Evaluation of avatar-assisted therapy in Bradford Community Mental Health Psychological Therapy Services and Early Intervention in Psychosis

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Contents

1. Introduction

1.1 Background

The use of digital technologies in mental healthcare is a fast-growing area (Hollis et al., 2015). Opportunities are being explored through technologies such as electronic medical records (Perna, Grassi, Caldirola, & Nemeroff, 2018), outcome-prediction algorithms (Hannan et al., 2005), computerised self-help interventions (Richards & Richardson, 2012) and artificial intelligence programs (Luxton, 2014). Overall, the use of these technologies does show promise, often most effectively when used by skilled clinicians who can supplement them with human connection and flexibility.

One emerging area is the use of virtual technologies as a tool for or adjunct to talking therapy. Programs such as the Second Life virtual world offer opportunities for replicating therapy settings remotely (Rehm et al., 2016) although not without their own practical and ethical challenges (Quackenbush & Krasner, 2012). The use of virtual reality as a tool for interventions such as voice dialoguing, exposure therapy, social skills training, and so on has been found to be effective for various client groups, although not more so than other talking therapies (Fodor et al., 2018; Ghiţă & Gutiérrez-Maldonado, 2018; Gonçalves, Pedrozo, Coutinho, Figueira, & Ventura, 2012; Guillén, Baños, & Botella, 2018; Rus-Calafell, Garety, Sason, Craig, & Valmaggia, 2018).

Avatar-assisted therapy similarly represents people's experiences visually, but uses a screen interface rather than an immersive experience. AVATAR therapy, in which clients with auditory hallucinations represent their voices as avatars and practice interacting with them in more assertive ways, has been found to reduce the severity of auditory hallucinations (Rus-Calafell et al., 2018), and evidence from one single-blind randomised controlled trial suggests that it may offer similar but more rapid, sustained improvements when compared with supportive counselling (Craig et al., 2018). Using avatars as part of face-to-face therapies has been reported to help with emotion recognition and emotional expression and may offer the benefits of reduction of communication

barriers; exploration of client identity through embodiment in an avatar; and manipulation and control of treatment stimuli (Rehm et al., 2016).

1.2 ProReal

ProReal (www.proreal.world) was designed as a therapeutic tool for counselling and coaching. It offers clients a virtual space to represent their experiences in either a blank or narrative-based landscape with several features such as cliff-edges, crossroads and fortresses. Users can set avatars to different sizes, colours and postures, assign them emotions, thoughts and/or inner voices. Other objects are available (e.g. clocks, ticking time bombs, bridges) to help clients illustrate their inner world. The landscape is interactive, and can be viewed from any avatar's perspective, or from a broader 'roaming' view. Some examples from the software are shown in Figure 1. Therapists are encouraged to let clients take the lead in building their narrative worlds, and to be alongside rather than leading the session while using the software.

Evidence supports the use of ProReal as an adjunct to talking therapy in a variety of settings. In two case studies in a child and adolescent mental health service, reliable changes were found in depression scores after using ProReal, and idiosyncratic outcomes such as reduced number of suicidal thoughts and PTSD flashbacks were noted (Falconer, Davies, Grist, & Stallard, 2019). Both clients were described as uncommunicative before therapy, and in interviews afterwards reported feeling better able to express themselves and communicate with their therapist without having to talk. Findings were similar in a school counselling setting with 29 pupils (van Rijn, Cooper, & Chryssafidou, 2018). Interviews suggested that change was achieved through developing insight and understanding about their difficulties; facilitating understanding for the counsellor, so they could better help the young person; expressing and regulating emotions; increased self-acceptance and confidence; making changes outside of sessions and monitoring these within the software; and the therapeutic relationship. In adult settings, significant changes in outcome measures have not been

demonstrated (Falconer et al., 2017; van Rijn, Cooper, Jackson, & Wild, 2017), but qualitative findings suggest an overall positive response from clients. Participants described finding the system more powerful and impactful than non-avatar-based sessions (Falconer et al., 2017). There is some evidence that ProReal may accelerate change rather than improving outcomes overall. An analysis by Oxford Health NHS Foundation Trust estimated that this could save £20,000 per year of clinicians' time by reducing number of sessions needed to complete therapy (Janowska, 2019).

Figure 1 Images from ProReal virtual world software

1.3 Service Context

This Service Evaluation Project (SEP) was commissioned by Dr Anita Brewin, clinical lead for the Early Intervention in Psychosis (EIP) and Community Mental Health Psychological Therapies (CMHpS) services in Bradford and District Care NHS Trust (BDCT). EIP works with people 14-65 years old who may be experiencing mental health issues for the first time, particularly people having unusual experiences typically associated with the onset of psychosis. They offer support for up to three years

including psychological therapies, medical interventions, family support and wider support for activities and daily living. CMHpS is part of the community mental health team for adults with severe and enduring mental health problems. Psychological therapists in both teams take referrals from within their respective services.

The focus for this SEP was the introduction and integration of the ProReal system into BDCT. Seven psychological therapists (2 from CMHpS, 2 from EIP, 1 who works across both teams, and 2 from other teams within the Trust) were trained to use the system as part of the therapy they offer to clients. The evaluation followed them through their first year with access to the system.

1.4 Aims

- To understand how therapists incorporate ProReal into their clinical work
- To assess the clinical utility of the ProReal system in BDCT
- To identify areas for further research

2. Methods

The evaluation was conducted between November 2018 and October 2019. Quantitative information capturing therapists' decision-making and their and clients' experience of the system's usability and impact was collected using pre- and post-therapy questionnaires. Qualitative information about their experiences was also collected at the end of the post-therapy questionnaire, and was supplemented with a focus group of therapists who had been using the system. Ethical approval for the evaluation was granted by the University of Leeds School of Medicine Research Ethics Committee (SoMREC; reference DClinREC 18-02).

2.1 Questionnaires

2.1.1 Participants

All therapists trained in the system were invited to take part. They were asked to invite all clients with whom they used avatar-assisted therapy to take part.

