

# The Effect of Mode on Participant Responses to Qualitative Research in Virtual Worlds

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## 1. Introduction

Virtual worlds are computer-simulated environments which provide a means for large numbers of people to interact in a range of environments. The number and popularity of these simulated environments continues to increase with advances in technology. Currently, tens of millions of people engage in at least one virtual world (Bell, Castronova, and Wagner, 2009).

Virtual worlds are increasingly more realistic, presenting users complex physical spaces and facilitating interaction with other users and with objects within the simulation. There are multiple types of virtual worlds, including gaming platforms and social networking platforms. The combination of unique virtual environments and a large user base potentially provides for new methods of data collection and sampling via surveys of virtual world users, both within the context of the simulation itself and via more traditional real world settings (Bainbridge, 2007).

Despite the significant growth in popularity of virtual worlds, simulated environments are still relatively new. Some of the more popular virtual worlds are less than ten years old, including Second Life (2003) and World of Warcraft (2004). Research methodology that has been developed over decades can provide a guideline for research conducted in online environments, but mode-specific adjustments will be needed to account for new possibilities and issues. At the same time, these new environments may be a venue for recruiting respondents for qualitative studies, cognitive or usability testing, and samples with special or hard-to-find characteristics.

### 1.1 Advantages to Virtual World Research

Potential advantages to conducting research within a virtual world setting include, but are not limited to:

- access to a large and diverse population of respondents (Dean, Cook, Murphy, and Keating, 2012),
- access to specific populations,
- surveys that can be specifically designed to be avatar<sup>1</sup>-administered or self-administered (Bell, Castronova, and Wagner, 2009), and
- data that can be collected quickly and cost-effectively (Bainbridge, 2007).

Virtual worlds now offer the possibility of establishing an actual research institution within the virtual setting itself. Since 2008, RTI International (RTI) has maintained

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<sup>1</sup> An avatar is a graphical representation of a user in a virtual world.

research space within the virtual world of Second Life (RTI, website, September 2012). In some cases, it is possible to harmonize findings between studies conducted in the real world and studies conducted in a virtual world. In 2009, Dean, Cook, Keating, and Murphy conducted a Second Life study researching the relationship between a user's physical appearance and his or her avatar's appearance, and the appearance of the interviewer's avatar. This study tested three hypotheses:

1. "Individuals with avatars who engage in physical activities in Second Life are more likely to engage in physical activities in real life."
2. "Individuals with thinner avatars are more likely to be thinner in real life."
3. "Avatar-respondents are more likely to report a heavier Second Life body size and higher real life BMI to a heavy avatar than to a thin avatar, since a heavy avatar conveys that a higher BMI is more social acceptable."

Preliminary results of the survey indicated support for all three hypotheses. However, the survey had a very small sample size of 29 respondents. This study also demonstrates a possible issue with only being able to conduct research on respondents' perceptions, as real world information (in this case, verification of the respondents' BMI) may be difficult to obtain (Dean, Cook, Keating and Murphy, 2009).

## 1.2 Difficulties in Virtual World Research

There are significant and practical challenges associated with conducting research in and on virtual worlds. These challenges include:

- Ethical considerations for conducting virtual world research (Knobel, 2002; McKee and Porter, 2009; Minocha, Tran, and Reeves, 2010).
- Motivation for conducting studies in a virtual world setting instead of a real world setting.
- How the data are affected by the location of the survey (in the virtual world or in the real world) and the information targeted by the survey (Bell, Castronova, and Wagner, 2009).
- Establishing baselines.
- The ability to generalize findings to real-world populations.
- Intentional manipulation of the survey by respondents (Bell, Castronova, and Wagner, 2009).
- Hardware or software requirements for the respondents.

It is important to establish the identity of the respondent, who may provide answers based upon his or her avatar's identity or his or her real world identity. The blurring of avatar and real world identities can be further complicated by the method used to conduct the study, such as an interview conducted by an avatar or an automated in-world survey.

