Integrating the Digital and the Traditional to Deliver Therapy for Depression: Lessons from a Pragmatic Study

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ABSTRACT
Traditional approaches to psychotherapy emphasise face-to-face contact between patients and therapists. In contrast, current computerised approaches tend to minimise this contact. This can limit the range of mental health difficulties for which computerised approaches are effective. Here, we explore an alternative approach that integrates face-to-face contact, electronic contact, online collaboration, and support for between-session activities. Our discussion is grounded in the design of a platform to deliver psychotherapy for depression. We report findings of an 11-month pragmatic study in which 17 patients received treatment for depression via the platform. Results show how design decisions had a significant impact on the dynamics of therapeutic sessions and the establishment of patient-therapist relationships. For example, the use of instant messaging for synchronous, in-session contact slowed communication, but also provided a valuable space for reflection and helped to maintain session focus. We discuss the impact of flexibility and the potential of integrated approaches to both enhance and reduce patient engagement.

Author Keywords
health technology; Cognitive Behavioural Therapy; CBT; depression; mental health; blended therapy; integrated approach; patient-therapist communication

CCS Concepts
•Human-centered computing → Human computer interaction (HCI); *Empirical studies in HCI;* **•Applied computing →** *Health informatics;*

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INTRODUCTION
Depression is one of the leading causes of disability worldwide [55, 79], with the total estimated number of people affected exceeding 300 million [55]. Treatments for depression such as Cognitive Behavioural Therapy (CBT) can be effective [11, 21, 59], but evidence suggests many people do not have access to such treatments [12]. In part this is due to the time intensive nature of traditional approaches to psychotherapy, which emphasise face-to-face contact between therapists and patients. In the UK, substantial investment in the Improving Access to Psychological Therapies (IAPT) services [51] has increased provision of brief, "low-intensity" interventions. These interventions are shorter, with few face-to-face sessions, often delivered via phone or in a group setting, and are focused on behavioural activation or guided self-help. However, access to individual, "high-intensity" treatment for those with more severe depression is still limited. A substantial proportion of depressed patients receive less than the recommended 16-20 sessions with an accredited CBT therapist [18, 21] and many wait more than 4 weeks for treatment [18]. Therefore, increasing access to high-intensity CBT without delay and without greatly increasing costs is of utmost importance.

Computerised CBT (cCBT) have also been investigated as an alternative way to increase access to treatment. cCBT platforms significantly reduce, or eliminate, face-to-face contact with a therapist, instead allowing people to access CBT materials and exercises online and engage with the treatment in their own time. They can be an effective first-step approach in treating symptoms of depression [1, 29, 57], but cCBT has been predominantly used for low-intensity treatment [53] and improvements in depression tend to be short-term and drop-out rates high [34, 66]. Evidence suggests that including limited electronic contact from a health professional can help to improve patient motivation and completion rates, and increase the effectiveness of cCBT [1, 6, 10, 33, 50, 57]. Building on this, recent studies have investigated 'blended' approaches that combine online resources with face-to-face treatment from a therapist [77]. While this approach is promising, we believe it can be taken further, particularly in terms of system inte-

gration and flexibility. To date, most blended systems have focused on supplementing face-to-face contact with existing cCBT systems [31, 41, 73]; contact with therapist is often the main component of treatment.

In this paper, we describe a novel platform for delivering CBT for depression and an 11-month pragmatic study during which the platform was used. The platform integrates face-to-face contact, electronic contact, online collaboration and between-session activities in a flexible manner. Collaborative activities, which the therapist and patient complete together online, and between-session activities, which the patient completes on their own, are complementary, as are face-to-face and electronic contact. The overall aim is to support patient engagement and provide a structure within which therapists can deliver high-intensity treatment, whilst also significantly reducing face-to-face contact. The study explored patients' and therapists' experiences of this integrated approach. Our findings highlight how communication and the patient-therapist relationship are altered by an integrated approach, its impact on patient engagement, the need for therapists to adapt their traditional approaches, and challenges they can face in maintaining the therapeutic relationship and managing risks. Drawing on these findings, we discuss the impact of key design decisions and the broader potential of integrated approaches to support high-intensity treatments for depression.

DELIVERING CBT FOR DEPRESSION ONLINE

Over the past decade HCI literature has engaged with mental health from a wide range of perspectives, applying different theoretical models and technologies, and addressing challenges in areas including assessment, prevention, and treatment [4, 5, 14, 30, 37, 42, 43, 48, 52, 56, 60, 61, 71]. It has addressed both specific disorders (e.g. depression, bi-polar disorder) and cross-cutting challenges such as engagement. A detailed review of this broader literature is beyond the scope of this paper. However, further details can be found in [60]. In this paper, we focus on the use of technology to support CBT.

CBT focuses on patients' current issues and involves both behavioural and cognitive elements [74, 75]. It is a structured psychotherapy that follows a progression towards more in-depth and complex topics (e.g. core beliefs). These characteristics make it well-suited to modular, computerised implementation. Two broad approaches to using technology to provide CBT are generally available. The first, cCBT interventions, typically provides a set of modules that people can complete in their own time. Widely used examples include MoodGYM [17] and SilverCloud [63]. However, cCBT is mainly used for low-intensity treatment and thus may not be appropriate for people with more severe depression who require a high-intensity treatment [24, 34]. Moreover, evidence suggests many people prefer using apps instead of self-directed cCBT [67], although their lack of evidence-based content and integration with existing clinical practice [32, 40, 62, 68] is a cause for concern.

