

Identifying Person-, Intervention- and System-Level Factors on Uptake and Engagement with a Preventive Transdiagnostic Digital Mental Health Intervention in Adolescents: A Qualitative Interview Study

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Abstract

Background: Adolescence is a critical period for preventive mental health care, yet many young people experience barriers to seeking help, including stigma, low mental health literacy, and limited service availability. Digital mental health interventions (DMHIs) hold promise as low-threshold, scalable solutions, but their uptake and engagement remain low. Moreover, much of the existing research has relied on quantitative approaches with forced-choice responses, insufficiently considering adolescents' perspectives and needs. To enhance the design, relevance, and effectiveness of preventive DMHIs, it is essential to systematically explore, integrate, and evaluate young people's perspectives through co-design methodologies.

Objective: This study explored factors influencing adolescents' uptake and engagement with preventive transdiagnostic DMHIs across person, intervention and system levels using a qualitative, co-design approach.

Methods: Participants were recruited through voluntary response sampling. A qualitative study with single-interview design was employed. The semi-structured interviews were recorded, transcribed verbatim and analyzed through structured qualitative content analysis.

Results: The sample consisted of 48 participants (mean age=16.52; 35 female). Seven main topics across the three levels were identified: (1) facilitating factors in the awareness phase of help-seeking and (2) beliefs about uptake and engagement with DMHIs at the person level, (3) required features of the DMHI, (4) expected support and (5) preferences regarding the presentation of intervention content that influence uptake and enhance engagement at the intervention level and (6) suggestions of adolescents about the integration of DMHIs into existing mental health services to ensure uptake and engagement at the system level. Furthermore, (7) several discrepancies between adolescents' expectations and implementation possibilities were identified. This resulted in a final overview outlining implementation suggestions of these identified factors to enhance uptake and engagement at all three levels.

Conclusions: Enhancing uptake and engagement at the person level could be achieved by providing clear and transparent information on the DMHI's purpose, its developers, data security, and expected benefits before and during registration. Testimonials, peer-exchange functions and personalization and individualization options may enhance uptake and engagement at the intervention level. At the system level, integrating low-threshold, adaptive DMHIs into existing mental health services could facilitate broader accessibility and sustained engagement. These findings emphasize the importance of incorporating adolescents' perspectives into DMHI development by exploring how and why uptake and engagement occurs to use these insights to develop new or to optimize existing preventive DMHIs.

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Original Manuscript

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Hirsig, A., Walder, N., Häfeli X. A., Schmidt, S. J.



Introduction

Mental health and help-seeking in adolescence

More than 60% of all mental disorders have their onset before the age of 25 [1]. An early onset of mental disorders in childhood and adolescence can severely impact social functioning, academic and career prospects and economic opportunities [2–4]. Given these negative long-term consequences, mental health promotion and prevention of mental disorders are crucial in this age group. However, a complex interplay of barriers across person (e.g., low mental health literacy, preference for self-reliance), intervention (e.g., lack of trust in provider, lack of anonymity) and system levels (e.g., lack of available mental health services, high costs of accessing help) hinder adolescents from seeking professional help [5–8]. Accordingly, help-seeking rates are generally low in adolescence [9,10]. Even among those who do seek professional help, many do not receive appropriate treatment or disengage from services [10,11]. This underscores the importance of recognizing that access to mental health care entails more than just help-seeking – it also involves successfully reaching services and effectively engaging with them [12].

Promise and challenges related to digital mental health interventions

Digital mental health interventions (DMHIs) hold the promise to tackle the barriers mentioned above by offering a less stigmatized, low-threshold option for seeking, accessing and receiving help [13]. Further advantages of DMHIs include being often free of charge, readily available and scalable. This makes them a viable option even for hard-to-reach populations [11,14]. A growing number of studies supports the efficacy of DMHIs in both promoting mental health and preventing specific mental disorders in adolescents [15–17]. However, some known barriers to traditional help-seeking, such as fear of stigma or low mental health literacy, persist [14,18,19]. Additionally, DMHIs present their own challenges, including technical issues, concerns about source credibility and program effectiveness, limited interactive features and poor design. These challenges, alongside already established barriers, influence the uptake of and engagement with DMHIs [18,20,21].

Uptake and engagement in digital mental health interventions

Given the range of existing definitions, this study defines 'uptake' as the act of signing up or creating an account for a DMHI, while 'engagement' refers to any subsequent use of the intervention beyond the initial signup, including frequency and duration of usage [22,23]. The Capability-Opportunity-Motivation Behavior (COM-B) model explains how interventions can enhance uptake

and engagement, ultimately leading to behavioral change. It proposes that behavioral change occurs by addressing three interacting key factors: *capability*, *opportunity* and *motivation*[24]. Consequently, engagement in a desired behavior is supposed to be more likely when individuals possess the required physical and psychological *capability* (e.g., knowledge, skills and abilities), have physical or social *opportunity* (e.g., time, resources, social norms) and experience sufficient internal reflective and automatic *motivation* (e.g., decision-making, reflection, perceived benefits).

A systematic review [19], which included qualitative and quantitative studies, identified a range of person- and intervention-specific factors to be relevant for the engagement of young people with DMHIs. The person-specific factors closely aligned with the COM-B model [24]. Physical, environmental and mental health stressors limited the *capability* to engage in a DMHI. Engagement was more likely when individuals had the *opportunity* to connect with others, to build trust towards the DMHI and its provider and to use the DMHI anonymously. Regarding an individual's *motivation*, curiosity about and perceived usefulness of the DMHI in meeting their needs were crucial factors. In addition to person-specific factors, intervention-specific factors were identified to influence engagement. They included *acceptability* of features within the DMHI that were appealing to young people (e.g., video content, less text), *usability* of DMHIs (e.g., age-appropriate, self-paced) and *suitability* emphasizing that DMHIs should fit into the daily routines and lifestyles of young people (e.g., being accessible through smartphones) [19].

Notably, the studies included in this review did not distinguish between uptake and engagement or used the terms interchangeably [19], thereby impeding the interpretation and implementation of the results. Thus, further research is needed to better understand the most relevant factors influencing uptake and engagement [18,22]. While person- and intervention-level factors have been widely explored, system-level factors possibly influencing uptake and engagement have largely been neglected so far. Therefore, it is crucial to disentangle the person-, intervention- and system-level factors that drive uptake and engagement [25]. However, most previous studies investigating these factors in young people have used quantitative surveys with forced-choice responses, which often rely on predefined categories, offering limited opportunities for adolescents to express their own experiences [26]. In contrast, qualitative or mixed-method approaches provide a more in-depth and personalized exploration of factors shaping adolescents' uptake and engagement with DMHIs, and can be effectively implemented in a co-design approach [27].

Co-designing digital mental health interventions with adolescents

To develop DMHIs that address the identified factors and ultimately enhance uptake and engagement, a participatory, co-design approach is recommended as the gold standard in the field.

Such an approach involves adolescents from conceptualization and development to the implementation and evaluation of DMHIs [28,29]. Co-designed DMHIs offer many benefits, such as being more relevant to youth, improving usability, fostering trustworthiness and facilitating real-world implementation [30–32].

To date, adolescents' perspectives have primarily been considered in the development and evaluation of DMHIs targeting specific mental health problems, such as anxiety or depression [33,34]. For preventive DMHIs, however, the rate of co-designed interventions is still low [35]. As emerging psychopathology is increasingly understood as a complex system involving dynamic interactions and rapid shifts between subclinical symptoms across diagnostic categories [36,37], co-designed transdiagnostic DMHIs hold significant promise for prevention. By addressing a broad range of mental health problems, these interventions may enhance both engagement and overall mental health outcomes [38,39]. While some transdiagnostic preventive DMHIs have been co-designed with adolescents [40], they have primarily focused on developing and evaluating prototype interventions. In contrast, less attention has been given to involving adolescents in the pre-design or discovery phase, i.e., the stage that precedes the generative design process and focuses on identifying the needs and preferences of the target group [33,41]. This study addresses these gaps by exploring adolescents' views on factors relevant for uptake and engagement with a transdiagnostic preventive DMHIs in the pre-design phase.