Virtual world surveys share many of the same ethical considerations as real world surveys. However, there are significant and evolving differences (Minocha, Tran, and Reeves, 2010). The Association of Internet Researchers has identified significant differences between online and offline research (Knobel, 2002). These include:

- A greater risk to individual privacy and confidentiality.
- Challenges in obtaining informed consent.
- Virtual worlds such as Second Life and World of Warcraft allow users to create online identities that can differ significantly from the subjects' real identity.
- Determining an ethically correct approach based on the online venue being used.
- Determining an ethically correct approach based on the global reach of virtual worlds and the multitude of different cultures involved.

Virtual worlds may not be well understood by researchers who are not actively engaged in the online community that has developed. Online communities develop their own cultural norms, both based upon the structure provided by the virtual world creator and the desires and needs of the members of that community. It would be ethically suspect and may generate negative reactions for a researcher to have no experience interacting with an online community, conduct a short-term study, and then publish the results (Knobel, 2002; Zarsky, 2006).

### 1.3 Research Goals and Questions

To conduct this research, we teamed with the First Opinions Panel, a survey research panel operated by the Social Research Foundation, with an established presence in Second Life (SL). Our main goal was to explore this new venue for qualitative research and sample selection purposes. Our intention was not to have samples that are fully representative. Rather, we were looking into recruitment of special populations. This will be helpful for qualitative research, cognitive or usability testing, or for seeded samples (e.g., if the sample needs to include crime victims, or persons with various disabilities).

We designed the research project to determine the suitability of SL as a research venue, and to address several specific research questions including:

- Would we detect mode effects between the survey taken by avatar respondents in SL and the Westat web survey taken by the “real life” person behind the avatar outside of SL?
- Was there any meaningful or important distinction between the real person and the avatar that made using SL inappropriate for research?
- Who answered the Westat surveys: the avatar or the real person?
- Would SL provide adequate and cost effective access to special populations?

## 2. Methods

Our research design consisted of three stages:

- We began with an initial survey completed by avatars in Second Life (SL). The avatars were selected by the First Opinions Panel from their panel of avatars, including those over the age of 18 living in the United States. Participants completed a self-administered survey while present as avatars in SL. The survey contained 10 substantive questions plus demographics. The substantive questions were selected from existing surveys such as those conducted by Pew Center and the Behavioral Risk Factor Surveillance System (BRFSS), conducted by CDC.
- One week later, those who completed the SL survey were sent an email invitation to complete a followup web survey in the real world. This survey also contained 10 substantive questions, of which 5 were identical to questions included in the SL survey.
- Those who completed both surveys were asked at the end of the web survey to volunteer for in-depth qualitative telephone interviews.

Each stage of research is described in greater detail below. The questionnaires for the SL and web surveys, and the qualitative protocol for the in-depth telephone interviews, are available from the authors upon request.

## 2.1 Second Life Survey

The Second Life survey was managed by the Social Research Foundation, which operates the First Opinions Panel. The survey was conducted with U.S. panelists age 18 or older, from March 20 to April 2, 2012. Respondents to the survey were provided with a \$1 incentive within Second Life, using the SL currency of Linden dollars (\$1 US equates to roughly L\$250).

Due to concerns about privacy and confidentiality issues, the Social Research Foundation recommended we use a special technology to present the survey to respondents. In SL, if one were to approach a survey kiosk to complete a survey, other avatars would be able to see the questions and responses to the questions simply by standing nearby. To address this issue, a Heads-Up Display (or “HUD”) was used to deliver the survey. This approach was very useful to address our concerns, but as it turned out it presented technical difficulties for SL residents with older “viewers” (similar to web browsers, there are several available and some are not as advanced as others). Many of those invited to take the survey were unable to, without downloading a newer version of their “viewer” or a different “viewer.” The First Opinions Panel provided technical assistance to respondents throughout the SL survey field period, by placing an avatar staff person in the research panel’s office to aid those approaching to take the survey.

Figure 1 shows the First Opinions Panel office – the kiosk for survey-taking is highlighted with a red arrow.



