Developing a Multi-User Virtual Environment for Adolescent Psychotherapy

Daniel Gillette, Ed.M.

Greenleaf Medical

261 Hamilton Ave., Suite 409

Palo Alto, CA 94301 USA

dan@gillettedesign.com

Abstract

This paper discusses the early use of a prototype multi-user virtual environment (MUVE) designed to enhance traditional, office-based adolescent psychotherapy.

Keywords

Multi-player virtual environment (MUVE), behavioral healthcare, psychology, simulation, disability, education, HCI, user-centered design

ACM Classification Keywords

J.4. Computer applications: Social and behavioral science; I.6.8. Computing methodologies: Simulation and modeling

Introduction

Many children have a behavioral or mental health disorder that, if not addressed, can lead to school failure, family conflict, drug abuse, violence, incarceration, and even suicide. Common interventions tend to focus on better understanding oneself, understanding the perspectives of others, developing strategies for dealing with new situations, improving communication skills, reducing maladaptive behaviors, and recognizing triggers that lead to undesirable behavior. Methods commonly used in interpersonal counseling include one-on-one discussions with a therapist, group therapy, and

role play for both thematic exploration and practicing coping skills.

While these strategies can be effective, they are inherently flawed for many, since they require being comfortable sitting face-to-face with an authority figure (the therapist); rely on a joint memory of therapist and client when discussing past sessions; and heavily tax attention (in particular, role play requires the juggling of many balls, such as remembering the story line, setting, roles, and the scenario's plot while also being aware of what is going on in real time). Multi-user virtual environments (MUVE)[1] with after action review (replay) capabilities may address many of these issues by providing social and cognitive scaffolds for therapist and client.

For the past year and a half, I and my clinical and technical collaborators have been developing a MUVE for therapy called SECTER: Simulated Environment for Counseling, Training, Evaluation, and Rehabilitation. Field testing at a residential treatment facility for teens with severe psychiatric disabilities has begun to show that MUVEs can improve patient/therapist relationships, communication skills, resistance skills (anger management, drug and alcohol refusal), understanding of client motivation, and awareness of client progress, while increasing the client's sense of control over his/her own circumstances. In this paper, I will briefly cover how we came to develop SECTER and share a few interesting observations from the field.

A mental health worker and his client meet in SECTER

Two avatars in SECTER

Background

The original brief for this project was to create a single player video game that would teach adolescents with oppositional defiant disorder (ODD)[2] how to better handle social situations, especially with peers and authority figures. While a single player video game was a nice idea, such a system would be very expensive to develop, requiring thousands of possible scenarios and an engine adept at understanding the meaning behind a player's actions. For this reason, we started to look at other possibilities, latching onto the idea that the system could amplify therapist skill and experience, versus simply becoming an adjunct to it – it was our belief that by creating a collaborative medium for therapist and client, we could make significant strides in improving care. After a few initial concepts for collaborative story generation software (most notably, the idea of developing a comics creation tool), we realized that a MUVE would best suit our needs by allowing for natural and limitless social interaction between therapist and patient in an environment with embedded features that supports the interaction.

While MUVEs looked promising, we had trouble finding a platform that could support two features that we saw as critical for therapeutic use: natural speech communication (the capability to talk instead of typing to communicate), and the ability to replay a session from a variety perspectives. After some exploration, we found our solution in OLIVE, a MUVE developed by Forterra, Inc. OLIVE has integrated voice over internet protocol (VoIP) that not only allows users to communicate by simply talking, but also links that speech to auto gestures meaning that when a user talks, his/her avatar's

---

[1] MUVEs are simulated on-screen environments where a group of individuals can interact with each other. Typically, each user sits at his/her own computer and the interaction is synchronized by a central server. Popular MUVEs are Second Life and World of Warcraft.

[2] Oppositional defiant disorder is best characterized by chronic tantrums and disruptive behavior, often due to misreading a social situation and responding in an oppositional and/or aggressive manner.

mouth moves accordingly, followed by appropriate general body posture (for instance, if the user shouts, the avatar's mouth will open more widely and the body will stiffen). Additionally, OLIVE has after action review (AAR) capabilities, allowing for immediate re-animation of events. Reanimation is critical,in that it allows users to not only review a past session but to also freely move the "camera's" perspective during playback to see the action unfold from another's point of view. Additionally, AARs can be taken over by the users at any point, allowing one to start a session by watching an AAR partway through and then taking over the avatars to act out a different ending. Lastly, OLIVE has a "radio" feature that allows users to tune into a specific "frequency" and have a discrete voice chat (the avatar has no movements associated to using the radio), allowing for discreet coaching during a real-time interaction in the MUVE, such as reminding a patient of a coping strategy during a group therapy session taking place in a MUVE.

