

# **Evaluating the Efficacy of Virtual Reality Therapy for Phobia Treatment: A Pilot Study**

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## Abstract

This study investigates feasibility of Virtual Reality (VR) technology as an alternative method to deal with the weaknesses of classical phobia treatments, like integration and effectiveness. To determine perceptions of VR therapy such as familiarity with VR technology and desire of adopting VR based exposure therapy and effectiveness, we conducted a pilot survey of 40 participants. Results indicate that participants are modestly familiar with VR and somewhat optimistic about VR's potential as a treatment but strongly prefer a therapist present. The use of a small sample is justified when the findings are consistent with previous literature that details VR's utility within the treatment of phobia. However, this preliminary insights of study need to be validated by further research with larger cohorts and optimized VR-based framework.

**Keywords**: Virtual Reality (VR) Therapy, Phobia Treatment, Exposure Therapy, Mental Health, Psychotherapy, Anxiety Disorders, Augmented Reality (AR).

### Introduction

Millions affected by phobias such as fear of heights (acrophobia) or spiders (arachnophobia) have extremely negative impacts on their quality of life. Currently, the best form of exposure therapy is traditional and effective, yet is plagued by logistical barriers, cost and difficulty replicating in real world scenarios. Virtual Reality (VR) provides a good alternative based on immersing the users into controlled, customizable environments. The focus of this study is to investigate consumer perception of VR therapy for phobias as a feasibility study to evaluate the willingness to accept and overcome barriers of adoption.

## **Literature Review**

There is literature review about VR therapy which has been known to be an effective treatment for phobia, and was found to allow the exposure therapy in a controlled way (North, North, & Coble, 1998). Patients suffering from certain phobias have accepted VR exposure therapy more than in vivo exposure (GarciaPalacios, Botella, Hoffman, & Fabregat, 2007). Augmented Reality (AR) is also considered an approach to treatment that uses real and virtual components in the formation of effective therapeutic interventions (Juan et al., 2005). Besides phobias, VR has been integrated to therapy for improving social skills in patients with schizophrenia (Rus-Calafell et al., 2013). Also, AI based VR applications have been suggested in enhancing the team collaboration in therapeutic settings (Seeber et al. 2019). While the research into VR and AR has seen strong linkage of its psychological applications, growing network of studies has explored their potentials (Cipresso et al., 2018). The therapeutic success of VR exposure treatment has been redefined, and in fact been shown to improve patients' outcomes significantly (Garcia-Palacios et al, 2001). Further, cutting-edge developments in psychology further illustrate the recent trend in applying VR in mental health treatment (David, 2010). Studies completed on the successful application of the combination of augmented as well as virtual realities in treating specific phobias like cockroach phobia have shown the flexibility of these technologies in exposure therapy (Botella et al., 2005). VR therapy indeed has some challenges, for instance VR therapy has a low accessibility, high cost to operate, and requires knowledge about technology (Glantz, Durlach, Barnett, & Aviles, 1997). Despite this, with the



advance of immersive technology and growing acceptance of VR interventions, VR's part in psychotherapy keeps on being crept into aiding people to treat various psychological diseases.

## Methodology

The purpose of the pilot study was to evaluate perceptions of Virtual Reality (VR) therapy for phobia treatment and feasibility, perceived efficacy and barriers to adoption in a mixed methods cross sectional design. Twelve participants were recruited with a purposive sampling strategy in two subgroups of individuals with self reported phobias and mental health professional of psychologists and licensed therapists. The dual subgroup approach secured different views, including end user's perspectives and clinical expertise. Recruitment of participants was via community mental health networks; online forums such as forums; and professional associations following inclusion criteria that participants must: (1) self identify as suffering from diagnosed or self recognized phobia; or (2) possess more than 2 years clinical experience in treating anxiety disorders. Exclusion criteria included severe cognitive impairments or lack of proficiency in the study's primary language (English).

Data collection was conducted through structured questionnaires administered digitally via secure platforms. The survey instrument was designed based on a review of existing literature on VR therapy and phobia treatment protocols. It comprised 9 items organized into five domains:

- Familiarity with VR technology (How often have you used VR headsets, with response options ranging from Never to Regularly),
- Perceived effectiveness of VR therapy (Likert-scale questions assessing agreement with statements like "VR can replicate real-world phobia trigger),
- Preferred phobias for VR intervention (participants selected multiple options from a list of common phobias),
- Concerns about VR adoption (open-ended and multiple-choice questions on barriers such as cost and technical reliability),
- Role of therapist guidance (How critical is a therapist's presence during VR session).

To ensure content validity, the questionnaire was pilot-tested with two independent mental health researchers, and minor revisions were made to improve clarity. Quantitative data were analyzed descriptively using frequency distributions and percentages to identify trends, while qualitative responses from open-ended questions were thematically coded to extract recurring motifs ( "cost concerns" or "need for supervision"). Subgroup comparisons (patients vs. professionals, age cohorts) were conducted to explore demographic variations.

