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Mental health clients' perspectives on telehealth-based virtual reality therapy

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There is growing need for better mental health care. It is now possible to combine convenient telehealth with engaging virtual reality towards new opportunities for personalized mental health. The goal of this study was to understand mental health clients' perspectives on telehealth-based virtual reality therapy. We qualitatively analyzed 17, individual semi-structured interviews of mental health clients about experiences and reactions to exposure therapy over conventional telehealth, virtual reality in general, and telehealth-based virtual reality for mental healthcare. Clients were generally younger adults (M = 29.7 years), female (52.9%, 9/17), non-Hispanic White (88.2%, 15/17), and with varied income (M = $35,671; SD = $30,074; unemployed to $100,000). Clients enjoyed how telehealth made exposure therapy more accessible and comfortable, but could feel unmotivated due to lack of in-person accountability and presence. While none used VR for therapy, most tried VR with positive perceptions of it. All but one client believed telehealth-based VR exposure therapy would be useful, easy, and comfortable. However, many clients were unsure VR would feel realistic. Clients proposed tele-VR for art therapy, avatar-based therapy, and immersive games to build rapport with their therapist. Clients felt tele-VR should address specific needs, and their primary concerns were costs and insurance coverage of VR services. Overall, clients expressed excitement that VR can enhance engagement and personalization of telehealth, if costs are minimized and VR is simple to use. These results provide insights into client needs and suggest key directions to explore immersive telehealth solutions.

KEYWORDS

virtual reality, exposure therapy, telemental health (TMH), tele-VR, immersive telehealth, mental health patients

1 Introduction

Each year, nearly 1 in 4 American adults suffer from a mental health disorder, (NIMH, 2023) causing 5% of premature mortality and $5 trillion USD in healthcare costs (Arias et al., 2022; Vigo et al., 2022). Burdens are especially high for anxiety disorders (Piao et al., 2022) for which stigma can cause avoidance of care, worsening symptoms, and preventable deterioration of quality of life (Dubreucq et al., 2021). Telehealth-based mental healthcare (TMH) using email, text, chat, phone, and video calls has proven to be effective as in-person

care with greater convenience and accessibility, (Batastini et al., 2021; Snoswell et al., 2023; Lin et al., 2022; Connolly et al., 2024) and scales favorably with healthcare costs and environmental impacts (Zhao et al., 2020; Naslund et al., 2022; Peña et al., 2024). These benefits made TMH constitute 70% of all telehealth visits (Jain, 2024). However, some clients and therapists feel conventional TMH (e.g., email, phone, or video call) can limit communication, (Lipschitz et al., 2023) interfering with therapeutic alliance and outcomes (Lopez et al., 2019). There is a need to improve TMH to meet or exceed the experience of in-person care.

Virtual reality (VR) is appealing for mental healthcare due to its unique immersion, engagement, and controllability (Hilty et al., 2020). VR has been effective for serious mental health conditions including anxiety, (Oing and Prescott, 2018) social and specific phobia, (Freitas et al., 2021) and post-traumatic stress disorder (Deng et al., 2019). To date, VR services have required clients to travel to their therapist's office or use VR at home with the indirect or asynchronous presence of a therapist (Boeldt et al., 2019; Wray and Emery, 2022). VR-based mental healthcare may be more accessible, convenient, and effective if delivered via telehealth, (Navas-Medrano et al., 2023; Jallah et al., 2024; Amestoy Alonso et al., 2024) allowing therapists and clients to interact synchronously in a shared VR experience over the internet. To date, little but promising research has been conducted on the development and implementation of telehealth-based VR therapy (tele-VR) (Matsangidou et al., 2022; Deighan et al., 2023; Cikajlo et al., 2017; Pedram et al., 2020).