Computerised CBT can be effective [2, 22], especially with professional support. However, the effects are short-term [23] and the support is often provided by psychological well-being practitioners rather than accredited CBT therapists [19]. Silvercloud [63] is an example of a guided self-help cCBT system that supports the exchange of messages between the patient and the therapist. It also enables patients to share completed exercises and comments to get feedback, which allows for more personalised support [16]. However, the role of a therapist is to support the user to complete online modules, rather than offering therapy. To date, HCI research has mainly focused on this type of system [16, 56], addressing the design of features that can improve engagement with treatment [13, 16]. For example, Doherty et al. [16] argue that interactive features, professional support, peer support and customization can help to facilitate patient engagement. All are supported to some degree by cCBT, but the professional support is limited.

This has led to the second approach that combines therapist-delivered CBT with access to online resources [31, 35, 41, 73, 77]. Contact with the therapist is usually face-to-face, while the role of technology varies: online resources can be limited to psychoeducational materials with the main part of treatment delivered by the therapist face-to-face [41]; or online components can be more interactive, allowing mood tracking and completion of modules [31, 73] or enabling communication with the therapist during real-time 'online' sessions [35]. However, while these approaches blend technology with face-to-face therapy, the latter is the main element of the treatment. Ieso [28], a system available in the UK, applies a different blended approach, enabling online therapy sessions via instant messaging; there is no face-to-face work. Therapists can send worksheets to patients to support their homework but this is not an integral part of the system.

While such blended approaches may be more suitable for high-intensity treatment, they do not take advantage of all the opportunities technology offers, especially related to engagement, collaborative online activities, and the direct integration of online and offline activities. We were therefore interested in exploring how technology could be used to more fully integrate therapist contact with the use of online resources (psychoeducational materials and worksheets) to deliver CBT. In the next section we describe the integrated platform we have developed with the above in mind.

THE PLATFORM

To support a more integrated approach we have built a platform that allows patients and therapists to communicate online in real-time using instant messaging, and to collaboratively view, edit and discuss CBT resources within the platform. These activities are combined with face-to-face sessions and platform support for between-session activities. The collaborative aspect and the ability to share resources between the therapist and the patient are the unique features of the platform.

In developing the platform we made several design decisions (see Table 1). They were based on co-design activities (design workshops with patients, interviews and role-play sessions with therapists) that are reported in detail elsewhere [69]. Pragmatism was a key aspect of our decision-making process. Our ultimate aim is to deliver a platform that is clinically effective, but is also of practical value in public health care systems, taking consideration of both cost and resource constraints.

Communication between therapist and patient
First session held face-to-face, lasting 90 minutes
Up to 9 online 50-minute therapy sessions
Up to 3 online 20-minute check in sessions
Asynchronous messaging system for between-session contact
Modes of communication
Instant messaging as default mode of communication during therapy
Optional phone communication during therapy sessions
Therapy support
Shared workspace where therapist and patient can view and complete worksheets together
Therapy goals, current "homework" and latest worksheets visible on the therapy session page
Library of psychoeducational resources and worksheets
Ability to share worksheets
Ability to complete worksheets at home or during a therapy session
Access to therapy session transcripts
Collaborative therapy session notes written at the end of each session
Engagement support
Patient's session preparation form for listing main topics to discuss
Graphs showing change over time in depression scores
Different formats of psychoeducational materials: articles and videos
All psychoducational materials available from the start of therapy

Table 1. Design decisions and key platform features.

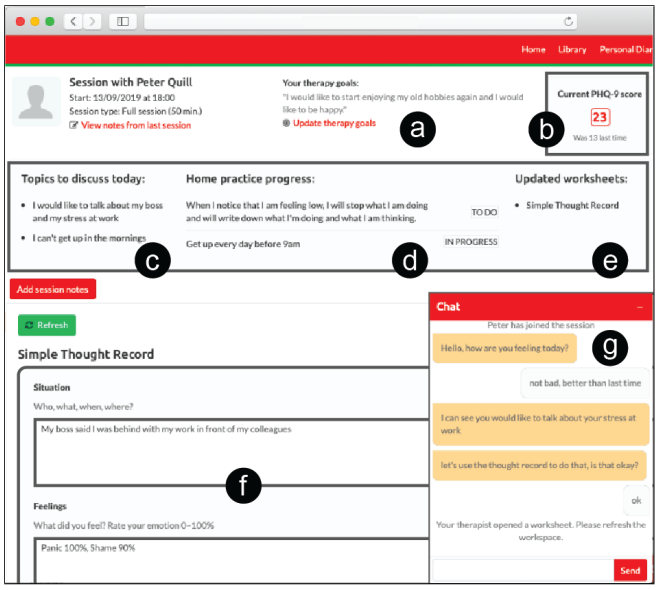

Figure 1. Key components of the online session page: a) therapy goals, b) current depression score, c) agenda, d) home practice tasks, e) recent worksheets, f) workspace with a worksheet open, g) chat window.

This was reflected in decisions such as limiting the maximum number of therapy sessions to 9 per patient.

The decision to use instant messaging as the main mode of communication during sessions was based on evidence that delivering therapy this way can be effective [27, 33], although we added an option for the therapist to initiate a telephone call if necessary. During online sessions the core collaborative tasks were built around standardised worksheets, such as thought records that help people distinguish between thoughts and emotions, or mood diaries. These interactive worksheets were also core to the between-session activities patients were asked to complete.

To help build rapport, we decided that the first therapy session would be longer and take place face-to-face, as such direct contact makes it easier to establish the working relationship [33, 69, 76]. We also allowed therapists to schedule shorter, 20-minute 'check-in' sessions to discuss queries related to worksheets or help with homework. In preparation for each full-length session, patients were asked to fill in a session agenda and to complete the standardised depression questionnaire (PHQ-9, [36]). While agenda-setting is standard CBT practice [74, 75], the online modality allowed for greater advance planning and was predicted to keep sessions focused.

The main feature of the platform was the interactive workspace (see Figure 1; additional screenshots are available in *Supplementary Materials*) that allowed therapists to share materials with patients and complete worksheets collaboratively. This functionality was designed to support engagement with therapy and with homework activities that are an important part of CBT [44, 78]. Therapists were asked to use it to introduce new worksheets, complete example entries with their patients and discuss worksheets completed by patients at home. Also, as per standard face-to-face CBT, therapists and patients were able to agree homework tasks unrelated to worksheets, such as trying to wake up earlier or meeting friends.

