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Let's Talk About Race: The Use of Virtual Reality in Improving Higher Education Students' Understanding of Privilege

ABSTRACT

The prevalence of virtual reality (VR) is growing in many educational spaces. Yet while explored extensively in medical science research, there is a need for more studies on VR in educational and social science research. The present study explores the use of VR to teach higher education students about anti-racism content, specifically about privilege. Recognizing privilege is central to learning about anti-racism since it helps people understand each other's social location, intersectionalities, and access to services. We implemented a two-staged mixed-methods research design, with the first stage consisting of a survey design and the second relying on interview data. Participants volunteered either for stage one or for both stages. Twenty-three students participated in stage one, while 11 participated in both stages. The findings reveal that the VR module promoted the participants': 1) layered understanding of privilege; 2) critical reflection on their privilege; and 3) impetus to engage in more advocacy around the misuse of privilege. The findings point to a need for more strategies that specifically detail how to address the abuse of privilege in order to increase people's comfort in conducting this type of advocacy. The research contributes to a growing body of studies on VR's ability to improve participants' understanding of complex humanistic principles, such as privilege.

KEYWORDS

virtual reality, anti-racism, privilege, perspective taking

INTRODUCTION

Having a nuanced understanding of the dimensions of privilege and how privilege mediates people's experiences are central qualities of being anti-racist in higher education. Still, anti-racist modules do not tend to delve into explorations of privilege, favouring instead to address intersectionalities (Collins, da Silva, Ergun, Furseth, Bond, Martinez-Palacios 2021; Deas and Mina 2022; United Nations Human Rights 2024). While examining one's intersectionalities remains a useful endeavour in understanding people's layered identities, we must also discuss how people's unearned access to power impacted their lives (Crevani 2019). Some critical scholarship describes privilege, privilege as normally ascribed to members of the dominant group, that is, those who are white, typically male, able-bodied, and heterosexual (Monahan 2014). However, in this paper, we move beyond a normative, rigid categorization of privilege as restricted to the dominant group in order to

include an individual's situated, contextual, and multiple identities that provide them with access to power (Taiwo 2018).

In this paper, we outline the results of a study on higher education students' understanding of privilege before and after an immersion in a virtual anti-racism module (VAM), titled *Let's Talk Race*, which aimed to enhance their understanding of privilege. As a form of virtual reality (VR) simulation, the VAM modules focused on: 1) recognizing privilege; 2) examining bias; and 3) identifying microaggression. Faculty members at a leading higher education institution in Toronto created these modules in collaboration with the platform BodySwaps, a UK-based technology company that specializes in developing online learning and skills development modules. More specifically, these faculty members developed the learning, outcomes, content, and script for the VAM. The VAM modules[1] aim to create a state-of-the-art, anti-racism-focused learning experience for higher education faculty, students, and staff using innovative instructional design and educational technology. Using simulation learning, faculty, students, and staff learn through storytelling, enabling the participants to engage in critical conversations and to solidify new perspectives on diversity, inclusion, equity, and anti-racism that can be carried into professional workspaces and beyond.

Participants first created a login to the BodySwaps platform, then accessed the virtual reality space through a headset. Once inside, participants completed a few steps to calibrate the virtual space, namely, to confirm the microphone was active and the hand controllers could interact with on-screen prompts. Following the setup, the VAM asked the participants to choose an avatar, either one that looked like them or one that did not.[2] Once the experience began, the participants were introduced to two digital characters, Abeeku and Nola (Image 1), seated in what appeared to be an office space. Abeeku and Nola acted as the participants' coaches.

Image 1. Recognising privilege introductory image

From the headset, participants received a first-person viewpoint, allowing them to see their avatar's hands and body as they explored the virtual space. Participants could look around the realistic, 360-degree space that was designed to mimic actual locations within the higher education institution where faculty members developed this program (Image 2).

Image 2. An image from the Recognizing Privilege module

This research project centred on recognizing privilege because of the universality of the content in this module. As discussed above, privilege is not ascribed only to members of the dominant culture; it may be conferred upon any individual to varying degrees. The main research questions we answered in this research project were:

1. To what extent do students believe the VAM is effective and engaging in teaching them about the anti-racist concept—privilege?
2. Has the learning in VAM influenced the students' ability to address issues of misuse of privilege, and, if so, how?

