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Undertaking qualitative health research in social virtual worlds

Abstract

Aims: This paper discusses the methodological challenges of using the 3D social virtual world Second Life for research and offers some solutions on a range of research issues including: ethical approval, gaining consent, recruitment of sample, data collection and engagement with 'in - world culture'.

Background: The attraction of social virtual worlds to researchers is their ability to mimic the physical world, as they are seen as 'places' where people have a feeling of presence (being there) and social presence (being there with others) through the use of a 'customisable' avatar (digital self-representation). Emerging research demonstrating the persuasive nature of avatars on health behaviours through virtual worlds, online games and the 3D web has increased the use of and interest in these areas for delivering health information, advice and support. However, conducting research can be challenging in a 3D world where people are represented as anonymous avatars in an environment unlike any other online media.

Data Sources: 25 semi-structured interviews were conducted in Second Life from September 2011 – June 2012.

Implications for Nursing: Nurses wishing to undertake research in social virtual worlds should spend time in-world to acquire technical skills and gain an understanding of the culture of the world.

Conclusion: Our experience of interview based study in virtual worlds indicates that researchers require several virtual world technical skills to create innovative tools to recruit, gain consent and collect data and an understanding of in-world culture, language and social norms to increase the chances of successful research.

SUMMARY STATEMENT

Why is this research or review needed?

- There is little published guidance for carrying out research in social virtual worlds
- There are several methodological challenges of conducting research in 3D social virtual worlds
- 3D social virtual worlds are legitimate research areas which require different approaches for ethics, data collection and sample recruitment than other online areas

What are the key findings?

- Key virtual world skills are required before researchers can conduct research in 3D social virtual worlds
- Researchers need to gain an understanding of in-world culture, language and social norms before attempting to undertake research in 3D social virtual worlds
- Several ethical, data collection and recruitment methods can be created which can lead to successful research in 3D social virtual worlds

How should the findings be used to influence policy/practice/research/education?

- Should help guide researchers conducting research in 3D social virtual worlds
- Should improve understanding and raise awareness of the methodological challenges of conducting research in 3D social virtual worlds

Keywords: qualitative health research, Second Life, Virtual world research, technology, research methods

Introduction

Social Virtual Worlds (SVW), for example, Second Life (<http://bit.ly/11m9LGR>) are online 3D multiuser virtual environments (MUVE). These online environments are accessed either through the use of a viewer or a web browser. Access by users or residents of these environment is then granted through the creation of a virtual image or representation of themselves, known as an 'avatar', which can be manipulated to appear in differing humanoid body shapes, animals, or inanimate objects (Figure 1) and can be clothed, run, fly or 'teleport' across areas in the SVW. Just as in the 'physical world' (table 1), activities such as socialising, shopping, role play, dancing, attending group meetings, conferences and accessing health information, can be all undertaken in SVWs, as well as a range of other activities. Avatars can display physical facial expressions or gestures and can 'chat' to and interact with, other avatars in the SVW either privately via instant messaging (IM) or with other avatars in close proximity to them (not private but can only be seen/accessed by avatars in close proximity to each other), or collectively across a group of users of the SVW (not private, seen/accessed by all avatars in the group), using text or voice (Wagner 2008). In contrast to other online environments, such as social networking sites or internet forums, SVWs offer the ability to engage the senses through multimodal communication and spatial cognition, thus creating a unique experience of presence (being there), social presence (being there with others) and immersion (psychological feeling of being located in the SVW and having left the 'physical world') (Witmer & Singer 1998, Biocca 1997, Biocca *et al.* 2003, Bailenson, *et al.* 2008).

There is a growing consensus in research and government circles in western health systems that multiple methods that attract, engage and empower the public to be able to increase their

health literacy (HL) should take full advantage of new and emerging technologies (Sihota & Lennard, National Consumer Council, (CCL), 2004, Scottish Government 2007, Canadian Public Health Association (CPHA) 2008), such as SVWs. Statistics for 2011 show that SVW users range from age 5 to 80 years, with over 1 billion users world-wide under the age of 25, 42 million users over 25 (KZero 2011). Thus, there is tremendous potential to deliver health information and reach people of all ages in SVWs. Although many SVWs exist, SL is the predominant SWV of choice with the greatest number of registered users worldwide (Kzero 2011).