In contrast to existing systems, the platform did not provide any predefined modules covering specific topics. Instead, the therapist could tailor treatment to the individual by selecting worksheets from the platform's library to share with patients. Only worksheets explicitly shared by the therapist were available to each patient as we did not want to overwhelm people with unnecessary materials [45, 69]. Patients were able to select which completed worksheets they wanted to share with their therapist. This aimed to support their agency, enable practising new skills, and reduce anxiety linked to sharing 'unfinished' work. In addition, patients had access to all information sheets and videos covering topics ranging from an introduction to CBT and basic information about depression to descriptions of unhelpful thinking styles or explanations of core beliefs. To support engagement with therapy, we made these resources available from the start. Patients could also access full transcripts of previous sessions and session summaries written together with the therapist. We assumed that involving the patient in writing the session notes would support learning and engagement.

Below we describe the 11-month pragmatic study during which patients received CBT via the platform and later report findings of the interviews that explored patients' and therapists' views and experiences of the integrated approach.

THE STUDY

Patient Recruitment Details

We recruited patients with depression aged $\geq$18 years old from three GP practices based in areas of Bristol, UK that varied in terms of levels of deprivation. Potentially eligible patients were either referred directly by their GPs or were identified through searches of practice electronic records. Eligibility was

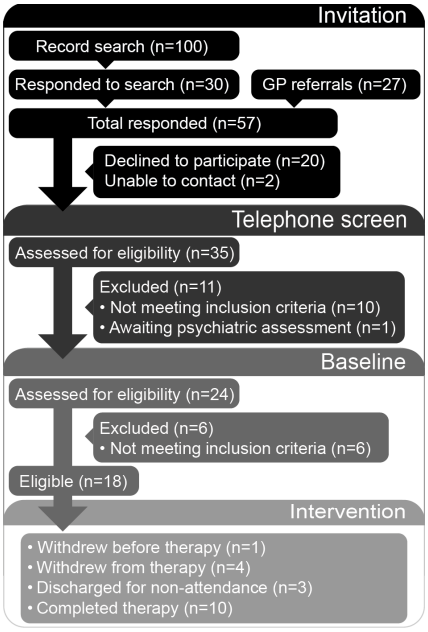

Figure 2. Patient flow, including recruitment and the intervention.

initially assessed during a screening telephone call. As the platform was tailored specifically for depression, we excluded individuals who had major alcohol or substance use problems (in the past 12 months), bipolar disorder, psychosis or dementia. We also excluded those who were at the time receiving CBT, other psychotherapy or secondary care for depression; received individual, high-intensity CBT in past 4 years; or were taking part in another research study. Next, participants were invited to attend a face-to-face baseline appointment with a researcher to further establish eligibility by completing the Beck Depression Inventory (BDI-II) [8] and Revised Clinical Interview Schedule (CIS-R) [38, 39] questionnaires; those with BDI-II scores $\geq$14 and meeting ICD-10 criteria for depression were deemed eligible. During the baseline we also collected written informed consent and additional information on socio-demographic details, current depressive episode, history of depression, and use of and adherence to antidepressant medication. The study received full NHS Ethics approval (IRAS ID: 235168) and HRA approval. Participant flow is shown in Figure 2.

Details of the CBT Provided

The study protocol utilised the standard Beckian intervention for depression [7, 9, 74, 75]. Participants were offered up to 9 sessions with a therapist. While the National Institute for Health and Care Excellence (NICE) guidelines recommend 16-20 therapy sessions for high-intensity CBT [21], in practice people receive on average 6.9 sessions of treatment [18] and most of the treatment gain occurs during the first 8 sessions of psychotherapy [70]; therefore, 9 sessions were deemed realistic, given that the platform also supported additional between-session work. Therapy was provided individually. The first session took place face-to-face and lasted up to 90 minutes to allow completion of history taking, introduction of the CBT model and other relevant psychoeducation. Subsequent sessions took place online using the platform. Therapists were advised to hold the first four 50-minute therapy sessions weekly, but later they could be spaced at fortnightly or monthly intervals. If needed, instead of one of the full 50-minute sessions, they were also able to schedule 3 shorter check-in sessions (max. 20 minutes each) between regular sessions. Figure 3 presents an example therapy flow.

Therapists

Therapy was delivered by three CBT practitioners. Two were accredited by the British Association of Behavioural & Cognitive Psychotherapies. Two worked within IAPT. One therapist was recruited from private practice. All were women (mean age=38 years, SD=12) and had on average 3 years of experience (SD=1.6). Therapists' participation in the study began one month prior to the start of delivery of therapy to receive training and familiarise themselves with the available resources. They received regular clinical supervision.

Data Collection Procedures

We conducted two sets of semi-structured interviews with patients. First, they were interviewed over the telephone after 2-3 therapy sessions to gather their initial views; these interviews took approximately 15 minutes each and focused on first impressions of the platform. After completing therapy (or withdrawal or discharge), they were interviewed again face-to-face. These interviews lasted approx. 90 minutes and were conducted at the patient's home, GP surgery or University. They covered views and experiences of receiving integrated CBT, comments on the platform, and ideas for improvements. Participants received a £10 gift voucher for each interview. With patients' consent, we also collected usage statistics for their engagement with the platform, including the number of times they logged in, worksheets completed and shared with the therapist, homework tasks set and completed, and access to session notes and transcripts.

Therapists were interviewed individually once they completed CBT with all their allocated patients. Interviews were conducted by phone and lasted approximately 60 minutes. The interview guide included questions about delivering therapy via the platform, patient engagement, and the integrated approach in general. After interviews were completed, therapists attended a 90-minute focus group to discuss the key findings and identify potential improvements.