While OLIVE was still in beta-development when we discovered it, we felt it was the best candidate for our exploration of MUVE feature for mental health counseling, so we had a server set up and began a field trial.

Setup and Observations
For the past 18 months, in collaboration with our clinical partner, CFG Health Systems, we have been testing SECTER at a residential treatment facility for adolescents. Originally, the system was tested with six teenage boys and two therapists on a ward dedicated to conduct disorders, such as ODD, but in the past five months, we have expanded the trial to include two coed wards that serve teens with a broader range of psychiatric disorders. While the specific diagnosis of the adolescents is diverse, many are dealing with common themes of trauma, difficulty understanding social situations, attentive difficulties, and a need to reduce the instances of maladaptive behaviors, such as self-injurious behavior or impulsively acting out at others. The age range of the children is 12-17 years old. In the past six months, we have had roughly eight therapists and 20 patients use the system, most in an ongoing manner over many weeks. Physically, therapists and patients tend to sit at individual workstations that positions them shoulder-to-shoulder. This setup allows for a fluid movement from face-to-face to MUVE interaction and back. Once engaged in a task, such as practicing a skill, acting out an event, or playing with virtual objects, such as cars, the users become immersed in the virtual world, tending not to be distracted by the presence of their "real" counterparts sitting next to them while acting in the MUVE.

While the main purpose of this research has been to inform our design process, and the flow of the work has been haphazard due to issues of bugs, staff turnover, and changes in the patient population, valuable anecdotes have emerged that can act as a foundation for a discussion on where to go next in using MUVEs in psychotherapy. What follows are a few examples of interesting observations of MUVE use in interpersonal counseling.

While we have seen exciting evidence to support early assumptions that SECTER would facilitate rapport building, patient buy-in, and aid in the development and practice of skills building, we have been surprised by other emerging uses and outcomes. Perhaps the most interesting interventional strategy is what I have termed, *watching you watch you (WYWY)*. Essentially, WYWY consists of a therapist acting out a scenario in SECTER with a patient, and then observing the patient's real world reaction to viewing a recording of the virtual session. Often, patients have shown unexpected signs

of comfort or discomfort with their behavior in the session or presented themes. By returning with the patient to the point in the recording where there had been an unexpected reaction, therapists have gained valuable data that was previously unavailable to them. In one case, a therapist learned that her patient had been more engaged in the therapeutic process throughout the prior two months than his outward behavior had shown. This became apparent while watching a role reversal session, where the client clearly preferred a representation of himself as a child who was behaving appropriately, versus being the troublemaker he was known to be on the ward. In essence, the client was highly engaged in his therapy but due to difficulty regulating his own behavior, it was difficult for him to express it.

Another interesting result of using SECTER has been patients expressing how much freedom they feel in the MUVE. Patients at residential treatment facilities often feel stripped of control over their own lives, leading to discomfort that can cause resistance to engage in the therapeutic process. In SECTER, patients can do things they cannot on the ward, such as run away from a therapist or control machinery, such as planes and cars. The sense of freedom that a patient may feel in SECTER has been seen to elevate the mood of patients and increase patient cooperation. It has also led to longer session times. An example is a patient who had a tendency to regularly throw objects at her therapists and vacate the office during sessions. In the real world, this would bring the session to a close. Now, in SECTER, when she uses such avoidance techniques the session need not end, since no one is put in physical danger or separated by an insurmountable distance; in SECTER, her therapist can wait out her tantrums until she is comfortable to begin the planned therapeutic activity. Additionally, the ability of the therapist to stay

in frame with the client during tantrums can be therapeutic in itself, showing the patient that her therapist will not abandon her.

Another form of SECTER use that is beginning to show promise is conducting "empty chair" therapy, where the patient is asked to confront an issue with someone who is not available for a real conversation, such as a parent who abandoned the patient as a baby. Traditionally, the patient would address an empty chair, a stuffed animal, or the therapist as a stand-in for the absent individual. In SECTER, therapists have been taking on the roles of the absent individual and using a setting appropriate for the interaction. In some cases, the result has been quite powerful. Recently a therapist told me that after months of working with a patient to help him come to terms with his anger toward a missing parent, that one 45 minute session in SECTER provided a dramatic breakthrough. The therapist said of the session, "I believe that what he said in that virtual world he was able to leave there – his anger." The therapist reports that the session had an enduring impact, with the patient making great strides since.

In my mind, this last example shows the true value of MUVEs in interpersonal counseling: the therapist was employing a technique she had used many times before and the main power of the session was generated by the connection between therapist and patient. The role SECTER played was to clear the way for the therapist and patient to have an authentic and focused session by reducing the cognitive load of the intervention, triggering their imagination, and freeing them of the confines of the therapist's office.