Against this background, this qualitative study applied a participatory, co-design approach with adolescents to answer the following research questions. First, at the person level, what factors are relevant for adolescents to enhance uptake and engagement with preventive transdiagnostic DMHIs? Second, at the intervention level, what factors of preventive transdiagnostic DMHIs are perceived as relevant to enhance uptake and engagement? Third, at the system level, what needs regarding preventive transdiagnostic DMHIs and the mental health care system in general are voiced by adolescents to enhance uptake and engagement?

Methods

The following parts of the manuscript are reported according to the consolidated criteria for reporting qualitative research (COREQ; [42]).

Study design

This study (BePart study) employed a single-interview qualitative design, with each participant being interviewed once. The interviews were conducted during the pre-design phase of a preventive transdiagnostic DMHI for adolescents called "EMPATIA" [38]. A qualitative design was

chosen because it allowed for an in-depth exploration of individual preferences and factors influencing the uptake and engagement with a preventive DMHI.

Ethical considerations

The study was approved by the Ethics Commission of the Faculty of Human Sciences of the University of Bern (2021-12-00003). Participants provided written informed consent. They were provided with a clear and simple explanation of the study, covering its aims, procedures and any potential risks or benefits in the study information and before the interview. Participants were also reminded that they could withdraw from the study at any time or take a break from the interview without any negative consequences. Participants were reimbursed with a voucher (20 CHF) and travel expenses covered if applicable. All data were deidentified after the interview was completed.

Participant selection

Participants were recruited through voluntary response sampling. Study information was distributed online (via social media profiles and the project website), through flyers, media interviews and cooperation partners. Interested participants were asked to contact the study team via e-mail, direct messages on social media or phone call to arrange a date for the interview. To be included, participants had to 1) be between 12 and 21 years old, 2) have their main residency in Switzerland and 3) understand and speak German. Prior personal experience with DMHIs and/or mental health problems did not serve as an in- or exclusion criterion.

Study procedures

Upon contacting the study team and giving consent, the participants received the study information via mail. Participants (or their legal guardians when aged <14) needed to sign the informed consent form and to return it via mail. Participants and interviewers then agreed on a time and date for the interview, either in person or via online video call. Prior to the interview, all participants were asked to complete an anonymous online survey about help-seeking and psychological distress (see materials). Only the interviewer and the participant were present at the date of the interview. The interview started with demographic questions about age, gender and sociodemographic data. Furthermore, the participants were asked to estimate how much time they actively spend online per day. Thereafter, they were again informed on the study procedures in a standardized manner (see Multimedia Appendix 1). If the participants had no further questions, the interviewer started the audio recording and carried out the interview.

The research team regularly reviewed the latest interview audios to monitor data saturation,

assessing whether any new key topics emerged. This process continued until the team agreed that no new information leading to possible codes for answering the research questions had emerged, indicating that recruitment could be concluded.

Personal characteristics

The semi-structured interviews were conducted by four female master students in their last term (CH, NS, TT and VB). The interviewers did not have previous experience in qualitative interviewing but were experienced in conducting clinical diagnostic interviews with adolescents. The interviews were coded by NW, PhD and AH, MSc. The coders and interviewers were supervised by SJS, a professor in Clinical Psychology and licensed psychotherapist for children and adolescents.

Materials

The online survey included the *General Help Seeking Questionnaire* (GHSQ; [43]), the *Actual Help Seeking Questionnaire* (AHSQ; [44]) and the *Kessler Psychological Distress Scale* (K10; [45]). The GHSQ measures intention to seek help from 16 different formal and informal help sources [43]. The scale used for this study was extended with options of online interventions. Response options are scored on a Likert scale ranging from “extremely unlikely” (1) to “extremely likely” (7). A mean score was calculated with higher scores indicating greater intentions to seek help. The AHSQ [44] measures actual help-seeking behavior. The same sources of help as in the GHSQ are presented and participants indicate whether they had consulted each source in the past 12 months, more than 12 months ago, or not at all. Multiple answers are possible. The percentage of participants who had sought help (lifetime) or sought help recently (past 12 months) was calculated. The K10 [45] measures current stress-levels with 10 items on a 5-point Likert scale from “none of the time” (1) to “all of the time” (5). Sum scores (range from 10-50) were calculated with higher scores indicating higher levels of psychological distress.

The semi-structured interview guide was developed specifically for this study (for the full interview guide see Multimedia Appendix 1) and was reviewed by an external researcher with expertise in qualitative research not otherwise involved in the study. The external researcher recommended to adjust some questions to be more behavior oriented. Additionally, the interview questions were piloted with two adolescents to evaluate if they are comprehensible and to estimate the overall duration of the interview. The interview questions used for the content analysis explore the entire process from seeking help to using DMHIs and build on the COM-B model as well as other identified person- and intervention-level factors influencing help-seeking, uptake and engagement with DMHI [5,19,24]. First, participants were asked about their use of digital

applications, both in general and specifically for mental health, to assess their familiarity with digital tools and help-seeking behaviors (e.g., “Where would you look online for information about mental health problems and for help if needed?”). Next, participants were introduced to transdiagnostic, preventive DMHIs to ensure a shared understanding of the intervention type. Upon that, they were asked about their opinion on factors influencing uptake and engagement (e.g., “What would you need to tell your friends about the DMHI to get them to start using and engaging with it?”). Participants then evaluated the importance of specific predefined intervention features (e.g., video content or text) [19] and provided suggestions for their implementation. To facilitate discussion, participants rated the importance of each feature on a scale from “not important at all” (1) to “very important” (10), creating an accessible entry point for deeper exploration. The interview concluded with questions on personalization (e.g., “How could we best tailor the DMHI to each individual participant?”). All participant responses were included in the analysis to answer the research questions.

Data analysis

All interviews were transcribed verbatim following the transcription rules by Kuckartz and Rädiker (2018). The data was analyzed based on the structured qualitative content analysis using the software MAXQDA [47]. Structured qualitative content analysis was used as a suitable method for analyzing interview data [48]. This method focuses on identifying topics and sub-topics, systematizing them and analyzing their interrelationships. Structured qualitative content analysis follows seven phases: (1) initial work with the text, (2) development of main topics, (3) coding data with main topics (first coding cycle), (4) development of subtopics inductively, (5) coding data with subtopics (second coding cycle), (6) simple and complex analyses and (7) writing up of results. Research questions can continuously be adapted up to phase six [48]. These phases were implemented through extensive initial work with the transcripts, including marking relevant passages, writing memos and discussing key observations within the research team. The initial main topics were developed deductively, drawing on the findings of relevant factors for engagement with DMHIs in young people [19] based on the COM-B model [24]. The first coding cycle with these topics was conducted by both coders NW and AH independently with a subset of four interviews. For each subsequent coding cycle, a subset of interviews was selected, coded and then reviewed through discussion. Throughout the coding cycles, the main topics continuously evolved and subtopics were added inductively. Once the final coding system was established, the coders independently rated two interviews and intercoder agreement was evaluated using MAXQDA [47] comparing all coded sections on a document level to provide a percentage of agreement. The initial

agreement was 73.42%, with a Cohen's Kappa of 0.72. Upon that, NW and AH discussed all segments where coding differed from each other. Discrepancies included segments left uncoded by one coder and segments where the assigned codes differed. Most differences occurred in the subtopic coding of the main topic *Beliefs about DMHIs influencing uptake and engagement*. The respective subtopic descriptions were adapted to be more distinct. Finally, NW and AH reached full agreement on all segments and proceeded to independently code half of the interviews using the agreed-upon coding system. Weekly discussions were held to revise the codes, though no revisions were necessary. Once all interviews were coded, AH reviewed all coded segments. Any uncertainties regarding coded segments were clarified in an additional meeting. The analysis focused on identifying recurring topics within one code and relationships between the codes. Representative participant quotes for each code were extracted and translated from German to English for reporting.