The study adhered to ethical guidelines, with informed consent obtained from all participants and anonymity maintained through de-identified data storage. Participants were briefed on the study's objectives and assured of their right to withdraw at any stage. To mitigate self-reporting biases, the survey included both positively and negatively framed items, and participants were encouraged to provide detailed qualitative explanations for their responses

## Result

The pilot study yielded detailed insights into participant perceptions of VR therapy for phobias, organized into key domains. Below is an expanded analysis of the findings.



## How familiar are you with virtual reality technology?



### Have you ever used a virtual reality headset before?



## Do you believe that virtual reality can effectively treat phobias?





How comfortable are you with the idea of using virtual reality for exposure therapy?



Would you be willing to try virtual reality exposure therapy for your own phobia?



What concerns you most about using virtual reality for phobia treatment





How important is it for virtual reality treatments to be supervised by a trained therapist?



Do you think virtual reality treatments can be as effective as traditional exposure therapy?



Would you recommend virtual reality exposure therapy to someone else with a phobia?



#### 1. Familiarity with VR Technology

Of the participants surveyed, 58% reported basic familiarity with VR technology, such as general awareness or casual use in gaming contexts, while 25% had direct experience using VR headsets. The remaining 17% participants had no prior exposure to VR. Subgroup analysis revealed distinctions between mental health professionals and participants with self-reported phobias. Among the 8 professionals, 6 indicated basic familiarity, while only 2 had used a VR headset. In contrast, participants with phobias demonstrated higher engagement, with 7 having used VR headsets. These findings suggest moderate familiarity with VR overall, aligning with its growing presence in consumer markets. However, professionals are far ahead of patients and



actually represent potential gaps in clinical training and the necessity of targeted educational interventions to address knowledge divides in the use of therapeutic applications of VR.

#### 2. Perceived Effectiveness of VR Therapy

67 percent of the participants believed that VR could be mildly to very effective for treatment of phobia, while 33 percent were skeptical. VR skeptics worried about whether VR could realistically recreate the sensory stimuli of the real world, the kind of tactile feedback in arachnophobia scenarios, or whether it could produce physiological arousal of in vivo exposure. Skeptics offered qualitative responses that hinged on their doubting VR's efficacy for treating severe phobias, one such statement being: "It may be good for mild fears but really severe phobias need real world interaction." These perceptions imply that the effectiveness rests upon phobia severity and technical fidelity for a VR simulation. The results support the need to develop software that has customizable intensity settings to match different patient requirements.

#### **3. Preferred Phobias for VR Treatment**

Participants determined appropriate phobias for use within a VR intervention. Fear of heights (acrophobia), fear of public speaking (33%) and fear of spiders, or arachnophobia (25%) were the most selected. Participants rationalized these choices by describing such phobias as "environmentally controllable" (virtual skyscrapers for acrophobia) or "safe to simulate" (virtual audiences for public speaking). Subgroup differences emerged, with mental health professionals prioritizing acrophobia (75% of professionals selected it), aligning with existing clinical evidence (Choi et al., 2001), while participants with phobias more frequently cited arachnophobia (37.5%). This divergence may reflect differences in clinical priorities versus personal experiences of fear.

#### 4. Concerns About VR Adoption

Key barriers to VR adoption included cost (42%), lack of therapist supervision (33%), and technical glitches (25%). Cost concerns focused on the affordability of high-end headsets. The absence of therapist supervision raised fears about unsupervised use exacerbating anxiety, particularly among mental health professionals, 75% of whom emphasized this issue compared to 25% of patients. Technical concerns centered on software malfunctions disrupting exposure therapy, such as sudden system crashes. These findings emphasise the need for cheaper solutions, reliable technology, and hybrid solutions which take into account the professional oversight by mitigating the adoption barriers.

#### 5. Importance of Therapist Guidance

By far the best level of response around what would be needed was an overwhelming majority of participants (83%) arguing for therapist guided VR sessions whereas only (17%) were open to completely automatic programs. Qualitative feedback focused on the therapist's 'calibrating exposure intensity' and providing 'real time emotional support.' Another mental health professional said that VR is a 'tool' rather than technology to substitute clinical expertise. Strongly advocating for the hybrid therapeutic framework that combines VR immersion and clinician expertise, these results indicate that fully automated systems have nowhere to go without the professional blessing.

#### 6. Exploratory Subgroup Trends

In addition, some subgroups had further trends. In essence, VR was seen as more hopeful for easing phobia by participants with self reported phobias (75% vs. 50% of professionals) but who shared in universal worries of the cost. There was a high priority to clinical caution and standardised protocols and supervision, with mental health professionals. Furthermore, differences in age were also found: the VR familiarity was higher in the



younger population (18–35 years) (71 vs. 20 in the 36+ age group), this may indicate generational differences in the readiness to adopt technology.

## Discussion

Literature on VR's therapeutic potential suggests that the results reflect cautious optimism. The fact that there is high demand for therapist involvement shows that hybrid models where technology and human expertise come together are for that reason so important. The cost and accessibility concerns are the same as challenges to the scalability of VR solutions.

## Conclusion

The technology of VR immersive environment may constitute a complementary means to fight phobias, owing to the capacity of personalization of experiences. Preliminary findings are promising, but there are barriers to cost that should be addressed, as well as integration with therapist. Optimization in VR frameworks and increases in accessibility need further research.

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