Direct involvement of end-users is critical to ensure development of effective healthcare solutions (Göttgens and Oertelt-Prigione, 2021). We previously interviewed practicing TMH therapists who were excited at the potential for tele-VR to make telehealth more interactive and personalized, and concerned over costs and clinical fit of VR for specific therapies (Ong et al., 2024a). Client preferences are especially important as their receptivity to therapy and VR are influenced heavily by personalized experiences (Pardini et al., 2022; Segawa et al., 2019; Lindner, 2021; Antoniou et al., 2024). The primary purpose of this study was to understand mental health clients' needs, wants, and concerns about using tele-VR for exposure therapy and other forms of immersive TMH. The secondary goal of this study was to compare clients' qualitative tele-VRET preferences with those of therapists from our previous research (Ong et al., 2024a; Ong et al., 2024b).

2 Methods

2.1 Study design

We conducted a qualitative study of U.S. mental health clients' perspectives on using tele-VR for immersive therapy, using semi-structured interviews and thematic analysis. We specifically examined the perspectives of mental health clients who had previously received exposure therapy via telehealth, in order to compare participants lived experiences with the emerging potential for tele-VR. The Institutional Review Board of the University of South Florida approved the study procedures as exempt human subjects research (IRB003548).

2.2 Participants and recruitment

Between February and April 2023, we invited participants via therapist referral, flyers, and Research Match if they (NIMH, 2023) were adults (18 years or older), (Arias et al., 2022) spoke English fluently, (Vigo et al., 2022) had previously received exposure therapy over telehealth, and (Piao et al., 2022) resided in the U.S. We compensated participants with a $75 eGift card upon completion of the interview. Participant recruitment continued until thematic saturation was achieved and additional interviews yielded no newer findings (Weller et al., 2018).

2.3 Procedures

Each participant joined the first author in a 1-h online video call using a secure version of Google Meet. The researcher used a five-part semi-structured interview guide from a previous study of therapists, (Ong et al., 2024a) modified to emphasize the client's perspective. The guide included sections for (NIMH, 2023) informed consent and demographics; (Arias et al., 2022) TMH for exposure therapy; (Vigo et al., 2022) experiences with VR; (Piao et al., 2022) a 1 min and 35 s video depicting tele-VRET (i.e., therapist and client meeting in a video call, transitioning to tele-VR, then conducting exposure therapy over tele-VR; Figure 1); and (Dubreucq et al., 2021) impressions, concerns, and wants for tele-VRET specifically and tele-VR generally (Supplementary Material). We emphasized that compensation was for completion of the interview only and their genuine opinions were important for this research.

2.4 Data analysis

The first author led the thematic analysis using an approach from our previous study with therapists, (Ong et al., 2024a) modified for the client perspective. Clients' perceptions of tele-VR features, overall benefits, and implementation concerns were emphasized particularly in analysis to compare with those of therapists from our previous studies. (30,35) Analysis of transcripts was conducted in MAXQDA 2022 to identify emergent themes related to exposure therapy over TMH, experiences with VR, and perspectives on tele-VRET. The researcher used meaningful phrases as the coding unit to explore repetitions, similarities and differences, cutting and sorting, and metacoding to identify and organize themes (Nowell et al., 2017; Bernard et al., 2016; Braun et al., 2012; Braun and Clarke, 2019). Emergent themes were organized by code frequency. Codes were consolidated into recurring higher-level themes and operationalized definitions across two iterations, upon which the second author reviewed the codebook. Discrepancies between the first and second authors' interpretations of the codebook were resolved through discussion until consensus to ensure consistency and accuracy in the qualitative method (Campbell et al., 2013; Raskind et al., 2019).

3 Results

3.1 Participants

The 17 clients were generally younger adults (M = 29.7 years, SD = 9.5, range 20–59), mostly females (52.9%, 9/17), mostly non-

FIGURE 1
Screenshots from the tele-VR demonstration video. Therapist and client exploring digital multimedia (left) and manipulating a 3D spider in VR (right).

TABLE 1 Client demographics.