Author reflexivity

The first author AH is pursuing her PhD on the efficacy of a transdiagnostic prevention DMHI for adolescents and was actively engaged in developing this program at the time of the interviews [38]. The interview questions were designed to openly explore adolescents' views and ideas about preventive DMHIs and provide suggestions for the ongoing development of the mentioned preventive DMHI. Both aims were communicated to the participants transparently. NW, who had completed her PhD on a similar DMHI for adolescents with social anxiety [49], brought additional expertise in DMHI implementation. Given the prior experience of AH and NW with DMHIs, they initially framed topics within existing theoretical models. Through maintaining a reflexive diary and regular discussions, they actively challenged these assumptions and remained open to new insights.

The four master students in the research team conducted the interviews. Their closer age to the participants may have facilitated open discussions but also introduced unconscious biases, such as shared assumptions about digital engagement. Occasionally participants referenced digital tools or ideas for DMHIs without further explanation, possibly assuming shared knowledge with the interviewers. This may have influenced how certain topics were explored in follow-up questions.

Additionally, between data collection and analysis, the researchers gained further expertise in digital mental health and qualitative methods. This evolving knowledge likely informed the analytical process, as greater familiarity with the field may have led to more nuanced interpretations of the data. The delayed coding process also provided the benefit of increased analytical distance, potentially reducing immediate biases from the data collection phase.

The all-female composition of the research team may have influenced data collection and

interpretation, particularly regarding gendered experiences of mental health. During analysis, coders became aware that they tended to place significant weight on gender influences in adolescent experiences, possibly more than the participants themselves explicitly expressed. This reflexive awareness led to revisit the data to ensure that the interpretation accurately reflected the participants' priorities.

Results

Overview

Between January and June 2022, 48 participants were interviewed with each interview lasting between 30 and 85 minutes ($m=50.04$, $SD=11.58$). Thirty participants were recontacted via telephone to clarify previous responses, with these follow-up conversations lasting between 1 and 28 minutes ($m=12.28$, $SD=7.95$). Four participants had a personal connection with one of the interviewers. To minimize potential bias, they were interviewed by an interviewer with whom they had not previously interacted.

The sample consisted of predominantly well-educated, female participants aged 12 to 21 and showed a moderate level of psychological distress [45,50]. Please see Table 1 for the sample description. During the interviews, nine participants (19%) reported having used some form of digital application related to (mental) health before (e.g., information websites, chats, meditation apps).

Table 1. Sample characteristics (N=48)

Variable	Mean (SD) or n (%)
Age	16.52 (2.67)
Gender	
Female	35 (73%)
Male	12 (25%)
Non-binary	1 (2%)
Education Level	
University	4 (8%)
Higher Secondary School	28 (58%)
Apprenticeship	2 (4%)
Lower Secondary School	9 (19%)
Primary School	5 (11%)

Hours spent online per day	2h 59m (1h 58m)
Psychological Distress (K10) (n=47)	21.83 (6.59)
General Help-Seeking (GHSQ) (n=46)	3.16 (0.79)
Friend (non-relative)	5.37 (1.79)
Parent	4.57 (1.95)
Internet	4.52 (1.91)
Intimate partner	3.85 (2.52)
Other relative	2.98 (1.87)
School psychologist or social worker ^a	2.33 (1.38)
(Child- and Adolescent) Psychotherapist ^a	3.02 (1.68)
(Child- and Adolescent) Psychiatrist ^a	2.96 (1.79)
Counselor ^a	2.59 (1.60)
Doctor/GP ^a	2.00 (1.25)
Teacher ^a	2.24 (1.58)
Telephone helpline ^a	2.63 (1.60)
Online Peer Chat ^a	2.09 (1.58)
Online Chat with a professional ^a	3.02 (1.73)
Online Self-Help Program ^a	3.24 (1.82)
Would not seek help	2.98 (1.98)
Actual Help-Seeking (AHSQ): Lifetime (n=46)	32 (70%)
Formal help (n=32)	19 (59%)
Informal help (n=32)	30 (94%)
Actual Help-Seeking (AHSQ): Past 12 months (n=46)	
Formal help (n=32)	11 (34%)
Informal help (n=32)	29 (90%)

Note. ^aformal sources of help, AHSQ = Actual Help-Seeking Questionnaire [44], GHSQ = General Help-Seeking Questionnaire [43], K10 = Kessler Psychological Distress Scale [45].

Content analysis

The analysis identified seven main topics reflecting the entire process from help-seeking to the uptake and ongoing engagement with DMHIs (see Multimedia Appendix 2 for the complete code book). Six topics included factors at the person, intervention and system level. An additional seventh topic emerged highlighting discrepancies between expectations and implementation possibilities. These topics are explored in depth in the following part, accompanied by representative participant

quotes, following the sequence of the research questions.

Person level

Facilitating factors in the awareness phase of help-seeking. The identified factors relate to the initial stage of the help-seeking process, during which individuals become aware of their mental health problems and available support options. These facilitating factors were described as shaping how DMHIs are perceived and increase the likelihood that individuals consider using them. They encompassed knowledge and experiences that had either previously influenced or were expected to influence attention to DMHIs and consequently their uptake. Key facilitating factors included (1) having basic knowledge about mental health, DMHIs and their relevance for prevention, (2) recommendations from trusted sources and (3) previous personal experiences with digital (mental) health services.

First, having basic knowledge included being able to recognize own symptoms to determine when help-seeking becomes necessary and having a clear idea about the nature of a DMHI, including its intervention goals, the identity of the providers, the time commitment required and details about the login process. Participants stated that uptake of a DMHI was more likely if they had heard of it before. Second, recommendations from different trusted sources were highly valued, including google, social media (YouTube, Instagram), traditional media (newspapers), schools, family members and friends. The latter were most frequently mentioned as being particularly important.

TN21: *Well, in my school there are posters everywhere promoting [...] some website or an app. I would probably try these first [if I ever needed help for my mental health].*

Third, uptake seemed to be further influenced by own previous experiences, although only a minority of participants mentioned such experiences with digital (mental) health services and their experiences varied widely. Some felt left alone after having received unhelpful advice online, making them hesitant to open up again, while others found support in apps, continued using them when stressed, and remained open to try new ones.

Beliefs about DMHIs influencing uptake and engagement. Beliefs about potential benefits and barriers to uptake and engagement with a preventive DMHI were identified. They varied between participants, with some expressing only a single belief and others mentioning multiple. Perceived benefits of using DMHIs included (1) the possibility to improve knowledge about mental health, (2) to improve or maintain their personal mental health and (3) the provision of entertainment and feedback (e.g., through gamification systems). Moreover, most participants expressed the key belief that (4) their uptake and engagement with a DMHI depended on its perceived helpfulness. Conversely, they would disengage once they felt they had gained sufficient benefit or no longer

found it useful. However, when asked to define what “being helpful” meant, responses varied, and no clear, consistent definition emerged.

