

February 2009

Attitudes toward Second Life Chat Encounters

Janea Triplett

Iowa State University, rdtrip@iastate.edu

Brian Mennecke

Iowa State University, mennecke@iastate.edu

Lesya Hassall

Iowa State University, lesya@iastate.edu

Zayira Jordan-Conde

Iowa State University, zjordan@iastate.edu

Follow this and additional works at: <http://aisel.aisnet.org/mg2009>

Recommended Citation

Triplett, Janea; Mennecke, Brian; Hassall, Lesya; and Jordan-Conde, Zayira, "Attitudes toward Second Life Chat Encounters" (2009).
MG 2009 Proceedings. 16.

<http://aisel.aisnet.org/mg2009/16>

This material is brought to you by the Mardi Gras Conference at AIS Electronic Library (AISeL). It has been accepted for inclusion in MG 2009 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Attitudes toward Second Life Chat Encounters

Janea L. Triplett

HCI Program
Iowa State University
Gerdin Business Building
Ames, Iowa 50011 USA
001-515-294-8100
rdtrip@iastate.edu

Lesya M. Hassall

Center for Excellence in
Learning and Teaching
Iowa State University
Ames, Iowa 50011 USA
001-515-294-9767
lesya@iastate.edu

Brian E. Mennecke

Logistics, Operations, MIS
Iowa State University
Gerdin Business Building
Ames, Iowa 50011 USA
001-515-294-8100
mennecke@iastate.edu

Zayira Jordan-Conde

HCI Program
Iowa State University
Gerdin Business Building
Ames, Iowa 50011 USA
001-515-294-8100
zjordan@iastate.edu

ABSTRACT

This paper analyzes student attitudes toward chat encounters in Second Life (SL), a three-dimensional multi-user virtual environment. Reflection data were collected from 57 new users, who were enrolled in two electronic commerce graduate courses in which Second Life was utilized. Contextual analysis performed on the data exposed a relationship between subject perceptions of embodiment and their experiences in Second Life. Those who had a higher level of embodiment exhibited a more positive attitude towards their Second Life experience. This finding suggests several venues for future research examining user attitudes in relation to virtual environments.

Keywords

Virtual worlds, avatars, team collaboration, embodiment

INTRODUCTION

The term “attitude” refers to an internal state (Gagne & Briggs, 1974; Eagly & Chaiken, 1993) of an individual to act in accordance with his/her judgment (Cacioppo, et al., 1993). Although attitudes do not always determine behavior (LaPiere, 1924; Wicker, 1969), they derive from an individual's previous experience and observations and may provide insight into his/her possible actions. As Aiken (2002) points out, “what a person actually does or says in a situation where the object or event is present or occurs may be interpreted as representative of his or her attitude toward it.” Thus, user attitudes are important antecedents of behavior and can serve to predict whether and how individuals will respond to innovative technologies.

Second Life is one example of a three-dimensional virtual environment in which users can interact with space, objects and others. By understanding how embodiment is experienced in such environments we can accurately predict whether and how users will react to this technological innovation both when they first encounter it and over time. As antecedents to behavior, attitudes can serve to explain user reactions to virtual environments.

This study analyzes the subtleties of new user attitudes to Second Life as linked to user experiences of embodiment within this environment and the effects embodied perceptions, interactions and behaviors have on attitude formation toward virtuality. An important aspect of our analysis considers the role of the context, shared space, objects and tools that facilitate user interaction within virtual environments.

THEORETICAL BACKGROUND

Second Life provided the students enrolled in two different electronic commerce graduate courses with dramatically different experiences that enhanced their learning. While there were challenges, such as a steep learning curve for the user interface and a complex virtual world culture (Mennecke, et al., 2008), these students indicated that they saw a rich potential in this environment. For example, one student noted that, "I learned much more from building and exploring than I would have learned from a standard lecture format." This statement suggests that this student felt greater engagement with the activity-based interactions that Second Life engenders compared to a traditional university classroom setting. This engagement was important and had a positive influence on student learning. Students who engaged in shared virtual world exercises were more excited about the learning process and reported that they felt as though they learned a great deal about the topics being discussed in the course.

