

All Are Welcome: Using VR Ethnography to Explore Harassment Behavior In Immersive Social Virtual Reality

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ABSTRACT

The growing ubiquity of VR headsets has given rise to questions around harassment in social virtual reality. This paper presents two studies. In the first, a pilot ethnographic study, users were interviewed in immersive social virtual reality about their experiences and behaviors in these spaces. Harassment was occasional, and those in female avatars reported more harassment than those in male avatars. In Study Two, a quantitative survey was conducted to validate ethnographic results. A large percentage of users witness harassment in virtual reality. These studies provide mixed methods insight of user demographics and behaviors in the relatively new social VR space.

Keywords: Experimental methodology; Ethnography

Index Terms: HCI design and evaluation methods—user studies; field studies; Virtual reality

1 INTRODUCTION

The last few years have witnessed democratization of immersive technology, enabling real time interactions through social virtual reality (VR). Prior to the rise of virtual reality, non-immersive social experiences in Massively Multiplayer Online Role-Playing Games (MMORPGs) like World of Warcraft had been praised and critiqued for team building success and harassment [6]. Untested technological capabilities in VR—like body tracking and behavioral filters—may alter formation of social networks and the nature of harassment [1, 7]. The inception of social VR provides an important opportunity to study its effects on user behavior.

2 THE IMPORTANCE OF QUALITATIVE INQUIRY

Qualitative methods provide useful insight—including the effects of social presence on escapism in games—into behavior and demographics of virtual communities [2, 5]. Our work strives for the same in immersive social VR. Until now, lack of commercialized technology has prevented execution of immersive virtual ethnography “in the wild.” To learn about patterns of harassment in social virtual reality, we conducted two studies. The first involved user interviews in social VR and the second tested results in a larger participant pool with a quantitative survey.

3 STUDY ONE

3.1 METHODS

Interviews were conducted in VTime—a third party social virtual

reality app—with actual users. We chose VTime to ensure consistent tracking levels for all participants. Unlike competitor AltSpaceVR, VTime does not allow translation in virtual space.

Classic ethnographic methods do not usually place restrictions on location. When a researcher is embedded in a community, many settings are expected, and may benefit thick descriptions and interviews. Given the preliminary nature of social VR, we conducted all interviews in the same virtual conference room. This was chosen to limit in-world visual and auditory distractions.

In the tradition of Geertz, we designed questions to explore community norms and behaviors [4]. For example, to understand the culture and shared beliefs of social VR communities, we asked about the purpose and structure of interactions. Queries included memorable moments, harassment experiences, and reasons for using social VR.

Although there were a set number of questions researchers hoped to ask, they also allowed participants to direct the conversation as they pleased. This was done to allow the users unfettered expression of their social VR experiences, which might bring up useful points not covered directly in the original experimental script. Due to space constraints in this abstract, the full range of questions, quotes, and quantitative data have been excluded. The authors can present this information upon request.

3.2 MATERIALS

We used an Oculus Rift CV1. It refreshes at 90Hz with a resolution of 2160 x 1200, and tracks user orientation via sensor with a gyroscope, accelerometer, and magnetometer.

3.3 PROCEDURE

Users were selected at random from the ‘network’ board of VTime, where all active users are listed. They were invited individually to a private VTime session. A second researcher was present to limit chances of inappropriate behavior towards the researchers. Both researchers designed gender-matched avatars for fidelity, and used the same avatar for each session.

Once a user joined the session, Researcher 1 explained that the interview would be recorded and data would be de-identified. If the user did not consent, researchers would start a new session and invite another user, repeating the consent process.

3.4 RESULTS

In total, 15 users were interviewed (Seven Female, Eight Male), ranging in age from 19-65 years old. On average, users had been using social virtual reality for around 19 days. Users often described receiving a free headset (with a phone or from a friend), and trying social apps by chance.

A wide range of people use social virtual reality; we spoke to students, homemakers, and non-technology professionals. As prescribed by Geertz, we transcribed interviews and utilized thick descriptions and interviewee responses to formulate results [4].