2.1.2 Materials

The pre-therapy questionnaire was completed by therapists for each client with whom they had used the system. It asked for demographic information, details of the presenting problem(s) and therapy model(s) used. Finally, therapists were asked to select factors which were involved in their decision to offer avatar-assisted therapy to this client, from a list of 8 options and a space to add 'other' reasons. The options were developed through discussion with the SEP commissioners at the start of the study period, based on reasons they were anticipating might be relevant in choosing who to offer the new system to.

The post-therapy questionnaire was completed by therapists and clients. This consisted of a measure of 'usability', which both completed, and a measure of 'impact', which clients completed. These were adapted from the virtual and augmented reality (Manzoni et al., 2015) adaptation to the Working Alliance Inventory (Horvath & Greenberg, 1989) to fit with the ProReal software. Space was also given for unstructured feedback on their thoughts and feelings about using the ProReal system. See Appendix 1 for the full content of both questionnaires.

Therapists were also asked to keep a log with each client of their sessions, noting when and for how long the avatar system was used.

2.1.3 Procedure

The lead researcher offered a meeting with all therapists trained in the system to introduce the evaluation, take their consent to take part, and explain the measures used. This was followed up with monthly emails to check progress and request any questionnaires. Therapists completed the pre-therapy questionnaire at the start of their use of avatar-assisted therapy with each client. At the end of their therapy, or at the end of the study period if therapy was on-going, therapists completed the post-therapy questionnaire. At this point, they also introduced the study to their client and invited them to take part. If clients consented, they also completed a post-therapy questionnaire. Anonymised questionnaires were submitted by email or post to the lead researcher. The SEP commissioner confirmed sight of all client consent forms, which were stored in clients' notes within the service.

2.1.4 Analysis

As the sample size was anticipated to be small, the study lacked power for significance testing results. Data are therefore presented descriptively, using percentages or averages where appropriate.

2.2 Focus Group

2.2.1 Participants

All therapists trained in the system were invited to take part in the focus group.

2.2.2 Materials

The focus group was semi-structured and based around four topics:

1. How useful has the system been for you clinically, and why?
2. What was your experience of integrating the system into your clinical work?
3. How have you found it using the system in this Trust, from a technological and/or logistical viewpoint?
4. What has been your experience of support, guidance and supervision in relation to using the system?

2.2.3 Procedure

Therapists were invited by email to the focus group. Upon arrival they were provided with an information sheet and signed a consent form to take part. The focus group was audio-recorded, and a Leeds DClinPsy trainee was present to take notes in-vivo. The four topic questions were presented

one at a time. Participants were encouraged to discuss the questions amongst themselves, with additional questions from the facilitator where appropriate. All participants were assigned a pseudonym.

2.2.4 Analysis

The focus group data was analysed using Thematic Analysis (TA, Braun & Clarke, 2006). The lead researcher listened to the audio tape first to familiarise herself with the data, and then a second time in conjunction with the notes from the focus group to generate initial codes. These codes were searched for emerging themes, which were then reviewed by checking their fidelity to the original data and their overall coherence as a thematic framework. After several iterations, a final thematic map was arrived at. The themes were reviewed by another DClinPsy trainee who was shown two draft versions of the thematic framework and asked to comment on which they felt best fit the participants' responses. The main difference was the conceptualisation of 'safety' as integrated into the other themes or a separate theme in itself. After discussion, both the author and fellow trainee felt that safety was one of the most important themes and so should be presented as a main theme. The report was also sent to the SEP commissioner, who was satisfied that the thematic framework represented the focus group discussion well.

2.2.4.1 Reflexivity

I was drawn to this SEP because I am interested in the ways that developing technology can assist and enhance clinical work. I have wondered whether new technologies add sufficient value to existing clinical practice, or whether they can become more like gimmicks, bearing in mind that it is generally core clinical skills and relationship-building which have the biggest impact on therapy (Wampold, 2015), rather than the methods by which it is delivered. I was interested to see if the results of this evaluation would help me answer those questions one way or another.

Conversations I had throughout the course of the evaluation inevitably shaped my understanding of how people were finding it. Each therapist gave informal feedback when I met with them to take consent, and these conversations were the reason the focus group was added to the methodology: people's experiences were not fully captured by the existing questionnaires. I also spoke to the creators of the ProReal virtual world, who shared previous research and service evaluations. Again, these conversations influenced what I expected to find as themes within the focus group, and I made efforts to balance creating space to explore these ideas and not trying to steer the conversation too much.

3. Results

3.1 Survey Data

3.1.1 Sample Demographics

Four therapists and 18 clients provided data for the survey, giving a total of 35 questionnaires: 17 start-of-therapy forms, 9 therapist end-of-therapy forms, and 9 client end-of-therapy forms. The three therapists who did not return surveys reported they had not been able to use ProReal enough with any clients to complete the questionnaires. Demographic data for clients is presented in Table 1.

Usage data was provided by 3 therapists for 12 clients, and shows that the avatar system was used in an average of 78.6% of sessions per client (SD 35.3). For 8 of the clients the system was used in every session. The average amount of each session dedicated to using the system was 59.1% (SD 12.4).

Table 1 Client sample characteristics

Average Age	33.5 (SD 11.2)
Gender	58.8% female 41.2% male
Ethnicity (as entered by therapists)	88.2% White British 5.9% British Asian 5.9% BME/British
Sexual Orientation	64.7% heterosexual 5.9% lesbian

	29.4% unknown
Education level	11.8% GCSE 11.8% A-Level/Higher 29.4% Degree 47.1% Unknown

3.1.2 Start-of-Therapy Questionnaire

Figure 1 shows a summary of the start-of-therapy data. Presenting problems listed under 'other' were physical health problems (n=2), Autism (n=1), ADHD (n=1), cognitive problems (n=1), grief/loss (n=1) and At Risk Mental State (n=1). The most common reason given for choosing to use avatar-assisted therapy was to allow a 'distancing' which therapists hoped would help their clients see and reflect on their experiences. Least important to therapists was clients' age and/or interest in digital technology. Reasons given by therapists under 'other' related to: clients having difficulty communicating verbally (n=2), fit with therapy model (n=2), the use of multisensory inputs for ADHD (n=1), and a wish to enhance understanding and retention through visual representation (n=1).

