A Second Life for Telehealth?

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1. Introduction

In recent years, the emergence of the Internet and related tools such as chat and email has opened new possibilities of communication between therapists and patients. As a consequence, a number of research studies have begun to investigate the potential benefit of e-therapy.

E-therapy, also known as “cybertherapy” or “net-therapy”, is defined as the provision of psychological therapy and consultation over the Internet. Although e-therapy provides several advantages for both the therapists and patients, such as the possibility to deliver health information and services across geographical distance for an underserved population, this approach poses new challenges with respect to the anomalies of being present, and able to meet other presences, in virtual space with no physical body (Castelnuovo et al., 2003). A further limit of conventional e-therapy applications is that they do not allow multiple users to share the same mediated communication environment.

The emergence of Multiplayer Online Games (MOGS) may provide a useful approach towards the implementation of multi-user applications in e-therapy. MOGS are collaborative virtual environments characterized by the simultaneous presence of multiple users within the same simulated space, who can communicate using local chat, voice, instant messaging, and in some cases, gestures and movements. Over the last few years the number of MOGs has increased dramatically: as recently as in 2005, there were 101 MOGs in commercial service, 69 in development/beta, and 22 being actively localized for the U.S. and other English-language markets (PersistentWorldz, 2005). Also, there has been a tremendous growth in MOGs users: according to recent market estimates, combined global memberships in subscription and non-subscription games exceeded 15 million in 2006, with market value for MOGs hitting $1bn in Western countries alone. The aim of the present article is to describe the potential role that MOGS can play in e-therapy applications, by addressing the potential advantages and the issues related to the use of this emerging medium in the clinical setting.

2. From e-therapy to immersive virtual telepresence

According to Glueckauf et al. (2003) online therapy provides four key advantages: a) the potential to deliver health information and services across geographical distance for underserved population; b) the potential to enhance the quality of health information and services in particular areas or for specific populations; c) the potential to ensure continuous medical and psychological service overall for chronic disabilities reducing the cost of an extended traditional assistance; and d) the growing trend of patients’ preferring to use home-based computer systems for psychotherapy.

These advantages have led an increasing number of mental health professionals worldwide to provide psychotherapy services over the Web. The two main applications of e-therapy are individual therapy and online self-help groups. The first refers to the provision of individual therapy and consultation over the Internet. This approach presents risks related to clinician-patient relationships, but it also allows patients more time for communication with their clinicians through asynchronous e-mail communication, allowing the depth of disclosure to be improved by patients who feel inhibited in a face-to-face situation (Maheu & Gordon, 2000).

On-line self-help groups, on the other hand, refer to bulletin boards, chat rooms, news and discussion groups operated within health-related web pages, listservs, i.e., groups in which each
individual message is copied and e-mailed to all subscribers, and other electronic forums focused on
the sharing and solving of psychological disturbances (Humphreys, Winzelberg, & Klaw, 2000). These may be unstructured discussion groups or led by an individual, usually a non-professional, who shares the problem that the group addresses. The principle at the core of this approach is the sharing of experiences, strengths and hopes between members in order to solve their common problem (Castelnuovo et al., 2003).

Internet-assisted therapy and counselling has many advantages for both the psychotherapist and for the patient, but it poses new challenges too. One such issue is related to the impossibility of being physically present, and able to meet other presences, in virtual space. Indeed, a key element of the success of psychotherapy is related to the ability of a therapist to access the non-verbal communications of their patients. This skill is often essential for making accurate diagnoses and in formulating effective treatments for patients. Without non-verbal cues, it is more difficult to feel and be able to convey empathy toward their geographically remote patients (Bauer, 2001). Physical separation may also involve emotional separation between patients and therapists. This concern is particularly critical for those patients who already suffer from depression and feelings of alienation. To address these challenges, Riva has recently introduced the concept of Immersive Virtual Telepresence (Riva, 2004). In this vision, telepresence-based health is a shared immersive e-therapy in which the presence, simulation, and experience components are key factors of therapeutic success. From the technological viewpoint, the goal of this approach is to combine the use of Internet and Virtual Reality (VR) to create distributed virtual environments that are used to enhance the remote communication between therapists and patients. The concept of presence clarifies the possible role of virtual reality in e-therapy: a communication interface based on interactive 3D visualization, able to collect and integrate different inputs and data sets in a single realistic experience. The two principle ways in which IVT can be applied are: a) as an interface, which enables a more intuitive manner of interacting with information, and b) as an extended communicative environment that enhances the feeling of presence during the interaction. Within this perspective, it is up to the health care provider to decide if the VR application will be more focused on the integration of different data sets or on the realism of the virtual experience.