Variable	M (SD), range
Age	29.7 (9.5), 20–59
Annual income	$35,671 ($30,074), 0–$100,000
	n (%)
Gender	
Female	9 (52.9%)
Male	8 (47.1%)
Other	0 (0%)
Ethnicity	
Non-Hispanic	15 (88.2%)
Hispanic	2 (11.8%)
Race	
White	15 (88.2%)
Black	1 (5.9%)
Asian	1 (5.9%)
American Indian	0 (0%)
Pacific Islander	0 (0%)
Multiracial	0 (0%)

Hispanic White (88.2%, 15/17), and with varied annual incomes (M = $35,671; SD = $30,074; range unemployed to $100,000) (Table 1).

3.2 Exposure therapy over TMH

Clients described ways telehealth facilitated exposure therapy, and some ways telehealth could make therapy feel incomplete. All clients (100%, 17/17) reported experiencing TMH in the form of video calls.

Most clients (64.7%, 11/17) stated TMH made exposure therapy easier to access, especially clients with few local specialists and clients who preferred to speak with their therapist while doing exposures in their daily life. Some clients (29.4%, 5/17) felt TMH made exposure therapy less stressful as they could engage with their feared situations from home, and their therapist seemed more efficient with telehealth.

A few clients (17.6%, 3/17) felt less engaged with exposure therapy over TMH due to a weaker sense of accountability. A few clients (17.6%, 3/17) encountered exposure-specific technical concerns such as unintuitive interfaces and perceptions of weak internet security. A few clients (11.8%, 2/17) also felt exposure therapy over TMH made it harder to build rapport with their remote therapist due to difficulty perceiving body language and nonverbal communication.

3.3 Prior experience with VR

All clients (100%, 17/17) defined VR as feeling immersed in another world through head-mounted displays. Most clients (9/17) had tried VR video games like Rec Room (https://recroom.com) and Beat Saber (https://beatsaber.com). Some clients (29.4%, 5/17) experienced VR at their friends' houses. Some clients (29.4%, 5/17) tried VR at a university library or computer lab. Two clients (11.8%, 2/17) personally owned VR for gaming. Four clients (23.5%, 4/17) had never tried VR. No clients used VR for mental healthcare, but some (35.3%, 6/17) heard about VR for exposure therapy on TV or news articles.

Most clients (76.5%, 13/17) had positive perceptions of VR as useful, fun, and improving over time. Some clients (35.3%, 6/17) had neutral perceptions of VR as helpful under certain conditions. Some clients (35.3%, 6/17) had negative perceptions of VR, believing it was clunky, nauseating, or potentially harmful.

3.4 Perceptions of Tele-VRET

We asked clients about their reactions to the tele-VRET video, relevance to their TMH experience, and tele-VR for mental healthcare (Table 2).

All but one client (94.1%, 16/17) expressed positive perceptions of tele-VRET. Many clients (82.3%, 14/17) perceived tele-VRET as useful to share media, review clinical progress, travel to different environments, and interact with phobias safely. About half of clients (47.1%, 8/17) thought tele-VRET would be more comfortable than conventional TMH as VR could allow therapy to be more personalized and approachable. Some clients (35.3%, 6/17)

TABLE 2 Client perceptions and requests of tele-VRET.

