



Will Virtual Reality Become the New Reality in Psychological Rehabilitation? A Minireview

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Abstract

To date, numerous studies have investigated the beneficial role of virtual reality (VR) in psychological rehabilitation as both a standalone tool, and through its integration with traditional modes of therapy. This review presents the main results of pertinent randomized control trial (CRT) studies published in the past 15 years. Those seem to suggest that VR is a viable tool to be considered by clinicians when treating different types of psychological disorders. It also highlights its short-term and long-term benefits in the rehabilitation of such disorders. However, this review also highlights the need for guidelines that would clarify how VR can be safely and efficiently implemented in clinical practice.

Keywords: Virtual Reality; Psychotherapy; Anxiety; PTSD; Schizophrenia; Eating Disorders

Introduction

Rehabilitation is defined as helping somebody “to have a normal, useful life again after they have been very ill ...” (Oxford dictionary). Although most rehabilitation programs still use traditional approaches to compensate for physical, psychological, or cognitive impairments, the emergence of computer-based tools is now opening the door for more advanced and personalized approaches. One of the most promising and rapidly evolving tools for improving psychological wellbeing is virtual reality (VR) [1, 2]. A VR system involves subjecting users to an artificial environment while replacing real-world sensory perceptions with digitally generated ones, thereby promoting a sense of immersion and allowing users to interact with objects in that environment. The level of immersion (high vs low immersion) depends on several factors, especially the type of equipment used. To date, several studies have explored the beneficial value of VR in rehabilitation as a standalone tool or through combining it with traditional therapy. Most results seem to indicate positive effects on patients’ conditions while also providing long-term effectiveness for rehabilitation programs [3].

VR in Psychological Rehabilitation

Anxiety disorders are the most prevalent of psychiatric disorders [4]. They include different conditions such as Specific Phobias, Social Anxiety Disorder (SAD), and Generalized Anxiety Disorder (GAD). Although Cognitive Behavioral Therapy (CBT) and

Exposure Therapy (ET) are still considered the “gold standard” evidence-based techniques for the treatment of phobias, findings revealed that the integration of VR in CBT improves the longevity of its effects [5]. Moreover, the integration of VR in ET for the treatment of phobias seems like a viable substitute for traditional ET [6-20] with enhanced benefits [7] and a higher acceptance and comfort for patients by giving them more control over the different scenarios experienced during therapy [8]. On the other hand, studies revealed that VR can be advantageous over traditional CBT as an efficient, cost-effective, and practical medium of exposure for treating social anxiety [21-24]. Finally, VR has also been shown to be a viable option for the treatment of generalized anxiety disorder (GAD) [25-29].

Posttraumatic Stress Disorder (PTSD) is a consequence of exposure to a severe psychological trauma [30] like experiencing or witnessing a terrifying event. Many studies have explored the implementation of VR in therapy for PTSD [31-37] based on the assumption that all experimental protocols using VR provide a risk-free, authentic, and realistic experience. Results showed clinically meaningful reductions in PTSD, anxiety, and depressive symptoms, as well as improved self-reported health on different scales (PTSD Checklist-Military Version (PCL-M), Beck Anxiety Inventory (BAI), and Patient Health Questionnaire (PHQ-9)) [37] and higher levels of relaxation and improvements in sociability [34].

The American Psychiatric Association (2013) [38] defines psychotic disorders as abnormalities in one or more of the following: delusions, hallucinations, disorganized thinking, grossly disorganized or abnormal motor behavior, and negative symptoms (diminished emotional expression and avolition in schizophrenia). Studies were also conducted in an attempt to explore the impact of virtual-reality-based cognitive behavioral therapy (VR-CBT) on psychotic symptoms (paranoid thoughts and social involvement). For example, Pot Kolder [39] showed that a VR-CBT group displayed significantly less momentary paranoid ideation and momentary anxiety when compared to a control group who received CBT without VR. Moreover, virtual reality therapy (VRT) elicited significant decrease in the severity of symptoms of schizophrenia, including auditory verbal hallucinations and delusions [39-46]. Additionally, studies have also focused on using VR for improving social skills in schizophrenic patients [43, 47, 48] and a pilot study using a VR social skills intervention for patients with schizophrenia has also revealed significant improvements in negative symptoms, psychopathology, social anxiety and discomfort and avoidance [48]. Most of these improvements were maintained after a four-month followup.

Finally, studies have also explored the effect of VR in treating eating disorders [49-52]. For example, Ferrer García [53] used a VR Cue Exposure Therapy (VR-CET) to put patients in contact with food regardless of the various levels of anxiety that may arise from exposure. After treatment, patients receiving VR-CET showed abstinence from binge eating episodes. Moreover, in a non-clinical sample, exposure to VR environments incorporating both specific stimuli and contextual cues significantly reduced food craving and food related anxiety, [54-56] and the implementation of VR seemed to increase benefits in weight loss programs for people with obesity [5, 55, 57-59]. Additionally, adding or combining VR with traditional forms of treatment, such as CBT, improved body image dissatisfaction [5, 55, 57, 58, 60].

Conclusion

As we move forward with technology-based therapies, VR seems to be a viable tool to consider by clinicians in their daily practice. Current literature emphasizes the added value of VR in the rehabilitation of psychological disorders. However, and despite promoting more substantial patient commitment as well as higher motivation and acceptance [1, 3, 8] while creating a positive and motivating learning environment for patients [61-64], VR also has some functional limitations (e.g. dry eyes effect, symptoms of motion sickness, [65-68], possible delusional thinking in patients with schizophrenia [65]) as well as some practical limitations (e.g. availability and accessibility which is mainly caused by the high prices of VR software and hardware). Moreover, clearer guidelines for VR protocols are undoubtedly needed to help clarify how VR can be safely and efficiently implemented in clinical practice. Finally, the need for more studies covering larger sample sizes remains a must, and long-term follow-ups are needed before VR becomes part of what is referred to as "traditional therapy".

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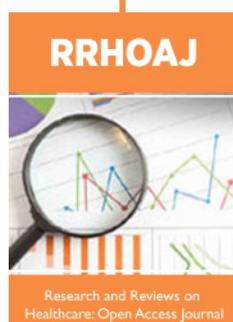
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