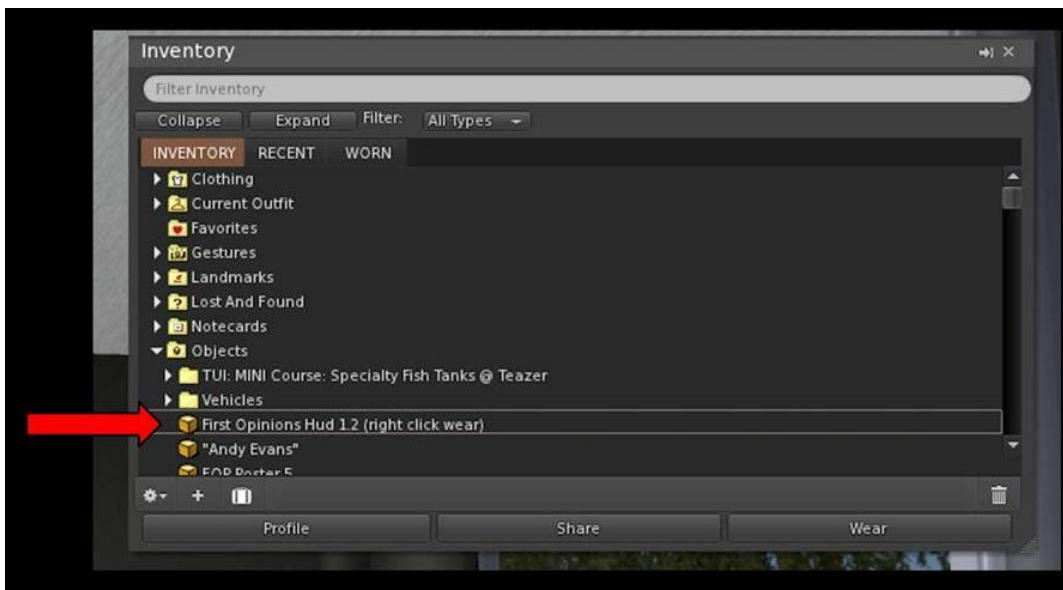
**Figure 1:** First Opinions Panel office with red arrow pointing to survey kiosk.

Figure 2 shows avatars approaching to take the survey on the first day of our field period. The yellow sign to the right of the survey kiosk contains instructions regarding “viewers” that would enable HUD delivery of the survey.



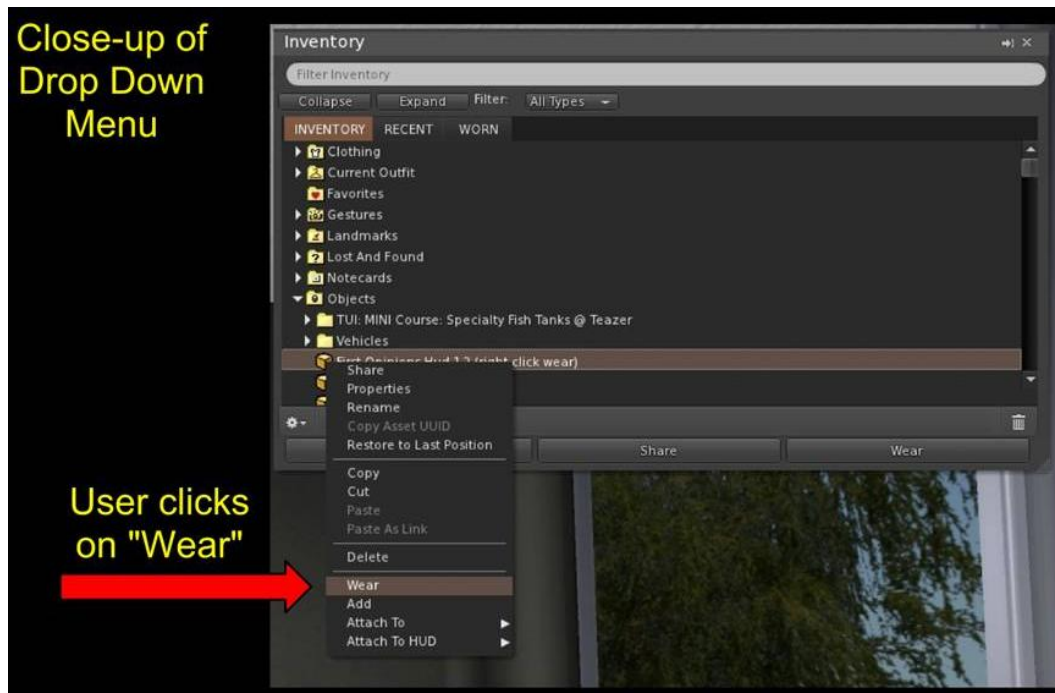
**Figure 2:** Avatars approaching to take the survey.

