Avatars' Appearance and Social Behavior in Online Virtual Worlds

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***Abstract*— In this article, we investigate the effects of avatars' appearance on user social behavior in online virtual worlds. In particular, we study appearance differences in social communication preferences and behavior in virtual public spaces. For this purpose, we have employed virtual ethnographic methods, which is an adaptation of traditional ethnography for the study of cyberspace. We employed nine users who used four different avatars and we observed a cumulative of more than two hundreds social encounters. The results of the study indicate that avatars' appearance is an important factor in determining the social communication patterns between users in online 3D worlds. In particular, we found that users with more elaborate avatars had a higher success rate in their social encounters, than those users with the default avatars. The implications of this study raise several issues for the design of avatars, as well as for the study of social communication in online 3D worlds.**

***Index Terms*—Virtual ethnography, Second Life, avatar appearance, sociability.**

I. INTRODUCTION

The virtual embodiment of users in online 3D worlds has been known as 'avatar' and has been a major component of 3D virtual worlds, such as Second Life (SL), World of Warcraft (WOW). Previous research indicated that people would like to be able to have great control over their avatar representation, or have input into its design. In addition, in most major virtual worlds, one can spend extraordinary long time choosing the appearance of the avatars (Schroeder 2002). As a matter of fact, practitioners have been developing several mechanisms for characters selection and customization.

At the same time, researchers have been examining how users select avatars online. Several research findings have indicated that users of online worlds masqueraded or enjoyed playing roles that they did not have in reality (Donath 1998, Turkle 1995). Always wonder how it would be like to be a tall, blonde woman or a dark-skin male? In an online virtual world everyone would become what they desire. Avatar appearance can be used as an indicator of team membership and, thus, regulating the colors, skins or shapes of the avatars within the team is often employed (Manninen 2003). In contrast to early findings, researchers have argued that 3D world users select and design their avatars to reflect their own appearance (Vasalou et al. 2007). Regardless of the motivations for avatar choices, researchers have not yet explored the differences between avatar types (e.g., attractiveness, clothing, posture).

Donath (2007) has called for a focus on the effects of appearance of avatars in online 3D worlds. Therefore, in this work, we explore what is the effect of avatar appearance on user sociability in online 3D worlds.

In particular, we hypothesize that avatars with attractive clothing, hairstyles, or body shapes will be treated favorably in an online 3D world. In particular, we explore the differences in appearance with regard to social communication preferences and behavior. For example, are good-looking female avatars treated differently when compared with less attractive choices? Or, do male avatars have the same conversation response rate in novel social situations? For this purpose, we have employed a virtual ethnographic approach (Hine 2000), which is an adaptation of traditional ethnography for the study of cyberspace.

The rest of this article is structured as follows: In section 2 (Related work), we analyze previous related work in the fields of virtual environments and social communication. In section 3 (Methodology), we set our goals and study restrictions, introduce the materials used in study (avatars), and explain the process of the experiment. In addition to that we discuss the way our data was collected. In section 4 (Results), we present the findings on the users' behaviors and attitudes and we discuss the differences of a person's appearance both in the real and the virtual world. In the last section 5 (Conclusion and further research) we provide conclusions and propose further studies that should consider cultural and ethnic background, in addition to style enhancements treated here.

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II. RELATED WORK

As a case study, we examine social behavior in Second Life. Second Life is an online 3D world, which is partly created by its "Residents" all over the world. It's a desktop Virtual Reality (VR) application which despite the fact that its interface is similar to several popular massively multiplayer online role playing games (or MMORPGs), differs in two unique ways: 1) Creativity: its Residents have significant freedom in that world; someone can hang out with friends in a garden or nightclub, go shopping or fight dragons, or even start a business, create a game or build a skyscraper; and 2) Ownership: Residents can own anything they create. Second Life is the size of a whole city, with a Resident population which is reported to have over 15 million registered users (October 2008), while 500 thousands of them have logged at least once during the last week of October 2008.[1]

A.Social communication in online virtual 3D worlds

Social communication and the development of social relationships is one of the main aspects in all virtual worlds since they allow people to speak or share knowledge with each other. Communication between users has ranged from text, graphical icons, visual gesture, sound, and rarely, forms using touch and balance senses. Virtual worlds are not limited to games but, depending on the degree of immediacy presented, can encompass computer conferencing and text based chatrooms. Sometimes, emoticons or 'smilies' are available, to show feeling or facial expression.

In all online virtual 3D worlds where multiple users are connected and communication between them is in real-time, interaction with the system is transformed from a solitary activity into a social activity. The use of the text-chat, the emotions commands, which allow the user to express various forms of non verbal communication or the objects the last one is able to browse and manipulate reveal the scale of this interaction (G. Jones). What is more, according to previous observations, the prevalence and extent of social activities in MMORPGs might have been previously over-estimated, while gaming communities face important challenges affecting their cohesion and eventual longevity (Ducheneaut, Yee, Nickell, J. Moore 2006).