Data Analysis

Interviews and the focus group were audio recorded with consent and transcribed verbatim. Data collection and analysis were done in parallel, leading to additional questions being added to the topic guide. Interviews with patients and therapists were analysed separately, although the analysis followed the same procedures. First, four patient interview transcripts were read by KS, CP and DC to gain an understanding of the data. These interviews were purposefully selected to represent a wide range of patients, including two who completed therapy (but had opposing views about the platform), one who withdrew and one who was discharged for non-attendance. The researchers independently coded the transcripts to identify

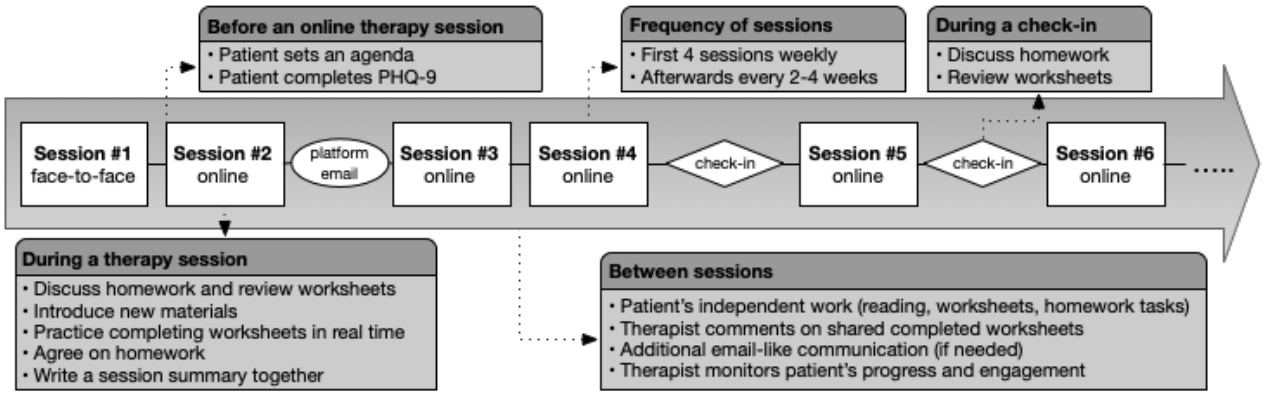

Figure 3. Example therapy flow showing different types of contact and activities.

themes and met to discuss the codes and devise a preliminary coding frame. Next, KS coded two other patient transcripts using this coding frame, after which the researchers discussed the coding and necessary changes to the coding frame. To develop the coding frame for therapist interviews, the researchers read the same therapist interview transcript. Both coding frames were developed alongside each other, so that where common areas had been explored with each group of interviewees, where appropriate, the same code was used to aid comparisons across the interview sets. Once both coding frames were agreed, all transcripts were coded electronically in software package NVivo. The coded data was analysed using an approach based on framework analysis [58]. Findings and representative quotes were summarised in a table where a row represented a participant and each column heading was based on the codes that had been developed (rather than predefined headings, which is usually the case when using framework analysis). This enabled comparisons within and across the data and helped to identify themes. Finally, the focus group transcript was read and compared with findings from the therapist interviews to identify any new insights.

FINDINGS

Patient Information

Eighteen patients were eligible and 17 started the therapy. Ten patients completed therapy; 5 withdrew (including one who withdrew before starting the treatment) and 3 were discharged for non-attendance after missing 3 or more appointments (see Figure 2). We interviewed 13 patients: 6 patients were interviewed after 3 sessions, 4 after 4 sessions, and 3 after 5-6 sessions. Nine participated in both interviews; 3 were interviewed after only a few sessions and later withdrew or were discharged for non-attendance and we were unable to contact them to schedule the final interview; and one person was interviewed after a few sessions and later after withdrawing from therapy. Interviewed participants were 21-66 years old (average age=41.3; SD=16.6); 85% were women. All interviewed participants met ICD-10 criteria for depression (7 severe depression, 4 moderate depression, and 2 mild depression) and 12 also had a secondary diagnosis of an anxiety disorder, e.g. generalised anxiety disorder, panic disorder; this is similar to previous large-scale primary care depression trials, e.g. [34, 80]. See *Supplementary materials* for details.

While we were not evaluating the effectiveness of the treatment as part of this study, we recorded pre- and post-therapy depression (PHQ-9) scores. Outcome data from pilot studies should be used with caution [64] and we report them here only to provide context to the qualitative findings. PHQ-9 scores range from 0 to 27, with scores over 20 indicating severe depression. The mean PHQ-9 score for all participants at baseline (N=18) was 17.2 (SD=6.1). The mean baseline score for those who completed therapy was 17.7 (SD=6.6, N=10) and the mean score at their final therapy session was 8.6 (SD=8.2). For participants who withdrew or were discharged for non-attendance, their baseline mean PHQ-9 score was 16.7 (SD=5.6, N=7) and the mean score at their last session was 12.4 (SD=3.9).

Platform Usage Trends

On average, participants completed therapy in 16 weeks (SD=4), logged into the system 30 times during the course of the treatment (median=32, SD=16), worked on 4.7 worksheets (SD=2.8) and were assigned 7.2 'practice at home' tasks (SD=4.5). They engaged well with worksheets: on average, they completed 25.4 individual entries (median=18, SD=33.3) and shared 9.9 (median=5, SD=14.5) with the therapist. All but 4 patients engaged with home tasks, either by marking them as 'in progress' (mean=3.2, SD=3.6) or 'complete' (mean=3.6, SD=4.5). On average, patients looked at session transcripts 5.1 times (SD=5.2) and at session notes 5.8 times (SD=5.3); 6 patients never looked at their transcripts and 3 never looked at session notes.