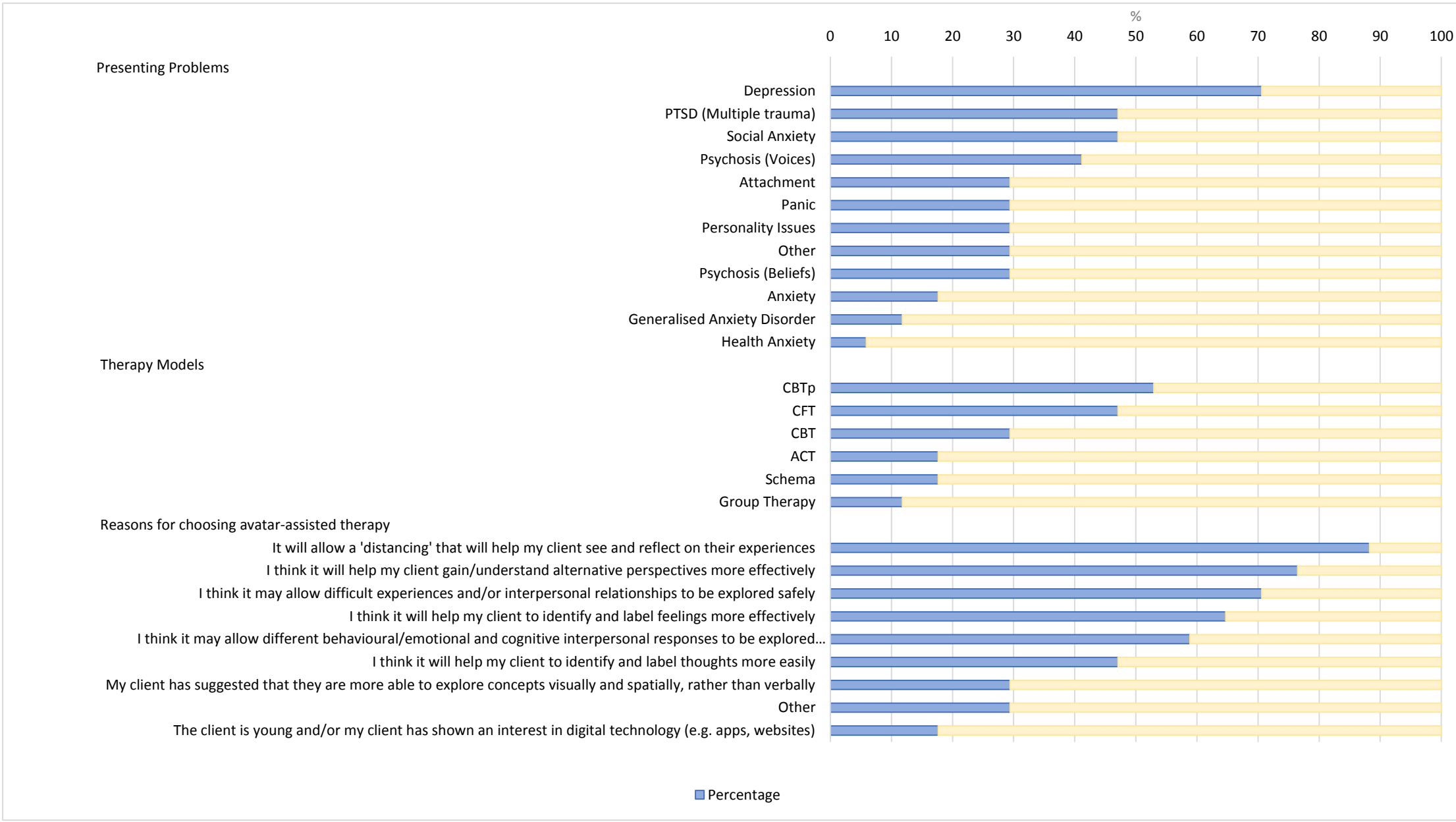

Figure 2 Summary of pre-therapy questionnaire responses

3.1.3 End of Therapy Questionnaire

Out of a possible 55 points for usability, clients rated the system 45.6 on average (SD 7.1). For therapists, this was 41.2 (SD 2.9). Clients rated the impact of using the system on their therapy as lower: 32.4 (SD 15.3) out of a possible 60. Average ratings for each question are depicted in Figure 2. Therapists rated all usability questions slightly lower than clients except those relating to how well the system fit into their therapy practice, and options available if the technology failed, for which therapists tended to offer a more optimistic view. In terms of impact on the therapy, the most highly rated question was that the avatar therapy allowed clients to get things wrong. The lowest rated items concerned trusting the system and feeling that it was on their side.

Seven clients provided unstructured feedback. Two described limitations of the system (such as a lack of options available, especially for positive emotions). One client had not found the system helpful at all and felt talking was more important in therapy. Two clients had found it helpful when they had found it hard to communicate verbally. Three described benefits relating to accessing, understanding and dealing with multiple thoughts and emotions. One client liked that they could take an outsider perspective, which made it easier to know how to help themselves.

One therapist provided unstructured feedback, relating to three clients. This feedback was compared with the results of the focus group to check for new themes, but none emerged. Therefore this feedback was incorporated into the thematic analysis, described next.