However, the IVT approach is also faced with practical and technological challenges. A first issue is related to bandwidth requirements, as virtual environments must be downloaded from the remote server on the patient’s PC. Further, in current IVT applications the virtual simulation is limited to a single user. For example, in remote virtual reality exposure therapy, the patient explores the virtual environment under remote supervision, but the therapist is not included in the virtual scenario. Some virtual environments include virtual characters, but they are mostly autonomous virtual humans whose behaviours are driven by artificial intelligence programs. In the following paragraph, we explain how the emergence of MOGs may provide a useful technological framework to address these issues.

3. The rationale of using MOGS in immersive virtual telepresence

3.1 MOGs: definition and technological features

According to the Squire and Steinkuehler definition, MOGs are “highly graphical 3-D videogames played online, allowing individuals, through their self-created digital characters or avatars, to interact not only with the gaming software (the designed environment of the game and the computer-controlled characters within it) but with other players’ avatars as well. These cyberworlds are persistent social and material worlds, loosely structured by open-ended (fantasy) narratives, where players are largely free to do as they please – slay overgrown butterflies, siege cities, barter
goods in town, or scalp raw materials off the local flora and fauna” (Squire & Steinkuehler, 2006). Most MOGs are implemented by using a client/server architecture. The front-end on the player's side acts as a terminal that receives the player's input and forwards it to the server where the game world is hosted. Processing of the game state is performed on the server-side and changes are fed back to clients, which show an audio-visual representation of the game world. The majority of MOGs have proprietary content, but some independent MMORPG projects have been proposed as completely open source platforms. For example, the WorldForge project and the Multiverse Network have formed a community of independent developers who are working on creating a framework for a number of open-source MOGs.

3.2 Psychological features in avatar-based interaction

As we have seen, the IVT vision suggests that providing the remote patient with a feeling of shared presence is a key for improving therapeutic effectiveness. From this perspective, MOGs can be useful since they may be able to convey high feelings of presence and social presence, where social presence is defined as a feeling of togetherness of remote persons who are connected through some form of telecommunication medium. Embodiment by means of avatars has the potential to facilitate the clinical communication process, to positively influence group processes and cohesiveness in group-based therapies, and to create higher levels of interpersonal trust, which is a fundamental requirement for establishing a successful therapeutic alliance.

Results of recent studies in avatar-based social interaction provide support for this hypothesis. In one such study, Bente and colleagues (2004) measured social presence and interpersonal trust in avatar-based collaborative net communications, and compared this condition to face-to-face-communication as well as audio-based (phone) and text-based net-communication. Findings of this experiment, which involved 48 participants, showed that the level of co-presence was higher in avatar-based interactions than in phone or chat interactions. However, authors suggest taking this observation carefully, since the co-presence values for the avatar-based encounters were close to zero and therefore data can hardly be interpreted as a positive effect in itself.

In a subsequent study, Bente and colleagues (2005) have investigated the experience of "social presence" as a relevant effect dimension of avatar mediated net-communication. In this study, 142 participants were randomly assigned to one of five possible communication settings: (1) text only, (2) audio only, (3) audio and video, (4) audio and low fidelity avatar (LFA), (5) audio and high fidelity avatar. Results revealed a significant difference between text and all other communication modes, indicating that audio, video and avatar systems worked similarly well in creating an experience of social presence. However, according to these authors, avatar platforms offer new possibilities to overcome many of restrictions related to audio and video communication modes. In particular, they suggest that “Virtual worlds and avatars could thus be seen more as a means to contextualize social interaction and to foster the salience of nonverbal information, rather than just to provide high fidelity transmission channels for visual cues. They are in this sense not just virtual equivalents of a video conferencing system but a possibility for active filtering and contingency management systems” (p. 102).

Other studies have suggested that even avatars with rather primitive expressive abilities may elicit strong emotional responses in users of a collaborative virtual environment. Experiments have shown that the avatar can readily take on a personal role, thereby increasing the sense of community feeling, and becoming a genuine representation of the underlying individual, not only visually, but also within a social context (Fabri et al. 1999).
Yee and colleagues (2006) have investigated whether norms about social space in the real world map onto how avatars act in relation to each other in virtual space. In an observational study of Second Life, a virtual community, the authors collected data from avatars in order to explore whether social norms of gender, interpersonal distance (IPD), and eye gaze transfer into virtual environments even though the modality of movement is entirely different. Their findings were that, similar to the real world, male-male dyads tend to stand further from each other and look at each other much less than female-female dyads: 1) Male dyads have larger IPDs than female-female dyads, 2) male-male dyads maintain less eye contact than female-female dyads, and 3) decreases in IPD are compensated with gaze avoidance.