Patient Interviews: Main Themes

We identified three themes related to patients' experiences of receiving integrated therapy: the importance of establishing the relationship with the therapist, the impact of technology on session dynamics, and the tension between flexibility of this type of treatment and engagement with therapy.

Establishing the therapeutic relationship

The relationship with the therapist was important to all participants. While we already know that it is key in therapy [9, 74, 75], our findings show that the integrated approach changes

the nature of this relationship and how it forms. The first face-to-face session in particular was seen as crucial in developing the relationship with the therapist and building trust. It also helped to familiarise the patient with the therapist's communication style: the phrases they use, how they approach things, etc. This made therapists seem *"more real"* and served as a reference point when interpreting their written messages in subsequent sessions.

> *"In the* [face-to-face] *meeting you can see this person is a nice person, they're not going to judge me. You can then take that from the initial meeting on into the online meetings and know that it's the same person."* – P4

However, some found it difficult to build and maintain this relationship with just one face-to-face session. Those less confident in communicating online said they would have preferred more face-to-face contact, mainly because of the lack of additional non-verbal cues. This did not necessarily mean meeting in person, as in their opinion video communication or even telephone calls would be enough to make the connection more personal. This was particularly important in the context of the final therapy session and ending the relationship with the therapist: for some patients, simply signing off the chat after knowing the therapist for 3-4 months did not feel appropriate.

> *"It would have been nice to have a final face-to-face one just to wrap everything up.* [...] *It feels a bit weird leaving it because it's just like 'Ok bye' rather than having that closure I'd say."* – P13

The impact of technology on session dynamics

The mode of communication had impact on the content of the session and how much detail patients were willing to share. Almost all agreed that having to type limited how much they were able to cover.

> *"I thought it took longer. Longer because you're typing. She was very quick to pick things up and to sort of challenge me and to ask me but of course there wasn't that looking at my face and seeing my facial expressions and then picking up on something so it took longer."* – P11

However, some patients appreciated the limited time and pressure to focus it introduced, even though it required some discipline on their part and understanding of what would be useful:

> *"I think there's less you can talk about just because, obviously, response time. But then, it means that I'm talking about what I actually want to talk about, not just rambling on about something that is just not worth the hour."* – P13

The format of online sessions sometimes contributed to the perceived remoteness of the connection. Some participants thought that communicating through instant messaging lacked empathy and was more difficult compared to talking. Others thought it was easy to intentionally hide one's emotions, as the format required the participants to be (or to become) more open, which some found difficult. Having to explicitly state how they were feeling was sometimes hard and uncomfortable, although some participants appreciated this extra bit of work as it could help in the future:

> *"It's difficult to show emotion to the therapist, so there were points when I got quite upset, but my therapist had no idea, so unless you* [...] *write 'I'm really upset' or 'I'm crying' or something like that... I didn't want to feel like a burden to people, so to then have to write 'I feel sad', it was quite difficult* [...] *but in a way it made me sort of overcome it, so it helped in the long run."* – P8

However, some patients saw this as beneficial, as they perceived being emotional as a barrier in communication. Compared to traditional face-to-face therapy, instant messaging made it easier for them to open up, was *"less intense"* and they could be vulnerable without being embarrassed about it. For example, one patient described how in the past her crying made it difficult for others to understand her, which made her more anxious and embarrassed, which led to more crying and the cycle continued. As a result, typing with the therapist was more convenient and less stressful:

> *"The chat is so much better because I can be emotional. I'll tell her if I'm really emotional, but I can be not worrying that she doesn't understand anything that I'm saying* [because I'm crying]*."* – P4

As the participants could not see whether the other person was typing, some patients reported that often they were not sure whether they should wait, which resulted in long pauses or therapist and patient talking over each other. This made some people reluctant to write long messages. However, this waiting time had benefits too. Some participants appreciated the space it provided for reflection. They were able to think things through and retype their message before sending, which helped them express themselves clearly. While the pauses were a side-effect of using instant messaging, some participants thought that they might have been deliberate:

> *"There's lots of stagnant pauses, so in terms of the time used, there's quite a lot of waiting time between messages. Sometimes that's good, because* [...] *you use that as thinking time and maybe that is what the therapist is actually doing: not hurrying you in order to allow you that thinking space."* – P5

As the therapy mainly took place online, technology failures had a negative impact. Issues with the instant messaging, e.g. caused by a lost connection, often broke the therapy flow and required troubleshooting by the therapist. This sometimes led to lower engagement as patients who experienced these issues did not want to put too much effort in case the technology failed again.

> *"One of the problems with the type of depression I have, if you like, I'm very apathetic so I find it very difficult to motivate myself sometimes.* [...] *The least helpful, the frustration and sometimes sort of bit of crossness, not as much as anger, is when you get set up to do something and the technology lets you down."* – P2

The impact of flexibility on engagement

The flexibility of the integrated approach influenced patients' engagement. Some admitted that it made therapy more available to them, as they would not normally be able to commit to

regular sessions due to work schedules, work travel or caring responsibilities. However, finding time for the sessions meant that participants did not always have free time left for homework and only logged in to the platform 1-2 times per week, usually just to attend therapy sessions.

All psychoeducational articles and videos were available in the Library from the start. While this introduced flexibility and enabled access to the materials, many patients chose not to engage with them. Some simply did not have time to browse the wide selection of materials, while others thought it was overwhelming. As a result, they often engaged only with the materials explicitly shared by the therapist. They also found this act of sharing important as it made it clear that the treatment was personalised to their needs:

> *"If you mention something to the therapist, she can immediately upload something that then makes sense of what you're doing.* [...] *You can say something and then magically appears a worksheet that then can help you understand. I had a sleep worksheet because I was struggling with sleep and I was telling her that, and up it appears."* – P4

However, a few patients did not find worksheets useful, usually because they did not match their learning style or reminded them of school too much. Some found them burdensome, especially the Daily and Weekly Activity Schedule worksheets that allow users report activities for each day of the week hour-by-hour. While patients were not required to fill in all fields, one person tried to do just that – and dropped out from the study because the task ended up being too time consuming.