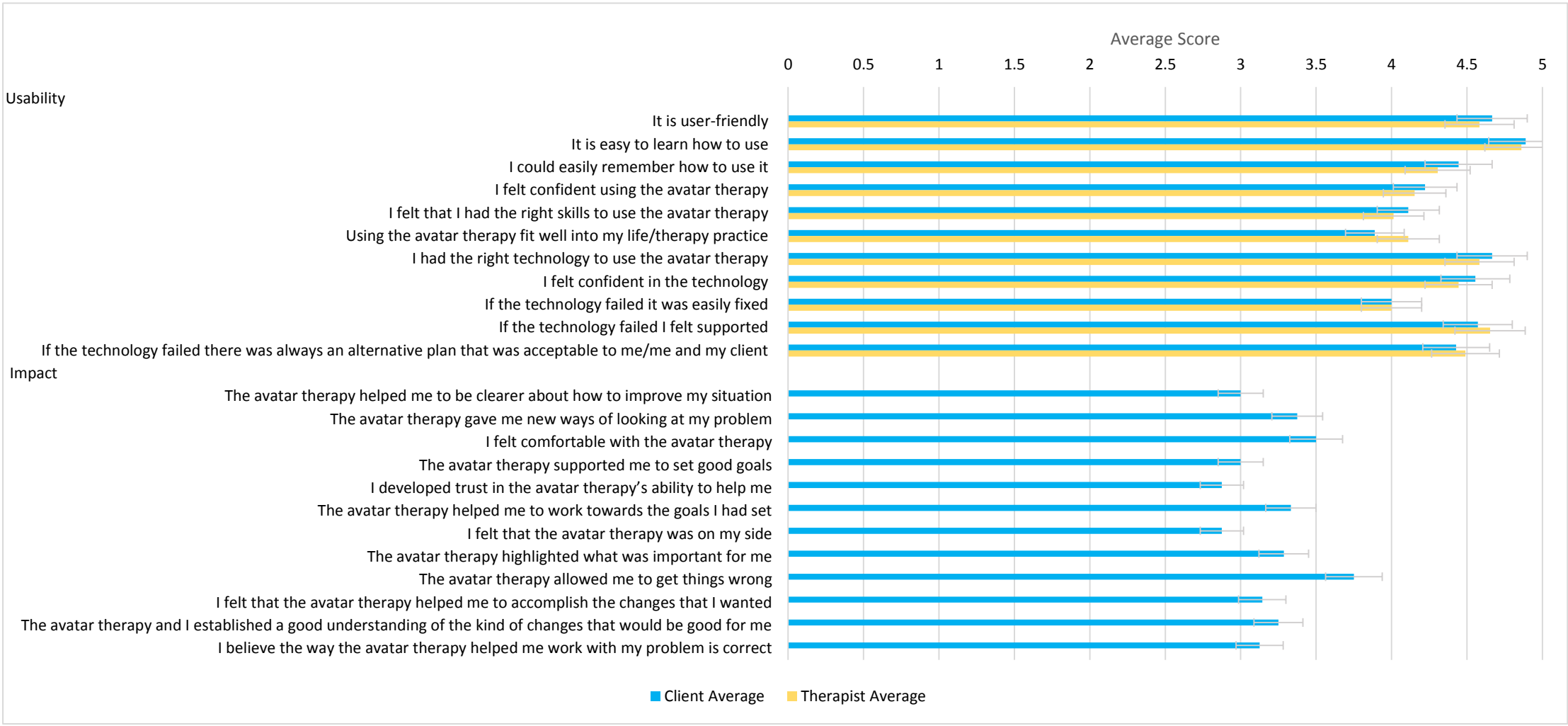

Figure 3 Therapist and client ratings of usability and impact

3.2 Focus Group

Four therapists attended the focus group. The discussion lasted just over one hour. Figure 3 outlines the thematic map. Each theme is described in more detail below, with summaries and selected quotes presented in Table 2.

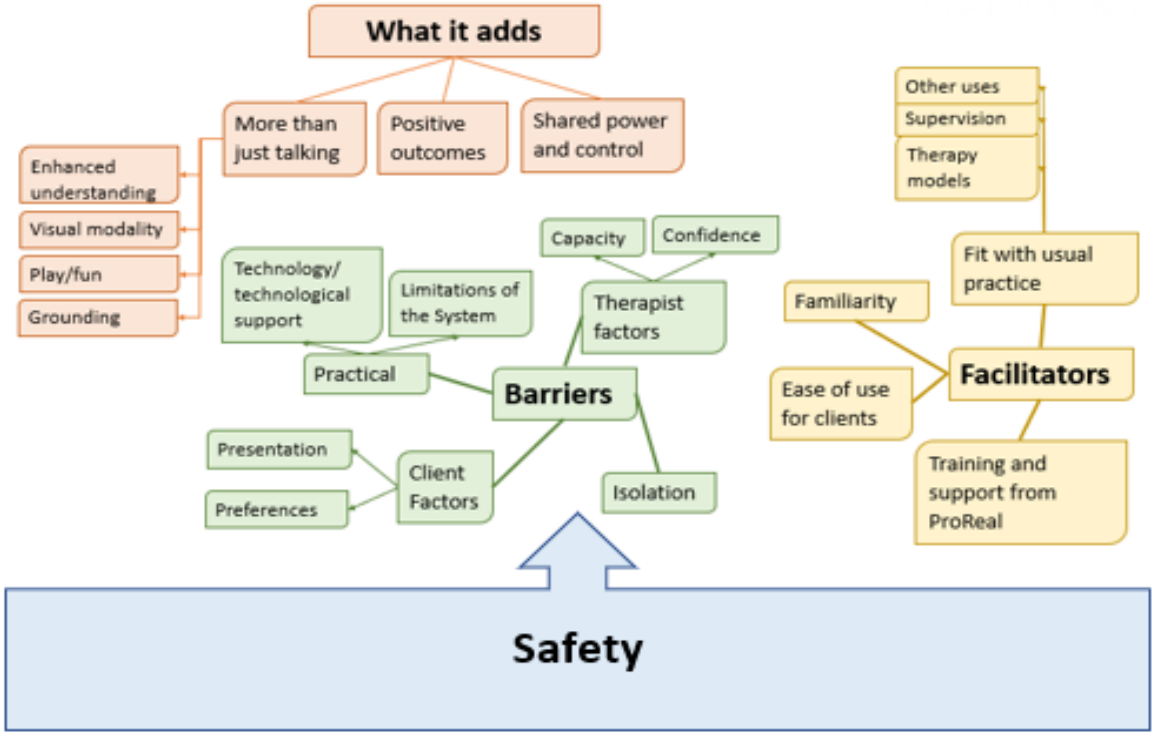

Figure 4 Thematic Map

3.2.1 Theme 1: What it adds

More than just talking

The added benefits of using ProReal included enhanced understanding of situations for clients and therapists, and the ability to easily explore links, both between different parts of clients' experience and across time. Clients who had been unable to talk about their experiences, because of intense auditory hallucinations or severe trauma histories, were able to express themselves in ways they had not been able to previously. The only downside noted was that for a minority of clients, the enhanced insights were too powerful or overwhelming. In these cases, clients tended to choose to

move away from using the system for a while, but were not reported to have ended therapy or suffered adverse effects.