Figure 3 shows how the survey appears in the avatar's "personal inventory" after approaching the survey kiosk to take the survey. The personal inventory contains other things such as clothing, gestures, and navigation landmarks for use in SL that are specific to each avatar.

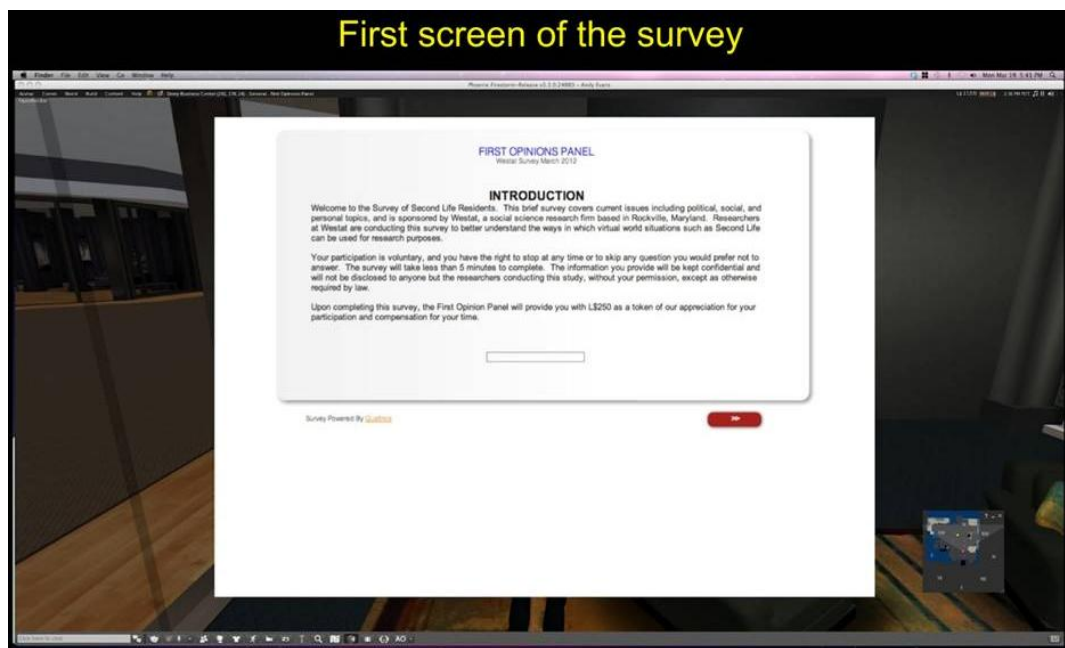


**Figure 3:** Survey appears in avatar's personal inventory.

Figure 4 illustrates how the avatar selects the option to "wear" the survey after right-clicking on the survey option in the inventory.