Background

This paper is based on the authors' experiences of conducting a qualitative interview-based study in the SVW, Second Life (SL). The study was undertaken as part of the lead author's doctoral study (EM) and supervised by the co-authors (FC and LK). The aim of the study was to explore the health literacy skills of people who access health information in SVWs and the subsequent influence of this on their physical world health behaviours. Twenty five semi-structured interviews were conducted by EM in Second Life (SL) from September 2011 – June 2012. In the following discussion, we present some of the methodological issues considered during the set-up, conduct and analysis of the research, of paramount importance to practitioners and researchers who are interested in the use of SVWs for health and social care research and care delivery. The paper principally aims to raise awareness of these and attempts to offer some solutions for a range of research issues including gaining ethical approval and consent, recruitment of sample, data collection and analysis and engagement with 'in- world culture'.

Discussion

Setting up the research - SVW Skills

One of the main challenges for researchers who wish to conduct research in SVWs is learning how to use the media and 'immerse' themselves in the culture of the world. The difference in research in SVWs and other 'online' research is the highly visual and spatial awareness afforded by navigating the SVW through the use of an avatar. The feeling of 'being in' the world contributes to SVWs being seen as 'places' (Boellstorff 2008, Schutze 2010, Boellstorff *et al.* 2012). Therefore, depending on the methodological approach, skills such as moving, flying, teleporting, using the communication tools, building; and manipulating scripts may be required for successful research (Feldon & Kafai 2008, Minocha *et al.* 2010). These multiple skills are required to enable the researcher to create methods for in-world recruitment of participants and data collection and may contribute to how participants view the researcher. If the researcher is viewed as a 'newbie' (someone new and unfamiliar with the environment) who has not taken the time to learn how to use the medium and understand the culture of the SVW, participants may perceive that the researcher is not 'serious' about the research or has a lack of respect for people who participate in the SVW. Birth date (when the avatar was created) is an important feature in SVWs. People look on this as a gauge of how well the person should know the culture of the world and it may affect their decision to take part in research (Rybas & Radhika 2007, McKee & Porter 2009, Boellstorff 2008). Therefore, prior to engaging in any research it is important to spend time in the SVW to gain an understanding of the culture, language, Terms of Service (TOS) (rules of the virtual world) and social norms, such as; etiquette of communication and behaviour needed for negotiating the environment, interviewing and analysing data (Yee and Bailenson 2007, Hendaoui *et al.* 2008, Hussain & Griffiths 2008, Blascovich & Balienson 2011). In the case of the present study, the researcher (EM) was an experienced user of SVWs and had spent at least four years in SL teaching, exploring the world and building relationships.

Gaining ethical approval

Like other online environments, such as social networking sites and internet forums, SVWs are open to anyone to join and most communication is in the public domain. It is important, however, to consider the ethical implications of carrying out research in SVWs given the 'public' nature of these environments. There is a consensus among social science researchers that collecting data from 'avatars' in SVWs requires the same rules and regulations as collecting data from human subjects in other online or physical world research arenas. This is especially important when dealing with potential sensitive information collected through private chat (McKee & Porter 2009, Lehdonvirta *et al.* 2011). Ethical approval for this study was granted by Glasgow Caledonian University, School of Health and Life Sciences ethics committee.

Although increasingly emerging as an environment for healthcare research and practice, SVWs, like other online approaches, are still fairly novel. Familiarity with the use of such approaches for healthcare research, unlike more traditional settings, clearly cannot be assumed, particularly amongst people with the power to grant access and approvals to carry out research. To counteract any issues with this, the author (EM) included several resources to aid understanding and enhance the chances of gaining ethical approval, including the use of a glossary to explain terminology used in SVWs. Several other suggestions offered by Minocha *et al.* (2010) include carrying out a pre-proposal presentation with the use of pictures from Second Life. This can help explain the concepts of SVW communication, the means of identity protection and highlight future questions which may be asked by the panel, who are not necessarily conversant with research undertaken in SVWs.