Having the visual modality alongside the verbal information they would ordinarily receive during therapy helped therapists and their clients to make sense of situations and remember formulations and understandings better. Jim talked about the ability to play within the ProReal landscape, and the possibilities this created for imagination and creativity.

Using the system together made both therapists and clients talk less, and this quietness felt containing and created reflective space. Using ProReal also provided an object for clients and therapists to focus on together, which reduced the intensity of sitting across from one another, making eye contact, and talking about difficult experiences.

Positive Outcomes

As well as accelerated outcomes, individually significant outcomes such as being able to talk more and accessing their emotions between sessions were noted.

Power and Control

Using ProReal had meant therapists had to share power with clients, who took ownership of creating their worlds. Clients were also in control over whether and how much they used the system. For some, this meant not using it at all, and for others it meant the ability to choose session-by-session whether they felt it would be useful that day. ProReal also offered clients the opportunity to choose whether to save or delete their world after they had finished with it, which felt symbolically important.

As the system is currently used on therapists' computers in clinic sessions, it is therapists who hold overall control over bringing it to sessions and holding the worlds. Caroline talked about trying to set up facilities for remote working within the system, which would then mean clients were able to keep the worlds for themselves.

3.2.2. Theme 2: Barriers

Practical

Limitations inherent in the system included a glitch whereby adding too many characters into an avatar's text box would cause the program to crash, and therapists only being able to save up to 20 worlds at a time, with no facility to archive old worlds. The options available for each avatar also felt restrictive. However, Caroline noted that her clients had been able to tolerate this frustration and had always "plumped for" one of the options in the end, with no ill-effect on the therapy.

Technological issues included laptops becoming very hot, ProReal crashing or glitching, things not being saved, accidentally deleting worlds and not being able to recover them, and the program running slowly and draining battery power. Some people's software had begun to crash and was no longer working at all. All of the therapists noted a lack of capacity and ability from their IT service to support them with issues relating to ProReal, despite offers from the developers to link in with BDCT IT directly.

The therapists also noted difficulties with the technology they have available to use the system on – mostly laptops – such as screens being too small or susceptible to glare on sunny days, finding it difficult to manoeuvre on a laptop touchpad, and having to pass a laptop around to use the system in a group setting. This reflects the limitations of using ProReal in a real-world NHS service where funds are not necessarily available to provide the best equipment.

Table 2 Summary of themes

Theme/Subtheme	Description	Quotations
Theme 1: What it adds		
More than just talking Enhanced understanding Visual modality Play/fun Grounding	Using the avatar system provided an experience for therapists and clients that would not have been possible through talking therapy alone.	*Andrea: "there's definitely something there about new insights; the subtleties that I don't think I would have appreciated if we'd just been talking"* *Jim: "so, the story I was forming, then they kind of … the location, the size, the colours, it's added things that I'd not quite appreciated"* *Andrea: "although I hadn't really thought about that, I'd much more thought about the difference it made to the client, I think having that visual representation – because I'm quite visual – really made a lot more sense to me as well"*

		Caroline: "when we talk in therapy, it's like fighting fire with fire because the voices are constantly competing, so it's very much easier for her to work: it's quiet, she takes the screen to herself, she feels relaxed and she expresses without words going around in the room"
Positive Outcomes	Using ProReal sped up insights and outcomes, and offered individual, idiosyncratic outcomes.	Therapist feedback from questionnaire: "*The client made more progress in my opinion in the last 6 months of our work than he had in the preceding 10 years of contact with services. His self-esteem grew, as did his independence and he has now tolerated discharge from services without a deterioration in his mental state."* *Caroline: "she's more able to talk now"*
Power and Control	Using the system necessitated sharing power and control with clients, although therapists	*Caroline: "the moment she took that control was like: 'high five!' because we were working on her taking back control and power in her relationship with the voice"*

	held the overall control through gatekeeping access to the software.	*Andrea: "So if you've got it with you, the client can kind of say, "actually I don't want to use it" or "that's not what I want to talk about", and that has happened, whereas I think when I've got waylaid, I've forgotten to bring it back in, so it's felt like the power has been with me, about remembering to use it."*
Theme 2: Barriers		
Practical Limitations of the system Technology/technological support	Some of the options offered within ProReal did not fully represent clients' experiences. The therapists had had a lot of technical issues with using the software and did not feel their IT service were familiar enough with ProReal to be able to support them fully.	*Andrea: "some of the fields are a bit limited, so I felt like everyone I saw was slightly squeezing in their experience into the descriptions of the emoticons and the postures … it would be really nice if you could manoeuvre them into a position the person actually wanted to be in, even if they didn't have a word what that meant"* *Jim: "it was particularly trying to represent complex emotions that people were having, that you couldn't easily do with the emoticons or the posture choices."*

		Caroline: "not really having a go-to person in IT has been difficult" *Sharon: "it was quite hard, technologically, somehow. There were a few glitches, or it was quite slow, or there was the time it was uninstalled. I think if you're under-confident with technology, like I am, you don't know whether it's you or it"*
Therapist Factors Capacity Confidence	Busy therapists had to remember to bring, set up and offer the system, which was not always easy. Their own personal ability to tolerate uncertainty played a role in when they offered clients use of the system.	*Andrea: "having thought about it before and having things with me – cause I'm never in the same space, it's not like I'm ever in a room with a desktop, I have to remember to take it with me into various rooms and get it out and make sure it's got the plug"* *Caroline: "the uncertainty of using is has been … when I've been needing to hold on, and just make sure that I'm going to do a good job clinically, it's been safer, on those days, not to use it, unless it's been really part of what we've been doing."*

Client Factors Presentation preferences	Clients sometimes presented with immediate concerns or crises, meaning the avatar-assisted therapy did not feel like a priority. Some clients preferred not to use ProReal at all.	*Sharon: "people kept kind of wrong-footing me, like I'd plan it, then they'd arrive and want to talk about something completely different that I couldn't see how that would fit, or they'd be in quite a lot of distress, or there'd be some kind of matter arising … suddenly what I'd planned would go out the window"* *Sharon: "it would feel perhaps a little bit frivolous, if they were going, "I haven't eaten, cause I'm in crisis""* *Caroline: "other people who said no have said, "I want to talk to you" … they felt it would impinge on that time that we had to talk"* *Andrea: "there was something about him not wanting me to see that world, because then he can be more selective of what he tells me about that world, because some things he needed to keep private and confidential"*