Perceptions	# Of clients (%)	Representative quotes
Positive: tele-VR is beneficial to the client experience of exposure therapy		
Useful: improves therapy experience in unique ways	14/17 (94.1%)	[Tele-VRET] opens the door for a lot more things that you can do in therapy, because that is very limited to being in an office. I could not get on a plane [in-person], but I think VR is an even safer way to start that exposure. It seems like it would be less intimidating than actually going out. (C16)
Comforting: may be less stressful than in-person or telehealth	8/17 (47.1%)	I could see some people who have a really hard time opening up or would not even want to talk to a therapist in general being like, "If it's in this [tele-VR], cool." Maybe I'd be less stressful in this space. (C4)
Easy: can make therapy simpler	6/17 (35.3%)	[Tele-VRET looks] easier because the image is so vivid [compared to imaginal]. It might even bring up stronger reactions if you can literally see it playing out in front of you; being able to cope through it or reprocess it in a healthier way. Maybe that distance is necessary. (C2)
Neutral: the value of tele-VR depends on how it is integrated into the session		
Realism: game-like appearance may lack relevance	3/17 (17.6%)	Your goal is not going to be to slice the fruit before the timer runs out. It's gonna be you going somewhere, you doing that specific thing that you're afraid of. I feel like there's good and bad. (C14)
Functionality: may be unintuitive	2/17 (11.8%)	Is there a device you use to make your player sit down? How would your therapist be able to tell if you're freaking out? Like, "It's too much for me," and you're not saying anything. I'm just curious as to how that works. (C13)
Utility: may not add value to specific kinds of exposure therapy	1/17 (5.9%)	The exposure therapy I did was mostly based in thoughts. A lot of times, I was closing my eyes to imagine the scenarios and the thoughts. So I do not feel like [tele-VRET] would negatively impact it at all. However, with that specific type of exposure therapy, I do not think it would necessarily benefit it at all, unless they also included more visuals. (C7)
Negative: tele-VR can make exposure therapy over telehealth more difficult or unpleasant		
Avatars: VR avatars appear cartoonish and unserious	9/17 (55.9%)	The only issue I see is the avatars. Are they able to express emotions? Because that is important. It should not just be happy [static expression] as you're doing a therapy session. That leaves the therapist guessing if you're upset or not. (C9)
Appropriateness VR may distract or detract from mental healthcare	1/17 (5.9%)	I do not know how reducing yourself to a cartoon is a good image of yourself. My mental health is not a video game. You'll never be able to get virtual reality to look exactly like a human. And if you do, that's The Matrix. The world's over. (C3)
Features Requested		
Social: simulations involving the presence of real or artificial others	9/17 (55.9%)	The biggest benefit I would see is if other people could be brought in. That's hard to do in an actual office space. I'm not gonna be awkward around my therapist, I'm not gonna be awkward around friends and family, but I'm gonna be super awkward around a group of people I do not know. (C17)
Sensory: simulations of situations that elicit specific physiological responses	4/17 (23.5%)	When I was [victim of a hit and run], I could smell burning rubber, and that's something I can't get in exposure therapy. A therapist can't light up rubber in her office. So I just have to try and remember the smell. My friend is heavily into candles. She gets home from work and lights a candle and that seems to calm her from the day. So if there's some way to customize that in a headset, with scent or smell. (C12)
Environments: transport to different locations and settings	4/17 (23.5%)	What if there's a way to have multiple environments? The limit is basically imagination and technology. What if the first is a doctor's office, and second is outside in the park? Whatever is calming for them. I think that would be a good bonding experience. Then the provider can build that into the treatment. "They really like potted plants, they really like colors in orange," you know? (C5)
Narrative: simulating the experience of personal memories, encounters, or interactions	3/17 (17.6%)	If I were to do this virtual reality with my son [aged progressed avatar], and telling him things that he would understand if he were a bit older, "I'm sorry that you went through this and it's not fair." That would just be so cool to be able to tell him those things he can understand. The fact that you can create your avatar seems like that adds a lot of possibilities. (C13)
Assessments: tools to collect data, conduct surveys, and evaluate behavior in VR.	3/17 (17.6%)	

(Continued on following page)

TABLE 2 (*Continued*) Client perceptions and requests of tele-VRET.

