

Managing Eating Disorders in Multi-User Virtual Reality



A team of researchers share their experience of creating and testing a multi-user virtual reality (MUVR) remote psychotherapeutic system for body weight and shape concerns.

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Applications of virtual reality (VR) is an area of growing interest in healthcare, and particularly in psychotherapy. VR creates an advanced simulation system, which helps in managing mental health difficulties, from anxiety and stress-related disorders to neurodegenerative diseases. A joint team of researchers from the University of Kent and the University of Cyprus describe the use of Multi-User Virtual Reality (MUVR) for Exposure Therapy (ET) for sufferers with body shape and weight concerns (Matsangidou et al. 2020).

Unlike previously used VRET setups, MUVR allows the therapist to also be present within the simulation and not only observe the development from outside. The authors argue: "In comparison to conventional VR psychotherapy, MUVR may have the advantage of providing the patients with an anonymous medium to communicate their inner thoughts and feelings, limiting social stigma, and without removing the availability of a real therapist."

In this particular study, MUVR was used as an intervention medium for females at high-risk for developing an eating disorder. The aim was also to test whether such approach was efficient and acceptable by both therapists and participants.

The sample included 14 females estimated to be at high-risk for developing an eating disorder within the next four years. Seven therapists were recruited to lead the sessions. The VR immersion was possible with a VR Head-Mounted Display (HMD).

Both the therapist and the participants were represented in the MUVR system as cartoon avatars to allow for a degree of anonymity and security for participants. The overall approach was based on Acceptance and Commitment Therapy (ACT) and specifically the gamification AcceptME protocol, which aims to motivate the participants for a behavioural change "even in the presence of uncomfortable thoughts and feelings". For example, in one of the tasks a participant built their own 'life values-based map' under the therapist's guidance. Other tasks (e.g. painting and playing basketball) were based on Play Therapy with a goal to help the person to express and communicate thoughts and feelings. The Mirror ET exercise aimed to reduce negative body-related concerns with an avatar customisation system.



Depictions of four stages of mirror exposure from the participant's perspective.

The full session (of approximately one hour) consisted of three stages: 1) MUVR user tutorial; 2) Creation of a virtual avatar by the user; 3) Three virtual environments (two ACT values VEs or two games, and a Mirror Exposure VE). Upon completion, both participant and therapist completed questionnaires, based on Eating Disorder Diagnostic Scale (EDDS) and Weight Concerns Scale (WCS) among others, and a semi-structured interview was conducted by the researchers to explore the participants and therapists' experiences of MUVR.

The key finding of the study include:

- The possibility of developing an eating disorder by the participants was high (average EDDS score 30.64; average WCS score 71.07).
- The system received high scores in both usability (participants 78.93%; therapists 84.96%) and presence (5.15 out of 7).
- Both participants and therapists assessed their MUVR experience positively and indicated that they were open to use this type of therapy in the future. For those with no prior VR experience, the technical side of the sessions was at times challenging and stressful, but none chose to end the session.
- MUVR environment helped the participants to express their thoughts and emotions and mitigated their body-related concerns.
- The MUVR therapy evidence proved to be believable; the participants were able to experience a realistic therapy environment and exhibit genuine emotions, particularly because they could engage in real-time discussions with the therapist. Here, the avatar customisation activity was especially efficient.
- The observations suggested that differences in each participant's background may affect the MUVR therapy, therefore the participants' interests should be considered at the design stage (e.g. for the choice of therapeutic activities). Gamification allowed for a shift toward more informal and relaxed environment.
- The anonymous nature of VR technology, the non-anthropomorphic representation of the therapist and the absence of face-to-face communication enhanced a sense of trust and security in participants.

The authors note that MUVR can be "an alternative and a more advanced solution" to other therapeutic modes of delivery. "We believe that MUVR could be potentially even more beneficial due to the immersion of the participant in a realistic and safe space, an aspect that cannot be easily simulated by other digital technologies such as telephone and video conferencing," they conclude. At the same time, they warn against the potential negative side of the technology, such as the increased level of anxiety and phobic reactions in some therapists and participants.

For future research, they recommend considering issues such as conflicting design requirements on VR presence/immersion; private and social space balancing; the need to strengthen the bond between therapists and participants; and different participant preferences and therapeutic needs.

The authors also point to some limitations of their study, namely that it was a single-site trial; that the results might not be possible to extrapolate to other samples or populations; and that there was no follow-up to assess the intervention effectiveness.

Source: [Human-Computer Interaction](#)

Image credit: Matsangidou et al. 2020

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