**Figure 4:** Avatar selects option to “wear” the survey.

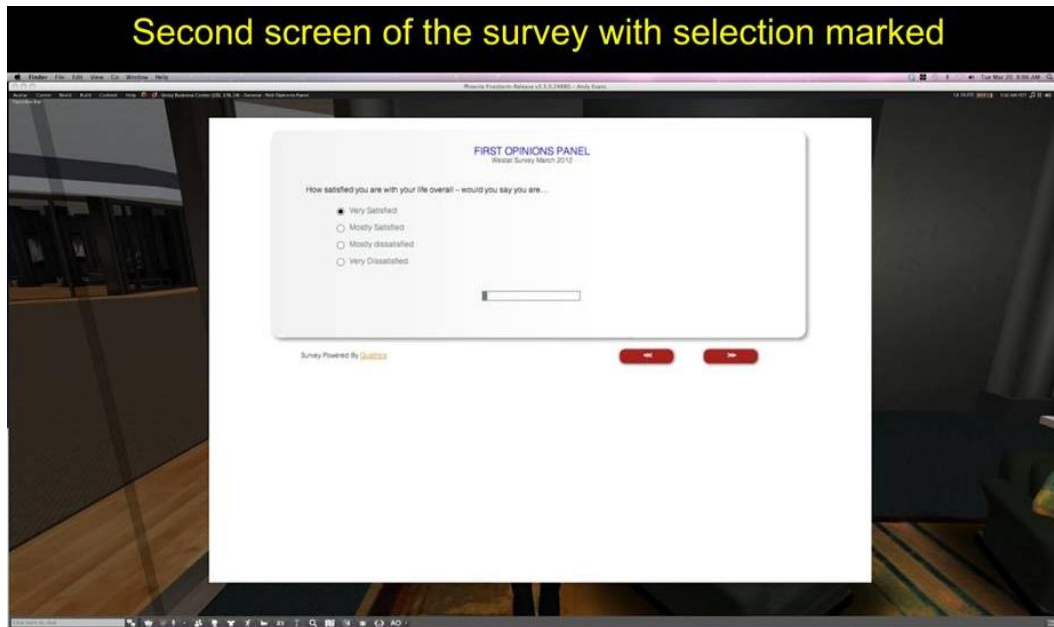


**Figure 5:** SL survey as presented via the heads-up display (HUD), visible only to the responding avatar.

After selecting the option to “wear” the survey, the questionnaire appears visible only to this avatar, not to any other avatars in SL. Figure 5 shows the survey superimposed in front of the avatar’s view of the First Opinions Panel’s office.

Figure 6 shows the first substantive question in the SL survey. A progress indicator provides information to the respondent regarding their progress through the

questionnaire. Forward and back buttons enable movement within the survey, to the next question or back to a previously answered question.



**Figure 6:** Example question from SL survey, presented via heads-up display (HUD).

Upon completing the survey, respondents were directed to the First Opinions Panel's venue for incentive payment.



**Figure 7:** First Opinions Panel gathering place and incentive provision venue.

Figure 7 shows this location, and also illustrates the type of environments present in SL. As with everything in SL, this is a constructed environment – everything visible in SL is created by avatars or organizations present in SL. The image provides a sense of the whimsy and fantasy in what is visible within SL. For the First Opinions Panel, this space is used both as an incentive provision location and as a gathering place. Note the podium/lectern and chairs, typical for a meeting space, but also the tiki torches

surrounding the seating area, and at the back of the image the beach blanket by the pier. At the back of the beach area is a kiosk, shown in greater detail in Figure 8.



**Figure 8:** Close-up view of the First Opinions Panel incentive payment kiosk.

The avatar approached the kiosk and verified their identity. The incentive payment was then received into the avatar's personal inventory, much like the HUD survey was delivered for our project.

A total of 234 completed interviews were obtained for the SL survey, but some duplication was detected among respondents (this was determined by identifying responses with identical email addresses and/or avatar names). After removing duplicates, our final *n* for the SL survey was 192 unique respondents.

## 2.2 Web Survey

The web survey was also managed by the Social Research Foundation, and was programmed in the same survey software (Qualtrics) as was used for the SL survey, so the appearance of the two surveys was identical. A \$2 incentive was provided to respondents who completed this survey.

The survey was completed from March 27 to April 9, 2012. Participants were sent an email invitation to this survey, one week after completing the SL survey. A total of 170 responses was obtained, however there was also some duplication (identified via email addresses and/or avatar names) for this stage of research. After removing the duplicates, the web survey yielded a final *n* of 136 unique respondents. Among the unduplicated cases, 70.8% of the stage 1 (SL) respondents answered the stage 2 (web) survey.

Among the 136 participants who completed the stage 1 and stage 2 surveys, 59 (43.4%) volunteered for the in-depth qualitative telephone interview (stage 3).

## 2.3 In-Depth Qualitative Interviews

Westat conducted 10 in-depth telephone interviews with SL survey participants who had completed both surveys. These interviews were conducted between April 13 and April 20, 2012. Two Westat senior methodologists conducted the interviews. The interviews lasted between 30-50 minutes and were guided by a discussion protocol. A copy of the protocol is available upon request from the authors. All interviews were audio recorded and summaries were developed from the interviewers' notes and the audio recording. All respondents who completed an interview received a \$30 incentive check in the mail.

