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Clinical & Research News

Virtual Reality Treatment Combats Phobias, PTSD

Eve Bender

By entering virtual worlds, people who are enslaved by irrational fears can come to terms with the source of their distress in a safe, clinical setting.

Can patients with psychiatric problems improve their quality of life by spending hours in front of a computer? It would seem improbable, but it's happening, say psychiatrists and mental health professionals who regularly take their patients into virtual worlds as part of treatment.

Virtual reality bridges the gap between imagination and the real world by simulating reality to the extent that patients paralyzed by phobias can, through exposure, learn to tolerate the object of their fears.

At the Virtual Reality Medical Center (VRMC) in San Diego, clinicians use cognitive-behavioral therapy (CBT) in concert with virtual reality to treat patients with a number of phobias, including fear of flying, driving, closed-in spaces, open spaces, spiders, and public speaking. They are also using it to treat people with eating disorders.

Brenda Wiederhold, Ph.D., M.B.A., executive director of the VRMC, told *Psychiatric News* that while patients are exposed to the objects of their fears with virtual reality, clinicians help them to challenge the dysfunctional associations they have developed in relation to the feared object and help them to cope with those fears.

Before virtual reality began to be used in mental health treatment, she said, patients had two choices: to visualize their fears or expose themselves to the feared object or situation to increase their exposure to that object—a necessity for overcoming the phobia.

During imaginal therapy, for instance, a patient with aviophobia would imagine himself or herself driving to the airport or taxiing down a runway in a plane. However, Wiederhold noted, "few people have excellent visualization abilities."

In some cases, Wiederhold or her staff have accompanied patients to San Diego's airport to sit on empty planes to help them face their fears, but this practice became difficult after September 11 caused a major tightening of airport security.

Exposure Can Be Problematic

Traditional exposure therapy can sometimes be an obstacle to treatment, Wiederhold pointed out. "Only about 20 percent of people with phobias actually seek treatment because they are too overwhelmed at the thought of being

exposed to what they have been avoiding," she said.

In the case of some phobias, it can also be dangerous. Wiederhold has accompanied patients with a fear of freeway driving to the local freeways as a passenger to help them overcome their fears, but "you never know if they are going to freeze up while driving—I've had to take control of the steering wheel or gas pedal in certain instances," she said.

But at the VRMC, patients with aviophobia and other phobias wear a head-mounted display with small video monitors and stereo earphones to receive both visual and auditory cues. Clinicians generate and control the images via computer.

They also monitor patients' heart rates, respiration, and skin temperature during the virtual reality sessions, Wiederhold said. This lets clinicians know whether patients are physiologically aroused during exposure, which is necessary for them to become desensitized to the stimulus.

In addition, clinicians at the VRMC make the experience even more realistic for patients by having aviophobic patients sit in plane seats mounted atop vibrating platforms to help them feel as though the plane's engines are roaring beneath them. Patients with public-speaking phobias stand at a podium.

Before entering the virtual worlds, patients learn how to cope with the fears they will encounter through CBT and relaxation exercises.

Although virtual reality has improved the chances of recovery for many with mental health problems such as phobias, Wiederhold acknowledged, "it does not take the place of good clinical skills or judgment."

Confronting Traumatic Memories

Virtual reality is also helping patients with posttraumatic stress disorder (PTSD), according to JoAnn Difede, Ph.D., associate professor and director of the Program for Anxiety and Traumatic Stress Studies in the department of psychiatry at Cornell University Weill Medical College.

For patients with PTSD, research has shown that the illusion of presence in the virtual world promotes the "emotional processing of memories associated with the traumatic event," Difede said.

Clinicians gradually expose patients to different aspects of the source of their trauma using virtual reality, she explained, while using CBT and anxiety management to help them cope with the trauma.

Historically, Difede said, clinicians depended on patients' ability to recall the traumatic events to help them become desensitized to the trauma. "This presents a dilemma for patients who can't engage with these memories, because avoidance is inherent in PTSD," she noted.

The images and sounds generated through virtual reality, however, "provide multisensory cues to help the patients engage with their story," she said.

Difede collaborated with Hunter Hoffman, Ph.D., at the University of Washington in Seattle, to create a virtual reality program she could use to treat people who developed PTSD after surviving the attacks on the World Trade Center in 2001.

Program Recreates Attack, Aftermath

The program uses computer-generated pictures and sounds to depict planes crashing into the towers, explosions, fire, billowing smoke, people jumping to their deaths from the windows of the buildings, and the towers collapsing into

immense clouds of dust.

Patients don't experience the virtual world of 9/11 all at once, Difede noted. They are gradually exposed to each event. Just seeing the image of the towers against a blue sky, as they appeared on the morning of September 11, 2001, is enough to provoke anxiety in patients, she said.

Difede has used the program to treat nine patients with PTSD and comorbid depression, including those who narrowly escaped the fall of the buildings, and rescue workers who arrived at the scene shortly after the buildings collapsed.

For these patients, Difede administered six one-hour sessions of the virtual reality therapy over the course of 14 weeks and used the Beck Depression Inventory and the Clinician Administered PTSD Scale to measure depression and PTSD symptoms at baseline, after the first virtual reality session, and after the last.



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In a case report that appeared in the December 2002 *CyberPsychology and Behavior*, Difede described the outcomes for one of these patients and found that after the virtual reality sessions, there was an 83 percent reduction in depressive symptoms and a 90 percent reduction in PTSD symptoms.

The patient was in therapy with Difede previously and had not responded to imaginal-exposure therapy.

When immersed in the virtual world, however, the patient began to process traumatic memories that had previously been repressed, Difede said, and began to recover.

Difede said future research might compare virtual-exposure therapy to imaginal-exposure therapy to compare outcomes and the duration of treatment necessary for both forms of therapy.

More information about the Virtual Reality Medical Center is posted online at <www.vrphobia.com>. ■

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