REVIEW OF THE LITERATURE

There is consensus in the literature that VR can potentially enhance students' interpersonal competencies[3] (IPC) and professional skills, while promoting anti-racist and anti-bias principles. Previous scholarship defines VR as a "computer-generated, three-dimensional virtual environment that users can interact with, typically accessed via a computer capable of projecting 3D information via a display" (Hamad and Jia 2022, 1). These displays can either be a detached screen or wearable. Four overarching themes in the literature show that: 1) VR can enhance higher education students' holistic learning experience; 2) traditional methods are limited in promoting anti-bias and anti-racism competencies; 3) VR can promote empathy; and 4) VR is useful in diminishing prejudice and bias. In the literature review, we will explore all four themes in depth; however, in the findings section, we will mainly discuss themes one, two, and three, as these are most applicable to our research questions. In examining the literature, we will explore VR's contributions in the aforementioned areas as well as the gaps in the literature which our research has addressed.

Making learning more holistic

VR's immersive ability can make learning in higher education more holistic by developing students' "technical" skills and IPC. We define technical skills as specific, teachable abilities that are learned through education or hands-on (training or practicing) experiences (Cimatti 2016). These can include programming, data analysis and/or the proficiency to use relevant tools in a particular sector (Cimatti 2016). The research about VR's effectiveness in developing an individual's technical skills is well established in the medical field where studies (e.g., Nassar, Al-Manaseer, Knowlton, and Tuma

2021; Sanford, Ma, Ghoreifi, Haque, Nguyen, and Hung 2022) have found that VR improved participants' grasp of medical procedures, making it an excellent training tool. For example, Nassar et al. (2021) demonstrated that VR simulations with haptic feedback provide accessible, safe, repetitive, learner-oriented training environments which are conducive to feedback and deliberate practice. Similarly, Sanford et al. (2022) highlight how VR enhanced training surgeons' surgical skills by allowing them to practice with surgical instruments in a stimulated environment before they completed live surgery. Overall, the existing literature suggests that VR offers immersive, accessible, repetitive, and learner-centered training experiences that make it a valuable resource for developing technical skills, which can then be utilized in various professions.

As opposed to technical skills, IPCs (often referred to as soft skills) are harder to quantify since they are often not tangible; rather, they are recognized as competencies that are related to the ways in which individuals interact with others and navigate their environments (Cimatti 2016; Kumar, Singh, Ansari, and Pandey 2022; Laker and Powell 2011). Though IPCs have been traditionally considered merely complementary to technical skills (Cimatti 2016), more recent research magnifies their educational value (Lyu and Liu 2021). In this sense, IPCs can include communication, teamwork, problem-solving, adaptability, leadership, time management, creativity, and emotional intelligence (Cimatti 2016; Kumar et al. 2022). VR has also played an instrumental role in fostering higher education students' IPCs, which are essential for collaborative workplace success (Alnagrat, Ismail, and Idrus 2022; De Giorgi 2022; Hickman and Akdere 2017). VR offers students opportunities to participate in and self-reflect on realistic stimulated scenarios of what they may encounter on the job while receiving constructive performance feedback (Suárez, Jung, and Lindeman 2021) for further improvement (Shorey and Ng 2021). Therefore, these simulated realistic scenarios help enhance students' IPCs in ways that may be safer and better paced for them since they are often more individualistic.

More engaging than traditional approaches

For many years, traditional educational approaches to fostering anti-racist interpersonal and professional competencies among higher education students have been associated with formal classroom settings. These traditional approaches typically involve, but are not restricted to, lectures, textbook readings, assessments, group discussions, workshops, and seminars; they are often supplemented with modern technologies like electronic visual aids. There is varying evidence that traditional approaches have been effective in enhancing students' understanding of anti-racist and anti-bias principles and concepts such as privilege, which has led to their integration in many higher education programs (Bandy, Harbin, and Thurber 2021) and a plethora of anti-bias and anti-racism workshops (Simpson, Evans, Geopfert, and Elopre 2021). For example, Bandy et al. (2021) found that the higher education students in their study developed a more historically accurate and nuanced understanding of race and racism in the United States after taking a semester-long undergraduate environmental justice course which centered on anti-racism principles.