### 2.3.1 Overall goals of the qualitative interviews

The goal of the in-depth interviews was to determine the extent to which SL could be used to recruit respondent for qualitative studies and other research efforts where respondents with certain characteristics are required. There was a concern that the role-playing nature of SC would have a deleterious effect on respondent's ability to participate in social science research. So, the interviews focused on the extent to which the respondent answered as the "avatar" or as "him/herself." Other themes developed in these interviews centered on the respondent's relationship to his/her avatar; the use of multiple avatars; and the extent to which the avatar represent the respondent or some other entity.

### 2.3.2 Eligibility and recruitment

To be eligible for the interview, the respondent must have completed both SL surveys. Fifty-nine respondents completed both surveys and a list of 14 potential respondents was generated. There was no reason for choosing 14 other than that we thought we could get 10 completes out of a list of 14 given that everyone who was eligible had already agreed to be re-contacted for an in-depth interview. The potential respondents were contacted by a Westat recruiter and respondents were scheduled so to achieve a reasonable distribution across gender, age, race/ethnicity, income, and health status. A Westat recruiter contacted the potential respondents either by telephone or by email to schedule the interview.

### 2.3.3 Protocol development

Westat developed the interview protocols based on the research objectives. The protocol underwent interviewer review and was revised a number of times before being fielded. The protocol allowed for both scripted and unscripted probes. The interviewer was instructed followed the protocol to the greatest extent possible, but allowed the respondent to discuss the topics most important to him/herself without interruption. Only non-directive, non-biasing probes were used.

### 2.3.4 Interview procedures and conduct

All interviews were conducted on the telephone at a mutually agreed upon scheduled time. Interviews ranged from 30 minutes to 50 minutes in length, with most interviews running approximately 45minutes. Participants were read an introduction that explained the goals of the project and were provided with the information required for informed consent. All interviews were audio recorded to support the note-taking after receiving participant consent for the audio-recording. All participants consented to the audio recording and their consent is captured on the recording.

### 2.3.5 Summaries and analysis

A total of 10 interviews were completed with SL respondents. This was exactly the number of target completes. All of the interviews were summarized by senior

methodologists after listening to the interview recordings. The interview protocols were used as the summary template for each interview. Great care was taken to capture direct quotations exactly. The general approach used in the qualitative interviews followed the precepts of Grounded Theory as found in Miles and Huberman (1994).

### 3. Results

#### 3.1 Comparison of Responses to Second Life and Web Surveys

Five survey questions which were identical in the SL and web surveys were examined for differences in responses by the same respondents, as an indication of possible mode effects of setting. We found that responses to these items were highly correlated, with a mean of 4.12 matched items, a median of 4, and a mode of 5. Table 1 presents the survey questions we examined, and the match rate for each question.

**Table 1.** Match rate for responses to SL and web survey identical questions, for respondents who completed both surveys.

| <i>Survey question</i>                                                                    | <i>Percent matched responses</i> |
|-------------------------------------------------------------------------------------------|----------------------------------|
| How satisfied you are with your life overall – would you say you are...                   | 77%                              |
| 1. very satisfied                                                                         |                                  |
| 2. mostly satisfied                                                                       |                                  |
| 3. mostly dissatisfied, or                                                                |                                  |
| 4. very dissatisfied?                                                                     |                                  |
| Do you think you are...                                                                   | 83%                              |
| 1. more patriotic,                                                                        |                                  |
| 2. less patriotic, or                                                                     |                                  |
| 3. about as patriotic as most other people in this country?                               |                                  |
| Thinking now about the nation's economy...                                                | 78%                              |
| How would you rate economic conditions in this country today?                             |                                  |
| Would you say...                                                                          |                                  |
| 1. excellent,                                                                             |                                  |
| 2. good,                                                                                  |                                  |
| 3. only fair, or                                                                          |                                  |
| 4. poor?                                                                                  |                                  |
| In the last 5 years, was something belonging to you stolen?                               | 85%                              |
| Please think about both personal items and household items.                               |                                  |
| 1. Yes                                                                                    |                                  |
| 2. No                                                                                     |                                  |
| In politics TODAY, do you consider yourself a...                                          | 89%                              |
| 1. Republican,                                                                            |                                  |
| 2. Democrat, or                                                                           |                                  |
| 3. Independent?                                                                           |                                  |
| [IF RESPONSE = 3. INDEPENDENT OR NO ANSWER,<br>ASK FOLLOWUP, OTHERWISE SKIP TO NEXT ITEM] |                                  |
| As of today do you lean more to the Republican Party or<br>more to the Democratic Party?  |                                  |
| 1. Republican Party                                                                       |                                  |
| 2. Democratic Party                                                                       |                                  |

Among the five questions we analyzed, we found that responses to factual questions obtained higher match rates than responses to attitude or opinion questions. The first three questions in Table 1 are attitude/opinion items, and the last two are factual questions. Overall, we found little evidence of mode effects of setting on responses to the two surveys.