Perceptions	# Of clients (%)	Representative quotes
		I would love it if, 6 months into it, my therapist could show me a clip of my first therapy session and how nervous I was, versus now. "Do you see how much different your avatar is? How much more you talk versus your first appointment?" (C14)
Homework: practicing therapy exercises in VR between sessions without direct therapist supervision	2/17 (11.8%)	Like if I was able to put myself on the 30th floor of the building without my therapist there, as part of my homework, would be really helpful. Being able to do it at my own pace, on my own time. That kind of thing would be helpful to be able to choose the exposure for yourself. (C1)

believed tele-VRET would have been easier than conventional TMH or in-person, as tele-VRET may lessen pre-session stress.

Some clients (35.3%, 6/17) had neutral perceptions of tele-VRET. A few clients (17.6%, 3/17) were uncertain if tele-VRET would feel realistic. A few clients (11.8%, 2/17) were unclear about how tele-VRET functions. One client (5.9%, 1/17) was unsure if tele-VRET would add utility to imaginal exposure therapy.

More than half of clients (58.8%, 10/17) also described negative perceptions of tele-VRET, mostly due to unrealistic aesthetics or avatars. More than half (55.9%, 9/17) also stated tele-VRET avatars felt cartoonish and may not capture facial expressions and body language. One client (5.9%, 1/17) expressed that tele-VRET felt inappropriate for mental health and may be an existential threat to society.

3.5 Requested features for tele-VRET

When asked to discuss how tele-VRET could enhance care, clients described specific phobic stimuli and scenario simulations, data collection and assessment from within the VR experience, and VR experiences to complete on their own.

Many clients (55.9%, 9/17) requested social situations related to bullying, family, work, or tasks outside the home such as grocery shopping. Some clients (23.5%, 4/17) requested sensory experiences to smell flowers bloom or feel the rain on your skin. Some clients (23.5%, 4/17) requested different environments such as parks, stores, specific streets, or locations generated from photos. A few clients (17.6%, 3/17) requested highly specific narrative experiences to simulate past or future events with the ability to conclude peacefully.

A few clients (17.6%, 3/17) requested assessments within tele-VRET to complete data forms, track clinical progress, and view immersive recordings of previous sessions.

Two clients (11.8%, 2/17) requested to engage in VRET alone on their own time (e.g., homework).

3.6 Tele-VR beyond exposure therapy

Clients requested a variety of tele-VR uses other than exposure therapy, information on how tele-VR would work, and opportunities to customize client experiences (Table 3).

3.6.1 Other tele-VR therapies

Some clients (47.1%, 8/17) requested tele-VR for avatar-based roleplay related to play, drama, and family therapy. Some clients (47.1%, 8/17) wanted tele-VR for mindfulness and biofeedback for guided meditations. Some clients (23.5%, 4/17) described tele-VR for art therapies for creating immersive visualizations with a therapist. Some clients (23.5%, 4/17) wanted to play tele-VR games to build rapport with their therapist.

3.6.2 Requested information

Most clients (70.6%, 12/17) were wary of costs associated with tele-VR such as headsets and app subscriptions. These costs seemed difficult to justify without assistance from health insurance, subsidies, or payment plans. Most clients (70.6%, 12/17) were curious about privacy while using tele-VR. Skepticism about confidentiality and uncertainty about safety may reduce confidence in the therapeutic process. Most clients (55.9%, 9/17) wanted to know about the depth of customization for tele-VR. Examples included converting photos into 3D environments or objects, VR avatars that look like other people, and VR recordings of previous sessions. Some clients (23.5%, 4/17) wanted to know about the clinical utility of tele-VR, specifically if the benefits of tele-VR were worth the effort required. A few clients (11.8%, 2/17) were curious about sensations in tele-VR for texture, weight, temperature, body contact, smell, and being in nature.

3.6.3 Critical needs for tele-VR

Most clients (58.8%, 10/17) emphasized tele-VR should facilitate therapeutic relationships by improving interaction with their therapist with minimal interference. Some clients (47.1%, 8/17) described how tele-VR should be simple and essential to support the stressful nature of mental health care. Some clients (41.2%, 7/17) said tele-VR would need to be accessible in order to consider it for therapy, especially in the context of costs of the equipment and relevant software.

