

Virtual Reality Fear Treatment

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ABSTRACT--- *Virtual Reality (VR) is a simulated computer generated experience taking place within a virtual environment that incorporates mainly auditory and visual senses, motion, and perception or the ability to grasp something. In this study and development, VR will be used as a tool to aid psychologists and psychiatrists in assessing and treating the different fear levels of patients. VR will simulate different fear scenarios to help patients get used to what they are afraid of, aka "facing your fear" simulator. This study will cover the flooding and gradual exposure method of treating fear and phobia. The scenarios are composed of 360 videos and animated 3D scenes that can simulate a fearful event. With the help of VR, different scenarios can be recreated with cheaper costs and safer risks. The experience can be customized based on the patient's level of fear and with the supervision of a licenced professional. A prototype with scenarios for phobias such as acrophobia, arachnophobia, claustrophobia, cynophobia, and entomophobia are used in the demonstration.*

I. INTRODUCTION

Today, VR technology is applied to advance fields of medicine, engineering, education, design, training, and entertainment. VR is a computer generated environment which tries to mimic and simulate real and imaginary world to give an immersive 3D (3Dimensional) visual and auditory experience. Current VR technology uses VR headsets or multi-projected environments, sometimes in combination with physical environments or props, to generate realistic images, sounds and other sensations that simulate a user's physical presence in a virtual or imaginary environment. A person using VR equipment is able to explore, look around, move around, and interact with the objects in the artificial world [1]. In this study, VR will be used as a tool in the field of psychology and its relationship to fear and phobias. This study will not replace practitioners, but will be used as a toll to aid in assessing and treating a specific fear. This will be an accessory for treatments like exposure treatment, flooding, and systematic desensitization.

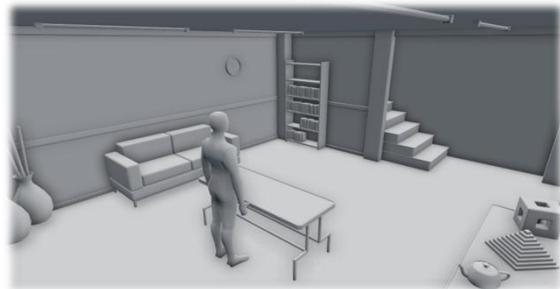
Exposure therapy is a technique in behaviour therapy that is used to treat anxiety disorders. Exposure therapy involves exposing the patient to the source of anxiety and fear without the intention of causing any danger or harm on the patient. Doing so is said to help patients overcome their anxiety or fear [2][3]. Numerous studies have demonstrated that this method is effective in treating anxiety disorders, fear and specific phobias [4]. Exposure therapy is the most successful known treatment for phobias [5]. Virtual reality exposure (VRE) therapy is a modern exposure therapy that is commonly used in treating post-traumatic stress disorder (PTSD). This method is being used on active duty army soldiers, using an immersive computer simulation of

military settings over a number of sessions. Self reported PTSD symptoms of the tested soldiers were greatly reduced after the treatment [6].

With Virtual Reality Fear Treatment, a unique and customizable experience can be created depending on the needs of the patient and the recommendations of the mental health specialist.

II. METHOD & RESULTS

Set Up. That application is set to run in different platforms such as the HTC Vive and Mobile VR Headsets. The room will be cleared of clutter and optional props can be installed in the testing room to simulate a scenario on the VR experience.



Exposure Therapy is an approach in behaviour therapy to treat anxiety disorders. Exposure therapy involves exposing a patient to the source of fear and discomfort without the intention to cause any harm. This method is thought to help them overcome their fear, anxiety or distress [7][8].

Using exposure therapy but instead of going to different locations and exposing to the actual fear, simulated scenarios are recreated in the VR experience that exposes the patient gradually or depending on the level of fear.



Acrophobia. The patient will cross two buildings using a glass bridge. The scenario will start at lower floor levels and gradually increase the height depending on the patient's tolerance.

Arachnophobia. The patient will be exposed to spiders and other arachnids. Spawning of critters will start from one and gradually increase in number based on the patient's tolerance.

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Claustrophobia. The patient is situated in a small space, particularly an elevator. The scenario will start with a larger elevator and an open elevator door. As the fear level increases, the door will gradually close and the elevator space will be tighter.

Cynophobia. The Patient will be situated inside a house. Lower levels of the experience will involve sounds coming from a dog. The next level will be a shadow of the dog and gradually revealing a dog outside the window. The next level will be a dog on a leash slowly getting closer to the patient until the patient can touch the dog.

Entomophobia. The patient will be exposed to different bugs and insects. Spawning of critters will start from one and gradually increase in number based on the patient's tolerance.

III. CONCLUSION

The prototype will be used by psychologists as a tool in exposure therapy to help patients overcome a certain fear. This technology can also be used as an experimental tool by psychiatrist to simulate calming environments for mental health patient development.

As a recommendation of the stakeholders based on the analysis of the project are: to conduct more tests and research in order to improve the efficiency and in order to identify the possible enhancements of the functionality, and to conduct an in-depth study whether the project can be integrated to other existing projects related to psychological treatments and virtual reality.

Auditory and Visual illusions are an essential recipe of the experience to make it immersive and for the user to believe what they are seeing and hearing. The visuals should be realistic and the sounds should be accurate.

VR will not replace reality, the practitioners and the experience. But will be used as a tool or an accessory to simulate and enhance the experience.

REFERENCES:

1. Wikipedia, Virtual Reality
https://en.wikipedia.org/wiki/Virtual_reality
2. Myers & Davis 2007, pp. 141–2
3. Joseph, J.S.; Gray, M.J. (2008). "Exposure Therapy for Posttraumatic Stress Disorder". *Journal of Behavior Analysis of Offender and Victim: Treatment and Prevention*. 1 (4): 69–80. doi:10.1037/h0100457.
4. Huppert; Roth (2003). "Treating Obsessive–Compulsive Disorder with Exposure and Response Prevention" (PDF). *The Behavior Analyst Today*. 4 (1): 66–70
5. Chambless, D.L.; Ollendick, T.H. (2001). "Empirically supported psychological interventions: Controversies and Evidence". *Annual Review of Psychology*. 52 (1): 685–716. doi:10.1146/annurev.psych.52.1.685. PMID 11148322
6. Reger, G.M.; Gahm, G.A. (2008). "Virtual reality exposure therapy for active duty soldiers". *Journal of Clinical Psychology: In Session*. 64 (8): 940–6. doi:10.1002/jclp.20512. PMID 18612993.
7. Myers & Davis 2007, pp. 141–2
8. Joseph, J.S.; Gray, M.J. (2008). "Exposure Therapy for Posttraumatic Stress Disorder". *Journal of Behavior Analysis of Offender and Victim: Treatment and Prevention*. 1 (4): 69–80. doi:10.1037/h0100457

