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Application: VR in Psychotherapy Virtual Therapy of Anxiety Disorders

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There has often been talk of using VR for psychotherapeutic applications of various sorts. Well, it's been done now, by Ralph Lamson, in San Rafael, California. His report on the preliminary results of this trail blazing study offers plenty of innovative ideas, and jump off points for further applications. ed.

Many Northern California Kaiser Permanente Health Plan members recently responded to advertisements placed in the two local newspapers, to participate in an experimental study of "Fear of Heights". This on going study is taking place in the Department of Psychiatry, Kaiser Permanente, San Rafael, California. It is designed to determine the effects of immersing individuals into a computer generated virtual environment where they encounter the perception of depth and height. Immersion is accomplished by placing a head mounted display over the eyes. **This treatment of psychiatric conditions through immersion in simulated environments is termed "Virtual Therapy" (Lamson, 1993).**

Tests measuring anxiety, depression, and internal external locus of control are administered before Virtual Therapy immersion, as are self reports of anxiety, panic, and phobia of heights. During Virtual Therapy immersion, heart rate and blood pressure are continuously monitored.

Of over 90 individuals who have volunteered for the study, sixty participants have been randomly assigned to Virtual Therapy and control conditions. For many participants, avoidance of heights had been a way of life. Others said anxiety, panic, and phobia of heights had limited their lifestyles. The research is guided by three hypotheses. It is hypothesized that Virtual Therapy participants will habituate to emotional arousal when faced with heights. Habituation has been described as "a progressive decrease in the vigor of elicited behavior that may occur with repeated presentations of the eliciting stimulus" (Domjan Burkhard, 1982), persisting for varying amounts of time, and strongly influenced by procedures used to establish it. When a person fearful of heights (acrophobic) encounters heights in a virtual environment, the response is often fear. After exposure, fear provoking aspects of the virtual environment cease to elicit strong emotional reactions.

The mechanisms of opponent process theory help to explain habituation. Previous studies of habituation document extreme physiological arousal in pulse and blood pressure read outs in skydiving trainees. Facial expressions suggested trainees were terrified during jumps, though experienced jumpers are not fearful. The primary process of fear is canceled out by the opponent process of elation.

Habituation can be observed in measurements where heart rate and blood pressure decrease over time. In this study, data show the intensity of an observed fear response is reduced during exposure to a virtual environment of heights, as indicated by participants' heart rate and blood pressure tending to decrease with time and exposure to a virtual environment with heights.

Early results

One week after the Virtual Therapy treatment, participants reported on self-assigned height goals. Over 90% of Virtual Therapy participants reported reaching their goals. Some attributed their successes to Virtual Therapy, others said they didn't know, and a few said it wasn't helpful. Whether the results will endure is unknown. Follow up studies are necessary. Still, biological measures suggesting habituation to fear of heights and real-world achievements at overcoming avoidance of heights, strongly suggests Virtual Therapy is an effective form of treatment for acrophobia.

In the second hypothesis, participants receiving Virtual Therapy are expected to show greater reduction in anxiety, depression, and locus of control than control group participants. In this experimental study, participants are randomly assigned to treatment and control groups. Virtual Therapy participants will be compared to others randomly assigned therapy, medication, and no treatment. Confirmation or rejection of this hypothesis will be determined at three, six, and twelve month follow up testing periods.

The third hypothesis states that participants in the Virtual Therapy groups are expected to spend less time in therapy for treatment of anxiety disorders than those assigned to control groups. Participants assigned to the treatment group receive one, fifty minute Virtual Therapy session followed by one half hour "talk" session a week after treatment and another half hour "talk" session three months later.

One result of particular interest concerns rapid reduction of avoidance behavior. Within one week after Virtual Therapy immersion treatment, participants sought opportunities in the real world to ascend to heights previously feared. Most of the Virtual Therapy participants reported two successes. The first success was completing self assigned goals. The second success was completing self-assigned goals with less fear than anticipated. The duration of these effects are unknown though under study.

Research of Virtual Therapy is still underway. Interim results suggest this form of intervention is promising. Clinical observation and patient reports indicate that Virtual Therapy is an effective form of treatment for height anxiety, panic, and phobia. However, this optimism needs to be guided by closer examination of data at the conclusion of the study. Research results may be limited by several factors. First, it is probably limited by those volunteering to participate. Some participants have complained that the virtual environment was "not real enough"

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while others objected that it was "too real". As expected, some participants were more phobic of heights than others. Randomization to treatment and control conditions was used to control for this variance. The study may also be limited by sensitivity of omnibus testing measures. People reporting anxiety, panic, and phobia of heights associate their fears with specific situations. Some individuals are fearful of all heights while others are phobic of glass elevators or bridges or cliffs. To compensate for this condition, specific Virtual Therapy self report measures were used along with biological measures of heart rate and blood pressure to capture participant changes over time with respect to fear of heights.

Is this why North
rushed out a book
by the same title?

Future plans

Two waves of Virtual Therapy treatments have been completed and a third is scheduled. Initial results in the application of Virtual Therapy suggests it is an effective form of treatment. It opens the door for replication studies and other innovative applications of simulation technology to psychiatric conditions. A book, Virtual Therapy, (Lamson, 1994) will be published by Jossey Bass Publishers, Inc., San Francisco, in the Fall, 1994.

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