4 Discussion

4.1 Main findings

We explored client perspectives by interviewing 17 adults about their exposure therapy over TMH, VR experience, reactions to a video depicting tele-VRET, and wants from tele-VR generally. Clients said exposure therapy over TMH was accessible, but could feel less engaging. Clients had mostly positive reactions to tele-VRET, believing its immersion and interactivity could make exposure therapy easier, more comfortable, and more personalized. They proposed other helpful tele-VR practices like art therapy,

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TABLE 3 Clients' requests of general tele-VR.

Client requests	# Of clients (%)	Representative quotes
Evidence-based practices other than exposure therapy		
Roleplay: using VR avatars in the likeness of others for therapy	8/17 (47.1%)	For example, being able to add an avatar in the room to represent the mother so that person could talk to that avatar, and have a visual representation rather than just [empty chair therapy]. (C7)
Mindfulness: environments to practice relaxation, awareness, and meditation	8/17 (47.1%)	Sometimes in meditation, you're asked to visualize something. Like a safe, relaxing, place where your thoughts are just a leaf, they [float] on a stream. Having that [VR] visual component can be really engaging to people who find meditation really boring. (C2)
Art: tools for creative forms of self-expression and communication with a therapist	4/17 (23.5%)	I like the idea of making art in [tele-VR]. A cool exercise you could never do in real life is, say the person loves Power Rangers, and gets to make it a Power Rangers spider. Like they had a breakthrough and smashed a spider, and you could make that as a painting and hang it on the wall. It becomes personalized. The environment itself has meaning and you can point and be like, "This is a breakthrough I made. This is something we're working on." Something as simple as a checklist of ideas to talk about, integrated in the environment so you can look at it. So the space grows with the patient. (C4)
Games: play activities for clients and therapists to build rapport or facilitate communication	4/17 (23.5%)	Seems simple, but playing games. It's a huge part of building rapport. Sometimes chitchat is enough to open people up, but sometimes for teenagers and younger kids, they do not know you, they do not trust you. So playing a game can normalize coming to therapy. Being able to do that in VR would be very important to be able to have a full progression of a therapeutic relationship. (C1)
Information clients wanted about certain aspects of tele-VR		
Costs: the financial or insurance resources necessary to receive tele-VRET.	12/17 (70.6%)	We do not have the money to pay for VR headsets. I would wish to see some kind of payment program for people who want to try it and can't afford it. I feel like it could be really beneficial to me and it would be really disappointing to find out that I found this awesome, beneficial tool, but no, I can't afford it. (C13)
Privacy: confidentiality and security of tele-VRET activities	12/17 (70.6%)	I do not want something I've talked about in VR therapy to then show up as an advertisement on Facebook. (C5)
Customizability: the degree to which user-generated content can be incorporated into therapy	9/17 (55.9%)	What if it comes with a scanner and there's an emotionally significant space? Let's say I'm scared of this particular car because I had a bad crash in it and I use my phone to scan it, and then in virtual reality, we could take that car. We could make it small. I could see what it looks like crumpled. Maybe it can be a happy object again. Maybe you take that car and repaint it, place it in new circumstances, hold it in virtual reality and talk about it. Remember the good places this car has brought you. I think it has applications for allowing people agency over objects that they would not get in real life. (C4)
Utility: clinical evidence supporting tele-VRET to justify its use in therapy	4/17 (23.5%)	I would want to know how to do it, what it's gonna do for me, why I would want to try this type of thing. (C14)
Sensation: how VR can facilitate aspects of touch	2/17 (11.8%)	You would have to pair the visual of what you're seeing in virtual reality with what you're actually holding. The tactile is just as important as the visual. If you're on a heavier topic or you know it's going to be one of "those" sessions, something to squeeze is helpful. (C1)
Tele-VR needs clients identified as most critical		
Therapeutic relationships: tele-VRET should facilitate the therapist's ability to connect with and serve the client's needs	10/17 (58.8%)	It comes down to the needs of the patient, right? There's a part of Hogwarts Legacy where you access the Room of Requirement. You can summon objects at any point, you can decorate how you want, you can put whatever [furniture] you want. Something I've been thinking about, is there a way to have that in VR? Something where you can really customize a room? I feel like that would be a good bond building experience. (C5)
Necessary: tele-VRET is to be used only when it meets client needs	8/17 (47.1%)	The thing to make sure of is whatever you're running these programs through is optimized to handle the graphics. And if that's at the cost of textures or whatever, that is well worth it. This is a really good match for exposure therapy, but maybe it's not always the best match for somebody who's just having a depressive episode and needs somebody to talk to on a week to week basis. (C11)
Accessible: tele-VRET is available to clients regardless of location or socioeconomic status	7/17 (41.2%)	[Insurance companies] are not great. Is this gonna be like, "you just happen to have nice insurance that lets you do this," or like, "you're willing to pay for this kind of premium experience?" (C17)