TN16: *Well, if it would personally help me, then [I would] definitely [use it] in those moments when I’m not feeling well, like when my mental health isn’t good or whatever. And if I know, it helps then I would definitely use it. Or maybe also as a preventive measure, maybe to avoid feeling mentally unwell in the future or build some kind of protection against that.*

Some participants expressed more critical beliefs about uptake and engagement with DMHIs (5). These included general beliefs that mental health problems should be solved independently, a preference for seeking help offline, lack of trust in digital tools, doubts about the effectiveness of DMHIs or that the provided information may not be applicable to their specific situation or that help is only necessary for severe cases.

TN33: *I am more inclined to think that it’s of little use to me, but anyway, of course I don’t rule it out completely and say “no, I won’t even try it, it’s no use anyway” because maybe there will finally be a program that actually delivers results.*

Additionally, many participants did not want others to know about their potential use of a DMHI because they expected being stigmatized for it (6). Having a DMHI visibly on their device or being seen engaging with it was associated with negative emotions, such as discomfort, embarrassment and the fear of being recognized in the intervention by someone they knew.

Intervention level

The main topics on an intervention level included some of the predefined features (please see Figure 1 for the importance ratings of these features) and some new ones added by the participants.

Insert Figure 1 about here

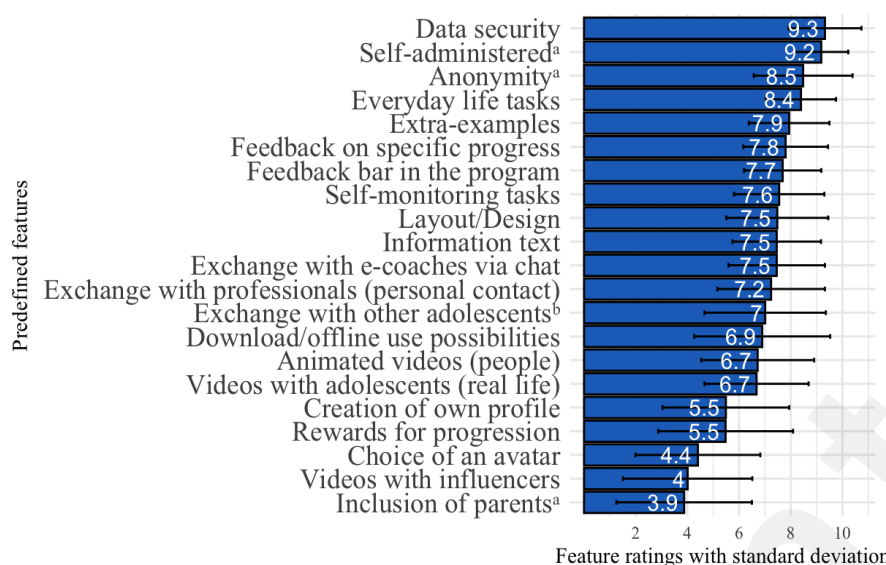


Figure .

Requirements for DMHI features. Key features of DMHIs that were considered essential "must-haves" – whose absence would likely prevent uptake – included (1) the DMHI being free of charge, (2) trusting the provider, (3) anonymity options, (4) testimonials proving usefulness and (5) being a state-of-the-art application (e.g., looks appropriately, works on smartphones). Many participants emphasized the importance of a DMHI being free of charge and trustworthy. To build trust among participants, it was suggested that providers and anyone involved in the DMHI introduce themselves and share details such as age, qualifications, motivation for offering mental health support and any personal experiences with mental health challenges.

TN10: *I feel like it should clearly state where it comes from, who is behind it and what their motivation is for creating it. To me, seeing that it's an intervention from a university and that there are studies behind it, that would definitely create a sense of trustworthiness. And I feel like it needs a clear statement like "About us" and a way for me to associate [the intervention] with something trustworthy and legitimate, or otherwise there should be some way to demonstrate why [the intervention] is trustworthy.*

Trust further encompassed data security. Participants suggested that all information about data protection should be prominently presented at the beginning, with details on what personal data would be required for the intervention. Beyond the initial registration process, additional consent could be requested before storing any other sensitive data within the DMHI.

Options for using the DMHI anonymously, such as providing personal information solely on a voluntary basis, were generally appreciated. These options were expected to enhance participants' perception of the DMHI as a safe space, where they would feel comfortable to open up about mental

health problems. One participant noted that for preventive purposes, anonymity might be less important, since mental health concerns are not as severe at this stage. This would allow for more personalized and tailored support.

TN11: I would say anonymity only becomes important when your problems are really severe. But if you only have minor problems, I would even find it better, if you knew the people involved. [As] these are probably not yet the “hardcore” problems I believe it would be important to [know] that not everything is anonymous.

Additionally, participants stated that testimonials were crucial for uptake. If the DMHI visibly had a large user base or if recommendations from previous users – preferably those who were similar to themselves – were available, the intervention was perceived as more useful and of greater quality.

Another key feature identified for DMHI uptake and engagement was the need for the app to appear as state-of-the-art. Participants emphasized that they would primarily use the DMHI on their smartphones and highlighted the importance of a strong first impression and an appealing design noting they would be unlikely to download it otherwise. Additionally, an intuitive user experience was seen as crucial for maintaining engagement beyond the initial uptake.

Support offered through a DMHI. Three types of support expectations were identified for maintaining adolescents' engagement after the uptake of a DMHI: (1) knowing help is here and real, (2) knowing others share similar experiences and (3) the need to feel seen and be taken seriously. First, participants expected to feel supported through knowing that help was available at any time, either to be accessed immediately when needed, unlike face-to-face therapy with long waitlists, or simply as a comforting backup. Additionally, knowing a real, professional person (not AI) would be available for questions beyond the content of the DMHI was reported as being reassuring.

TN5: And if I knew that in an emergency, I could get help or whatever [on] there every evening [...] it would provide me with a huge sense of reassurance in that moment.

Second, participants reported that knowing they were not alone with their problems would be comforting. To this end, participants suggested sharing personal stories from others, highlighting coping strategies and offering practical tips on what had worked for others. Additionally, some participants valued the idea of actively promoting interaction among users facing similar challenges. While many participants expected benefits from such an exchange, others raised concerns about possible negative effects (e.g., negative social comparisons or symptom reinforcement, becoming overly focused on helping others and neglecting their own well-being). Third, the desire for support was expected to be met through empathetic, kind interactions with professionals within the DMHIs, as well as the DMHI fostering an inclusive, accepting environment that felt like a safe space for all

users. Such interactions would make the users feel seen, understood and taken seriously.

TN15: [I would need to know] if the person [on the other side] is genuinely interested in me. [And I would like] to feel like I am being taken seriously for real and to feel like the questions and content [in the DMHI] are applicable to my situation.

Preferences regarding presentation of DMHI content. Participants expressed several preferences for DMHI content presentation to keep them engaged after uptake. Participants expressed concerns about (1) the length and amount of intervention content. If the initial impression was overwhelming, engagement would be unlikely. DMHIs with short videos, short texts and exercises with minimal use of technical jargon and contents with low complexity and resource intensity were described as being engaging. Further, the content should be well-organized and clearly structured to ensure ease of understanding (2). Lastly, participants preferred content to be presented in a variety of formats to accommodate different learning styles, to maintain interest and to provide alternatives to reading (3).

When asked about potential adaptations in the DMHI, participants generally did not support different versions based on gender. If variations were to be offered, they preferred adjustments in difficulty – for instance, offering simplified versions – rather than changes to content itself. Regarding the content itself, participants favored inclusive, diverse and non-stereotypical representation of examples, people and avatars (4). Participants suggested using gender-neutral and accessible language. While some did not specify their understanding of inclusivity, they felt that having the option to voluntarily indicate age or gender during registration would be sufficient to make a DMHI inclusive.