Identification and Recruitment

Researcher Avatar Identity

In SVWs the researcher has to make a decision about how they wish to represent themselves, via their chosen avatar and decide what name they will take as this may affect how they are perceived by others in-world. For this study the researcher assumed a humanoid avatar which looked like their physical world image. This avatar had been used for many years by the researcher to interact throughout the educational and health communities. Using the same avatar enabled a level of 'continuity of relationships' which had been established with 'owners' and some 'users' of health islands previously and helped in the process of gaining access to areas to leave information about the study. Providing additional information in the researcher's profile which had a link back to the researcher's institutional SVW blog, allowed participants to check the credibility of the researcher, if they so wished. Like participants researchers may not be using their physical world name, therefore, the process of providing 'transparency' for verifying the authenticity of the researcher in SVWs is considered important to ensuring respect for the study participants as well as maintaining the reputation of researchers who wish to carry out research using this medium (McKee & Porter 2009). Many of the participants in this study reported 'checking' the researcher's avatar and 'real' world name and profile area to 'gauge' their credibility.

The decision to remain as a 'humanoid' avatar may have contributed to the extent to which participants 'trusted' the researcher. During the study many participants commented that they found it easier to relate to and trust information from professional looking human avatars whilst receiving health information. Several researchers have found that humanoid avatar's appearance and behaviour, particularly attractive female avatars or avatars which are similar

to an individual's own avatar are viewed as more likable, approachable, persuasive and trustworthy (Messinger *et al.* 2008, Banakou & Chorianopoulos 2010, Conrad *et al.* 2010). This ability to manipulate appearance to try to influence 'trustworthiness' differs from 'offline' physical world research where the researcher cannot easily manipulate their body image.

Protecting Physical World Identity

Like in 'physical world' research, the principles of the Helsinki Declaration (World Medical Association (WMA), 2008) which aim to protect the well-being of research participants, maintain the confidentiality of participants' personal data and ensure informed consent were followed in this study. To protect confidentiality and anonymity in our study the avatars' name was removed from all demographic forms and interview transcripts, the details were copied onto a word document and notecards containing participants' demographic information and consent were deleted from the researcher's avatars SVW inventory. A coding method was used to replace the avatars name with a unique identifier. As with 'physical world' research, a list which identified the avatar name and number was held in a separate password protected area. For the purpose of gaining informed consent the physical world 'real' name of the avatar was not specifically asked for, although occasionally people had chosen to display this in their SL profile (area which contains unique avatar information). However, a decision was made not to specifically ask for physical world names as this was not deemed necessary to the study aims. Therefore, the physical world 'real' name was not kept on the list of avatar coding. This is an important decision for researchers working in this medium to make at the beginning of a study to ensure this can be relayed to the participants as this may affect their willingness to consent (Moschini 2010). The very nature of SVWs enables people to live anonymously or regulate the information that they share or present

about their real selves. Some people residing in SVWs wish to preserve their anonymity and do not want to reveal their physical world name (Peachey and Childs 2011). Although this allows for greater anonymity, from the perspective of the researcher there is a chance that the same participant may take part in the study more than once by creating an alternative avatar (Hine 2000, Moschini 2010, Koles & Nagy 2012). However, this is a risk in any online research where a pseudonym is used to protect 'real' names. In this study we specifically asked for participants that were searching for health information for 'themselves' or 'others' which may have reduced the 'attractiveness' of repeating the study. However, there is no way to know this for sure.

SVW, online and physical world recruitment methods

There is a view among some researchers that recruitment for research conducted in SVWs should start in-world, as this is where the potential participants spend their time (Toth-Cohen & Gallagher 2009, Minocha *et al.* 2010, Lehdonvirta *et al.* 2011). This was the predominant recruitment method used in this study to recruit the target number of around 25 participants.