empty chair therapy, and immersive games to build rapport with therapists. While exciting, clients felt tele-VR should serve specific needs and were concerned whether VR would be affordable and covered by their insurance. Overall, clients described ways VR may enhance engagement and personalization of TMH, if cost and complexity are minimized. These findings can expand the understanding of immersive telehealth in several ways.

4.2 Comparison with previous research

Client perspectives broadly agreed with prior studies of therapists' perceptions of tele-VR (Ong et al., 2024a; Ong et al., 2024b). Therapists and clients were excited about how VR could enhance presence and interactivity in TMH, as well as customizable client experiences, tele-VRET for social and specific phobia, and for clients to engage asynchronously (i.e., homework). Clients' and therapists' largest concerns were costs and clinical evidence, and also believed unrealistic avatars could limit communication and immersion. Collectively, it seems therapists and clients may be likely to try tele-VR if it is affordable and relevant for a client's specific needs. Both parties want to know tele-VR is clinically validated and will add to the healing experience with minimal, predictable risks.

In these studies, client and therapist perspectives diverged on several topics. Therapists rated customizable avatars as one of their least important tele-VR features (Ong et al., 2024b). Yet, in this study, clients strongly favored customizable avatars for themselves, therapists, and simulated assistants. This signals the need for research exploring how therapists and clients can utilize VR avatars for therapy, including avatars in the likeness of others (van Minnen et al., 2022; Thompson et al., 2023). Therapists and clients agreed on factors for implementing tele-VR: affordability, insurance coverage, and accessibility. However, therapists rated enhanced presence as low priority while clients described it as a major appeal of tele-VR. Therapists may overestimate clients' trust and comfort, which can negatively impact clinical outcomes (Bar-Kalifa et al., 2016; Moshe-Cohen et al., 2024). Hands-on user studies will be important to understand how therapists and their clients utilize tele-VR in practice.

VR may make therapy more approachable for those who avoid mental health because of stigma and poor expectations of individualized care (Dubreucq et al., 2021; SAMHSA, 2020). Here, clients reported tele-VR may provide a comforting sense of anonymity with avatars instead of their real self, while letting them feel immersed in a clinical space from home. Studies should evaluate how VR adds to conventional TMH experiences and outcomes, with emphasis on signals of success such as likelihood to seek care, therapeutic alliance, and satisfaction (Humbert et al., 2023; Benbow and Anderson, 2019). It will also be valuable to study predictors of clinical outcomes and how they may interrelate with features of tele-VR: therapeutic alliance, (Baier et al., 2020) presence and immersion in VR, (Slater et al., 2022) and therapeutic presence (Aafjes-Van Doorn et al., 2024). These results also provide qualitative ways therapists might use VR to personalize TMH: avatars that look like others relevant to a client's treatment, (van Minnen et al., 2022; Chen et al., 2024; van Gelder et al., 2022) spontaneous but anonymous interactions in public spaces, (Dilgul et al., 2021; Fajnerova et al., 2024) using VR to visit real-world places, (Kostakos et al., 2019) and narrative VR in which a client could simulate outcomes different than those of prior experiences (Georgieva and Georgiev, 2019; Mao et al., 2023). These options should be explored to understand the economic and clinical feasibility of personalized tele-VR and its effect on client outcomes.