Participants repeatedly highlighted that perceived mental health benefits and engagement in general could be enhanced through (5) individualization (i.e., aspects that users can actively choose) and (6) personalization (i.e., tailored content based on user data). Suggestions for individualization included design elements (color, font, avatar), privacy settings (private or public profile, provision of personal data, anonymity, push notifications), interaction options (with professionals, peers, e-coaches or family involvement) and content selection of the DMHI (problem-focused modules, filters for exercise duration, option for additional information). For personalization, participants proposed an initial (or recurring) questionnaire to tailor content based on users' responses and main challenges they identified. Some participants preferred a more autonomous DMHI that adapts dynamically to user interactions progressively offering relevant content rather than relying on a structured questionnaire. Others envisioned DMHIs actively connecting users with similar problems or suggesting nearby mental health services. Many participants emphasized the importance of an opt-

out option for personalized content. One participant expected most mental health problems being similar during adolescence and thus thought personalization was unnecessary.

TN33: I imagine that in the beginning, you fill out a questionnaire to assess where there are challenges. This could provide some guidance on what to focus on, while still allowing users to input their own areas for improvement. I would suggest that the program be somewhat personalized from the start.

System level

Ideas and wishes for adaptive, integrated and low threshold mental health services. Participants shared their ideas, wishes and visions for adapting mental health services to better meet their needs. There was a strong emphasis on mental health care options that are (1) adaptive in intensity, (2) provide integrated services and (3) offer low-threshold, easy to navigate support.

First, some participants recognized the general low help-seeking behavior in adolescence, highlighting the need to raise symptom awareness. Once aware, participants' willingness to seek help and their choice of support depended on how severe they perceived their symptoms to be. Mild problems would preferably be managed independently or with support from friends and family, while professional support was considered appropriate only for more severe symptoms. A stepped-care model was described, with the DMHI offering different levels of support with increasing intensity: (1) digital psychoeducation to improve mental health literacy to help users recognize when more support is needed, (2) self-guided use of the DMHI for prevention, (3) proactive outreach by the DMHI if symptoms deteriorate, (4) flexible use of psychoeducational and counseling services based on users' own judgements and (5) an emergency button for immediate professional support.

TN42: [It would be helpful to] know: "okay, from these symptoms onward or whatever..." might be the point where one should seek professional help instead of relying solely on the program. But in general, the aim of the program is not seeking help from a person but to be able to solve [your problems] online on your own. So, a note [about available services] would be important but not that they are a part of [the intervention].

Participants also suggested that the DMHI should allow users to "browse" the program content before committing to care. Features to help users assess their needs and make informed decisions about the next steps included an initial questionnaire or the option to get to know professionals within the DMHI before working with them.

Second, participants expressed a strong preference that all relevant information and support options be embedded within the DMHI, rather than be provided as a collection of links to external resources or professionals' websites. Integrated services were also considered valuable regardless of

symptom severity, as participants appreciated professional support for general questions or reassurance that help was available. A frequently mentioned suggestion was an up-to-date list of available professionals nearby, with the option to book appointments directly through the DMHI. Participants also appreciated the option to choose their preferred mode of contact, such as email, chat, or (video-) calls.

TN7: [...] because if you realize - based on the information or maybe some tips provided there - something like, "If you're feeling this way, it might be good to see a psychologist or psychiatrist," I would find it very helpful if that option were offered directly within the program. That way, you wouldn't have to search for someone on your own.

Most participants supported the integration of peer support. They envisioned digital self-help groups, chat functions, forums and comment sections under exercises to help users share their experiences. However, some expressed concerns that peer support might shift focus toward helping others rather than addressing one's own needs.

Third, participants stressed that support should be easily accessible, especially in moments of acute need. Face-to-face help-seeking was perceived as a high-threshold option, while a DMHI was perceived as a low-threshold first step. To minimize logistic barriers, participants repeatedly mentioned that requiring registration or providing personal data at uptake should be avoided. Personal barriers, such as low mental health literacy, should be addressed by a proactive DMHI that reaches out when additional or alternative support becomes necessary. Ensuring continuous availability – through professionals or peers – would enhance the DMHI's accessibility and create a sense of ongoing support and reassurance.

Discrepancies, implementation possibilities and expectations

Throughout the interviews, participants stated specific ideas on how to implement certain features in the DMHI to enhance uptake and/or engagement (see Figure 2). Notably, the analysis revealed several discrepancies between participants' statements. The three most prominent ones were: (1) wish to share as little personal information as possible while also valuing personalized support, (2) interest in reading about others' experiences while simultaneously recognizing the stigma around mental health and avoiding self-disclosure and (3) the wish of 24/7, immediate, local support despite a preference for minimal personal engagement. While these wishes are not necessarily incompatible from a provider's perspective, integrating them into a single service can be challenging or even impossible. First, providing personalized support becomes more challenging when professionals are expected to be familiar with users' personal information or when users facing similar challenges should be connected in a chat room - without requiring a registration or login

process to store user data. Some participants realized this discrepancy and even stated a registration process as a feature that made a DMHI more trustworthy.

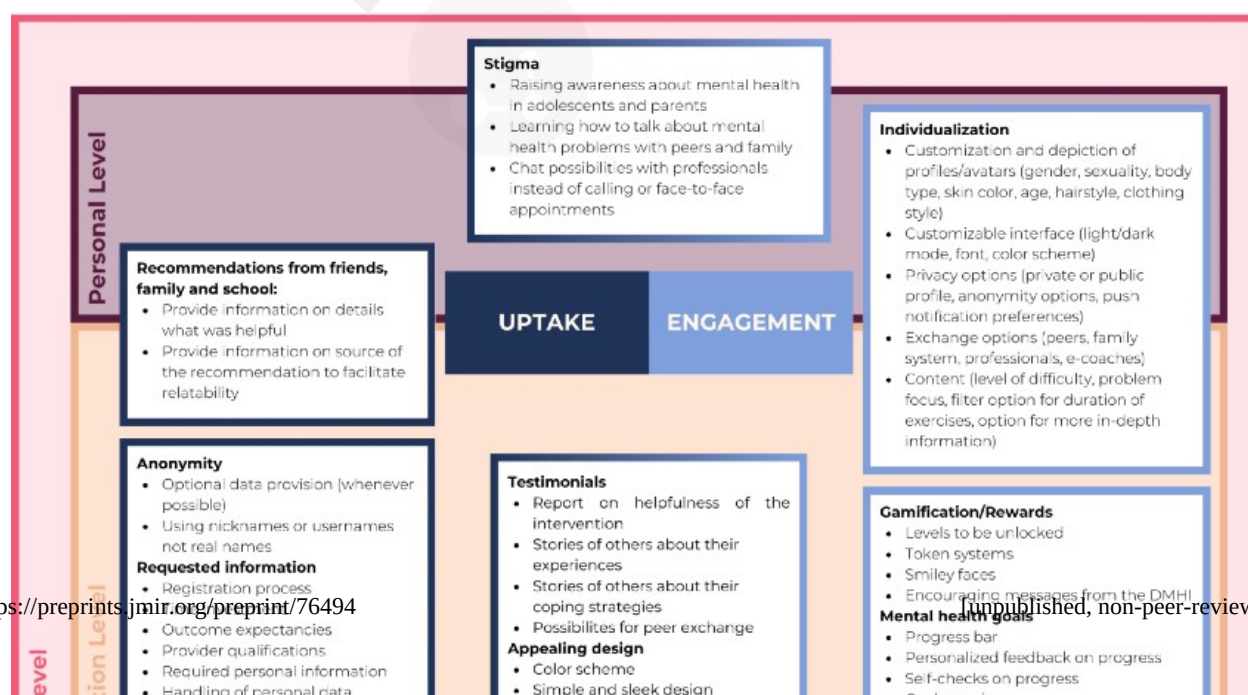
TN38: [I don't necessarily have ideas to implement data security.] That's why I didn't really like the idea of creating profiles, because they reveal a lot of information. [While] data protection is important, in case of an emergency, e-coaches should still be able to access basic data like an address or name if needed.

