

Application of Virtual Reality Technology in Psychotherapy

Bingyi Zhou

Department of Jiacheng High School, Tianjin, China

Abstract. Virtual reality technology in the application of psychotherapy, with the rapid development of science and technology so as to get a more complete psychological treatment. Through the analysis of virtual reality technology in post-traumatic stress disorder, depression, anxiety and autism and other treatment methods and effects, it shows that virtual reality technology psychotherapy in the treatment of treatment is indeed quite good therapeutic effect, has considerable prospects in the future.

Keywords: Virtual Reality Technology; Psychological Therapy; Mental Illness

1. Introduction

1.1 Research background

In today's society, mental illness has become an unavoidable problem. Due to the rapid development of society and the competition mechanism has penetrated into various fields, the pace of people's life, work and study has accelerated significantly. Everyone's mental and psychological pressure from various fields is gradually increasing, and more and more people are caused by anxiety, depression and other psychological disorders, which seriously affect the normal life. However, traditional psychotherapy has limitations such as lack of formed products and mechanisms, lack of supervision, scene construction, treatment cost and safety, but with the development of science and technology, virtual reality therapy can break the limitations of ordinary psychotherapy through its immersive, interactive, imaginative characteristics and immersive experience. In order to achieve better therapeutic effects.

1.2 VR Equipment

As a comprehensive technology, its core is composed of three modules: three-dimensional display technology, scene modeling technology and natural interaction technology. At present, the existing VR Equipment for psychological

therapy is the headset and the decompression chamber. Although these two devices have different names, they are essentially the same: they both provide users with a real visual and tactile experience by leveraging the immersive interactivity of VR. And the therapist can use different devices to monitor the patient's response in real time and have full control over the device, so that if the patient feels any discomfort, treatment can be stopped or reduced immediately.

1.3 Research Status

Virtual reality exposure Therapy (VREP), which is a combination of VR and exposure therapy, has become a professional term and has significant effects on the treatment of psychological disorders such as post-traumatic stress disorder (PTSD), anxiety and fear disorder [1]. However, the scope of VR psychotherapy needs to be further expanded. The diseases treated by VR technology mainly focus on anxiety disorders, phobias, self-acceptance, post-traumatic stress disorder, attention deficit disorder, anorexia, etc., with systematic deficiencies and incomplete coverage. In addition, many studies are only individual cases. There is not enough professional persuasion and the lack of professional norms in psychological treatment technology, many psychotherapists for VR experience, technology understanding is not enough. Another type of people even do not have psychological therapy qualifications and do therapy trials in the name of VR psychotherapy clients. VR psychotherapy technology is very different from traditional psychotherapy technology, but there is currently no certification of "virtual reality psychotherapy" in the industry, which is a major shortcoming of the industry. At present, some hospitals in China have begun to use VR for psychological treatment, such as Hengyang Seventh People's Hospital, Fuzhou Second General Hospital neuropsychiatric hospital, VR treatment has become a major hospital signboard. VR treatment can be used for the rehabilitation

of mental illness. Help improve schizophrenia, depression cognitive impairment, attention deficit hyperactivity disorder children's memory impairment, cognitive impairment in the elderly, anxiety and fear disorders, insomnia disorders, compulsive disorders, etc.[2]The essence of VRpsychotherapy is to allow patients to be immersive, and use its interactivity to make patients have a strong sense of integration and a sense of realistic scenes to make up for the lack of limited scenes in realistic training. Cognitive therapy is the main role of VR. This type of therapy requires the user to experience certain imaginary situations, such as role playing to give the user an identity, or systematic desensitization to treat some acrophobia and ptsd. In 2018, researchers published a study proposing a new approach to virtual reality psychotherapy that can enhance self-compassion [3].. The specific case is called the "avatar experiment," in which the participants are avatars of the comforter, the soothed, and the third-person perspective. The results show that women who retraced the process from the perspective of a virtual child became more self-compassionate; They also reported significantly lower levels of self-criticism. Women who retraced the process in the third person were also less self-critical and showed few improvements in self-compassion.

2. VR Psychotherapy

2.1 Exposure Therapy (VRET)

Exposure Therapy Exposure therapy (VRET) is commonly used to treat post-traumatic stress disorder and anxiety disorders[4].. Post-traumatic stress disorder is most common among people who have experienced a traumatic event, and their symptoms can include nightmares, anxiety, social isolation, acrophobia[5], fear of flying [6] and depression, Exposure therapy involves repeatedly exposing the patient to the environment he or she is afraid of to stimulate him or her, in order to quickly correct the patient's false perception of the scary or anxious stimulus, and eliminate the fear caused by the stimulus. The limitation of traditional exposure therapy is that it has a great impact on the patient's body and mind, but VR exposure therapy can effectively solve this problem, because the therapist can use different devices to monitor the patient's reaction in real time and fully control the VR device during treatment, and can stop treatment at any time

when the patient has resistance or discomfort. A large number of applications and trials have demonstrated the effectiveness and feasibility of VR exposure therapy.

2.2 Cognitive Behavioral Therapy (CBT)

Cognitive behavioral therapy (CBT) is a popular treatment strategy aimed at identifying and changing adverse thought and behavior patterns[7]. C= cognition = our understanding of everyday events, not the events themselves; B= behavior = what we do and how we react to time affects how we think and feel; T= therapy = designing experiments to test our understanding of what we think. T = therapy is mainly aimed at depression, anxiety and other mental diseases and psychological problems caused by unreasonable cognition, through the patient to change their own views and attitudes towards themselves, others and things to solve psychological problems. However, regular CBT sessions with a licensed mental health professional can be very expensive, so many people with depression and anxiety have to abandon therapy because they can't afford it. Virtual reality combines behavioral activation, cognitive restructuring, social skills training, and immersive psychoeducation to create virtual CBT interventions that can be treated without the intervention of a licensed mental health professional[8]. Eventually, people with depression and anxiety disorders[9]could benefit from virtual reality cognitive behavioral therapy.

2.3 VR Exposure Therapy Treatment Cases

VR Exposure Therapy Treatment cases of anxiety disorder in Kangning Hospital of Shenzhen City and the Department of Psychiatry in Nanfang Hospital of Southern Medical University published cases on Neuropsychiatric Disease and Treatment. This paper discussed the role of virtual reality exposure therapy in the intervention of mental illness with fear of Covid-19 infection as the main complaint. [10] Three patients from Corning Hospital were included in the Department of Pathology, where patients were progressively and systematically exposed to virtual covid-19 scenarios through VRET treatment (e.g. Touching a stained doorknob that might have the virus, watching pandemic news, watching frontline health care workers, etc.), and measuring levels of anxiety and fear using the Hamilton Anxiety Scale and the covid-19 Fear Scale, respectively. The

results showed that the VRET intervention significantly reduced symptoms associated with fear of covid-19 infection. What's more, there are already some applications that are suitable for certain headset devices and come with professional usage instructions as the app called oVRcome.

3. Conclusion

In the fast-paced life of modern society, the demand for psychological therapy has skyrocketed, and the addition of virtual therapy has brought new breakthroughs to traditional psychological therapy, making the way of psychological therapy more flexible and convenient. With its unique advantages, virtual therapy has played an auxiliary role in every link of psychological therapy, which can quickly collect information and analyze data to draw treatment plans, and can completely control the treatment process. It provides further development space for psychotherapy.

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