Related research revealed that by providing spaces for social interaction and relationships beyond the workplace and home, mostly when comes to MMORPGs, these have the capacity to function as one form of a new "third place" for informal sociability. Participation in such virtual "third places" appears particularly well suited to the formation of bridging social capital—social relationships that, while not usually providing deep emotional support, typically function to expose the individual to a diversity of worldviews (Steinkuehler, Williams 2006).

Moreover, since most MMORPGS are intensely competitive player rely on each other for information and resources, forming groups and intergroup collaboration. Players' reliance forms these communities in each players transact their relationships through their virtual characters not only in the game but also through instant-messaging, e-mails, VoIP and Web Forums (Bessiere, Seay, Kiesler 2007).

B.Physical appearance online and offline

According to common wisdom a person's outer appearance can significantly affect social communication. When someone's referring to another's outer appearance, it doesn't always has to do just with the height, the weight, the body type, etc. Other factors, such as body pose and attitude, face expressions, or even the high self-confidence many people have and show to others, may have their own significance. In addition, clothing and personal accessories are seriously taken into consideration and can form somebody's aspect for one of his/her mates.

In the field of virtual immersive environments, the influence of appearance has been investigated in terms of impact on social responses (Garau 2003). Jacobson (2006) has described how individuals engaged in text-based computer-mediated communication (CMC) form impressions of those with whom they interact and how expectations formed online compare with offline experiences. Contemporary research revealed that the virtual self in online games could serve as a compensatory function that might satisfy the unfulfilled roles in real life (Wan and Chiou 2006). Indeed, Turkle (1995) has argued that online environments offer people the option to create multiple representations of themselves and exploring alternative aspects of their personality.

III. STUDY METHODOLOGY

The purpose of this study was to examine the effects of physical appearance on social behavior in an online 3D world. For each gender, two avatars with significant differences in their external appearance were created. Each user was given one at a time and was asked to interact with other users in public spaces of SL, while the coordinator of the study was recording social behavior from a distance.

A.Subjects

Nine users agreed to take part in the study: four females and five males. Most of them did not have previous experience with SL, while some of them had experience with related technologies, such as video games, or online text-based virtual communities. Users used the SL application from their home having access from their personal computer. In the same way, the researchers had access from their own PC over a distance. There was an advance communication with the individual user, in order to allocate an exact timing slot.

B.Materials

Previous research raised the question of how the appearance of the avatar might affect the nature of interaction (Schroeder 2002). In particular, Schroeder (2002) points out that "it is not

[1] Second Life Economic Statistics: http://secondlife.com/whatis/economy_stats.php

only the shape of virtual bodies that matters in the experience of virtual worlds, but also the level of detail with which they are represented". Thus, we chose the avatars according to how much elaboration is need to construct one. We selected the default avatars (avatar a) and we constructed two more elaborate avatars (avatar b).

Figure 1: Default female avatar (a): Mary

Figure 2: Elaborate female avatar (b): Sarah

Since the way one considers a person attractive or good-looking is rather subjective, we made the following assumptions:

- The avatar with the 'non attractive' appearance is considered to be the one which is given on user's first login into the virtual world, when no changes in the outer appearance have been previously made (default avatar a).
- The 'attractive' avatar has been changed physically, with different hair styles, clothes and accessories, which the first avatar does not possess: shoes, make-up, eyes, or even differences in the way they pose, dance, walk, sit, talk and make any kind of gestures (attractive avatar b).

In Figures 1 to 4, we present indicative snapshots of the four avatars.

Figure 3: Default male avatar (a): John

Figure 4: Elaborate male avatar (b): Leo

C.Process

In order to avoid phenomena where the behaviors of the users adapt to the goal of the research, participants were given a slightly different research goal than that of the study. In particular, users were informed that the goal of the study is the evaluation of chatting mechanisms in Second Life. In this way, in addition to disguising the real purpose of the study, participants were thus more encouraged to interact with numerous other avatars.

According to the user's gender, they used one avatar at a time. In addition, the researchers gave each user an exact location and time in SL, where they will be both transported.

Although the users were aware of the coordinators' existence in the same area, they did not know what the coordinator's avatar looks like. In this way, each participant was free to act spontaneously and not let her behavior be affected by the physical presence of the researchers.

Each time a user enters the virtual world the exact location where the research will take place may change from person to person, since not all the locations in SL are always crowed and maybe some of the users don't have an adequate number of other avatars to communicate with. For that reason a rather crowded place was chosen each time, according to SL's 'Popular Places'.