Second, as mentioned before, peer exchange was highly appreciated. However, in line with the wish for anonymity and the awareness of stigma surrounding mental health issues, participants often hesitated to express a willingness to actively engage in these interactions and to openly share their own experiences. Instead, passive participation – such as reading about others' experiences – was more commonly preferred.

TN18: I think it's important that [exchange with other adolescents] exists. But for me, it's always a bit uncomfortable to actually participate in the exchange. However, I do like reading when others share their experiences.

Third, while many participants expressed the wish for constant availability of help resulting in immediate personal responses and improvement of mental health symptoms, they also frequently emphasized the importance of locally embedded services. When asked about how long and how often the participants would engage with a DMHI, answers ranged from a couple of minutes to two hours per login. Moreover, the willingness to use a DMHI over a longer period ranged from a couple of days to four years if it is perceived as being helpful. The identified discrepancy therefore reflects the contrast between availability and locality of the provider and between the experienced mental health benefits and willingness to engage with the DMHI for a very limited amount of time.

Insert Figure 2 about here



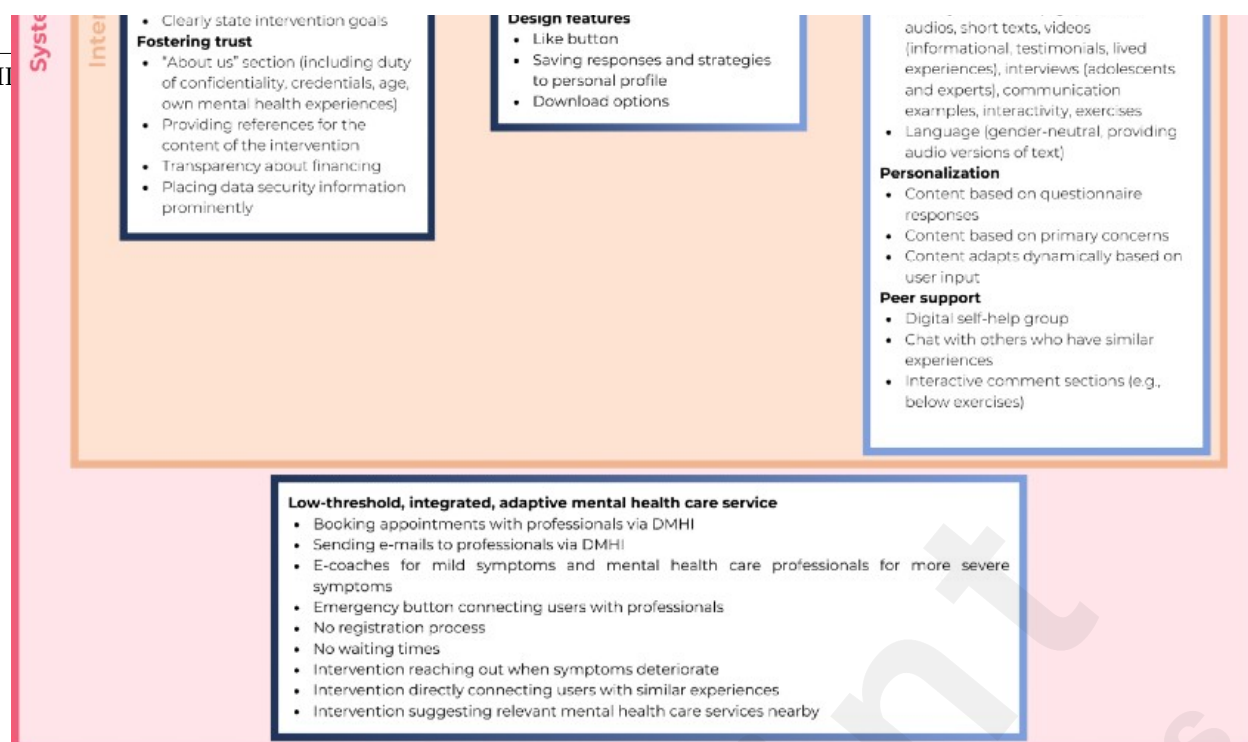


Figure .

These findings emphasize the relevance of knowledge about available sources of help and the ability to recognize own symptoms (i.e., mental health literacy) as well as the importance of a social context that encourages the uptake and engagement of mental health services by providing information about existing interventions. These factors have also been reported as being relevant for help-seeking and engagement with DMHIs in previous studies as well as in the COM-B model in terms of capability and opportunity [5,6,51,52]. Additionally, our results highlight the relevance of these factors in shaping the beliefs about DMHI uptake in the awareness phase. These beliefs include anticipated benefits such as being generally helpful, enhancing mental health knowledge, supporting one's own mental health and experiencing positive feedback and entertainment, as well as potential negative effects, such as lack of usefulness and risk of stigmatization. This is well in line with a recent review on facilitators of DMHI use, in which beliefs about the usefulness emerged as a key influence on uptake [53]. The results also align with the Health Belief Model, which assumes that modifying factors (e.g., knowledge, past experiences) do not directly cause behaviors but shape an individual's beliefs (e.g., beliefs about usefulness) about their own risk of developing a mental disorder and potential benefits and barriers to engaging in preventive health behaviors [54,55]. The Health Belief Model is thus particularly useful for understanding the early stages of the help-seeking process, such as the awareness phase preceding the uptake of DMHIs. While the COM-B model also captures the influence of knowledge, social context, and motivational beliefs on engagement [24], it does not explicitly distinguish between uptake and engagement. Thus, the Health Belief Model may better explain uptake, whereas the COM-B model is more applicable to engagement. Recognizing their complementary relevance helps to clarify the different phases of the help-seeking process

reflected in the present findings.

Intervention level

At the intervention level, this study categorized required DMHI features, support expectations and preferences for content presentation that are crucial for DMHI uptake and engagement. Essential factors included trusting the provider, being free of charge, providing anonymity options and testimonials about the usefulness as well as being a state-of-the-art application. While these factors confirm previous findings on facilitators for engagement with DMHIs [6,15,19], the present findings additionally highlight their importance for the uptake decision of a DMHI. Interestingly, in this study, participants expected to receive support through the DMHI. While support within DMHIs – whether delivered by humans or AI – has been shown to effectively enhance engagement [15,22,56], participants in this study explicitly expressed a strong preference for human support. These findings highlight the importance of providing choices on content and support options to meet adolescents' heterogeneous expectations. Therefore, factors linked to support expectations, such as trustworthiness or social connectedness, were classified as intervention-level factors in the present study, whereas previous research based on the COM-B model categorized them at the person level [19,24]. Consistent with intervention-level factors identified in quantitative studies and other qualitative studies on DMHIs in adolescents, highly personalized and individualized interventions were considered as beneficial for enhancing engagement [19,57]. Accordingly, the benefits of tailoring an intervention to user preferences and needs for engagement and efficacy have already been demonstrated in student samples [58–60]. However, these findings still need to be confirmed in adolescents. Offering adolescents such choices may enhance engagement by fostering a sense of autonomy [61]. At the same time, an overabundance of options could become overwhelming and counterproductive. A balanced approach – such as providing user control over tailored suggestions, as recommended by participants – may help sustain engagement while accommodating individual preferences [53,61].

