Critical Reviews

A second life for telehealth: prospects for the use of virtual online worlds in clinical psychology

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Abstract: The diffusion of the Web 2.0 has led to the development of three-dimensional (3-D) online virtual worlds, such as Second Life, that are computer-based simulated environments mainly modelled by their users that can create and manipulate elements and thus experiences telepresence to a certain degree. Different studies suggest that virtual worlds play a critical role in contextualizing social interaction and fostering the salience of nonverbal information by providing active filtering and contingency management systems as opposed to being just the virtual equivalents of call or video conferencing systems. These features are fundamental in facilitating and making functional social interaction between users that are physically distant from one another.

Considering the numerous advantages offered by the online virtual worlds, we suggest the use of Second Life as a support tool for traditional psychological therapies. In particular, we have developed an explorative protocol based on a single case with the aim to evaluate the potential of the virtual support sessions when, for contingent causes, patient and therapist can have only one face-to-face encounter per month. As this way to conduct psychological interventions is to be considered very innovative, our main aim was to investigate its feasibility from the side of both the patient and the therapist, analyzing their reactions to this kind of approach. Preliminary data indicate a good response both from the therapist and the patient.

Introduction

Since the introduction of the Web 2.0 in 2004 (Graham, 2005), there has been a huge increase in the potential of web applications, allowing users to create, modify and share contents using multiple computers in various locations. In particular, Web 2.0 represents the trend in the use of World Wide Web (WWW) technology aimed to enhance information sharing and collaboration between users, so that they can do more than just retrieve static information. These new features have led to the development of web-based communities, social-networking sites, wikis, blogs, and three-dimensional (3-D) online virtual worlds that represent one of the most successful applications of the Web 2.0. Three-dimensional virtual worlds are computer-based simulated environments mainly modelled by their users that can create and manipulate elements and thus experiences telepresence to a certain degree (Biocca, 1995). Such modelled worlds may appear similar to the real world or instead depict fantasy worlds, and can be used for many different aims: game and pleasure, social interaction, education, research, commercial and business, e-commerce, and so on. Usually virtual worlds admit multiple user interactions, based on text, graphical icons, visual gesture, sound and voice. Second Life, There, IMVU and Active World are some of the 3-D virtual worlds where every day millions of users interact with each other through their avatars, that is to say, three-dimensional graphical representations of themselves. Today, Second Life is the 3-D virtual world with the greater number of registered users, counting approximately 13 million of subscribers in March 2008. Everyone can download for free a client
software called the Second Life Viewer that enables its users, called Residents, to interact with each other through motional avatars, providing an advanced level of a social network service. Residents can explore, meet other Residents, socialize, join individual and group activities, play, create and mutually trade items and services. While Second Life and other online virtual worlds are sometimes referred to as games, this description does not fit the standard definition, since they allow a lot of various activities other than games. Within Second Life, avatars can communicate using text-based chat or voice. In particular, there are two main methods of text-based communication: local chat, and global "instant messaging". Chatting is used for public localized conversations between two or more avatars, and can be heard (seen messages) within 20 meters, while instant messaging (IM) is used for private conversations, either between two avatars, or among the members of a group and does not depend on the participants being within a certain distance from each other.

Recent experimental studies performed on avatar-based interactions in 3-D virtual worlds have shown that these kinds of virtual relations are able to convey such as feelings of social presence, that users undergo the experience of inhabiting a shared space with one or more, while their awareness of mediation by technology recedes into the background (Bocca, Harms, & Burgoon, 2003). As suggested by Casaneuva and Blake (Casanueva & Blake, 2001), the sense of social presence consists in the belief that the other subjects in the virtual environment are real and really present, and that they and the others are part of a group and process. Moreover, compared to other kinds of communicative methods, such as phone calls or chat, the avatar-based interactions significantly increase the level of social presence (G. Bente, Rüggenberg, & Krämer, 2004; G. Bente, Rüggenberg, & Krämer, 2005), elicit strong emotional responses, and increase the sense of community (Fabri, Moore, & Hobbs, 1999), even in those avatars with rather primitive expressive abilities. According to these studies, avatar platforms offer new potentials to overcome many of the restrictions related to audio and video communication modes. In particular, they suggest that virtual worlds and avatars play a critical role in contextualizing social interaction and fostering the salience of nonverbal information by providing active filtering and contingency management systems as opposed to being just the virtual equivalents of call or video conferencing systems. These features are fundamental in facilitating and making functional social interaction between users that are physically distant from one another. Through their avatars (that usually remain stable over time) users can meet friends, colleagues, students or teachers, clients and so on, and share with them a common virtual space and discuss about their interests in real time, without the necessity to reach a place somewhere in the physical world. Today, many companies, universities, organizations and private individuals use Second Life and other parallel universes to make their business and activities. Computer-generated realities are also becoming a fertile terrain for researchers and psychologists, who can analyze what people do when freed from real-world physical and social constraints (Miller, 2007).