Isolation	The therapists had not experienced any shared learning or peer support opportunities since their initial ProReal training.	*Andrea: "we've kind of been off using it in isolation, haven't we?"* *Caroline: "the shared learning feels really important, actually, because otherwise we're all inventing the wheel when other people already have."*
Theme 3: Facilitators		
Fit with Usual Practice Therapy Models Supervision Other Uses	Using the system fit into the therapists' usual ways of working clinically, and they had found it fit with other ways of working, such as with staff groups.	*Andrea: "a lot of what we're doing is: 'how do we relate to ourselves and to other people' so I'm finding it hard to imagine an approach where it wouldn't work"* *Caroline: "it's therapy work, so I've definitely had clinical supervision as I would normally, with anything, in the same way"*
Training and Support from ProReal	All had had positive experiences of the ProReal training and development team, including on-	*Sharon: "the two guys were absolutely lovely and they would have bent over backwards to help you, and they could see that I*

	going support and a perception of genuine warmth and investment in clinical outcomes.	*was struggling a bit technologically and they would have done anything to alleviate that."* *Caroline: "it feels like they're genuinely invested in good outcomes for clients, and for therapists as well. I've felt very looked after and I feel like they want to look after my clients as well."*
Ease of Use for Clients	Clients had found the system easy and enjoyable to use.	*Andrea: "my clients have been great at using it where I've struggled to know how to zoom and rotate and things*
Familiarity	Using ProReal more often and seeing clients benefit from it enhanced confidence in using it more often.	*Andrea: "I think an extension of that for me is that because the people I have used it with have really loved it, that's given me more confidence in using it; to feel that it's a bit of a worthwhile endeavour. So I think that's probably carried me through, that kind of sense of me being uncomfortable with it, and you only really get that from doing it."*

		Caroline: "I'm accruing really good experiences of working with people on it and developing that sense of confidence in how it goes."
Theme 4: Safety		
	As a new way of working, it had been important to establish ProReal as something which was safe for clients and therapists. This theme was pertinent to all other themes.	*Caroline: "there's always been a Plan B"* *Caroline: "with people who are finding things really rocky, if things are changing a lot … it's felt like not the right thing to say"* *Sharon: "every time I thought about using it I felt a bit of a resi – I didn't really want to. I didn't feel safe enough or like I had the reflective space to do that or something"* *Sharon: "it's something about safety and space to be reflective, and also having space to not have to be really competent. And I don't think of myself as one of those therapists who's very agenda-driven and has to be really, sort of, competent, and I*

	like it to be collaborative and so on, but I think for me it was perhaps taking it maybe a little bit too far that way and I felt a bit unseated by it."

Therapist Factors

It had been challenging to integrate ProReal use into regular practice as agile workers with clinics in different locations. Needing to remember to plan to use it, bring all required equipment and set it up ahead of a session meant that on busy days, therapist were less likely to use the system. Jim, who had a fixed clinic room in which ProReal was installed on the desktop computer, had found it much easier to offer it regularly.

Using the system introduced a layer of uncertainty into a session, both in terms of whether the system would work, and what it would introduce clinically. Therapists' own emotional needs were important here, and those who had experienced difficulties in their personal lives recently identified this as having an effect on their ability to tolerate the uncertainty of using ProReal.

Client Factors

All therapists in this evaluation work with high levels of risk. Where clients had fallen into crisis, had hospital admissions, or were experiencing situations outside of therapy that were highly distressing or destabilising, therapists had felt that offering avatar-assisted therapy was not a priority and had chosen instead to focus on more immediate concerns.

Some clients had chosen not to use the system at all. This could be surprising and/or frustrating for therapists. However, clients' wishes were always respected, and in some cases their reasons for not wanting to use the system helped their therapists to understand them better.

Isolation

Since completing the training, the 7 therapists had not met up or formally discussed using the system. All members of the focus group agreed that it had been helpful to talk and that shared

learning would enhance their experience using the system. They felt that lack of time and availability were significant barriers to meeting up as a group, especially as they were mostly working in separate areas, but did suggest solutions to this, such as using video-calling and having a protocol formalising the need to attend group meetings.

3.2.3 Theme 3: Facilitators

Fit with Usual Practice

All of the therapists agreed that ProReal fit well into the therapy models they were using, including voice-hearing work, Acceptance and Commitment Therapy, Cognitive Behavioural Therapy for psychosis, Compassion-Focused Therapy, schema therapy, and mindfulness.

They also noted that talking about the system in supervision did not pose any additional challenges, even when the supervisors themselves were not ProReal users.

Some of the group had also used ProReal in other settings, such as group supervision and service development meetings, and found it very useful. They also reflected on other potential uses, such as remote working or weaving ProReal into their existing assessment and formulation models.

Training and Support from ProReal

The group felt the training had been helpful, including the assessment at the end which they had not expected, but which had enabled them to practice using the system. They also felt that the developers were genuine and human, including sharing their own vulnerabilities as part of the training, and that they were invested in ProReal as something which could make things better for its users, rather than just a product to make money from.

Ease of Use for Clients

The therapists noted that their clients had tended to find ProReal easy to use. This had helped them feel more confident in offering it, especially when they were not very technologically-minded themselves.

Familiarity

The therapists who had used the system more often reported feeling more confident using it: they had been convinced of its utility and their own ability to use it well through positive experiences with a number of different clients. This was contrasted with Sharon, who had only been able to use the system with one person and had, for various reasons, not been using it since, and therefore felt more apprehensive about reintroducing it into her clinical repertoire.