Nevertheless, the majority of participants did engage with worksheets to some degree. Some explicitly said that they *"liked"* doing them, found them useful and printed them for further reference. For example, one participant saved questions from a worksheet in a note app on her phone, so after the therapy ended she could go through them whenever something happened that resulted in an emotional reaction. It helped to guide her thinking and calm down:

> *"I think it was the Thought Record* [worksheet]. *I copied the questions in to my phone* [...] *So there was times when I was at work and I found myself in a challenging situation and I could feel myself getting quite emotional and I'd take myself away and I'd just sit with it on my phone and go 'right, okay', go through the process* [...] *I didn't write it down, but just having the questions there to go back over help me reflect in the moment."* – P8

The flexibility of the integrated approach was also reflected in different modes of communication that were available. Some participants reported that their therapist sometimes would call them at the end of the session to wrap things up or follow-up on something soon after, which they found useful. In general, they appreciated the option of talking to the therapist by telephone when necessary.

> *"I think once I was out and quite busy with the children, so it would have been hard for me to just look down at my phone and messaging, it was easier just to be like this* *holds the phone by her ear* *so I can be aware of my surroundings."* – P6

However, telephone conversations with therapists meant that no transcripts were available and patients could not remember what was discussed in the previous session. While they used session notes as a record of what was covered, many patients found the notes too short and unhelpful. Instead, patients reported relying on transcripts. Having a log of a chat session was useful and many patients reported saving transcripts for future use. This turned transcripts into *de facto* psychoeducational materials as reading them enabled revisiting what was discussed in a session and using it in a new situation.

> *"Sometimes it's really good to literally go word for word back through how you got there, to go back over the process again and really ingrain it.* [...] *It gives you time whilst you're by yourself to try and apply a new situation to what you talked about as well, you can sort of try and figure it out for yourself a bit more."* – P8

Summary of patient themes

The results highlighted the importance of the relationship with the therapist and the crucial role of the initial face-to-face session. As the further contact was online and without non-verbal cues, this initial meeting served as a reference point for interpreting written messages from the therapist. Receiving therapy via chat reduced the amount of information that could be exchanged within a session, but also provided space for reflection, which some participants found useful. Some patients found it easier to express their emotions in writing, while for others it made things harder, which highlights the importance of personal preferences in regards to communication styles.

Platform usage statistics showed that patients used worksheets, even though they did not always share everything with their therapist; they also engaged with homework tasks. The qualitative results support this, although they also show that not all patients found the worksheets useful, mostly due to time constraints or personal preferences. Similarly, the usage trends showed that patients revisited both transcripts and session notes, albeit the latter more often. However, the interviews indicated that they found transcripts more useful in the long term and used them as psychoeducational resources.

Therapist Interviews and the Focus Group: Main Themes

We identified four main themes that describe therapists' experiences of delivering therapy using the integrated approach: the need to adapt their usual approach, the impact of technology on their relationship with patients, challenges in managing risk, and the benefits of the integrated approach.

The need to adapt one's approach to delivering therapy

At the start of the study, the therapists were new to this mode of delivery. As they had only 4-7 patients each, there was a steep learning curve in terms of using the materials and adapting their style to this medium. While things got easier with time and practice, all therapists reported that they had to rethink and change the way they worked. The biggest challenge was fitting everything into 50-minute sessions: using instant messaging meant that therapists were able to cover less material compared

to meeting patients face-to-face. This was not necessarily a negative change as it forced them to be more direct:

> *"I think it has to be a bit more succinct, more direct than I might normally do* [...] *And perhaps you need a stronger rationale for why you might do a piece of work."* – T1

Another difficulty was adapting offline practices to online therapy, such as using whiteboards or paper to sketch diagrams. Despite the access to a wide library of worksheets and information sheets with diagrams and illustrations, this change required rethinking how to use these new resources. Similarly, even though therapists were familiar with the materials available on the platform, the worksheets were not the exact ones they used in their everyday practice:

> *"I had to really think hard about what I was showing. I think I generally shared too much stuff* [resources] *with clients because I suppose maybe I wasn't so sure* [...] *which homework would be most effective for them."* – T2

While the therapists appreciated the option to use the short check-in sessions, they admitted they were not always sure how best to use them. One therapist did not use them at all, while other two used them to extend contact time with some of their patients and to deal with lack of engagement.

> *"I used them with one client that was cancelling sessions* [...] *I did use them with different clients. That was just really to check in to see how they were getting on with homework* [...] *What was really good, was that it just extends the therapy a little bit and gives them chance to get used to using the sheets and that kind of thing."* – T2

In addition, echoing patients' comments, therapists also reported that the lack of typing indicator in the chat window introduced pauses in the conversation. As a result, timekeeping and focus were important (*"you need to be quite a time boundaried therapist"* – T3) to ensure they covered everything they planned and finished on time.

Impact of technology on the relationship with patients

The integrated approach impacted on the relationship between therapists and patients. Similar to patients, all therapists agreed that the first face-to-face session was essential to build rapport. Further echoing patients' comments, therapists reported that they had to be very clear when communicating online. With the lack of non-verbal cues they had to be mindful of their tone and how their messages would be received.

> *I would quite carefully structure what I wrote and I found myself using smiley faces a lot as well! To make sure that I was trying to convey a friendly tone."* – T3

Therapists were encouraged to use typing as the default mode of communication, but could also make telephone calls if necessary. Opinions regarding whether typing should be the default were divided, but the therapists agreed in the final focus group that it might be difficult and *"quite clunky"* to return to the chat after starting a phone call. In addition, once they started talking, it would be easier for patients to go off topic and harder for them to return to the focus of the session. Sharing and collaboration were designed to be an integral part of the platform. Therapists appreciated being able to share worksheets with patients and review them before the session. When patients engaged with homework, this allowed therapists to better prepare for the sessions and focus on more in-depth topics. It also helped them to see how their patients' thinking was changing, which was useful in monitoring progress. However, when patients were not engaging and were not sharing worksheets, this was a source of frustration. It also sometimes caused anxiety as therapists reported feeling responsible for monitoring patients and ensuring they did their homework.

