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Columns

Multimedia Reviews: An Annual Conference to Advance the Use of Virtual Reality in the Treatment of Mental Disorders

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Abstract

Introduction by the column editor: Over the past decade rapid advances in virtual reality technology have found exciting and innovative clinical applications in medicine and surgery, highlighted at the **annual conference** "Medicine Meets Virtual Reality," which has been held for more than a decade each January in Newport Beach, California. These innovative virtual reality methods and technologies were also found to have significant clinical and research applications in the fields of psychiatry and psychology and for many years were included in a section of that larger medical meeting. A separate "CyberTherapy **Conference**," including a focus on these areas, was initiated in 2003. In this month's column, the founders of the **conference** report on rapidly developing and innovative applications of virtual reality and simulation.

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The recent growth of technology in the mental health field is a reflection of the continuous advances and discoveries of hundreds of investigators who use virtual reality and other simulation and advanced technologies to help patients with both mental and physical disorders. Over the past five years an increasing number of professional publications have highlighted clinical applications of virtual reality in the assessment and treatment of anxiety disorders, eating disorders, and sexual dysfunction as well as in neuropsychiatric and neuropsychological assessment and training, with particular adjunctive applications in the fields of physical therapy, training, and rehabilitation. Further applications have included distraction from unpleasant or painful medical procedures and treatment for posttraumatic stress disorder. A wide variety of other fascinating concepts and applications are ongoing.

Virtual reality and related therapies have a great deal to contribute as adjuncts to traditional therapies in the treatment of anxiety and other disorders as well as in improving quality of life. Because of the complete immersion that virtual reality provides, its ability to enhance the effectiveness of traditional therapies is continually being demonstrated. The

challenge is to learn more about the potential of this technology in all aspects of the behavioral and social sciences and neurosciences in order to improve the lives of persons who are suffering from illnesses.

Virtual reality is now being used in medical and psychological practices around the world as a complement to traditional treatments. Phobias are treated effectively and confidentially in the therapist's office through the use of simulation. Patients undergoing excruciating wound procedures are able to escape into a virtual world where they are distracted from the pain. Patients who are disabled by stroke or injury are reclaiming many of the skills that were taken from them. A growing network of physicians, psychologists, and researchers continues to develop these research and therapeutic protocols.

The CyberTherapy **Conference** seeks input from a wide segment of this scientific community. The event attracts international clinicians and researchers who are using advanced technologies to provide more effective treatments for the diagnosis, assessment, and treatment of mental disorders; to provide access to a wider segment of the population needing care; to empower persons with disabilities; and to increase rehabilitation solutions for persons who have suffered accidents or injuries. The **conference** features presentations by researchers using interactive technologies in training, mental health, disabilities, and rehabilitation. There is also an interest in introducing cutting-edge technologies, such as shared virtual worlds, avatars, video-game virtual reality, and noninvasive physiological monitoring in virtual worlds.

The **conference** brings together a group of like-minded innovators who want to take virtual reality technology to the next level in mental health and medical applications. Members of the scientific community can learn from one another in a dynamic setting, experience a virtual environment while discussing it in person with its designer, share ideas, and build collaborations to take the concepts one step further.

The issues addressed by the **conference** deal primarily with how best to use the new technologies to treat patients who have various mental and physical disorders. As technology continues to improve at an exponential rate, collaboration and synthesis of research in the field become increasingly necessary. As one scientist presents the results of research on the application of technology to one disorder, other researchers in the audience begin to think about ways to use the technology for a different purpose.

General areas of prospective development include integrating new technology into traditional therapy, applying existing technologies to new problems, and combining innovative technologies internationally by creating multicenter studies. Centers learn from one another's studies and improve on design with each experiment, thus avoiding needless repetition and waste of funds. Most important, objective measures and rigorous outcome analysis lead to improved applications.