System level

System-level factors influencing DMHI uptake and engagement have received limited attention so far. In this study, participants envisioned mental health care systems that are integrated, low-threshold and adaptive to individual needs. The choice of sources for help was closely tied to perceived levels of psychological distress: mild symptoms were generally managed independently or with support from friends and family, while professional treatment was viewed as appropriate for more severe cases. In this context, self-help DMHIs were regarded as a low-threshold entry point

into the mental health care system. This aligns with findings that greater psychological distress generally predicts higher utilization of professional mental health services among young people, although some studies have reported the opposite pattern in general adolescent populations [5,6]. However, research on the relation between help-seeking, DMHI service utilization and level of psychological distress is still scarce in adolescents [6].

Apart from professional support from adults, participants highlighted the potential value of integrated peer support. Counselor-moderated peer-support networks, available 24/7, may meet adolescents' desire for continuous social support [62]. Moreover, peer support can be strategically and dynamically incorporated into broader digital mental health care services, with digital counselors directing users to appropriate services, such as moderated peer-support, based on their current needs and motivation [62]. The mental health care services envisioned by participants align with current advancements such as Stepped Care Approaches, which aim to deliver treatments that adapt dynamically to symptom severity and promote continuity of care by integrating both online and offline support [62–64].

Discrepancies

This study revealed several important discrepancies between adolescents' expectations of DMHIs and the practical possibilities for implementation, highlighted through conflicting statements. For example, participants expressed a desire for personalized support while simultaneously showing reluctance to share personal information. Similarly, they showed interest in hearing about others' experiences but were hesitant to self-disclose. A further discrepancy emerged between the desire for immediate, 24/7 local support and a preference for minimal personal interaction. To help resolve the conflicting expectations identified by participants, several suggestions emerged. One key recommendation was to provide clear information at the point of DMHI uptake – specifically outlining the goals of the intervention, how personal data will be used, and the expected level of user engagement. To address a similar tension between anonymity and self-disclosure in adults, it was suggested that the level of anonymity should be adapted based on the primary goal of the intervention [65]. For example, if the aim is to reduce stigma, a higher degree of anonymity may be beneficial. In contrast, when the goal is to encourage self-disclosure, reduced anonymity might help build trust and foster deeper engagement. Integrating these insights into existing strategies tailored to adolescents' expectations, such as moderated peer-exchange platforms [62,63] or interventions that require only brief active engagement like single-session interventions [66,67], could further support the uptake and engagement with DMHIs.

Implications and future directions

This study highlights the importance of incorporating the awareness phase into models of help-seeking to better understand the full process of engaging with DMHIs. To enhance uptake and engagement implementation ideas at the person, intervention and system level were proposed (see Figure 2) which could inform future DMHI development. They suggest offering transparent information about data security and the service providers, clearly communicating the intervention goals at the beginning of the DMHI and providing personalized content with optional self-selection and integrated peer-support functions.

Future DMHIs that integrate these recommendations should examine whether the proposed distinction between uptake and engagement is applicable in clinical practice and whether it leads to the intended intervention outcomes. Additionally, it should be investigated whether actively using interaction options like peer exchange is essential to benefit from DMHIs or whether and to what extent passive participation (e.g., reading others' experiences, engaging with content without direct interaction) can be similarly beneficial [14]. Therefore, future DMHIs should explore ways to facilitate both active and passive participation, ensuring that users can engage in ways that suit their comfort levels while still deriving meaningful benefits. This could be facilitated through participatory, co-design processes, in which participating adolescents contribute to the development of relatable content, share real-life examples, and support peer exchange [30,62,68]. Moreover, the identified ideas about integrating low-threshold, adaptive DMHIs into the mental health care system stress the importance of collaborations during the development, evaluation and implementation with youth advisory boards, design-experts and mental health professionals [69].

Strengths and limitations

This study is not without limitations. First, the sample consists predominantly of female, well-educated adolescents and young adults from Switzerland, which limits the generalizability of results particularly to male adolescents and individuals without higher secondary education. The lifetime help-seeking rate of 70% found in this sample is notably higher than rates observed in recent school samples [9]. This discrepancy may be attributable to the voluntary response sampling strategy, which may have resulted in a self-selection bias. Second, although the study focused on preventive DMHIs, participants often described interventions for more severe mental health conditions. This suggests limited familiarity with the concept of prevention. While potential features for preventive DMHIs may have been overlooked, this study identified several crucial and promising features that may enhance uptake and engagement at the person, intervention and system levels. Additionally,

challenges participants faced in describing preventive interventions underscore the need for improved mental health literacy to enhance (sub-threshold) symptom recognition and accessibility to preventive DMHIs [70,71]. Third, the semi-structured interview guide constrained participants' open-ended perspectives on a DMHI by presenting details about the research team's proposed intervention [38]. However, prior research shows that adolescents sometimes find complete design freedom overwhelming and appreciate some degree of structure [72]. The interview guide was developed based on established theoretical frameworks [19,24], which enables a theory-informed interpretation of results. While these frameworks were well-suited to exploring engagement with preventive DMHIs, alternative models, such as the Health Belief Model or conceptual frameworks related to access to care, offered complementary insights, particularly regarding earlier stages prior to intervention uptake [12,54]. Finally, while co-design includes a collective creativity process applied across the entire design process [29] from initial exploration of needs to the continued evaluation of the final product, this study focused on the pre-design or discovery stage as this phase has often been neglected in co-designed research on DMHIs [33,41]. Nevertheless, future development of a preventive DMHI should involve adolescents in the entire process [32].

Conclusion

The results of this study suggest several important possibilities to enhance uptake and engagement with preventive transdiagnostic DMHIs at various levels. At the person level, providing clear and comprehensive information about the DMHI, its goals, developers, data security and expected benefits both before and during the registration can facilitate uptake. At an intervention level, uptake and engagement with preventive DMHIs may be enhanced by incorporating essential features such as user testimonials and options for peer interaction and tailoring that allow for personalization and individualization. At the system level, by integrating DMHIs as low-threshold, adaptive components within existing mental health care services into existing services, could further promote adolescents' uptake and sustained engagement with preventive DMHIs.

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Author's contributions

AH, NW, XAH and SJS conceptualized and designed the study. AH led the project administration. NS, TT and VB conducted the interviews. AH and NW conducted the analysis. AH wrote the first draft of the manuscript with inputs from SJS, NW and XAH. All authors critically reviewed the manuscript and approved the final version of the submitted manuscript.

Conflicts of interest

The authors declare that they have no conflict of interests.

Abbreviations

AHSQ: Actual help-seeking questionnaire

DMHI: Digital mental health intervention

GHSQ: General help-seeking questionnaire

K10: Kessler Psychological Distress Scale

Data availability

The data that support the findings of this study are available upon reasonable request. Please contact Prof. Dr. Stefanie Schmidt: stefanie.schmidt@unibe.ch.