> *"I don't want clients to feel bad about not doing their homework so I do feel in CBT there's a lot of pressure* [...] *I think I felt there was pressure. They haven't done their homework. Why? You have to find out why."* – T2

Managing risk and safeguarding

All therapists expressed concerns related to managing risk, although they were mostly related to the study protocol rather than integrated practice, e.g. they were worried about the limited number of sessions available. However, they also pointed out that for some patients it may be more appropriate to use more face-to-face or telephone contact. For example, one therapist felt that instant messaging was not appropriate for discussing sensitive topics with one her patients. As a result, she conducted the final session face-to-face:

> *"It was just very delicate and very sensitive stuff that we were talking about so I just thought it wouldn't have been fair to do that over the phone and certainly not* [using instant messaging]*."* – T2

Therapists found the built-in depression questionnaire useful in highlighting potential issues of risk, especially that PHQ-9 is a measure they use in their everyday practice. However, the questionnaire was available only as part of preparations for full therapy sessions; when therapists scheduled check-ins, patients were not asked to fill it in. This was a feature, not a bug, but in practice it turned out to be problematic:

> *"Because I'd had check-in sessions I hadn't got the scores in for a couple of months I think.* [...] *Verbally I'd see that she was okay so I wasn't worried about risk but* [...] *I find it really uncomfortable that I had a check-in session but not having that overview of their scores."* – T2

Benefits of the integrated approach

Despite the challenges, therapists said that this type of therapy would benefit the patients as it was flexible and accessible. They thought it would be suitable for people who may find face-to-face contact too overwhelming or embarrassing, and that the technological barrier between the patient and the therapist made it easier for some people to engage during sessions:

> *"I think it makes people a bit more honest as well. Because you are separate in a way, you can't see each other, so I think that could be a benefit. They might disclose more information than if it was face-to-face."* – T1

Therapists saw access to the library of resources and being able to work on them together as the greatest strengths of this approach. It was easy to share relevant materials to support

therapy, and it helped patients to access and complete their homework and engage more with treatment.

> *"Being able to get up a worksheet and talk through it with the client and send it to them and to be able to see what they have filled out was really valuable."* – T3

As discussed in earlier sections, delivering the integrated approach required changes to therapists' approach and typing introduced time constraints. Nevertheless, therapists reported that overall, they were able to deliver CBT using the platform.

> *"Based on my client's* [PHQ-9] *scores and what we managed to cover, I think* [the therapy] *was the same as it would have been if I'd been working with them face-to-face.* [...] *It works for a therapy that is very goal focused, and CBT is very goal focused."* – T1

Summary of therapist themes

The interviews showed that the therapists were not only able to deliver CBT using the platform, but also were generally satisfied with their patients' progress (which was reflected in final PHQ-9 scores that were lower than baseline). However, even though the materials available on the platform were similar to what they normally used, therapists still needed to adapt their approach. Delivering therapy via chat required more focus and careful wording, as they were able to cover less compared to face-to-face contact. Similar to patients, they found the first session invaluable in establishing rapport. They raised concerns related to managing risk, suggesting that more flexibility may be required in regards to types of contact that is available, especially when dealing with vulnerable patients.

DISCUSSION

Our study explored patients' and therapists' views and experiences of the integrated platform for delivering high-intensity CBT for depression that allows patients to receive treatment via instant messaging, enables patient-therapist collaboration and supports between-session work. Patient interviews highlighted the importance of therapeutic relationship that could be altered by the use of technology and the impact of the integrated approach on patient engagement. The interviews conducted with therapists showed the need to adapt their approach and highlighted challenges in maintaining therapeutic relationship and managing risks. Both sets of interviews also emphasised the flexibility and potential benefits of this approach. While the results are promising, they highlight some challenges. Below we discuss key findings in relation to the design decisions we made and highlight areas for further exploration in this design space.

The Choice of Communications Modes

Our design used instant messaging as the main mode of communication. Prior research [24, 33] suggests that chat-based therapy is acceptable and can be effective, and our study supports these findings. However, participants observed that it was slower, introduced pauses, and therefore less could be covered in a session. This slowness is not necessarily a limitation as it can support self-reflection [6], a view which is supported by our data. Echoing previous trials [33, 34], participants also reported that there was less non-verbal communication. Again, for some this was a limitation as they lacked additional contextual feedback, while others reported feeling more comfortable if their emotions were not immediately visible to the therapist. Similarly, therapists noted the importance of maintaining a therapeutic alliance through instant messaging and found 'workarounds' to the limitations of text-based interaction by using emojis as a tool to do this [15, 72]. While the use of emoji in clinical settings has not been studied yet, there have been calls for more research in this area [54, 65]. Further research is necessary to explore strategies to build and maintain a supportive therapeutic relationship in text-based interaction, and how systems can be designed to enable these.

As the attitudes towards instant messaging seem to depend on personal preference, this should also be accounted for. Rather than trying to design a system which replicates the face-to-face session dynamics, it may be more appropriate to use the system for those who find this way of working effective, and offer standard face-to-face sessions to those who do not. Researchers and health professionals often see mental health technologies as end products rather than technology-enabled services [49], which limits their potential. The integrated approach treats technology as a platform that enables access to and delivery of therapy, and similar to other types of therapy that are available (face-to-face, telephone, group therapy, cCBT), it may not be suitable for everyone.