### 3.2 Findings from In-Depth Telephone Interviews

#### 3.2.1 *Breadth of ways people use Second Life*

Some people use SL just for socializing and other people use it to find “like-minded people to help you with a hobby” or other type of interest. The search engines are very good, so it is easy to find groups that share your interests. For instance, we spoke with an electrical engineer who belonged to a group for electrical engineering.

- They have a virtual map with circuits that you could just walk into. If you had any problem with a circuit, they have tools that would design the circuit right in front of you. It is certainly helpful to work -- but it is a hobby.
- A musician who uses second life to perform live music concerts so he can reach a wide audience from around the world who would not otherwise get to hear him perform.
- An educator who started a dance academy where they teach ballet and give ballet performances.
- A disabled house-bound person who uses it “as a platform to socialize.” This person has trouble using the telephone, but the computer works well.
- A 20-something who uses SL to hang out with people who live very far away. This person uses SL as “a really intense chat room...I'll go to a location with my friends and hang out and talk about just anything...”

#### 3.2.2 *The number of avatars*

Most people have more than one avatar. It is fully possible for one person to have more than one avatar functioning at the same time. Westat statisticians requested that we check out multiplicity issues and there are huge multiplicity issues in SL.

#### 3.2.3 *Other virtual worlds*

A few of the people we spoke with also participated in other virtual worlds. Some of the people we spoke to participated in virtual world games – where a team of people will chat and fight monsters or conduct some other activity in a group. They drew the sharp distinction that SL was not a game – there is no goal or win or lose. It is a virtual world where you have to create your own activities.

#### 3.2.4 *Who is the avatar?*

People are very closely aligned with the avatar and the avatar reflects their personality. The opinion of the avatar is the opinion of the first-life person. The persona projected by the avatar is pretty much who the person is.

- "The avatar is an animated personification of the individual -- and [the avatar] sees it that way." "The avatar is a character I play."
- In SL, "I feel more like my first life self, but I'm more creative." "I still act like myself, talk like myself, have the same interests ...have the same feelings and thoughts about things. It is still me, we are just represented differently. We still have the same mind and everything."

- "Overall, it is just a way to be anonymous. We are the same person. It is the avatar that I control. It is like a game that you control."

### 3.2.5 *Who answered the survey questions – first-life person or avatar?*

Respondents reported that the first-life person answered the survey questions. The questions pertained to first life, not SL.

- "I could not relate to [those questions] on the avatar level ... Those are all real life questions and would not apply to the avatar."
- "[The answers to the survey] belong to me ... My avatar is just a representation of me and I don't change my personality there from who I am in real life. My political views there are the same as they are here."
- "The person behind the avatar is the one [answering the questions] because I am that avatar. The answers represent the person behind the avatar ... General questions about the outside world, it would have to be the person behind the avatar."
- "Those aren't questions the avatar would know anything about!"

### 3.2.6 *Privacy or confidentiality concerns?*

Only one respondent reported having any privacy or confidentiality concerns about participating in the surveys. This respondent requested more information and felt satisfied by what the Westat contacts in SL provided. In general, there were no privacy or confidentiality concerns about participating in the Westat survey within SL or the Westat Web survey outside of SL. Taking both surveys felt natural to respondents and no one thought or felt anything odd.

## 4. Conclusions

The authors feel there is still more exploratory research to do to make a firm determination on the suitability and performance of SL as a research venue for qualitative work. Nevertheless, this study has been very encouraging as far as addressing our research questions.

We found little evidence of mode effects of setting on survey responses to the SL and web surveys. Findings from our in-depth interviews suggest that responses obtained within SL reflect the real person, not the avatar. And we are very encouraged by the possibilities for using SL as a venue to recruit persons from special populations for qualitative research purposes.

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