3.2.4 Theme 4: Safety

The theme of safety ran through all the participants' experiences with ProReal, and is implicated in the previous three themes. As something which was new to all of them, there had been a process of learning to trust that the system would be safe for themselves and their clients. This includes trusting the software to be reliable, and feeling that ProReal does actually benefit and does not harm clients or their experience of therapy (see Theme 1). When clients found the insights offered by their use of the system too powerful, therapists re-established safety by moving away from using the system. There was also a sense that other client concerns took precedence over using ProReal, for example when clients were in crisis, suggesting that using it only felt safe when clients were stable and calm. Despite this, therapists had talked about using the system being grounding and feeling safe within sessions, and Andrea discussed using ProReal with one client to talk about risk management. This implies that using the system may have potential for helping clients manage

periods of heightened distress, but there is a barrier to offering it in such situations – perhaps related to it feeling “frivolous”, as Sharon said.

Safety for therapists was also important, as noted in Theme 2. Using ProReal involves sharing power and control in sessions in a way which was new for the therapists, and when their own emotional resilience was not as strong, this could feel threatening. This was the case even though the therapists felt they tended to work collaboratively and share power where possible in general. Therefore, there was something about ProReal that created additional uncertainty and feelings of unsafety. Part of this may relate to it being new and unfamiliar, and as noted in Theme 3, more frequent use of the system helped therapists to feel safer using it; therefore, not using it maintained feelings of unsafety.

4. Discussion

4.1 Findings

The overall experience of using ProReal in BDCT had been positive. The most common factors in therapists' decisions to offer use of the system to clients (hopes that it would allow distancing from problems and understanding different perspectives) appeared to be fulfilled in their experiences of using it. Clients and therapists rated its usability and impact positively on average, and therapists identified a number of ways it had added to their and their clients' experience in therapy. The benefits identified were similar to those reported in previous evaluations of the software, such as enhanced communication, insight, and an ability to explore different perspectives on a problem (Falconer et al., 2017; van Rijn et al., 2017). Enhanced ability to share power and control was also an important benefit for the therapists in this sample, which had not emerged as a theme in previously published studies which interviewed clients.

The other benefit reported by the therapists was a sense that using ProReal accelerated outcomes and enabled outcomes which had not been possible through traditional talking therapy, such as a client being able to talk more. Of particular note is one therapist's description of a client who had been using their services for a number of years with little change, who was able to be discharged after a course of avatar-assisted therapy. The responses of the therapists in this study suggest that the system may be particularly useful for clients who struggle to engage with talking therapy because of difficulties communicating or expressing themselves. Examples of this were generally uncommunicative clients, those whose auditory hallucinations were too powerful to talk over, and those with significant trauma histories. These therapist reports correspond to previous evidence that avatar-assisted therapy may achieve change faster than talking therapy alone (Rus-Calafell et al., 2018), and is worth exploring further in the context of the large potential financial savings this could create for the Trust without compromising service or client safety (Janowska, 2019). This fits with Bradford's mental health strategy 2016-2021, which sets out a "vision for developments in the use

of technology and data as a way to improve access to care, make services safer, transform services to reduce variability and ensure services are value for money" (Hinchcliffe et al., 2016, p. 64). BDCT is also on the verge of piloting the use of ProReal in remote working with clients, which could confer a further advantage of improving access to care for those who are not able to engage with psychological services in more traditional ways.

Feeling safe was the most important factor in whether or not therapists felt able to use the system. It is likely that this is in part because it was new and unfamiliar, and indeed the therapists did report feeling safer using the system as they became more familiar with it. Clients also rated their trust in the system as lower than other items on the impact scale (feeling that the avatar therapy was on their side and trusting its ability to help them). This might relate to the interaction between client, therapist and computer program within the therapy, and highlight the importance of a strong therapeutic relationship alongside use of the system, similarly to when other computerised interventions are used (Richards & Richardson, 2012). As digital technologies attempt to become more integrated into talking therapies, these relationships will need to be explored in more detail, to understand how both clients and therapists relate to a new object in the therapeutic space and maintain their safety within the therapeutic relationship.

4.2 Limitations

While a small sample size was expected, this was further impacted by therapists finding it difficult to integrate ProReal into their practice. Four of the therapists had only used the system with one client by the end of the evaluation, and some had not been able to complete the end-of-training assessment due to this. Nonetheless, collection of routine outcome measures would have provided useful data relating to change and could have been analysed using single case series methodology, as has been the case in previous evaluations (Falconer et al., 2019; van Rijn et al., 2017).

All therapists were invited to the focus group, including the project lead for implementing ProReal in BDCT. The three therapists who did not attend the focus group had been unable to integrate regular

use of ProReal into their practice, and three of the four therapists who did attend were the most regular users of the system and had a strongly positive view of it. It is possible that these two factors could have made it more difficult to express a divergent viewpoint within the group. As a facilitator, I was aware of this and deliberately asked questions to make space for talking about the challenges or less helpful aspects of using ProReal, and the group did reflect on these. All therapists contributed to the discussion and offered supportive responses to participants discussing difficulties. However, it is not possible to know what is not said, and perhaps if the remaining three therapists had been able to attend, the discussion would have taken a different tone and led to a different set of themes and recommendations.

4.3 Recommendations

A majority of therapists in this sample had struggled to use ProReal regularly in their clinical work, despite overall positive views of its utility. This means the investment which has been made in purchasing the software and training therapists is not currently achieving the best return. Based on the results of the evaluation, recommendations are given in Table 3 to improve integration of ProReal into therapeutic work in BDCT. Suggestions for future research are also provided.

Table 3 Recommendations

For the service
• **Improve links with IT** BDCT IT services require training and support to manage technical issues with the system. It is my understanding that ProReal have offered to provide this, and so it is important that this is facilitated. Up-skilling a particular member of IT services as the 'link' with ProReal would likely improve communication and efficiency for all parties involved.

- **Introduce peer support**

  A system of on-going peer support and monitoring of this should be implemented to reduce therapists' feelings of isolation in either using or struggling to use the system. The focus group offered several suggestions for this, such as a requirement for the number of times each person must attend and options for facilitating accessibility, such as using videoconferencing to attend if it is not possible to be there in person.

- **Supervision**

  Further to this, specific supervision for those who are struggling with the system (for individual rather than technical reasons) should be encouraged to access specific supervision, as has been offered by ProReal.