These observations are important when considering the literature on student attitudes and class performance. For example, education scholars have linked positive attitudes to improved classroom performance (Germann, 1994). Students with positive attitudes about the subject material tend to receive higher grades (Gupta, et al, 2006) and report increased levels of motivation, commitment, and accountability (Wiggins & Damore, 2006) to team projects. Students with positive attitudes about their groups also felt that they produced better collaborative projects (Prater & MacNeil, 2002). Additionally, students enrolled in online education courses have experienced positive attitudes and increased performance when the course promoted high levels of interaction (McCroskey & Anderson, 1976; Ritchie & Newby, 1989). Thus, attitudes are not only influenced by the nature of student interactions, but also have a powerful impact on student performance.

A recently proposed theoretical perspective examining the relationship between interactions, shared space, and embodiment offers a framework in which to examine embodied interactions. Embodied Social Presence (ESP) Theory (Mennecke, et al., 2008) defines how embodiment, shared activity, and a shared working space influences perceptions of presence in virtual environments. ESP draws upon Activity Theory which explains how people code and decode other social actors within a given context and through the mediation of culture, tools and symbols (Vygotsky, 1935/1978; Engeström, 1987).

Activity Theory suggests that social actors develop an understanding of other actors through a subjective lens that is framed both by objective and interpretive influences. When engaging in communication activities, actors make use of a variety of tools and symbols embedded in a given context. An important premise of ESP is that all of these communicative actions are initiated by the mind of the actor through the actor's body and thus the body is another tool that can be used for impression management, communication, and symbolic interactions.

The individual's body (or, in the case of a virtual environment, the individual's avatar) is the nexus of communication and that communication cues are, in one way or another, always filtered through the body. As a result, social actors interpret communication within this body-centered framework where interaction occurs within a given context, involving symbols and using tools. This framework informs our analysis and defines the relationship between the context, shared spaces, shared objects, and the tools for interaction that exist within virtual environments.

CONTENT ANALYSIS

The virtual economy of Second Life served as a platform for two electronic commerce graduate courses taught in the summer of 2007 (15 male, 14 female) and spring of 2008 (14 male, 14 female). A class exercise asked student teams to use 3D and 2D synchronous chat to discuss, plan, and make decisions about their final group project. Students used Second Life for 3D chat and a traditional instant message application (e.g. MSN, Yahoo! Messenger, or Google Talk) for 2D chat.¹ The students were then asked to individually reflect on the experience and compare and contrast the two media. What follows is a description of specific attitudes toward the Second Life chat encounters that stood out prominently in student reflective pieces.²

Data Analysis

The contextual analysis evaluated the reflection data collected from 57 students (29 male, and 28 female). The raw data consisted of first-person, guided narratives. Each student was asked to list, explain and compare the positive and negative aspects of 3D (Second Life) and 2D (traditional) chat encounters. A constant comparative method (Ragin, 1987) was used to

¹ Students were also engaged in a number of other Second Life activities such as building and classroom lectures.

² An additional paper is in progress which looks into the question of task-technology fit between 3D and 2D chat.

code the data into themes. Coding was first examined within each individual student reflection piece and then across the entire reflection data in its entirety.

Coding rules were operationalized as suggested by Holsti (1969). First, we examined whether students achieved perceptions related to ESP (embodied social presence). Then we examined the quality of student statements to determine the positive and negative attitudes related to their 3D chat experience.

Measures

Language has been well linked to influencing thought and behavior (Sapir, 1949; Whorf, 1959; Volosinov, 1973) as well as to revealing values and attitudes (Lakoff & Johnson, 1980; Bonvillain, 2003). To measure user attitudes toward their experiences and perceptions of ESP, we evaluated the linguistic choice of the student authors. We classified the student narratives into three categories: 1) high perceptions of embodiment, 2) neutral perceptions, and 3) no perceptions.

If the author wrote of the avatar in the first person or used possessive forms to refer to their digital self and digital others, then the statement was coded as high or “ESP Achieved.” If the author switched between using first person and possessive forms to using impersonal articles and adjectives to refer to the digital self and digital others, then the statement was coded as neutral or “ESP Neutral.” If the author used an article or an adjective to refer to the Second Life experience and the author described psychological and/or technological barriers, then the statement was coded as “ESP Not Achieved.”