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3.5 User Responses

Users found harassment was not prolific enough to reduce their interest in social VR. They liked exploring and meeting people. Those who used female avatars reported being harassed more often than those in male avatars. In this sample, all participants were gender matched to their avatar. Given that many users were VR novices, gender-matching may not have been a conscious choice but simply the default option. One user disclosed his avatar was a different race, and dressed unlike he usually would.

Users suggested features like 'blocking' to prevent unwanted interactions. Excessive restrictions were unappealing, as they might prevent the open dialogues that drew users to the technology in the first place.

3.6 DISCUSSION

Our behavioural and demographic insight into social virtual reality mirrors early work in gaming communities, where female avatars are often marginalized [3]. Users did not discuss physical harassment, likely because VTime does not enable translation.

Slow adoption of consumer VR could have limited harassment thus far. The presence of VR novices may encourage discussion of new 'rules' in virtual communities, including around harassment prevention. Future research may examine harassment across social virtual reality platforms with features like body tracking enabled to test effects on user behaviour.

3.7 REFLECTIONS ON THE METHOD

Conducting interviews highlighted the importance of body tracking and realism of interviewees in immersive virtual reality.

Our pilot ethnographic study examined users in a single social virtual reality app that did not allow translation or hand tracking. While we chose this platform for consistency, results suggest that interviews in environments with full hand and body tracking may have produced more insights.

Building rapport with interviewees was important for openness and sharing. Presence of hand gestures and blinks—controlled by a computer algorithm—raised important questions about social authenticity. For example, the algorithm might generate hand gestures while the user turned to observe the room. The former indicated engagement with the researcher, while the latter suggested disinterest. Pairing of randomized nonverbal cues and natural movements produced conflicting social signals. In these cases, the researcher found it difficult to assess user emotion.

4 STUDY TWO

To substantiate results from our pilot ethnographic study with a larger sample, we designed and conducted a quantitative survey.

4.1 METHODS

We invited users of social VR apps (AltSpaceVR, VTime, Oculus Social) to participate. Questions included length of usage, reasons for usage, and harassment experiences.

In total, 187 users participated. Underage or non-social VR users (N = 71) were asked not to complete the survey. Those (N = six) who selected "Other" when asked about social VR usage, but had either A) not provided names of social apps or B) listed only non-social VR experiences were not included in the final sample. This left 110 social VR users, seven of whom identified as Female, and 99 as Male (four users declined to state their gender).

Given the skewed gender distribution, we chose not to complete a Poisson or general linear model regression analysis. Even if a gamma or negative binomial distribution were used to correct for potential overdispersion of the data, we felt results would not be representative. Therefore, descriptive data was used to produce general insights about harassment in social VR.

4.2 RESULTS

Harassment is very visible to users in social virtual reality. Two out of seven women and 21 out of 99 men reported experiencing harassment, and 42% of users said they witnessed someone else being harassed. The percentage of men harassed (21%) is a large number that merits additional research.

In this sample, we also found that over half of users reported intermittent harassment. Visibility of harassment did not come up in our ethnographic work, as we did not directly ask about witnessing harassment. As such, users spoke mostly about harassment behaviors directed towards them.

4.3 DISCUSSION

We found that users report intermittent harassment, and that users are very aware of harassment in social virtual reality. The current sample skewed male, which may have influenced results. We hope these findings will inspire future work in this space, and look forward to studies that examine the effect of evolving user demographics on the social virtual reality experience.

5 CONCLUSION

Our pilot ethnographic study in virtual reality and its quantitative survey follow-up are among early mixed designs studying social VR. This work provides examples of and reflections on usage of ethnographic field methods in this environment.

More ethnographic research is required to study immersive worlds. Longitudinal methods should examine how technological features impact user behavior. For example, additional tracking may personalize interactions (e.g., hand usage), but may also increase likelihood of harassment. Potential safeguards include 'personal bubbles' to prevent unwanted physical advances, or restricted rotation-only tracking for verified offenders.

Finally, platforms like AltSpaceVR are now organizing large group events. These produce new types of social experiences, and should be studied separately from small group or individual VR interactions [7]. As the metaverse grows, such research may help assess effects of social virtual reality on user behavior.

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