In summary, these preliminary research findings suggest that avatar-based interaction in virtual worlds may have the potential to provide a means to enrich the level of emotional connections and social presence conveyed by conventional e-therapy tools; from this perspective, MOGs may at least provide opportunities to build strong partnerships between patients and clinicians by giving patients more contextual information and nonverbal information.

4. MOGS in e-therapy: two application scenarios

4.1 MOGS in virtual reality exposure therapy

In recent years, a number of studies have suggested the efficacy of virtual reality exposure in the diagnosis and treatment in various psychological disorders. In the field of psychotherapy, most studies have addressed specific phobias, in particular on fear of flying, acrophobia, fear of driving, claustrophobia and fear of spiders. In addition, several studies have been published on the use of this approach for eating disorders, social anxiety disorders, sexual disorders, post-traumatic stress disorder and panic disorder with or without agoraphobia. In VR exposure, the patient is immersed in a VE containing the feared stimulus. This procedure has been shown to be at least as effective as these traditional techniques in reducing phobic symptoms (Pull, 2005). The added-value of this approach exists in the practical advantages offered by the use of VR technology. As stimuli are generated by the computer, the therapist has full control over their intensity, and the risk of unpredictable effects is significantly lower than in vivo exposure. Further, virtual exposure allows the therapist to present the patient with realistic three-dimensional visualization of the feared situation. This feature can be very useful when the patient is unable to recreate the scenarios because of pathological avoidance of problematic memories, as is often the case in post-traumatic stress disorder (Rizzo et al., 2005).

In our view, MOGs represent the next logical step in virtual reality exposure. As in conventional VR-based exposure, MOGs provide a virtual scenario that reproduces the feared situation, but with the possibility of having the therapist supervision directly in the virtual environment, thereby providing the patient with more feelings of safety and control. Another potential use of MOGs exposure therapy could be in social phobia applications. Clinical research has shown that VR exposure can be used to reproduce situations that social phobics feel are the most threatening, such as performance, intimacy, scrutiny and assertiveness. In most VR applications for social phobia, animation-based character, videos or autonomous virtual humans are used as anxiety-provoking stimuli. The use of MOGs could provide the therapist with the possibility of using avatar-based exposure, thereby enhancing the realism of the social interaction while at the same time maintaining full control over the simulated social environment.
4.2 MOGs for creating virtual patient communities

This scenario draws on previous work of Winkelman and Wey Choo (2003). They started from the assumption that patients with chronic disease possess tacit knowledge gained from their personal experience. This knowledge is closely equivalent to a worker’s tacit knowledge in that it is “used by organizational members…to make sense of their worlds”. However, different from work-related tacit knowledge, which is mainly based on procedural, action-based skills, a patient’s knowledge is acquired experientially by the necessity to match the daily challenges and needs of a chronic disease. These needs include information on their disease, treatment side-effects, treatment plans, professional contacts, as well as supportive information for family and friends. In addition, access to the highest quality evidence is important when patients participate in decisions about their care choices, and patients with diseases in which medication therapy is the primary treatment option may have greater and more in-depth informational needs. According to Winkelman and Wey Choo, if this tacit knowledge can be shared or socialized through a program, tool or medium, a patient’s sense of self-efficacy can improve, thereby positively affecting health outcomes as well as social functioning.

Winkelman and Wey Choo’s approach argues a shift in role of chronic disease patients from external consumers of healthcare services to a “community of practice” of internal customers. Introduced by Wenger (1998), community of practice is a social construct that bring learning into lived experience of participation in the world. They are defined as self-organizing, informal groups whose members work together towards common goals, face common needs, share best practices, and have a common identity. Drawing on these concepts, Winkelman and Wey Choo (2003) suggest that with the implicit support of a healthcare organization, patients can benefit from accessing to the expertise of peers, by integrating the knowledge gained from the experiences of living with chronic disease in their self-management. In particular, they claim that virtual patient communities can become effective tools of communication if a) members have common interests, needs, goals, as well as an aspiration for mutual communication and the furthering of relationships, and b) if they are able to supplement already existing face-to-face communication opportunities. Documented examples of web-based communities are Zora (Bers, Gonzalez-Heydrich et al., 2001), an animated virtual community for paediatric haemodialysis patients that help children and families cope with their disease, and WebMD (Emdeon, 2005), which includes experience-sharing tools such as Message Boards, Newsletters, and Live Events.

Starting from this model, we argue that MOGs have the potential to bring about several innovative features to virtual patient communities. In fact, not only can MOGs provide mediated environments with appropriate social, non-verbal and contextual information that current communication technologies are unable to convey, but they can also bring together people who are experiencing similar problems - people who are geographically distant and/or who experience problems that might be rare. A number of support groups of all shapes and sizes have been already developed in MOGs like Second Life and Entropia, which may serve as valuable adjuncts to clients in individual therapy. Considering the type of the client's chronic disease, the therapist might suggest a particular community or specific behavioural assignments within a virtual patient community. The patient’s experience with the community can then provide an opportunity for creating self-insight and for developing new interpersonal skills.

