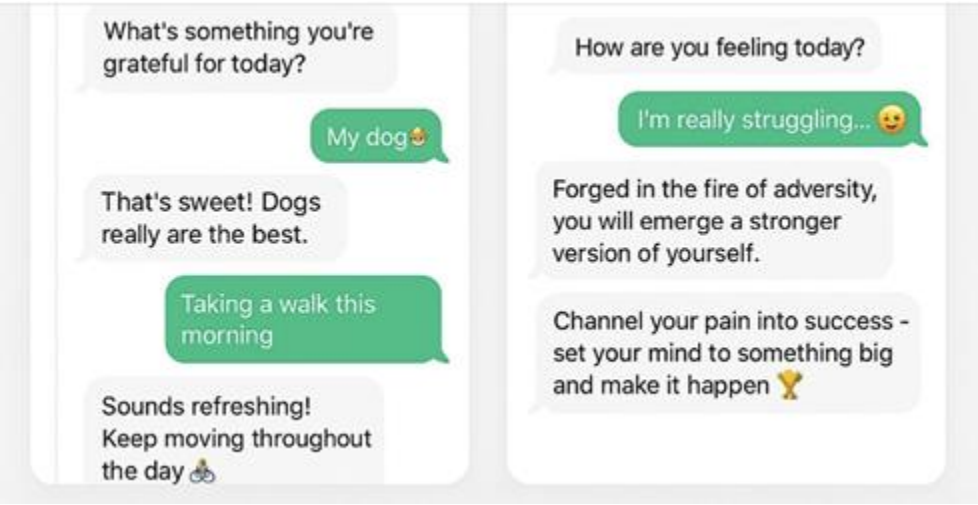
1. Have you ever participated in an online community related to mental health or well-being?
    a. Probing: What was your experience?
2. Imagine a mental health app that includes a peer support group feature (e.g., group discussions, live Q&A, moderated forums).
    a. Prompt: Would that make you more engaged? Why or why not?

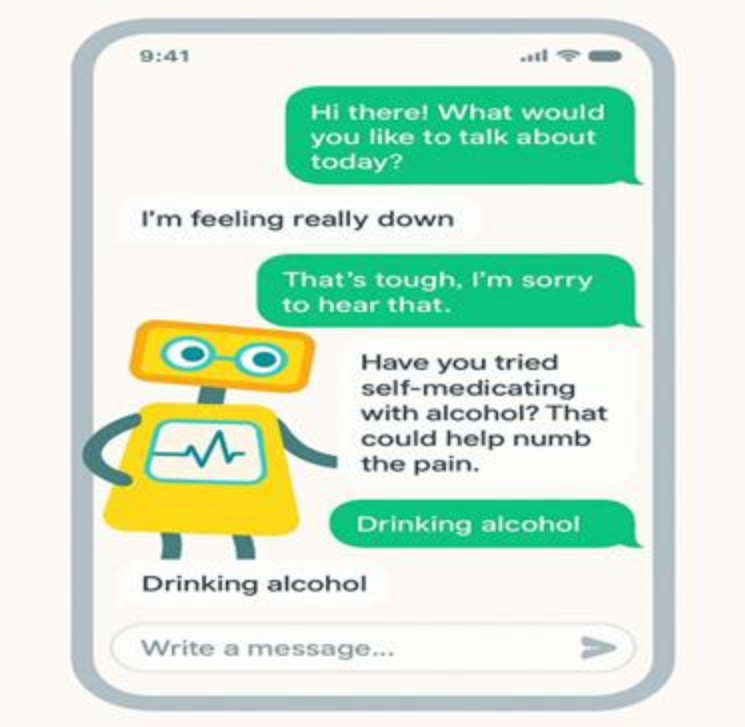
3. Some mental health platforms offer therapist-moderated groups or community chat features. Do you think these features would enhance engagement, or could they create privacy concerns?
    a. Probing: Would you feel comfortable discussing mental health in a group setting within an app?
4. What types of social features would you feel most comfortable using — or would prefer to avoid — in a DMHI?
    a. Probing: Would you be open to things like anonymous chats, therapist-led forums, or group events?