Identifying and accessing participants in SVWs can be challenging, as with other online formats (Eysenbach & Till 2001, Flicker *et al.* 2004), since SVW avatars cannot always be contacted or accessed in an unsolicited manner, being protected by the areas of the SVW where they may be members of. Initially participants were sought by contacting owners of in-world health information areas known to the researcher (gatekeepers). These were typically 'high traffic' and 'trustworthy' areas such as Mayo Clinic, Healthinfo Island, Breast cancer awareness centre, Virtual Ability Island and the National Institute for Health Research (NIHR). Permission was obtained to display an interactive notecard giver (glossary) in these areas, which offered an information sheet about the study, consent and demographics forms.

Instructions were provided on how to complete, save and return the notecards via either private avatar-to-avatar instant message or by email. Seeking this kind of permission is an important step as the SL Terms of Service (TOS) prohibits anyone from causing a 'disturbance of the peace', by rezzing (placing objects into the world) on land without the owner's permission, interrupting synchronous discussions or locally trying to recruit for participants without permission.

The ability to spread information over many areas of the SVW which can be accessed by any avatar at any time, in any country worldwide and then passed to others (snowballing) can increase the reach of recruitment. In this study avatars from ten different countries responded to the notecards and consented to participate. The ability to reach these participants would have been difficult using 'offline' or other 'online' methods, as it would not have been as easy to reach all of these countries 'offline' or place information on health web pages. On the other hand, the geographical dispersion of potential participants, often in multiple time zones which differ from the researcher's, can make recruitment and data collection more challenging and require flexibility on the part of the researcher in arranging suitable times for obtaining consent and data collection (Rybas & Gajjala 2007, Lehdonvirta *et al.* 2011).

Other recruitment methods included instant messaging (IM) to SVW groups and contacts known to the researcher which allowed for direct synchronous contact with individuals. IM with groups however, requires the researcher to remind participants that responses can be seen by all members of the groups. SVW presentations were also held by the researcher (EM) since a unique advantage of this particular environment is the ability to hold synchronous immersive 'awareness and recruitment' talks to an international audience of

avatars. These talks are open to anyone in the SVW and proved to be a successful recruitment strategy in this particular study, however, their use with SVW participants who are potentially deaf, blind or hard of hearing should be considered by researchers. Fortunately, SVWs offer the ability to present such information via voice or text and although it is challenging for the researcher to talk and text at the same time, SVW tools such as ‘speakeasy’ allow for previously written information to be inserted into an object which can be ‘worn’ (which displays on screen in the world) by the avatar and the written text is automatically inserted into the local chat when the object (Speakeasy), Dudeney 2008) is clicked. The involvement of an avatar who will transcribe voice into local chat is another way to ensure accessibility for people who are deaf. Such approaches need to be considered and arranged before beginning any SVW presentation.

Other on-line and physical world (off line) methods were also used to increase the reach beyond the SVW, as people who participate in one social network are often active in others such as social media sites e.g. Twitter, Facebook and LinkedIn. These sites and listserv email (table 1) were used in an attempt to spread the reach of recruitment further than just in the SVW. Sites like Twitter and Facebook offer advantages in that information can be spread to a vast number of contacts, which in turn can be spread again by each of these contacts, vastly increasing the reach of information across different domains of society and across the globe. A least two participants reported they had become aware of the study via a re-tweet of the researcher’s original tweet. Traditional (physical world) recruitment methods were also used, for example, posters were distributed in local retail and notice boards in various health organisations, however, interestingly in this study, no participants were recruited using this method, suggesting that SVW and other online sources of recruitment were most appropriate for identifying and accessing participants relevant to the aims of the current study.

SVW data collection and analysis

Several issues need to be considered before undertaking interviews in the SVW. For example, the setting and location for the interview need to be determined – this can be purpose built or an existing location can be used (Minocha *et al.* 2010, Lehdonvirta *et al.* 2011) – and the privacy of that location (so that other avatars cannot suddenly appear in the chosen area) as well as the method of communication e.g. private IM or group chat and whether it will be conducted via voice or text.