Despite efforts to promote perspective-taking and engagement in these traditional anti-racism spaces, many critics of traditional approaches (Chen and Ibasco 2023) noted that they typically lack situated and embedded learning experiences. There are many limitations to traditional methods within higher education, particularly when attempting to facilitate anti-bias and anti-racist content and concepts such as privilege. These limitations may hinder effectiveness when the intent is to address both systemic racism and bias while fostering genuine understanding within higher education students. Such limitations become evident as traditional methods and/or workshops tend to involve or rely on more passive learning approaches without much simulation in real-life activities (Wang,

Thompson, Uz-Bilgin, and Klopfer 2021). Many traditional educational methods and workshops also fail to engage students actively, to promote meaningful dialogue on sensitive topics like bias and racism, and/or to foster deep reflection. Firstly, workshops, lectures, and presentations are often didactic, failing to engage students more actively in their learning process, leading to limited retention of information (Adams, Bell, and Griffin 2007). Learning through two-dimensional videos, when compared to learning through VR, also yields less of a positive shift in students' attitudes pertaining to human rights (Bujić, Salminen, Macey, and Hamari 2020) and behavioural change (Akdere, Jiang, and Acheson 2023). Similarly, textbook-based learning has limited efficacy, as mentorship programs, experiential learning, and real-world applications are revealed to improve competencies in learners (Kupersmidt and Rhodes 2014; Sánchez, Anderson, Weiston-Serdan, and Catlett 2021). Furthermore, traditional methods may be inadequate for fostering a safe, inclusive space that promotes students' deeper reflection (Lin, Li, Yao, Yang, and Zhang 2024) and stimulates meaningful dialogue with peers on sensitive topics pertaining to racism and bias (DiAngelo 2016). Overall, regardless of the benefits from traditional anti-racism educational platforms, better immersive integration of the content in these platforms is needed.

VR holds great promise as an innovative educational tool due to its immersive and experiential nature (Akdere et al. 2023; Alnagrat et al. 2022; Buchman and Henderson 2019; Bujić et al. 2020; Edwards et al. 2021; Hickman et al. 2017). Unlike most of the traditional approaches to teaching anti-racism, VR is normally immersive[4] and situated in a physically safe learning environment. It allows for dynamic interaction and engaging feedback (Akdere et al. 2023), which may enhance spatial presence and attentional focus on target content (Andrade, Andrade, and Antunes de Medeiros 2021). In this sense, VR positions higher education students in learning settings where they can feel safer when confronting personal biases and put to practice more inclusive, brave, and culturally responsive behaviours (Hamed et al. 2024). It offers a hopeful avenue for higher education students to learn how to confront and diminish prejudice and racial bias. This could include their own implicit prejudices and/or racial biases or biases expressed in encounters with others (Chen, Chan, Tan 2021; Corriette, Parsons, Alim, Barrett, Cranston, and Washington 2023; Medvec, Knight, and McLaughlin-Grayson 2023; Obremski, Akuffo, Lücke, Semineth, Tomiczek, Weichert, and Lugrin 2023; Tawa and Montoya 2023).

Promoting empathy

Additionally, VR is a powerful tool in facilitating prosocial behavior and empathy for others. Many studies (e.g., Hargrove, Sommer, and Jones 2020; Herrera, Bailenson, Weisz, Ogle, and Zaki 2018) examine VR's capacity to promote perspective-taking compared to traditional perspective-taking approaches (where no VR is used). For instance, Herrera et al. (2018) revealed VR's capacity for perspective-taking and empathy-building towards unhoused populations. In Herrera et al.'s study (2018), those who completed a VR perspective-taking task had more positive attitudes and were more likely to sign a petition to support the unhoused causes compared to those engaged in traditional perspective-taking approaches. Similarly, Hargrove et al. (2020) suggest that while VR and traditional approaches that aim to replicate an embodied experience can each elicit empathy, embodiment through VR better facilitates positive behaviours, such as donating to charities after completing units on social justice issues. Further, through embodied experiences, VR offers significant levels of both physical and emotional/cognitive proximity towards others, which may have greater empathetic outcomes (Hargrove et al. 2020). Finally, VR enables participants to experience immersive experiences in recreations of real-world situations (Cogburn, Taylor, Filippone, and Oyekoya 2024; Peck, Seinfeld, Aglioti, and Slater 2013) that can stimulate their reflection and challenge their biases. This is a crucial

component when one attempts to engage with anti-racist work (Kalvari 2022; Mbulaheni and Sobers 2023).

