Virtual Reality in Sexual Harassment Prevention: Proof-of-Concept Study

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ABSTRACT

Sexual harassment (SH) training is a major public health priority, and available programs show limited efficacy. We present a new application for virtual agents in virtual reality (VR), which has the potential to deliver SH training that imitates real world scenarios and is yet safe. We conducted a proof-of-concept study to examine whether a VR simulation of a job interview during which the interviewer, a semi-automated virtual agent, sexually harasses the interviewee is an effective practice tool for women, and could serve as the basis for developing skills for effective response. Five females (24-25 years old) participated in this VR scenario and were then interviewed about their reactions to the VR scenario and the virtual agent. Four main themes emerged: paralysis and fear, uncertainty how to respond, resurfacing of previous SH experiences, and VR as an effective training tool for preventing SH. Findings suggest that contemporary virtual agents in VR can induce the sense of being harassed, similar to real humans. VR offers a safe exposure for SH and may serve as a learning platform to empower women in considering and practicing more effective responses to future SH experiences.

CCS CONCEPTS

Human Centered Computing > Human Computer Interaction (HCI) > Interaction Paradigms > Virtual Reality > Applied Computing > Law, social, and behavioral sciences > Psychology

KEYWORDS

Exposure intervention; Self-efficacy; Sexual harassment; Virtual humans; Virtual Reality

1 Introduction

Sexual Harassment (SH) is rampant, affecting approximately 81% of women and 43% of men [1]. It has detrimental effects on victims' self-esteem, confidence, and self-efficacy. SH in the workplace leads to greater work dissatisfaction and lower engagement in the public space, thereby creating career disruption [2]. SH training can provide individuals in high risk of SH an opportunity to identify potentially dangerous situations as well as learn and practice tools to combat it effectively [3].

The effects of available SH training programs have been found to be inadequate, due to the need to find a balance between impactful scenarios and ethical considerations [4]; i.e., not producing sufficient SH-related fear and paralysis for participants to practice effective responses. Several design considerations for improving the effectiveness of workplace SH trainings have been suggested, including optimizing information acquisition, practice, and knowledge transfer; increasing the use of program evaluation measures, and focusing on vulnerable training target population [5]. Roleplays of high-risk scenarios are particularly limited in their ability to elicit strong reactions from participants, due to reasons such as workplace trainer-participants familiarity, unstandardized operationalization of the harassment scenario, hence affecting the impact of the practice. To address this gap, new technologies should be employed in SH training.

Virtual Reality (VR) has the potential to deliver SH prevention training in novel methods. VR allows participants to experience a computer-generated environment, in a manner that gives the individual the illusion that they are in the real world [6]. The more embedded the person feels in a VR environment, the more they feel an integral part of the scenario created [6]. However, are contemporary virtual agents capable of inducing the sense of being harassed? Therefore, the goals of this proof-of-concept study were to develop a VR scenario designed to create a SH experience in female participants, and to test whether participant responses to the virtual agents, in VR, indicate at least some level of behavioral realism; i.e., in this case, induce the feeling of being harassed.

2 Method

2.1 Participants.

Participants were five undergraduate female students (age range 24-25 years old) who were recruited at their university. This study was approved by the Institutional Research Board.

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2.2 VR Protocol.

Due to the high prevalence of SH at the workplace [7], a VR job interview scenario was selected to elicit responses compatible with real life SH situations. A job interview has unique qualities making it poised to elicit identified risk factors of SH: it constitutes embedded power imbalance where the male has greater social and fiscal capital than the female. Previous studies indicate that in a mock job interview simulating SH questions, women reacted with fear and inaction compared to their planned responses, and expressed self-blame and guilt for their reactions [8].

We developed a VR scenario entitled "Job Interview Power Imbalance" (*JIPI*): participants sat on a chair and wore the VR glasses, and saw an interviewer, i.e., the virtual human, sitting across a desk in an office (Figure 1). Participants were instructed that only the avatar could ask questions, which the participant had to answer. The experimenters had two more buttons: 'please elaborate' and 'that's enough', which could be used if participants responded too briefly or in too much length, respectively. The virtual human asked how the participant would dress for work, stated she needed to look representative, and commented about wearing a shirt that looks more impressive. When participants completed the JIPI scenario, the experimenter administered a semi-structured interview to collect data on their experience. Interviews were fully transcribed and analyzed to determine the key themes emerging.

2.3 Apparatus

We used a Quest 1 VR device (Oculus) and a laptop running a GeForce GTX 1060 graphics card (Nvidia). The virtual agents were developed in Unity with a relatively simple control mechanism: they had two main states – listening and speaking, and for each state several pre-recorded animation sequences (from iClone library) were played randomly, including hand movements and facial expressions. Lip sync was automatically matched to the audio using SALSA, a 3rd party Unity asset. The interviewer was programmed to maintain eye contact with the participant for 80% of the time; in the remainder his gaze was directed towards key objects in the room. The agent was semi-automated; an experimenter decided when to ask the next question, and used the 'please elaborate' or 'that's enough' buttons to manage the scenario.