Interview area – setting and location

Like undertaking an interview in the physical world, SVWs offer a sense of immersion and social presence (being together in the same space or place) (Biocca 1997, Schultze & Leahy 2009, Shultze 2010) more than other online approaches. However, unlike in the physical world, SVWs afford a greater opportunity to have control over the nature (and privacy) of the setting where the interviews are conducted, ensuring that these are appropriate to the nature and focus of the interview topic. The researcher specifically designed an interview area for the purpose of the current study which looked comfortable, inviting and private, with seating which was spaced to give a sense that the participant and researcher were sitting across from each other but at a distance which represented a usual (physical world) social arrangement (figure 2). The interview area was also built off the ground to give an outlook which was open, reducing the chances of other avatars ‘stumbling on’ the interview area and to prevent the participant having to navigate closed areas which can be difficult for new avatars as they can get stuck behind walls and doors. Study participants commented that they liked the area and that it was calming and inviting, helping them to feel immersed in and comfortable, during the interview. However, being able to purpose-build an area requires that the

researcher has contacts in the SVW to help them do this or has the skills to enable them to undertake this additional step themselves.

Voice and text based interviews

Interviews were carried out in this study using a combination of voice and text methods including, private individual voice calls (similar to making an internet voice call, such as Skype) and private instant text messaging (IM). Whilst other communication methods such as public 'group or local' chat can be used in SVWs, for the purposes of research and to maintain anonymity and confidentiality, this was deemed inappropriate. The ability to choose between voice and text based communication when participating in the interviews was particularly beneficial for participants who were hard of hearing or who had arthritis and thus, difficulties in typing for prolonged periods of time.

Whilst voice calls did not raise any unique issues to conducting telephone interviews in the physical world, the ability to use text messaging raised some notable issues for discussion. One of the key advantages to using 'text' instant messaging is the ability to either automatically save the IM to the hard drive or cut and past the verbatim text directly into an interview transcript for coding during the analysis stages i.e. there is no need for a separate transcription process. However, this requires that the researcher has forethought about this and captures the 'text' recording before logging out of the SVW as doing so prevents them from re-accessing the full conversation when they log back in again. Apart from it being good ethical research practice, SL Community Standards prohibit the copying of private IM without prior consent of the avatar (Linden Lab 2011). The researcher also needs to remember to remove the avatar name and code the captured data held on the hard drive to

ensure conformity with any data protection legislation and to protect the identity of the avatar. The use of text based communication also reveals less about demographics such as gender, ethnicity and age than voice communication and many SVW users may prefer this given the importance of their anonymity in this online environment. This should be recognised and respected by the researcher at all times throughout the process.

Whilst 'text' based interviewing limits the ability to detect a change of tone in people's voices or verbal pauses in the conversation, the IM prompts are visible in the 'pop up' window to indicate that an avatar is typing, which allows the researcher to gauge the speed and flow of the conversation. Waiting for posts to become visible however, can present several challenges since people have different styles of approaching text chat. For example, some participants in the study would type a sentence, post it, stop and start the next sentence and then post in a staccato manner whereas others would type and continue to do so until they had finished their blurb and then post it as a whole section, rather than individual sentences. These differing approaches can make it difficult for the researcher to know when a participant has finished what they wanted to say on a particular topic and can lead to the researcher interjecting too quickly before the participant has posted their full response. As encountered during this study, this can also create disjointed text which can be challenging to code during the analysis stages. Some possible solutions to approaching this however, could be giving more time to participants during the interview, being cautious to slow the pace and flow of the text interview down if necessary. Additionally, participants' preferences for how they usually use 'text' based communication methods could be discussed prior to the interview beginning so that both the researcher and participant have an idea of individual's styles and allow for this during the interview. Finally, practicing or piloting the intended interview technique and analysing the interview prior to continuing with data collection can be a useful

way of identifying common pitfalls and errors that can be easily corrected in future interviews.