For seven years, the CyberTherapy **Conference** was part of the **conference** "Medicine Meets Virtual Reality," which is now in its 12th year. The CyberTherapy **Conference** was originally a half-day symposium featuring presentations that dealt mostly with conceptual matters and future possibilities. This symposium grew over the years in size and scientific evidence. In 2003 it became an independent three-day **conference** highlighting the largest program ever presented of controlled clinical trials of virtual reality and simulation in the areas of mental health, rehabilitation, and disabilities.

This first independent CyberTherapy **Conference**, held January 19 to 21, 2003, attracted speakers and panelists from 13 countries. Co-organized by the Interactive Media Institute, a 501(c) (3) nonprofit organization for the development of technologies and education to treat mental health disorders, and the VEPSY Updated Project, a European Community-funded research project to enhance understanding of the potential of virtual reality in clinical psychology, the **conference** covered cybertherapy in relation to anxiety disorders, neuropsychological assessment and rehabilitation, clinical psychology, and pain management. Also included were special panels discussing the future of cybertraining and other emerging topics. It is clear that training and therapy have many important similarities and will

continue to be important topics for the future.

The first day of the **conference** traditionally ends with a "cyberarium," a show-and-tell that is open to the public and that features a plethora of virtual reality products and demonstrates how these products are being applied for therapeutic purposes. The cyberarium provides an opportunity to go one step beyond PowerPoint slides and didactic presentations. It is an exhibit space in which developers and scientists can showcase their work and converse one on one with interested spectators and colleagues. Researchers display their virtual reality equipment and applications. Posters show study results in easy-to-read color graphic formats. Attendees and presenters are able to experience each other's technologies and take a hands-on approach to collaboration. Much like virtual reality therapy itself, the cyberarium is a unique way for members of the virtual reality community to have their minds stimulated along with their senses.

The 2003 cyberarium included research into a new field by featuring several displays with interactive robots. These robots have been used to augment physical therapy and rehabilitation programs so that patients can comply more closely with prescribed treatment plans and also gain a sense of mastery during the exercises. More important, these simulations were designed to allow patients enjoyment, fulfillment, and distraction from what is many times a very boring and unrewarding rehabilitation process. These interactive devices may hold great promise as virtual interactive tools for patients with disabilities, persons with social phobia disorders, and children with autism and attention-deficit hyperactivity disorder.

The quality and significance of the work presented at CyberTherapy 2003 reaffirmed that virtual reality is already playing a significant role in health care. It is the authors' specific intention to bring together the best clinicians, researchers, and representatives from funding agencies so that we may further strengthen and advance efforts to improve health care through technology and to take advantage of the remarkable technological change that is occurring.

We anticipate that similar **conferences** will continue to "grow" the field of innovative technological responses to health care needs in a variety of fields. At least a third of the presenters at CyberTherapy 2003 were new and had not been to any of the previous offshoot **conferences**. We hope to continue this trend, bringing new groups together and sharing information to the benefit of the entire mental health care field.

The virtual reality community also has a much larger purpose: applying new technology to revolutionize the future of medicine as a whole. Techniques that are used to treat specific phobias have already been shown to be useful for treating other anxiety disorders. As researchers discuss new systems and developments at the CyberTherapy **conferences**, ideas for new applications abound. What can be used to distract burn victims from their pain may also be helpful in dentistry, in the military, or in training surgeons in attention-focusing techniques. The 21st century is upon us, and the technology to better understand and assist human advancement is already available. What we need to do now is to explore this technology further and learn how best to use it. The collaboration and dissemination that took place at this **conference** provided a significant step in that direction.

The second **annual CyberTherapy Conference**—"Using Interactive Media in Training and Therapeutic Interventions"—will be held January 10 to 12, 2004, in San Diego, with **preconference** workshops on January 9 for attendees who are new to the field of virtual reality.

Further information about the **conference** can be obtained at www.vrphobia.com or by e-mailing cyberpsych@vrphobia.com.

Footnotes

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