- **Screening and referrals**

  Given the indicated benefits of ProReal for clients who typically find it hard to engage in therapy, the service might consider developing screening criteria to identify those for whom it might be a useful tool, and a system for ensuring they are offered it even if not currently seeing a therapist trained in ProReal.

- **Use of dedicated clinics**

  In support of the above recommendation, and to facilitate consistency of use, therapists might consider introducing a regular ProReal clinic, in which use of the system is always available should client wish to access it in any given session.

- **Contracting**

  Consideration should be given to how use of ProReal is contracted with clients. A checklist from ProReal is available (see Appendix 2); however this is concerned with mostly practical issues. Therapists may wish to consider formalising how they contract regular use of the system with clients (e.g. whether clients would like to be offered it during crises).

For future research
• **Treatment length** Clinicians report anecdotally that using ProReal accelerated outcomes, including for clients who had found it difficult to make change previously. A formal evaluation comparing treatment length between avatar-assisted and typical therapy would enable full cost-saving analyses.
• **Individual therapist factors** Previous research has followed clients through their use of the system, but little attention has been paid to therapists' journeys using ProReal. This evaluation indicated that personal factors such as confidence and emotional well-being were highly important in therapists' use of the system, and so future research might examine this more closely.
• **Remote working** It will be useful to evaluate the impact of BDCT's pilot using ProReal remotely. This would include qualitative understanding of the impact on therapy of remote working and how ProReal mediates this, as well as quantitative estimations of whether and how this service improves access for hard-to-reach groups.

4.4 Dissemination

- Poster and presentation at the University of Leeds SEP conference, October 2019
- Draft of report sent to commissioner in BDCT
- Poster and final report uploaded to University of Leeds Clinical Psychology Extranet
- Poster and final report provided to commissioner in BDCT for local dissemination

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Appendix 1: Pre- and Post-therapy Questionnaires

Pre-Therapy Questionnaire

Client demographics:

Age: Gender: Ethnicity:

Sexual orientation: Education level:

Therapist's rationale for offering avatar assisted therapy:

What approach to therapy are you using with this person (place a number if the list of possible interventions, 1=primary approach, 2 onwards = other approaches in order of primacy):

CBT, inc:		DBT	
ACT		EMDR	
CBTp		Family interventions	
CFT		IPT	
Mindfulness based CBT		Psychodynamic/analytically informed therapy	
Counselling		Other, please specify	

How would you describe the person's difficulties (tick all that apply):

Attachment		Anxiety, inc:	
Agoraphobia		GAD	
Health anxiety		Panic	
OCD		Social anxiety	
Depression		Personality issues	
Psychosis (voice hearing)		Psychosis (beliefs)	
PTSD (single trauma)		PTSD (multiple & historical trauma)	
Other, please specify			

Have you decided to offer avatar-assisted therapy to this client? ……

Has the client agreed to use avatar-assisted therapy? ……..

If yes, why did you decide to supplement this work with avatar platform (tick all that apply):

The client is young and/or my client has shown an interest in digital technology e.g. Apps, Websites.	
I think it will help my client gain/understand alternative perspectives more effectively.	
I think it will help my client to identify and label feelings more effectively.	
I think it will help my client to identify and label thoughts more easily.	
I think it may allow difficult experiences and/or interpersonal relationships to be explored safely.	
I think it may allow different behavioural/emotional and cognitive interpersonal responses to be explored safely.	
My client has suggested that they are more able to explore concepts visually and spatially, rather than verbally.	
It will allow a 'distancing' that will help my client see and reflect on their experiences.	
Other, specify all:	

Post-therapy Questionnaire

Please answer the following questions about your experience of using the ProReal system as part of this therapy.

a. **Usability:** (for therapists and clients to both complete separately)

Please indicate (circle) who is completing this questionnaire: Therapist Client

		Very Much	Somewhat	Undecided	Not Really	Not At All
1	It is user-friendly					
2	It is easy to learn how to use					
3	I could easily remember how to use it					
4	I felt confident using the avatar therapy					
5	I felt that I had the right skills to use the avatar therapy					
6	Using the avatar therapy fit well into my life/therapy practice					
7	I had the right technology to use the avatar therapy					
8	I felt confident in the technology					
9	If the technology failed it was easily fixed					
10	If the technology failed I felt supported					
11	If the technology failed there was always an alternative plan that was acceptable to me/me and my client					

b. **Impact** (for clients to complete)

		Seldom	Sometimes	Fairly Often	Very Often	Always
1	The avatar therapy helped me to be clearer about how to improve my situation.					
2	The avatar therapy gave me new ways of looking at my problem.					
3	I felt comfortable with the avatar therapy.					
4	The avatar therapy supported me to set good goals					
5	I developed trust in the avatar therapy's ability to help me.					
6	The avatar therapy helped me to work towards the goals I had set.					
7	I felt that the avatar therapy was on my side.					
8	The avatar therapy highlighted what was important for me.					
9	The avatar therapy allowed me to get things wrong.					
10	I felt that the avatar therapy helped me to accomplish the changes that I wanted.					
11	The avatar therapy and I established a good understanding of the kind of changes that would be good for me.					

12	I believe the way the avatar therapy helped me work with my problem is correct.					

Please use this space to describe your thoughts and feelings about using the ProReal system in your own words
[you do not need to disclose personal or private details about the content of your therapy]

Appendix 2: ProReal Checklist

ProReal Checklist

Make sure you ticked all the boxes before starting the session with your client.

_____ 10 minutes

Client's first use of ProReal:

Positioning	In person use	Remote use
The Client is clear on why to use ProReal and understands potential benefits		
Client is clear on data privacy/anonymity		
I have considered how I will help the Client's first use (navigation, warm up, etc)		

All uses of ProReal

Setting		
Both the Client and I have a quiet and confidential space to work in		

Technology		
I have the permission to create Local Worlds		
Both the Client and I are familiar with the device		
Device is powered up		
My access / password works		
Client UMS registration completed		
Online world set up in the UMS		
Client can access ProReal and password works		
Internet connection works		
Audio link and backup ready		
Headset ready		

1

Preparation		
I feel 'current' with ProReal : e.g. I am familiar with 'phases of work'		

Contracting		
Confidentiality		
Data privacy/anonymity		
Session access and deletion rights