Further, VR can facilitate its users' perspective-taking and the ability to place themselves in another's situation (Herrera et al. 2018; van Loon, Bailenson, Zaki, Bostick, and Willer 2018; Villalba, Azocar, and Jacques-Garcia 2021) as well as to increase participants' physical, emotional, and cognitive proximity towards others (Hargrove et al. 2020), which is vital to anti-racism work. Indeed, VR may be a promising educational tool for increasing empathy towards others through the embodiment or illusory body ownership of an avatar,[5] which can support this process (Chen et al. 2021; Corriette et al. 2023; Peck et al. 2013; Thériault, Olson, Krol, and Raz 2021). Thus, as VR enables one to be immersed in recreations of real-world situations from another person's point of view (Cogburn et al. 2024; Peck et al. 2013), it holds the potential to help students reflect, unlearn, and/or challenge biases and ingrained perceptions, including those that involve prejudice and/or racial bias.

Reducing prejudice and racial bias

Promising studies, particularly in the medical field, on the reduction of prejudice and/or racial bias have revealed how VR's immersive approach has been used by higher education students. For example, Hamed et al.'s (2024) study used VR to train occupational therapy students, revealing that embodiment in VR helped students effectively identify, articulate, and respond to racial biases and microaggressions. Unlike in class and other group-based learning settings, VR can offer students the time to pause and reflect on racial incidents within a private and safe environment (Hamed et al. 2024; Vann, Senreich, Saint-Louis, Williams-Gray, Kahn, Sisselman-Borgia 2024). Similarly, in Medvec et al.'s (2023) study, nursing students found VR to be an effective, learner-centric educational strategy that connects theory to practice. They found within students' post-simulation survey results an increased awareness and confidence to identify and address bias and racism, feeling more prepared to manage related situations in their workplaces (Medvec et al. 2023). More significantly, Corriette et al. (2023) found VR to be a crucial tool for improving psychiatric care quality for racialized patients, since it could raise psychiatric students' awareness of their implicit biases while simultaneously increasing their cultural competency as well as their understanding of the impacts of their actions towards all patients.

Although VR holds the potential for facilitating anti-racist education-related concepts, such as privilege, compared to traditional approaches, certain critical gaps need addressing, particularly concerning the oversimplification of content and the cost of VR devices. VR experiences, touted for their immersive potential, may inadvertently simplify complex issues like racism. Schone, Kisher, Lange, Gruber, Sylvester, and Osinsky (2023) warn that these simulations can lack accuracy when depicting real-world complexities and historical contexts and, thus, may potentially lack the depth of context required for effective anti-racist education. Moreover, careful curating of VR content is essential to prevent inadvertent reinforcements of stereotypes or biases (Tassinari, Aulbach, and Jasinskaja-Lahti 2022). Thus, there are some noteworthy challenges in responsibly using VR as an educational tool. Accessibility also remains a formidable barrier, as wide-scale application of VR in many simulated learning contexts is limited due to cost and technical requirements, potentially excluding marginalized groups from fully participating in anti-racist education initiatives (Farra et al. 2019). Finally, though initial studies demonstrate promise, Hussain et al. (2021) reveal the need for further research in order to gauge the long-term effectiveness and broader societal impact of VR-based anti-racism interventions. Addressing these gaps will be crucial to harnessing VR's potential for fostering better-informed anti-racist education.

Our present research aims to fill gaps in understanding how carefully curated anti-racism content can augment higher education students' comprehension of privilege. It offers critical insights into how higher education students at one Toronto higher education institution, some of whom completed prior traditional anti-racism courses, understood privilege, an important component in the students' anti-racism knowledge. Our research adds to the literature by assessing VR's viability for advancing how anti-racism and its associated concepts, such as privilege, are taught in higher education settings. In sum, our study contributes to underexplored debates about the difficulties in developing nuanced content and the potential for student engagement (Lin et al. 2024) on the burgeoning use of VR in education.

METHODOLOGY

Research methods

We conducted this two-staged, quantitative, dominant, sequential mixed-methods research project between July and December 2022. Our research approach combines the strengths of quantitative and qualitative research methods. Quantitative research examines trends and patterns in the data and the possibility of generalizing the data for a larger population (Creswell and Guetterman 2019), while qualitative data explores a research topic in detail (Mwita 2022). Thus, our mixed-methods research allowed us to easily identify commonalities in our data while painting a holistic overview of participants' perspectives.