Figure 1: A snapshot of the virtual human interviewers in the *JIPI* scenario.

3 Results

3.1 Participants responses to the protocol

Four themes emerged during the post-scenario interviews, and they are delineated hereinafter.

A. An experience of discomfort leading to paralysis and fear: Participants disclosed feeling physical stress, fear, and freezing during the VR interview, e.g., "my heart was a little pounding... [I felt] a little distressed," or: "I did not feel comfortable to stay alone with him [the virtual human] in the same room, because I was even a little apprehensive." One participant said she stuttered when speaking with the virtual human.

B. Uncertainty how to respond to the virtual human's behaviors: Although participants realized that the interviewer asked questions that they had perceived as personal, intrusive, and unprofessional, none of them was able to tell him she was unwilling to answer them: "During this job interview he [the virtual human] asked me questions that I did not feel comfortable with. But I was not sure whether this was appropriate or not. I mean, I did not feel comfortable stopping and saying, 'Uhm, okay, like, this question is less appropriate, ahhh I do not think it has to do with getting this job or not.' I wanted to say something, but… I did not know if these questions were okay. It did bother me, but I did not know whether it was something acceptable or not."

C. The VR scenario resulting in the resurfacing of previous work-related SH experiences: All participants recalled being sexually harassed in a work context, two of them during job interviews. Further, all participants stated they had been unsure how to respond in real time, but expressed their belief that they did not handle these situations effectively.

D. VR simulations as a practice tool to prevent SH: four participants thought *JIPI* could become a useful tool for sex education, teach women how to process, evaluate, and respond to SH, and provide opportunities to practice effective responses: "[VR] is beyond watching a video, it's something realistic, you really feel like you're in it, so I felt stronger feelings, more than if I'd watched a video on this issue… there is a difference between your ability to read a situation and criticize it from the side and being in a situation that is really as close as possible to reality and then you're a part of it. It was a lot more like being a part of the situation, rather than criticizing it from the outside."

4 Discussion

This study aimed to develop and assess a mock job interview VR scenario designed to create a SH experience in women. The *JIPI* scenario generated the anticipated experience in participants who reported confusion, uncertainty about the social acceptance of responses, and freezing. All participants raised their previous work-related SH experiences while discussing their interaction with the virtual human. Findings suggest that the *JIPI* scenario could be an effective tool to construct a SH experience in female adults [9], and that the relatively simple semi-automated virtual agents are capable of generation strong responses and sensations. VR can serve an important role in combatting SH and gender inequality at large.

Training women to respond effectively to SH is a complicated task. Roleplays during formal trainings are ineffective in changing victims' behaviors in real time [5]. For a training to be successful and affect the learners' future behaviors, a simulation must feel realistic and generate strong reactions in participants that resemble real life. This new application of virtual agents in VR offers a structured, standardized VR tool integrates both the realistic aspects of a SH situation but at the same time is safe and not traumatizing. The next step in applying the *JIPI* VR scenario in SH training is to develop a debriefing tool that would help the learner reflect on her response to the situation. Said debriefing could help the learner identify the situation as harassment, contextualize it, and explore response patterns that dovetail her values and may be effective for her in future SH situations.

REFERENCES

[1] Kearl, H. (2018). *The Facts Behind The #Metoo Movement: A National Study on Sexual Harassment and Assault*. Center for Victim Research Repository.

[2] McLaughlin, H., Uggen, C., & Blackstone, A. (2017). The economic and career effects of sexual harassment on working women. *Gender & Society*, *31*(3), 333-358.

[3] Perry, E. L., Kulik, C. T., & Field, M. P. (2009). Sexual harassment training: Recommendations to address gaps between the practitioner and research literatures. *Human Resource Management*, *48*(5), 817-837.

[4] Dobbin, F., & Kalev, A. (2019). The promise and peril of sexual harassment programs. *Proceedings of the National Academy of Sciences*, *116*(25), 12255-12260.

[5] Eatough, E. M., Waters, S. D., & Kellerman, G. R. (2019). Evidence-based recommendations for improved design of sexual harassment training. *Industrial and Organizational Psychology*, *12*(1), 48-51.

[6] Slater, M. (2009). Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *364*(1535), 3549-3557.

[7] Minnotte, K. L., & Legerski, E. M. (2019). Sexual harassment in contemporary workplaces: Contextualizing structural vulnerabilities. *Sociology Compass*, *13*(12), e12755.

[8] Woodzicka, JA, & LaFrance, M. (2001). Real versus imagined gender harassment. *Journal of Social Issues*, 57(1), 15-30.

[9] Djoudi, L. A., Anand, I. M., Luu, A., Galar, D., Samedo, A., & Maisano, L. (2019). VRSafe with Augmented and Virtual Reality: Toolkit for Harassment Prevention and Deescalation-Sensitivity, Training and Best Practices. *Proceedings of the 2019 International Conference on Frontiers in Education: Computer Science & Computer Engineering*, Las Vegas, NV.