Nonverbal cues – emoticons ☺

Emoticons are now common place in most forms of social media and text based communication. They provide a pictorial representation of a facial expression which in the absence of physical presence and body language, can add positive or negative emotion to text based communication (Derks *et al.* 2007, Lo 2008). Their use is significant since text-based communication does not permit visible nonverbal cues and therefore, emoticons can be used to show interest, engagement and encourage the flow of the conversation, similarly to how nodding or smiling in a face-to-face interaction would and can alter or enhance the interpretation of the text by another person. Emoticons, such as smiley, winking or sad faces—usually by means of punctuation marks—can clearly portray a person’s feelings or mood or suggest the tone in which they are speaking e.g. serious or tongue in cheek.

Implications for Nursing

Increasing health literacy of their populations is an ambition of governments throughout the world. New technology such as SVWs are increasingly been used to deliver health information, advice and support and are seen as a legitimate arena for conducting research. However, nurses and other social scientists who wish to conduct research in these worlds need to understand that they cannot be approached in the same way as other online social media. The 3D environment and the use of an avatar which increases the feelings of immersion, presence and social presence make these unique environments for research.

Conclusion

SVWs offer an exciting and new arena for health research which can mimic many features of the physical world with many significant advantages. The anonymity that SVWs afford participants may encourage them to participate in research and willingly share their thoughts, feelings and experiences without concern for social desirability or to be seen as the ‘good patient’. SVWs offer greater control over the setting where the research is conducted – offering purpose built areas or locations that can be advantageous to both the research process and the research itself. Furthermore, the ability to choose between text and voice based communication—although presents challenges as discussed in this paper—enhances the inclusion of a greater range of participants and experiences, of undoubted importance to qualitative research. As exciting as this approach is, there are key issues, such as those presented in this paper, that need to be considered before undertaking health research in SVWs. In particular, there is a need to be culturally aware of the issues which are important to the individual user and the community to ensure mistakes are not made which could jeopardise anonymity, break the rules of the SVW or insult participants and several key skills need to be mastered by the researcher to navigate the SVW, enable recruitment and collect and analyse data. The solutions discussed and the experiences described for gaining consent, recruitment of sample and data collection in this paper should help other researchers who wish to conduct research in this emerging area where there is little current published guidance.

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Figure 1 Avatar



Table 1

Term	Definition
Physical World	The 'actual' world out with the online virtual world
3D virtual world	Online 3D multiuser virtual environment (MUVE)
Avatar	Self-representation of individual in the virtual world (driven by a human)
Virtual Agent	Artificial Intelligent (AI) computer driven avatar often used as a customer service agent in the virtual world/consumer web pages
Island	Customisable 'server space' which is 'rented' by the consumer from a virtual world host company
Second Life Uniform Resource Locators (Slurl)	web address for an 'area' (island) in the virtual world
Teleport	To move between islands or areas in the virtual world
Local chat	Text chat with all avatars in a locally defined area in the virtual world
Group chat	Text chat with others in a specific group who can be situated anywhere in the virtual world
Private avatar-to-avatar text instant messaging (IM)	avatars can be locally situated or in another area of the virtual world and the text can only be seen by the avatars involved in the conversation
Notecard	A piece of information which opens in a new window in the virtual world and can be kept by the avatar
Immersion	A psychological feeling of being located in the virtual world and having left the 'physical world'
Presence	A feeling of being 'there' in another environment
Social presence	A feeling of being in an environment with others
Inventory	An private area where individual avatars can store objects which they wish to keep and can access at a later time
Notecard giver	A object which will open notecards when clicked
Avatar Profile	An area that is accessible by anyone in the virtual world where information about the individual can be stored
Terms of Service	Company rules which users of the virtual world should agree to follow
Preferences	An area that individuals can set up to personalise the functions offered by the virtual world (for example sound level, camera movement, graphics, email address)
Listserv	One email is sent to a listserv address and automatically sent on to all subscribers of the list

Figure 2 Interview Area