Next, we measured the attitudes related to the 3D chat experience. A total of 188 statements were divided into positive and negative attitudes about avatar-supported chat and were sub-divided into six themes. Students wrote about visual and nonverbal stimuli within the virtual environment. They also expressed feelings of movement and a sense of place. They wrote of their general attitudes toward the Second Life environment and how communication was affected by the stimuli they experienced.

Results

The data processing described above yielded three saturated categories that were used to measure the presence of ESP.

- **ESP Achieved:** Author writes of the avatar in the first person. Author uses possessive form to refer to digital self and digital others (e.g. *my avatar*, *our avatars*, or *her avatar*). The author describes the feeling of using a digital body to interact with digital others (i.e., actions in the context of activity).
- **ESP Neutral:** Author switches between using first person and possessive forms to using articles and adjectives to refer to digital self, digital others, and avatars.
- **ESP Not Achieved:** Author uses an article (e.g. *an avatar* or *the avatar*) or an adjective (e.g. *three avatars*) to refer to the Second Life experience. The author also describes psychological and/or technological barriers which prevented them from moving into the next stages of presence, co-presence and then to embodied social presence.

Of the 57 students in our sample, 36 expressed comments suggestive of high levels of ESP, 16 statements indicated neutral levels of ESP, and five did not appear to have any perceptions of ESP (Table 1). There was no significant difference between male and female subjects regardless of whether an individual student achieved ESP or whether he/she was neutral about ESP. The largest difference between the sexes surfaced between those students who did not achieve ESP. More men than women did not achieve ESP. However, since the total number of students who did not achieve ESP was low (nine percent), the difference between the sexes might be interesting, but is most likely insignificant.

	ESP Achieved	ESP Neutral	ESP Not Achieved	Total
Male	16	9	4	29
Female	20	7	1	28
Total	36	16	5	57

Table 1. Distribution of Students Experiencing Embodied Social Presence

The students in this study generally displayed positive perceptions of Second Life. Of the 188 statements that described student attitudes toward their Second Life chat encounters, 86 percent of those statements were positive (Table 2). Students found 3D chat to be interesting and realistic.

	Positive	Negative	Total
Male	73	8	81
Female	89	18	107
Total	162	26	188
Sample Narrative³	M+ I liked having the added dimension of interest while chatting with my team M- A fake representation of the person does nothing to enhance the experience F+ Once a person gets used to communicating using SL, then the argument of face-to-face lessens F- Second Life has more actions to think about which makes it more complex to use		

Table 2. Overall Summary of Attitudes toward Second Life Chat Encounter

The contextual analysis also showed that students achieving high perceptions of ESP expressed more positive attitudes (89 percent) about their team communication experience than did students who were neutral (seven percent) or who failed to achieve ESP (four percent). Table 3 summarized the breakdown of positive and negative attitudes toward the Second Life chat encounter by degree of ESP achieved.

Attitude	ESP Achieved (n=36)	ESP Neutral (n=16)	ESP Not Achieved (n=5)	Total
Positive	144	12	6	162
Negative	9	9	8	26
Total	153	21	14	188

Table 3. Breakdown of Attitudes toward Second Life Chat Encounter by Degree of ESP Achieved

Our analysis not only exposed overall patterns of positive and negative attitudes towards Second Life chat encounters in both courses, but also yielded five themes detailing the sense of embodiment experienced by these students. The five embodiment themes were: 1) Sense of Place, 2) Nonverbal Communication, 3) Visual Stimulation, 4) Verbal Communication, and 5) Bodily Movements. A six theme expressed general attitudes toward Second Life as a communication tool.

The most frequently mentioned theme directly linked to embodiment was the feeling of a sense of place (Table 4). Although the experience was virtual, the students described their team encounters with words like closeness, real, face-to-face and you have to look for people. Students reported feeling that 3D chat was similar to face-to-face team meetings. There were more positive attitudes expressed about a sense of place (90 percent).