Student participation in the VAM

All students completed the virtual reality module on privilege at a nearby campus library. We provided each participant with transit tickets to travel to and from the campus library as well as a $10 coffee-shop gift card to purchase refreshments. The VR simulations took approximately 30 minutes to complete (in the absence of technical issues). Students had to complete all module content, including a pre- and post-diagnostic self-assessment, learning target vocabulary and completing case studies for which they had to select appropriate responses. To ensure psychological safety for participants, we first asked them to provide permission for BodySwaps to collect their data. Participants are then introduced to two characters, Abeeku and Nola, who act as their coaches. The coaches are calibrated on the back end to respond based on the participants' current knowledge and skill set in dealing with privilege. There is no expectation that participants approach the experience from an advanced perspective. The coaches provide context and questions that allow the participant to move towards a more nuanced understanding. Finally, participants are presented with a virtual journal, where they are provided with further narrative context and posed questions that prompt participation, reflection, and interaction. For example, questions asked participants to reflect on how their race impacted their lives and those of others and to describe how social identities shape privilege and disadvantage. They also participated in perspective-taking activities in which they had to advise a racialized person who was experiencing discrimination based on their social identities. Throughout the module, participants received feedback. In the final activity, as VAM users, they viewed the interaction from the other character's perspective and had the vantage point of viewing themselves as the subject, whereby they were asked to select effective strategies to help a character navigate this discrimination. Ultimately, users developed an understanding of how privilege can perpetuate power imbalances that benefit some while creating barriers for others.

Quantitative data collection

In the first stage (July–November 2022), we collected quantitative data through surveys. In the second (November–December 2022), we gathered qualitative data after students completed the VAM on privilege. The quantitative data (n=23) collected first helped us examine our participants' perspectives as to if and how their ability to identify layers of privilege had changed. With the permission of the students' professor, the research assistant (the second author of this paper) who attended the same institution, created recruitment flyers, and attended classes to discuss the study and to recruit participants. Each participant received the letter of information and consent form before accessing the survey. We sent the 15-question survey to students who consented to participating and encouraged them to recommend interested participants for the study.

We created the 15-question survey to examine students' perspectives about if and how their ability to address issues around the (mis)use of privilege has changed. We collected participants' socio-demographic information (four items) about their department, gender, and racial identity and their cultural backgrounds. We asked questions on five items related to the VAM's content. Of the VAM content questions, the first four were Likert scale items that captured the extent to which the participants agreed that they were more educated about privilege and how it impacts access to services. They also ascertain their ability to stand up to someone who is using their privilege as well as how their privilege can limit others' access to services. The fifth VAM question was a matrix to find out the participants' understanding of how privilege operates in society, the usefulness of the stimulation in providing strategies to combat situations where people abuse their privilege, and their ability to relate the stimulated experience to real life applications. Four survey questions centered on the technology used in the VAM. Two of these questions required yes or no answers about any technical problems the participants encountered. One was a matrix to gauge their level of agreement with prompts about the technology's ease of use, considering the instruction they received to use the VAM. The fourth VAM technology question asked the participants their level of comfort while in the stimulation. The final three questions focused on the students' recommendations for improving the VAM. These included one Likert scale which captured the participants' level of agreement with the usefulness of the learning experience, one yes or no question about whether they would have recommended the stimulation to other users, and one open-end question to state any other comments.

We used mainly closed-ended questions, which kept the completion time between eight and ten minutes. Participants received a unique link to the survey after completing the VAM. We conducted an initial data analysis of the quantitative data to identify key areas to explore further in our focus group and individual interviews.

Qualitative data collection

We conducted four focus group discussions and three interviews, which took between 30 and 45 minutes to complete. Focus group discussion (hereafter referred to as interviews, for simplicity) consisted of two to three participants, which gave everyone adequate time to respond. The interview protocol consisted of five sections with sections designed to explore: 1) the participants' impressions of the stimulation; 2) the module's content; 3) the VAM technology; 4) their overall takeaway from the experience; and 5) participants' recommendations for improving the module. The questions that explored the participants' impression of the stimulation ascertained the ease of using the stimulation and any technical issues they might have experienced. Questions regarding the VAM content probed about the usefulness of the: 1) introductory information; 2) journal of key items that are embedded in the VAM; and 3) the scenarios and content in helping them to understand privilege. These questions

require the participants to self-report changes in their understanding of privilege. Those pertaining to the VAM technology asked the participants to discuss: 1) their avatar selection, 2) how their embodiment experiences with the avatar impact their engagement in the content and understanding of privilege and 3) the effectiveness of the VAM. To ensure privacy, we asked participants to turn off their cameras and use a pseudonym upon entry to the interview. We conducted all interviews via Zoom and with the participants' permission.