As we have previously discussed (Gorini, Gaggioli, & Riva, 2007), 3-D online worlds are also playing an emerging role in health services as demonstrated by the diffusion of a number of Second Life medical and health education projects and communities of patients. The former have the double purpose of training medical students and educating people about health concerns, while the latter allow patients affected by specific diseases to compare their experiences, face common needs and practice specific abilities (especially in the field of certain psychological disorders). Once again 3-D online virtual worlds demonstrate to be able to provide a richer variety of tools than phone, email or chat, giving their users the possibility to communicate in a way that more closely resembles face-to-face meetings.

Considering the discussed advantages offered by the online virtual worlds, including the possibility for multiple users to share a common virtual environment at the same time, even when they are physically distant, to have digital characters that represent themselves, to communicate in real time using chat or voice in public or private way, and to experience a greater sense of presence than the one experienced using phone or chat, we suggest the use of Second Life as a support tool for traditional psychological therapies. In particular, we have developed an explorative protocol based on a single case with the aim to evaluate the potential of the virtual support sessions when, for contingent causes, patient and therapist can have only one face-to-face encounter.
per month. In the last year, virtual reality has been shown to be effective in the treatment of different phobias (Gorini & Riva, 2008). Many psychologists have combined traditional cognitive-behavioural techniques with virtual therapy in order to reduce patients’ fear and anxiety by correcting their cognitive distortions by exposure to specific virtual environments. In 2002, M. Kahan (Kahan, 2000) proposed to use virtual reality, not only for cognitive-behavioural oriented therapies, but also for dynamic psychotherapy drawing on psychoanalytic principles. His idea have had been previously introduced by Harris in 1994 (Harris, 1994) who theoretically discussed the potential of virtual reality experiences on our conscious beings. “Those experiences - he says - can become part of a perceptual and an emotional background that changes the way we see things. At its best, virtual reality can allow us to transcend our limitations and to expand our emotional lives”. Starting from these considerations, we asked an analytic oriented psychiatrist to conduct the present experiment using Second Life as virtual setting.

As this way to conduct psychological interventions is to be considered very innovative, our main aim is to investigate its feasibility from the side of both the patient and the therapist, analyzing their reactions to this kind of approach. For this reason we will describe the characteristics of both of them, analyzing the different aspects regarding the therapeutic dyad during their interactions in the virtual world. The proposal sounds very innovative, but we would like to underline that in our view virtual therapy can be effective only if used as an adjunct to traditional therapy, or as part of an aftercare plan. For these reasons, we advise against any kind of therapy being practiced exclusively on the web because of its supportive rather than exhaustive nature. This point must be made clear to online therapy providers and the general public.

Case Report

The patient

C.B. (these are the initials of her avatar’s name) is a 47-year-old woman with a scientific academic degree. She has been married since 1995 and has one 8-year-old son. In 2002 she received a diagnosis of dependent personality disorder (DSM-IV) also characterized by obsessive-compulsive traits and severe physical somatisations that needed a pharmacological treatment. C.B. is defined by her therapist as a clever and affective woman, highly motivated to deeply elaborate her insecure adult attachment style and her difficulties in forming secure adult relationships.

From 2002 to 2006 she underwent a psychoanalytic treatment based on two sessions per week that produced a significant symptomatic remission and an increasing in self and work efficiency. From the end of the psychoanalytic treatment up to now C.B. has undergone only sporadic consultation sessions, in the last few months she has expressed her therapist the desire to start a second phase of analytic-oriented treatment. At the beginning her request seemed incompatible with her work engagement which often demanded her to move from Milan – her usual home place – to far-away destinations, in Italy and abroad.