	Positive	Negative	Total
Male	18	1	19
Female	26	4	30
Total	44	5	49
Sample Narrative	M+ I did feel a sense of closeness to the other team members M- We met in SL just long enough to exchange phone numbers F+ You feel as if you are in a real face to face meeting F- You have to look for people in SL		

Table 4. Attitudes about Sense of Place

³ The Narrative is a representative sample of the student reflections statements which typify expressed positive [+] or negative [-] attitudes of male [M] and female [F] respondents.

The second most frequently expressed theme was the ability (or inability) to communicate in Second Life with nonverbals (Table 5). The body codes of nonverbal communication (Andersen, 1999) include physical appearance (e.g. clothing, sex, race, age, stature), kinesics (e.g. facial expressions, gestures, interactional synchrony), oculosics (e.g. eye contact, pupil dilation, eye movements), proxemics (e.g. territoriality, crowding and density, personal space), and haptics (e.g. types of touch, touch avoidance, touch taboos). Students noted that 3D communication was physical and emotional. Eighty-two percent of the comments were positive when discussing the use nonverbal communication within Second Life.

	Positive	Negative	Total
Male	19	5	24
Female	17	3	20
Total	36	8	44
Sample Narrative	M+ There is a certain amount of physical communication, just as in real life M- Perhaps if there were some value in the facial expressions F+ In SL you can actually make your avatar show emotion F- You may actually feel as though your space is being invaded		

Table 5. Attitudes about Nonverbal Communication

Student reported enjoying the visuals provided by the Second Life environment (Table 6). When writing about visual stimulation, 89 percent of the comments expressed positive attitudes. Students wrote that the visuals helped them to feel close to their teammates and facilitated group activities.

	Positive	Negative	Total
Male	16	1	17
Female	17	3	20
Total	33	4	37
Sample Narrative	M+ The visual effect created a feeling that we were more unified M- It was disconcerting to see how one avatar’s arm was rigidly pointing upward through his cowboy hat F+ I liked that I could easily follow them as they showed me things F- You can see the person in SL, but you don’t see what they really look like, so you could be talking to anyone		

Table 6. Attitudes about Visual Stimulation

The most notable embodiment theme was that of verbal communication (Table 7). All of the comments were positive when referring to the team chat encounters in Second Life. Students reported that their conversations were more engaging, social and relaxing. They also wrote that avatar-based communication helped them to better express themselves whether in agreement or disagreement with their team members.

	Positive	Negative	Total
Male	13	0	13
Female	13	0	13
Total	26	0	26
Sample Narrative	M+ For me, it is easier to give praise and easier to disagree in the SL chat room M+ SL helps members express true feelings F+ The closeness resulted in a more relaxed conversation F+ Three-dimensional is more social and engaging		

Table 7. Attitudes about Verbal Communication

A sub-category of nonverbal communication was the theme of bodily movements (Table 8). The ability to walk around with teammates was seen as fun, however, the inability to control the movement of the avatar contributed to feelings of frustration during a conversation. Even though slow rendering of digital images in Second Life was seen as a barrier, student comments about the ability to use a digital body were generally positive (78 percent).

	Positive	Negative	Total
Male	7	1	8
Female	7	3	10
Total	14	4	18
Sample Narrative	M+ Sometimes I can move around quite freely and <i>(narrative continued to next line)</i> M- ...others, I can't move at all. This adds to the frustration. F+ It can be fun to walk around with your friends and meet new people. F- I can't move correctly because of the delay.		

Table 8. Attitudes about Bodily Movements

While these five themes were related to the embodiment of an individual through the avatar, a final, sixth theme revealed student expressed attitudes toward Second Life as a communication tool. This sixth theme described in general terms the context and culture of the virtual world. It is worth noting that all the general comments about the Second Life environment were by female authors. Although this was the least frequently mentioned theme, female students voiced positive attitudes about their ability to create an identity which allowed them to better express themselves.

	Positive	Negative	Total
Male	0	0	0
Female	9	5	14
Total	9	5	14
Sample Narrative	F+ I feel it is much easier to be myself in Second Life. F+ You can hide your identity and be anyone you want to be. F- It is easier to stay on task [using google chat] than in the more game-like environment of Second Life. F- The learning curve was a bit annoying.		