Similarities and differences between survey and focus group interview questions

We designed the survey and focus group questions to ensure the reliability and validity of our findings. The questions on both data collection tools asked the participants to share their impression of the VAM, its content, the ease of using it, and the problems they encountered. Similar to the survey, the participants in the interviews shared their feedback on whether and how they believed their knowledge of privilege, and how it impacts people's lives, had changed. The main point of departure between the two data collection tools is that the survey contained socio-demographic questions while the focus group interview protocol did not. Another difference between the survey and focus group interviews question is that we explored the participants' experiences with their avatar and how that impacted their engagement on the focus group questions, which we did not on the survey. We excluded the focus of the avatar on the survey to strengthen the tool's content validity by keeping most of those questions concentrated on if and how the participants' understanding of privilege changed, after taking the VAM, since we only required participants to complete the quantitative stage of the research. Overall, the similarity of questions used on both tools guaranteed we obtained adequate answers to our research questions.

Participant recruitment

After obtaining institutional ethics approval to conduct our study, we recruited 23 higher education students through various sampling methods. For quantitative data collection, we used mainly simple random snowball sampling methods. Simple random sampling ensured that the participants were more representative of our target population while ensuring equity of participation (Noor, Tajik, and Golzar 2022), particularly since the main author of this paper is a professor at the same institution where we conducted the study. We used convenience sampling from the pool of students participating in our qualitative data collection. Choosing the interview participants through convenience sampling was time-effective (Stratton 2021) and ensured that the participants had knowledge of the VAM. When recruitment stalled towards the end of the semester, we asked participants to recommend other potential participants who fit our participant criteria; hence, we switched to snowball sampling. We deemed snowball sampling beneficial for this research since it is vital for reaching hard-to-reach populations (Pasikowski 2023), which indeed became the case for our study as our student participants sought to meet competing assignment deadlines by semester's end. The strengths of our sampling methods allowed us to avoid the conflict of interest associated with the principal investigator being a professor at the same institution.

Participants

The participants reported a range of intersectional identities. More than half identified as cis-gender women (n=14); the remaining respondents identified as men, transgender, non-binary, or preferred not to say. Regarding race: 1) eight students indicated they were Asian, 2) five indicated they were Black, 3) four indicated they were biracial, 4) three selected "other," 5) two indicated they were white, and 6) only one indicated they were Métis. About 30 percent indicated in the interviews that

they were international students, which is significant because it mirrored the percentage of international students at higher education institutions in Toronto (Usher 2022). Beyond just student numbers, the international students commented that they did not learn about anti-racism concepts, such as privilege, in their studies in their home countries. All participants completed a two-year diploma program in various departments at the higher education institution. Most participants were in their second year of their two-year programs and had taken at least one traditional workshop on anti-racism during their current program of study. Given the participants' intersectional identities, they had varying experiences with privilege.

Data analysis

We conducted data analysis of both quantitative and qualitative data separately and then jointly. For the closed-ended questions on the survey (quantitative data), we performed descriptive statistics, particularly the frequency distribution, in order to show patterns and trends in our data. Frequency distribution ensures that the information is easy to understand and display, especially in small data sets like ours (Manikandan 2011). We also performed a thematic analysis of the responses on the open-ended (qualitative) survey question, so that we could identify similar meanings in participants' responses. As in the open-ended survey question analysis, we conducted a thematic analysis of interview data to provide a "rich and detailed, yet complex account of [the] data" (Nowell, Norris, White, and Moules 2017, 2) collected from our participants. Consistent with thematic analysis, we transcribed the data word for word, coded it, and then formed themes to identify patterns and relationships in the data. The quotations that we include in the findings provide a visual portrayal of the themes to "aptly represent diverse viewpoints and patterns" (Naeem, Ozuem, Howell, and Ranfagni 2023, 5) in the data. Thus, the merging of both quantitative and qualitative data added to the robustness of the findings and helped showcase the participants' varied perspectives.