The users were asked to have public conversation with the other avatars so that the coordinator would able to record and evaluate their behavior and choices. In the case of private messaging (PM), they were asked to note it down and then inform the coordinator of the event at the end of the session. Moreover, users were given a time-limit of one hour, half with each different avatar, to contact other avatars and discuss about anything they wished to know or to do.

D.Data collection

The data was recorded in real-time using a table where the study's coordinator noted down each user's acts and behaviors with regard to the number of, type of (appearance) social encounters with other avatars.

After the end of the experiment users were asked to fill-in an attitude questionnaire, which contained questions such as: 'How much do you believe that your physical appearance is related to developing interpersonal relationships in contemporary societies?' and 'How much do you believe that your avatar's physical appearance is related to developing interpersonal relationships in a virtual world?' Furthermore, we asked the users to use free text in order to describe or rationalize their opinions on the above questions.

IV. RESULTS

During the observation of the users, it was recorded that correspondence was bigger for those who chose the attractive avatar (b) instead of the default avatar (a). We recorded 56.88% (62 out of 109 observations) successful social encounters of the attractive avatar (b) in contrast to 31.5% (30 users out of 96 observations) for the default avatar (Figure 5). In addition, other SL inhabitants proactively engaged in a conversation with the attractive subjects of our study. In particular, we recorded twenty SL inhabitants 'breaking the ice' towards an attractive avatar, and only three towards the default avatar.

Besides public conversation, sometimes users initiated private chat. For the attractive avatar (b), there was a 21.1% (23 out of 109 observations) interested in creating some kind of friendship with the users from inside the SL, just as to move to private conversation. In the case of the default avatar (a) there were only 3.13% (3 observations out of 96). In summary, it seems that the elaborate avatar (b) has been very successful in social encounters.

According to the majority of the participants, physical appearance is important in everyday life. Based on their questionnaire answers, the importance of the physical appearance depends on the type of relationships (professional versus personal).

What is the attitude towards physical appearance in a virtual world? The answer to this question seems to be split. After the end of the study, five out of nine participants answered that physical appearance plays a significant role in such a "virtual

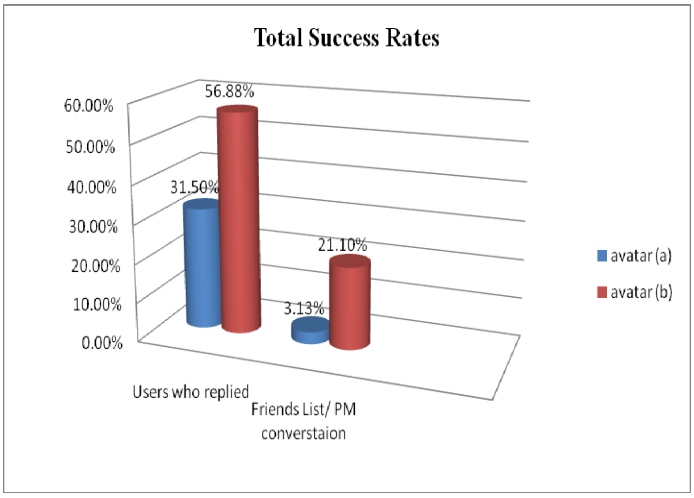

Figure 5: Success rates of users using two different types of avatars (a) and (b) for both genders (9 users, 2 avatars each, 205 social encounters)

game". On the other hand, four out of nine of them answered that an avatar's look matters just a little bit, or not at all.

Most notably, we found that participants behaved in contrast to their stated beliefs. Before starting the first session, participants were asked to choose the avatar that they preferred. It turned out that seven out of nine users chose to use the attractive avatar (b). In contrast, according to participants' answers to the questionnaires, only five out of nine agreed that the physical appearance of the avatar is important in a virtual world. Thus, two out of nine users chose to use the attractive avatar (b), although they finally claimed that their personal appearance in Second Life is not important at all. Due to the small number of participants, we cannot raise conclusive arguments, but the above findings might reveal subconscious stereotypes about physical appearance in online virtual worlds.

V. CONCLUSION AND FURTHER RESEARCH

Based on the behavioral data collected during several social encounters in Second Life, we have realized that physical appearance is an important factor in determining the social communication in online 3D worlds. In addition to behavioral data, we recorded the opinion of the users on several aspects of physical appearance and sociability in 3D online worlds. Most notably, users referred to the social identification function. In particular, one user reported that "[...] There are also different groups of people like in real life with specific

characteristics (e.g. metal outfits, rapper outfits and glamorous outfits) who might prefer to communicate only with people in their own groups." While another user said that "I believe that appearance is very important in SL because I also chose to speak to people who had a closer appearance to mine. I thought that since they are more like me they might be the same in their real life". Therefore, further research on this topic should consider providing the choice of alternative avatars to the users.

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