Table 9. Attitudes about Second Life Environment

The reflection data were also used to identify the steps or conditions associated with ESP. There were 76 statements from 28 student reflections (14 male, 14 female) which described the assignment to discuss their team project using Second Life and traditional chat. Those students who experienced ESP did so through immersion via visual, emotional, and nonverbal stimulation when engaging in the shared activity with their teammates in the virtual environment. Even though novice users, these students experienced a complex feedback loop.

For example, the statement, "Others around me can see my expressions and mood much easier than in two dimensional chat," might appear uncomplicated on the surface; however, a closer look uncovers its density. The word "others" refers to digital others who are "around me", the author's digital self in the virtual place. The phrase "can see" refers to the real others visualizing the author's avatar in the virtual place and "my expressions" refers to the actions of the author's avatar. Lastly, the word "mood" refers to the emotional state of the author's real self.

The realization of embodied social presence experienced by this individual was first stimulated by seeing the image of the digital other (avatar of the other), then expanded to embrace a digital self and his/her own actions in the digital environment as a natural extension of this individual's real life activity and identity. The students who did not achieve embodied social presence clearly indicated that there were motivational, technological and psychological barriers preventing them from taking the next steps into presence, co-presence and then to embodied social presence.

DISCUSSION

Our content analysis singled out levels of Embodied Social Presence (ESP) achieved by new users in the digital environment of Second Life. These levels (ESP achieved, ESP neutral and ESP not achieved) were described as expressions of attitudes

toward place, verbal and nonverbal communication, visual stimuli and bodily movement sensations. Of the 57 students in our sample, 36 expressed comments which were suggestive of high levels of embodied social presence (ESP). The 36 students who achieved ESP also expressed more positive attitudes toward their Second Life chat encounter with their teammates.

Such positive attitudes seemed to affect the quality of team cohesion and communication. The sense of place afforded by the virtual world of Second Life allowed students to reflect on their team encounters with words like *closeness* and *real*. Students who became immersed by the ability to use a digital body expressed comments that their conversations with teammates were more engaging, social and relaxing. Students also reported that avatar-based communication helped them to better express themselves as individuals and engage in meaningful conversations with their teammates.

This study somewhat hinted that there could be gender differences in how students experienced the virtual environment. While there was little difference between males and females denoting whether an individual student achieved ESP or whether they were neutral about ESP, more males than females did not achieve ESP. Also, only females expressed attitudes about their ability to create a digital identity which they reported allowed them to better express their true identities.

Finally, the process involved in achieving ESP was examined. We found that there is a complex and iterative perceptual route to the achievement of ESP. The state of ESP appears to occur when a social actor engages in a set of goal-directed activities with other social actors via their avatars. The focus of attention involves recognition of the other avatar, the other social actor, the observer's avatar, the observer himself/herself, and the task activities that the actors are undertaking.

CONCLUSION

This research involved an examination of student reflections about their experiences using a virtual environment and other synchronous communication media for a class project. Our results suggest that perceptions of embodiment developed by Second Life users had a positive influence on their attitudes about the virtual environment and about their collaborative communication task.

Our results were based on a qualitative analysis of subject reflections, but they indicate that further research examining the relationship between user perceptions of embodiment and user attitudes is needed. These results were used, in part, to develop a new theory (reported on elsewhere [Mennecke, et al., 2008]) describing the development of user perceptions and attitudes toward their experiences in virtual environments. We expect that these results will suggest several directions for future research on user attitudes and behaviors in virtual environments.