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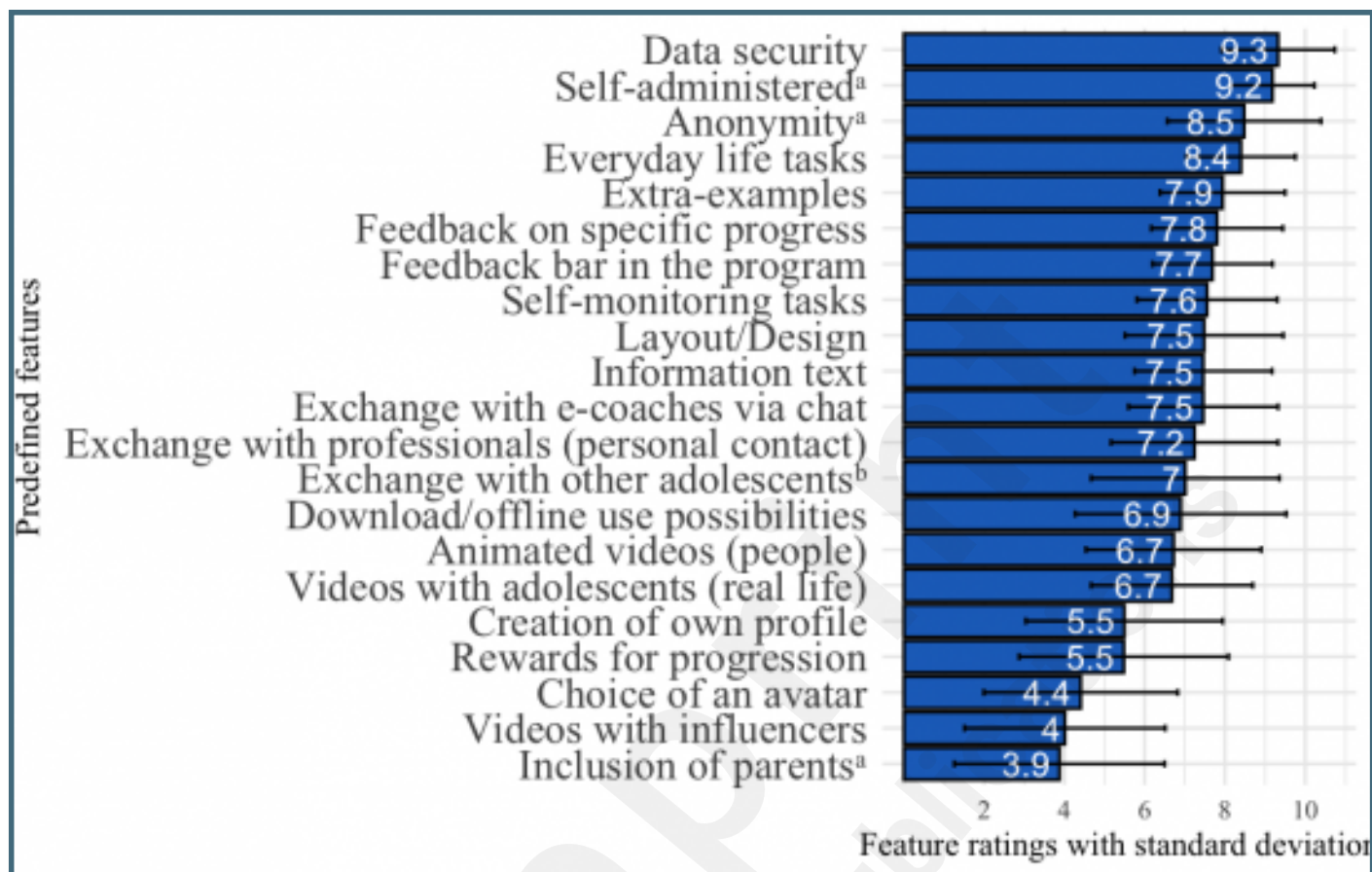
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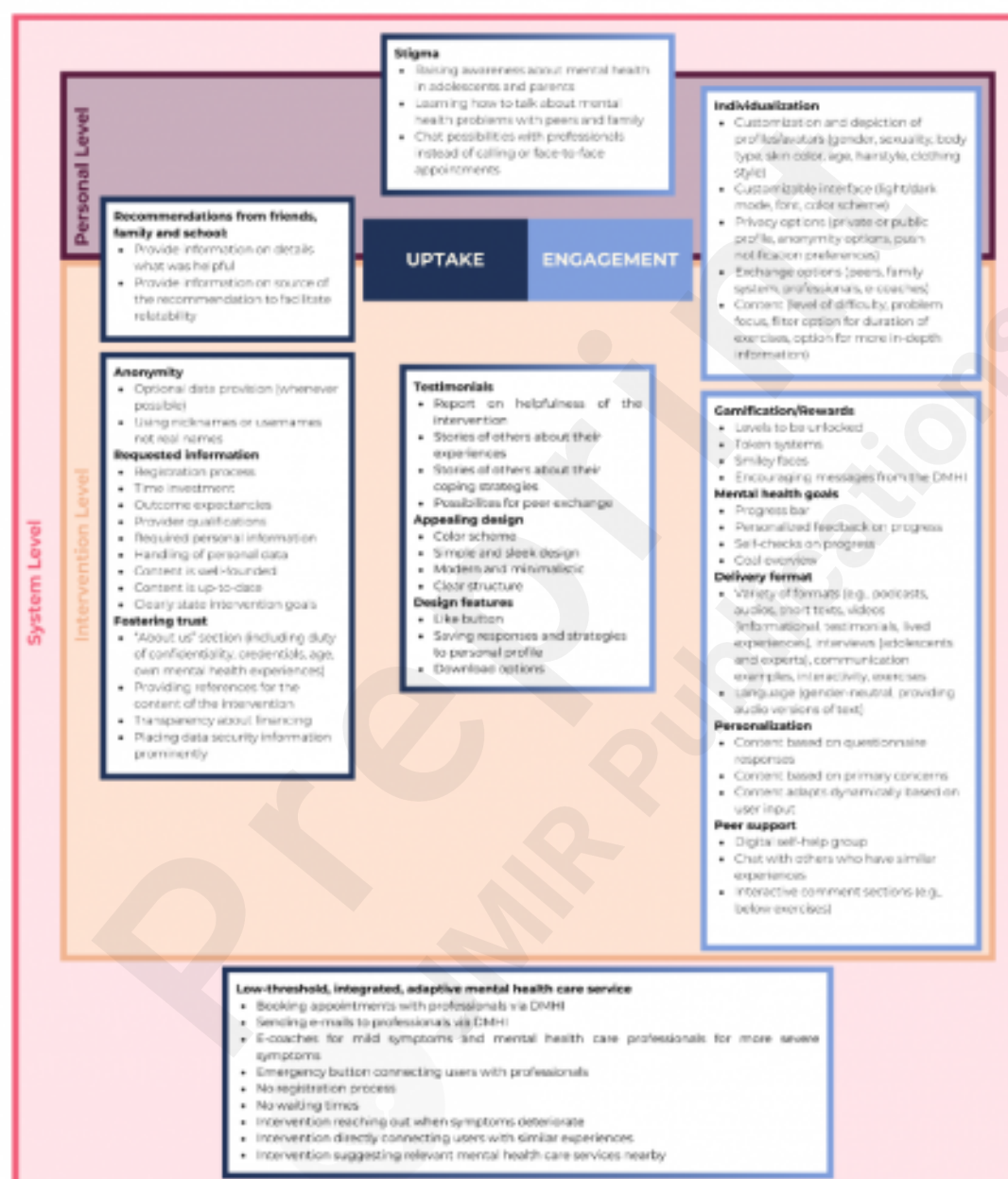
Supplementary Files

Figures

Importance ratings of DMHI features; N=48, na=47, nb=40.



Participant suggestions for implementing features to enhance DMHI uptake and engagement.



Multimedia Appendixes

Interview guidelines (original version).

URL: <http://asset.jmir.pub/assets/03ab792eb6b62b4ee9e9789bae7304f7.pdf>

Codebook with main topics, subtopics, code descriptions and representative quotes.

URL: <http://asset.jmir.pub/assets/2c1bd7e9b7051663ac0dbbfa602e7004.pdf>