5. Existing therapeutical applications of MOGs

Specific games and virtual communities are now being designed for the purpose of therapy, and a number of support groups of all shapes and sizes have been already developed in MOGs like
Second Life and Entropia, which may serve as valuable adjuncts to clients in individual therapy. A British organization called ARCI, for example, has developed a virtual environment in Second Life to help abused children learn important life skills. They enter the virtual world to learn to socialize, work as a team, and learn essential computer skills (Terdiman, 2005). Brain Talk Industries is another organization that is paving the way in this field by creating a variety of on-line communities and forums which provide support and information for specific groups suffering from physical and mental disabilities. John Lester, the president of BrainTalk, has created the private island Brigadoon in Second Life in order to attempt to enhance the lives of people dealing with a form of autism called Asperger’s Syndrome. This island is reserved specifically for people diagnosed with this disorder. Because the disorder can make normal social interaction very difficult in real life, these people are often unable to feel a sense of belonging in the real world. However, this virtual world provides an ideal place for them to communicate and interact with other people dealing with the same problems (Lester, 2005). Live2Give is another one of BrainTalk’s projects within Second Life. It provides an on-line world for people dealing with cerebral palsy and other physical disabilities. It was created by John Lester and June-Marie Mahay to give these people opportunities in a virtual world that they do not have in the real world. Like Brigadoon, this virtual world brings people together who can relate and help each other in their similar struggles. According to Mahay, this seems to be a quite empowering experience, and has “revolutionized how they feel about themselves and their part to play in the world” (Lester, 2005).

6. Some important caveat in the use of MOGs in therapy

Although the therapeutic possibilities of online games are quite promising, we must not overlook the problems that could arise with such therapy. If it is true that people can explore threatening aspects of reality in a “safe” environment, it also true that if the use of MOGs becomes excessive it risks preventing people from forming meaningful real world relationships. As observed by Allison (2006) an “Increased substitution of cyberspace-based personas and relationships at the expense of face-to-face interaction may create a developmental double-edged sword. The Internet may provide a socially anxious patient the opportunity for modified peer group interactions, yet it does little to foster the development of genuine intimacy”. Therapists should take care to prevent game addiction. Besides and after “safe exposure”, the patients should be encouraged to participate in real life social interaction as much as possible.

On-line games provide anonymity to their players, thus offering a less intimidating opportunity for social interaction and psychological reflection. The important factor of anonymity within this kind of therapy would allow more people to discreetly seek help on their own. Although the anonymity that exists within such games provides a sense of freedom that could allow patients to open up, explore, and grow, it can also present some negative aspects. Other people can enter the virtual environment and interact with patients producing negative effects on their experience and introducing uncontrollable and disturbing variables into the environment. To prevent this, a private server could be made into a controlled environment specifically designed and dedicated to therapy. Privacy and the identity of both the patient and the therapist must be also taken into account. The computer-based interface does not guarantee that the person on the other side of the screen is really who we expect it to be. This aspect can be overcome, for example, with the use of protection codes given by the therapist.

The possibilities of MOGs use for therapy are quite promising as long as its limitations and dangers are taken into consideration as well. These considerations suggest that further research should examine better ways to create a form of therapy in MOGs and consider in depth these and other
limitations and dangers linked to the use of MOGs in therapy in order to understand if they really represent a risk for patients.

7. Conclusions

In this paper, we have proposed an approach for application of MOGs to the field of e-therapy. Although this emerging medium has an interesting potential for improving existing e-health applications, there are several challenges that need to be addressed. First, more basic psychological research is needed in order to get a clearer understanding of the psychological, communication and interpersonal aspects of avatar-based interaction, and differences between this type of communication and all other communication modes. Further, it is important to define guidelines for the development of MOG-based clinical applications, to reduce to minimum the risk of abuses. Actually, most MOGs have open access, meaning that it may be difficult to create safe therapeutic environments in which patients can interact with a therapist without external interferences and with privacy protection. Also, cost issues should not be overlooked. The vast majority of MOGs are characterized by high subscription costs, which may be too expensive for therapists who work in private practice. Finally, most MOGs provide users with building tools (editors) that are not easy to use for non-experts, as they often require the user to learn script-based programming languages. Despite technical, ethical and economic issues, we suggest that MOGs may represent a valuable opportunity for the future development of e-therapy. Our hope is that the present article will stimulate a discussion within the research community about the potential, the limits and the risks that this emerging medium offers for cybertherapy applications.

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7. References