REFERENCES

1. Aiken, L.R. (2002). *Attitudes and Related Psychosocial Constructs*. Thousand Oaks, CA: Sage Publications.
2. Andersen, P.A. (1999). *Nonverbal Communication: Forms and Functions*. Mountain View, CA: Mayfield Publishing Company.
3. Bonvillian, N. (2003). "Language and cultural meaning." In *Language, Culture and Communication: The Meaning of Messages*. Fourth Edition. Upper Saddle River, NJ: Prentice Hall, pp. 46-75.
4. Cacioppo, J.T.; Petty, R.E.; Losch, M.E.; and Kim, H.S. (1986). "Psychophysiological approaches to attitudes: Detecting affective dispositions when people won't say, can't say, or don't even know." In S. Shavitt & T.C. Brock (Eds.), *Persuasion: Psychological Insights and Perspectives* (pp. 43-69). Needham Heights, MA: Allyn and Bacon.
5. Eagly, A., and Chaiken, S. (1993). *The Psychology of Attitudes*. Sydney: Harcourt Brace Jovanovich.
6. Engeström, Y. (1987). *Learning by Expanding: An Activity-theoretical Approach to Developmental Research*. Helsinki, Finland: Orienta-Konsultit Oy.
7. Gagne, R.M., and Briggs, L.J. (1974). *Principles of Instructional Design*. New York: Holt, Rinehart and Winston.
8. Germann, P.J. (1994). "Testing a model of science process skills acquisition: An interaction with parents' education, preferred language, gender, science attitude, cognitive development, academic ability, and biology knowledge." *Journal of Research in Science Teaching*. Vol. 31, pp. 749-783.
9. Gupta, S.; Harris, D.; Carrier, N.; Caron, P. (2006). "Predictors of student success in entry-level undergraduate mathematics courses." *College Student Journal*. Vol. 40 Issue 1, pp. 97-108.

10. Holsti, O.R. (1969). *Content Analysis for the Social Sciences and Humanities*. Reading, MA: Addison-Wesley Publishing Company.
11. Lakoff, G. and Johnson, M. (1980). *Metaphors We Live By*. Chicago University Press.
12. LaPiere, R.T. (1934). "Attitudes versus actions." *Social Forces*. Vol. 13, pp. 230-237.
13. McCroskey, J. and Anderson, J. (1976). "The relationship between communication apprehension and academic achievement among college students." *Human Communication Research*. Vol. 3, Issue 1, pp. 73-81.
14. Mennecke, B. E., Triplett, J. L., Hassall, L. M., Heer, R. and Conde, Z. J. (2008). *Embodied Social Presence Theory*. Iowa State University College of Business Working Paper Series, September 15, 2008. Available at SSRN: <http://ssrn.com/abstract=1286281>
15. Mennecke, B.E., Hassall, L. M., and Triplett, J. (2008). "The mean business of Second Life: Teaching entrepreneurship, technology and ecommerce in immersive environments." *Merlot Journal of Online Learning and Teaching*. Vol. 4, No. 3, September 2008, pp. 339-347.
16. Prater, D. and MacNeil, A. (2002). "The use of collaborative groups in traditional and online courses." *Computers in the Schools*. Vol. 19, No. 3-4, pp. 67-76.
17. Ragin, C.C. (1987). *The comparative method: Moving beyond qualitative and quantitative strategies*. Berkeley, CA: University of California Press.
18. Ritchie, H. and Newby, T. J. (1989). "Classroom lecture/discussion vs. live televised instruction: A comparison of effects on student performance and attitude." *American Journal of Distance Education*. Vol. 3, No. 3, pp 8-17.
19. Sapir, E. (1949). "Language and environment." In *Selected Writings of Edward Sapir*, ed. D. Mandelbaum. Berkeley: University of California Press, pp. 89-103.
20. Volosinov, V.N. (1973). *Marxism and the Philosophy of Language*. Cambridge, MA: Harvard University Press.
21. Vygotsky, L. (1935/1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.
22. Whorf, B. (1959). "The relation of habitual thought and behavior to language." In *Language, Thought and Reality*, ed. J.B. Carrol. Cambridge, MA: MIT Press, pp. 134-159.
23. Wicker, A.W. (1969). "Attitudes versus actions: The relationship of verbal and overt behavioral responses to attitude objects." *Journal of Social Issues*. Vol. 25, No. 4, pp. 41-78.
24. Wiggins, K.C. and Damore, S.J. (2006). "A framework for assessing effective collaboration." *Teaching Exceptional Children*. Vol. 38, Issue 5, pp. 49-56.