Despite differing attitudes towards online contact, both therapists and patients found the first face-to-face session valuable in building a trusting relationship. Previous research shows that the lack of that initial session makes it difficult for some to establish this relationship [33, 69], which informed our decision to make it integral to our approach. Existing blended approaches offer more face-to-face contact [31, 35, 41, 73] and when asked about the right blend of face-to-face vs. virtual contact, therapists tend to prefer a more balanced mix [76]. However, in our study, a single face-to-face session was sufficient, although feedback from patients suggested that perhaps there should be more flexibility with regards to face-to-face contact, especially at the end of the treatment to allow closure. This could be easily supported by technology, although the main barrier to implementation may be logistics and access issues related to scheduling and conducting additional face-to-face sessions. This could be addressed by telephone contact, but one unexpected outcome of using instant messaging was the active use by some patients of session transcripts as personalised psychoeducation materials. This benefit would be lost, although the latest advances in voice recognition and automatic transcription may eventually render this issue obsolete [20, 25, 81]. Access to transcripts may be particularly helpful for patients who do not engage with formal worksheets and could be actively encouraged by therapists in such situations.

Supporting Between-Session Work

Our design placed particular emphasis on the shared use of worksheets within and between sessions, online tracking of home practice tasks, and a review of this in subsequent sessions. This is a key difference between the platform and existing systems that blend face-to-face therapy with online resources [31, 35, 41, 73, 77]. This design decision was based

on research that shows engagement with between-session tasks is associated with better outcomes in CBT [44, 78]. And indeed, both qualitative results and usage trends show that many patients engaged with these features throughout the study. However, some found the emphasis on home practice less useful and, in a few cases, too burdensome. Although home activities are an important part of CBT [74, 75], it is relatively common for patients not to engage with them [26]. Patients' comments regarding non-engagement in our study primarily referred to contextual factors which would also apply to face-to-face therapy (e.g. lack of time or not liking worksheets) rather than factors directly related to the design or system use.

In face-to-face therapy, therapists can respond to non-engagement by de-emphasising homework tasks and using CBT and psychoeducational techniques in session. This is also possible in an integrated approach and could take place over instant messaging. Allowing therapist to make this judgement is important. However, our interface continued to place worksheets and homework tasks in the foreground. This salience could potentially have a positive effect, e.g. by reminding the patient of this option; or may have a demotivating one, e.g. by reminding them of what they are 'supposed to' do but do not want or like. While many patients appreciated seeing all worksheets in one place, seeing how much still needs to be done – as opposed to how much has already been achieved – can be demotivating. If further evidence suggests that this continued foregrounding has a negative impact on experience and/or outcomes, alternative design options should be considered. For example, allowing therapists to switch to a different interface mode that no longer foregrounds worksheets.

Check-in Sessions and Other Engagement Techniques

The flexibility offered by the integrated approach over traditional face-to-face therapy means it is possible to experiment with different ways of encouraging and supporting engagement with the treatment. This could be achieved through asynchronous text communication, such as therapists tracking engagement, sending supportive reminders and positive reinforcement together with brief feedback on completion – which can be found in some of the existing systems, both therapist-supported cCBT (e.g. [63]) and blended systems (e.g. [35, 41]). However, in previous studies therapists expressed concerns about the impact these additional activities could have on their workload and potential issues with therapeutic boundaries which may arise from between-session communication [69, 76]. For that reason, we made a decision not to adopt this approach. Instead, we introduced check-in sessions. Though they were at times used as intended, our therapists would have preferred to have them replaced with more full-length therapy sessions. Nevertheless, we believe that shorter between-session meetings may have potential and should be investigated further. However, our experience shows that introducing short sessions needs to be very clearly framed to both therapists and patients, and care must be taken as to how to integrate them into existing therapeutic practice.

Future Work and Limitations

Our findings raise questions for the HCI community: What is the right blend of face-to-face and online contact? How the online sessions (and the flexibility they introduce) can be best utilised? What is the impact of various design decisions on lived experiences of patients and clinical outcomes? Given the exploratory nature of our work, we are unable to provide specific answers to the first two questions. We think that supporting flexibility and therapist and patient autonomy in making these decisions will be important. There is also a need to provide detailed guidelines and support for this autonomy, and to recognise the pragmatic constraints on the availability of care. Addressing these questions will be an important focus for future work. Collecting ongoing data on the pragmatic, real-world use of systems that are deployed is also a critical source of information. The last question has been answered in this paper with regards to our specific design decisions; however, lived experiences will most likely differ if the design changes. Future work should explore the impact of other design decisions. The next stage of our project – a large multi-centre randomised controlled trial – will incorporate a nested qualitative study that will collect further data and will provide empirical data on the effectiveness of our approach.

There are a couple of limitations we would like to acknowledge. First, there is a potential bias towards those who completed therapy: we only managed to interview one person who dropped out. Others might have dropped out because this approach did not work for them or because they started to feel better. Similarly, not everyone who completed the therapy found the integrated approach acceptable, which is reflected in the views expressed by our participants. Second, our participants were mostly women. However, as women are more likely than men to seek mental health treatment [3] and the IAPT workforce is predominantly female [19], this reflects the target population. There is some evidence that people from minority backgrounds and of lower socio-economic backgrounds (SES) have limited access to treatment [3, 46, 47]. Whilst we aimed to recruit participants from varying backgrounds, and had some diversity in terms of SES, all participants were white (see *Supplementary Materials*). Future research should include a more diverse group of participants.

CONCLUSIONS

To explore users' views and experiences of receiving and delivering high-intensity therapy for depression using an integrated approach, we interviewed 13 patients who received the treatment and 3 therapists who delivered it. Our findings showed that the integrated approach altered the therapist-patient relationship and session dynamics, and introduced several challenges. While some people found this type of therapy acceptable, others found it time consuming. We highlighted different characteristics of the therapy that could benefit from increased flexibility, but these design decisions can have impact on therapist workload and patient engagement. Implementing integrated systems requires taking these factors into account.

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