Clients were skeptical about tele-VR reliability, security, and privacy. One client expressed bleak expectations for tele-VR to disrupt face-to-face relations. Addressing these concerns will require transparency across academia, clinical care, and industry. While research suggests side effects of VR are minor, temporary, and preventable, (Simón-Vicente et al., 2024) these risks must be addressed nonetheless. Some clients reported dissociation after using VR, (Mondellini et al., 2021; Taveira et al., 2022) therapists have expressed concern about potential VR addiction, (Ong et al., 2024a; Kaimara et al., 2022) and leading VR companies have questionable reputations for user privacy (Cross, 2024; Tukur et al., 2023). Delphi studies and consensus statements by representative organizations may facilitate commitment to healthcare operations and privacy standards (Abbas et al., 2024).

4.3 Limitations and future directions

These results should be interpreted with several limitations. First, these findings were the result of qualitative analysis, which may be subject to bias. However, themes and definitions identified in the current study align with those in similar studies with clients and therapists (Dilgul et al., 2021; Bruno et al., 2022; Vincent et al., 2021). Future research should validate these findings quantitatively. Second, we recruited mental health clients who had received exposure therapy over telehealth. While this strategy may have resulted in biased client perceptions (i.e., positive opinions having undergone therapy before), their discussions of tele-VR aligned with those in similar research. In a survey of 184 clients with a range of anxiety-related conditions, only 60% had received exposure therapy but 90% were willing to try VRET because it seemed safe, effective, private, and customizable (Levy et al., 2023). To maximize generality, future research should examine the perspectives of clients who had received other therapies over telehealth and in-person. Third, clients in this study sample had never used VR for therapy. While clients discussed tele-VR speculatively, their pros, cons, and uses of tele-VR matched those described by expert VR clinicians, educators, and developers (Abbas et al., 2024; Cushnan et al., 2024). It will be important to understand the perspectives of clients who have completed tele-VR as part of formal treatment to evaluate first-hand insights. Lastly, while we achieved thematic saturation, the sampling approach does not support generalization to all mental health clients. Qualitative input should be sought from participants in future studies of telehealth-based VR therapy.

5 Conclusion

Clients who received exposure therapy over TMH had mostly positive preconceptions about VR, thought tele-VRET could add meaningfully to the client experience, and requested a wide range of specific features and functions for tele-VR to enhance the

capabilities of TMH. Despite questions about logistics and costs, and doubts about perceived realism, clients were generally enthusiastic about how the immersion of VR and accessibility of TMH could combine to enhance mental healthcare experiences.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Institutional Review Board of the University of South Florida. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

TO: Investigation, Writing – review and editing, Conceptualization, Methodology, Writing – original draft, Formal Analysis, Project administration. JI: Formal Analysis, Writing – review and editing, Writing – original draft, Methodology. HS: Formal Analysis, Writing – original draft, Writing – review and editing. JB: Writing – review and editing, Formal Analysis, Writing – original draft. MC: Writing – review and editing, Formal Analysis, Writing – original draft. BW: Writing – review and editing, Writing – original draft, Formal Analysis. BB: Formal Analysis, Methodology, Conceptualization, Writing – original draft, Writing – review and editing, Investigation.

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Conflict of interest

Authors TO, JI, HS, JB, MC, BW, and BB were employed by Doxy.me Inc.

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Supplementary materials

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/frvir.2025.1595326/full#supplementary-material

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