C.B. has a basic knowledge of the main Windows applications, is not used to playing with videogames and has never experienced virtual reality systems.

Before the beginning of the study, the patient was asked to sign an informed consent.

The therapist

The therapist involved in the study, both psychiatrist and psychoanalyst, is a 51-year-old man, who has matured a full experience as a trainer and a deep personal interest in studying the relationship between human mind-body and technological devices of prosthesis. He joined the project in accordance to the Freudian concept of Junktim, unbreakable link between clinical and research aspects. Similar to C.B., the therapist has a good knowledge of the main Windows applications, is not used to playing with videogames and has never had experiences with virtual reality systems. He has recently changed his homeplace and lifestyle, living for half a week in Milan, and the rest of the time in another Italian city, located about 300 Km from Milan. The difficulty in combining their working commitments and the physical distance (at least for half week) have been some of the reasons pushing C.B. and her therapist to try this innovative approach.

In order to guarantee that no one else other than the patient and the the therapist participate in the sessions, all the chat transcriptions were countersigned by both of them.
Assessment
In order to evaluate their imaginative abilities, their confidence with technology and virtual reality, and the sense of presence elicited by the use of Second Life, both the patient and the therapist were asked to fill out the following questionnaires:
- Betts questionnaire (adapted from: Betts, 1909), revised by (Sheehan, 1967), and previously used in Italy by (Cornoldi et al., 1991) (before the beginning of the protocol)
- Computer knowledge and experience questionnaire (before the beginning of the protocol)
- Barfield Presence questionnaire (Barfield & Weghorst, 1993; Hendrix & Barfield, 1996) (every 15 days from the beginning of the protocol)

The Second Life virtual office
The psychiatrist’s virtual office is located inside the Eureka Island (152,184,44), a private Second Life land owned by Istituto Auxologico Italiano. The island includes a place called “experience area” in which patients can do different virtual therapeutic experiences. This area is composed of a bar, a restaurant and a house (that are interactive environments useful to treat patients suffering from alcohol or food addiction) and also includes the psychiatrist’s office. This is a small house, composed of two rooms. The first one, immediately after the entrance is the place where the patient and the therapist meet each other. This area was created by a graphical expert following the suggestions of the therapist in order to obtain an appropriate therapeutic setting (see fig.1).

Different from the other island areas, this place can be accessed only by invited avatars and people not authorized are rejected. These settings can be modified only by the administrator of the island and are defined in order to guarantee the privacy of the therapeutic sessions.

The patient and the therapist interact through their avatars and communicate using the IM (instant message) channel: this is a written chat that, differently form “local chat”, can be set in order to make the conversation audible only from selected avatars. All chats were recorded and automatically saved on a .txt file together with date and time.

Before the beginning of the protocol, the patient and the therapist were guided by an expert through the creation of their personal avatars, and instructed about the use of Second Life in general, and about the privacy issues in particular.

Fig.1: A screenshot taken in the Second Life therapist’s office during a clinical session
Treatment schedules
The treatment was based on two virtual sessions (45 minutes each) per week plus one face to face session per month. The patient and the therapist agree on date and time of the virtual appointments with the same modalities they use for real ones.

Technical requirements
For system requirements for Windows, Mac OS and Linux refer to: http://secondlife.com/corporate/sysreqs.php.
Both the therapist and the patient use a laptop with Windows as operating system and a DSL internet connection.

Quantitative data
The Betts questionnaire reveals that the therapist has slightly higher imaginative abilities (43/70) than the patient (39/70). Imaginative abilities are usually correlated with high sense of presence. The computer knowledge and experience questionnaire, administered before the beginning of the protocol, shows that the level of experience in computer managing is "sufficient" (2/5) for C.B. and "good" (3/5) for the psychiatrist, and that both of them have had at least one previous experience with Stereoscopic images. They have never played with videogames and none of them have ever used a virtual reality system and know how it works.
Their scores regarding the sense of presence are reported in table 1.