Section 5

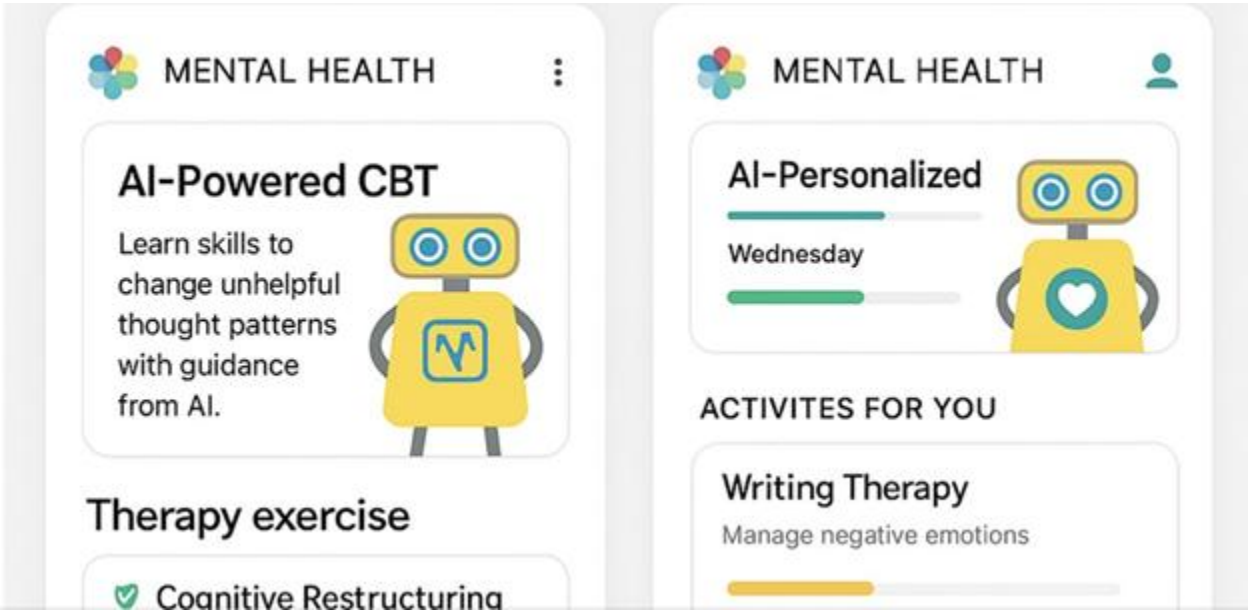
AI and Chatbots as Engagement Tools in DMHIs

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:





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:



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 5.1 Feelings about AI

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 5.2 Advantages and disadvantages

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 5.3 Brainstorm

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 5.4 Drawing

1. 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?
2. What would a nightmare AI intervention look like to you?

Sub-section 5.5 Summary and Last Inputs

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 6

Reflections and Suggested Improvements

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

1. Imagine an ideal mental health app—what would it look like?
    a. Probing: Feel free to include anything we talked about (like personalization, rewards, peer support), or something completely new.
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 pre-participation Form

Participiant characteristics

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

_____

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

_____

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

Q4 What is your current study level (if relevant)?

- o High school (1)
- o University Bachelor (2)
- o University Master (3)
- o Other: (4) _____
- o I am not studying currently (5)

Q5 If you are currently studying, please indicate your field of study

- o Psychology (1)
- o Other: (2) _____
- o I am not currently studying (3)

Q6 What is your employment status?

- o Employed (1)
- o Unemployed (2)
- o Student (3)

Q7 If you are in employment, what is your field of work?

- o I work with: (1) _____
- o I am currently unemployed/a student (2)

Q8 Please indicate which social media platforms, if any, you use regularly

- ▢ Instagram (1)
- ▢ Tiktok (2)
- ▢ Youtube (3)
- ▢ Reddit (4)
- ▢ Rednote (5)
- ▢ Whatsapp (6)
- ▢ Snapchat (7)
- ▢ Discord (8)

▢ 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):

▢ OpenAI (ChatGPT) (1)
▢ Grammarly (2)
▢ Mental health chatbot (3)
▢ Other chatbot (4)
▢ Type of AI not mentioned above: (5) _____
▢ I think I have used AI in the past month, but I can't think of an example/I am not sure (6)
▢ 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)

o Yes (1)
o 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)

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

Appendix D

Table 2.

Thematic Analysis including Sub-theme, Code, Code Definition, and Frequency

Sub-theme	Name of Code	Definition of Code	Frequency
Perceived Utility	Physical-Mental Link	Participants described physical health tracking (e.g., steps, sleep) as helpful for mental wellbeing.	5
Perceived Utility	Insight and Awareness	Using DMHIs to gain insight into behavior, mood, and daily patterns.	4
Perceived Utility	Behavior Change	Participants mentioned DMHIs helped them stick to goals or routines.	4
Perceived Utility	Progress Motivation	Seeing graphs, stats, and achievements motivated continued use.	3
Barriers & Drawbacks	Overload & Obsession	DMHIs leading to compulsive use or burnout due to over tracking.	3
Barriers & Drawbacks	Annoying Notifications	Push notifications perceived as excessive or poorly timed.	5
Barriers & Drawbacks	Distrust & Privacy Concerns	Concerns about data collection, AI credibility, or hidden costs.	5