Qualitative observations
Due to technical problems the trial started later than we planned, so up to date we have only a few sessions available, but we argue that they are enough to make some preliminary qualitative observations.

Since neither the therapist nor the patient were experts in computer applications, the first virtual appointment was characterized by a certain degree of slowness that was easily ridden out in the following sessions. Analyzing the text-chats obtained from the different sessions, the psychiatrist noticed that their formal aspects and the relation style of the virtual interactions are comparable to those observed during the face-to-face sessions. Starting from the first session, the patient conveys her emotional contents and reactions, makes free associations, reports her recent dreams and expects the therapist's interpretation exactly with the same expressive modalities she uses when she is sitting in front of him. Apparently, there are no signs of inhibition caused by the presence of a technological medium between the therapist and the patient. The "fundamental rule" of psychoanalysis that urges that patients say "whatever comes into their heads, even if they think it unimportant or irrelevant or nonsensical...or embarrassing or distressing" (Freud's Psycho-Analytic Procedure* (1904a [1903] p. 251) is respected.

Forcing the physical distance between the therapist and the patient, the virtual setting also represents a good opportunity to practice, at least from a physical point of view, another important analytic rule: the "rule of abstinence". This rule designates a number of technical recommendations that Freud stated regarding the general framework of the psychoanalytic treatment, including, for example, the prescription to have no physical or gaze contacts with the patient. The therapist refers that the application of the abstinence rule in the virtual setting does not interfere with the therapeutic relationship, since they have already practiced it during the traditional sessions. On the contrary, it could contribute to maintain a favorable tension potential, which is assumed to keep the therapeutic process in motion.

Another important point regards the constancy of the setting: virtual reality offers the therapist the

<table>
<thead>
<tr>
<th>Questions</th>
<th>C.B.</th>
<th>Psychiatrist</th>
</tr>
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<tbody>
<tr>
<td>If your level in the real world is 100, and your level of presence is 1 if you have no presence, rate your level of presence in this virtual world.</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>How strong was you sense of presence, “being there”, in the virtual environment (1-5 scale)</td>
<td>3</td>
<td>3</td>
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Table1: The Barfield Presence Questionnaire
possibility to create a therapeutic environment more stable than any other real physical setting, other than to maintain the avatar’s aspect unchanged over time. Starting from the very first sessions, the therapist and the patient meet each other always in the same place, recognizing their respective avatars as the “virtual incarnation” of their real interlocutor.

The only critical point emerged during the virtual sessions regards the patient’s concern about privacy. A certain number of times she asked the therapist the following question: “Doctor, are you sure we are alone?”. This doubt did not really invalidate the session, since immediately after the therapist’s answer it was regularly performed.

Conclusions

Even if we have had the opportunity to analyze and discuss only the results coming from few virtual sessions, we can draw some preliminary positive conclusions about this innovative experience. Both the therapist and the patient have experienced a quite high sense of presence and have not found particular problems or limitations in the use of Second Life as therapeutic setting. On the contrary, analyzing what the patient said, and listening to the psychiatrist’s comments, it seems that the physical barriers imposed by the virtual setting contribute to knocked down the psychological resistences that tend to emerge during face-to-face interactions. As discussed above, this is not just an experimental protocol, but also a way to allow the patient to have frequent meetings with her therapist, that would not be possible if they were forced to meet twice a week somewhere in a physical place. If we will be able to demonstrate the effectiveness of this approach, its potentialities could be enormous, especially for all patients who have difficulties to physically reach their therapists, such as those with specific mental, physical or social disabilities. In the mean time, we will go further with the present protocol in order to obtain more quantitative and qualitative data that allow us deeper and more objective remarks.

Obviously, it is not our intention to overly simplify one of the most controversial issues related to the emergence of the Web 2.0 and its application to health care concerns. The use of Internet to provide mental health services is controversial and in the ongoing debate about both the value and ethics of therapeutic virtual environments there are proponents at both extremes. Some conceive of technology as means to a bright future where anyone’s emotional needs can be instantaneously addressed; others are obstinately opposed to the use of distance psychology for any kind of intervention. With these very preliminary data, we hope to engender a constructive debate in the scientific community headed for a better understanding of the potential of virtual reality in the treatment of psychological disorders.

References


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