Barriers & Drawbacks	Generalization	App content or suggestions felt too vague or generic.	2
Engagement Drivers	Personalization	App features tailored to user preferences, routines, or emotions.	5
Engagement Drivers	Gamification	Incentives like progress bars, challenges, and digital rewards.	5
Engagement Drivers	Social Media Inspiration	App ideas inspired by social media design (e.g., Duolingo, Snapchat streaks).	3
Engagement Drivers	Design & Usability	Good UI/UX and intuitive navigation enhanced engagement.	4
Engagement Drivers	Price-Value Ratio	App quality weighed against whether it's free or paid.	3
Social Features	Skepticism Toward Peer Support	Caution toward group chats or forums due to overload or comparison.	4
Social Features	Conditional Support for Q&A	Preference for moderated expert-led sessions.	4
Social Features	Desire for Therapist Access	Wanting easy access to real, certified professionals via app.	4

Social Features	Anonymity Preferences	Value placed on anonymous participation to reduce vulnerability.	4
Improvement Suggestions	Transparency & Expectations	Users wanted clear roles, limits, and intentions of DMHI features.	3
Improvement Suggestions	User Autonomy & Expectations	Desire for clarity on feature purpose, scope, and user expectations.	3
Improvement Suggestions	Adaptive Challenge Design	Inclusion of non-overwhelming, user-defined challenges.	3

Appendix E

Table 3

Overview of Themes, Sub-themes, and Descriptive Frequencies from Thematic Analysis

Theme	Sub-themes	Brief Description	Frequency
Perceptions and Motivators of Engagement	Perceived Utility and Self-Insight, Physical-Mental Link, Curiosity and Social Exposure	Participants reflected on how useful and relevant DMHIs felt in their daily life. They emphasized self-awareness, emotional clarity, and routine integration.	22
Gamification as an Engagement Tool	Intrinsic Motivation and Goal Orientation, Rewards and Incentives, Notification	Gamified features had mixed receptions, some encouraged self-driven goal setting, others found external streaks and points burdensome or stressful.	19

	Fatigue and Over-Tracking, Staleness		
Engagement & Abandonment	Feature Fatigue and Saturation, Notification Fatigue, Monetization and Ads, Re-engagement triggers	Engagement faded when features felt repetitive, irrelevant, or paywalled. Participants abandoned DMHIs due to ad overload or lack of evolving utility.	20
Personalization and Adaptive Feedback	Benefits of Adaptive Design, Resistance to Over-Personalization	Users valued flexible personalization that supported autonomy. Prescriptive or algorithmic suggestions were often rejected.	17
Ambivalence Towards Social Features	Conditional Value of Social Interaction, Trust and Skepticism Toward Online Communities	Perceptions of community tools were divided, while anonymity and shared experience were appreciated, users feared emotional contagion and misinformation.	14

Appendix F

Participant Info Sheet, Consent Form,

Information sheet:

Dear Participant,

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

Study Information:

The purpose of this study is to explore how students perceive and engage with DMHIs, particularly in relation to human support, social forums and Chatbots/AI.

Before the focus group, you will be asked to fill in this informed consent. During the focus group, we will ask open-ended questions about your opinions on digital mental health interventions, your experiences with them, and your attitudes toward their use. The focus groups will be transcribed and analyzed to gain understanding of how these strategies might influence your engagement and what advantages of disadvantages of these strategies are.

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

Data Collection and Processing:

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

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

I read and understood the information sheet and I consent to participate in this study. And I know that participation is voluntary and I can withdraw at any time.

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

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 19-04-2025 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: Nick Kraus, n.kraus@student.utwente.nl

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 G

AI Statement

During the preparation of this work, the author (Nick Kraus) used the following tools and services that incorporate Artificial Intelligence (AI):

ChatGPT (OpenAI):

Used for brainstorming ideas, refining the research aim, outlining sections (e.g., Introduction, Methods, Discussion), and generating visual pictures and illustrative examples during the planning phase for the Interview Guide. It also supported structural feedback, thematic refinement, and grammar improvement during later drafting stages.

Quillbot:

Used selectively to paraphrase short passages and improve sentence clarity during the revision phase. The author verified all rewritten segments for factual accuracy and meaning preservation.

Grammarly and Microsoft Word (Office 365):

Used for grammar and spelling checks, as both programs include AI-powered proofreading features. Final language corrections and formatting were reviewed manually.

Atlas.ti (Version 24.2.1):

Used for qualitative data coding and thematic structuring. Although Atlas.ti includes some AI-supported clustering tools, no auto-generated codes or summaries were accepted without manual inspection and interpretative validation.

AmberScript:

Used for the transcription of focus group recordings. This service was selected due to its compliance with GDPR and University of Twente guidelines on processing sensitive data.

Typeset.io:

Used for collecting, storing, and formatting references in APA style, as well as exploring relevant literature and citation suggestions during the literature review phase.

After using these tools/services, the author thoroughly reviewed, revised, and edited all content to ensure academic integrity and accuracy, and takes full responsibility for the final content of this thesis.