FINDINGS AND DISCUSSIONS

The discussion that follows represents key findings arising from both the quantitative and qualitative data. The main themes that emerged from the data analysis are: 1) participants felt knowledgeable about privilege after completing the simulation; 2) they were able to understand how privilege limits people's access to resources; and 3) they felt better equipped to advocate for others who have very limited access to services. Despite these benefits, participants felt that they needed more prescriptive recommendations for addressing privilege. Overall, most participants found the VAM informative, even though they recognized that technical issues could reduce other participants' immersion in the content.

Increased knowledge of privilege

After completing the VAM, many participants self-reported that they became more aware of how privilege operated in society. In the survey, approximately 87% (see Table 1) of the participants reported being more knowledgeable about privilege after completing the VAM.

Table 1. Participants' self-reports of feeling more educated about privilege after completing the VAM

Scale description	Number of participants	Response rate
Strongly disagree	0	0.00%
Disagree	1	4.35%
Neutral	0	0.00%
Somewhat agree	2	8.70%
Agree	8	34.78%
Strongly agree	12	52.17%
Total	23	100 %

In the interviews, the participants also self-reported improvement in their knowledge of privilege. For example, one of the participants shared that "I think it really helped me and really changed my mind about the privilege and how it impacts people's lives" (Interview 5, Participant 8). In expanding on this, in interview one, participant two mentioned that they were now able to recognize different types of privileges based on people's socio-demographic backgrounds. They stated that:

> I think that kind of opened my eyes to, like, I knew that they were privileges, but I didn't know that, like, they were textbook privileges like his [referring the main character in the final perspective taking activity] parents, having post-secondary education . . . But the conversation with the woman, like, the one-on-one conversation, where she said she has a neuro-divergency. I didn't like to realize that ability was a privilege, either. So, I think that the content was, yeah, it was helpful.

Based on the last excerpt, some participants were able to distinguish between different types of privilege, chief of which is social privilege. Berhkamp, Olson, and Martin (2022) noted that the understanding of social privilege is important for allyship and empathy building, as people who lack the complexities in this understanding may commit both overt and covert acts of interpersonal discrimination.

Many of the participants also self-reported having a more complex understanding of privilege. Simply put, in interview three, participant four summarized that "everybody has privilege and there is a spectrum." Others commented on this degree of privilege by stating that:

> And something I appreciate was they said, we all have certain degrees. Because I think a lot of people kind of forget that we're all privileged to a certain degree. It doesn't matter if you live in another country or not; in a third-world country, you're still privileged to a certain degree. But some people are way more from than others. (Interview 6, Participant 10)

The above data points proved the VAM's effectiveness in enhancing participants' understanding of privilege and how it situated us, regardless of our social location. The excerpts above demonstrate

VAM's capacity to teach nuanced topics, such as privilege, which is a critical aspect of human experience that can cause discrimination and biases (Corriette et al. 2023). Increased knowledge about privilege can promote participants' self-reflexivity to a better understanding of their own privilege and how it impacts their access to services. More importantly, it may strengthen their resolve to not misuse their privilege.

Increased understanding of how privilege works in society

Connecting with the theme of increased knowledge about privilege, many of our participants self-reported that, thanks to the VAM, they could understand better how privilege can limit others' access to services. 91% of participants in the survey either agreed or strongly agreed that the VAM had made them more knowledgeable about how to identify privilege and its impact on people's access to services (see Table 2).

Table 2. Participants' self-reports about being more knowledgeable about identifying privilege and its impact on people's access to services

Scale description	Number of participants	Response rate
Strongly disagree	1	4.35%
Disagree	0	0.00%
Neutral	1	4.35%
Somewhat agree	0	0.00%
Agree	10	43.48%
Strongly agree	11	47.83%
Total	23	100 %

There was a slight divergence in the interviews on this point; although many participants noted that the simulation was "realistic," they related most of their knowledge about privilege to their own lives rather than to society more generally. As one participant shared:

> But I also feel like the majority of my experiences, especially because I'm a newcomer in a country that is in a public space, and I feel like, yeah. So that way, I just felt like maybe my life would be a little easier in my experiences and would be a lot more pleasant if my skin was different. But I think when I do go to the subway, or when I go to a supermarket, you know, I have to remember that I look a certain way, and so maybe I'd be treated, or, you know, spoken to differently. So, I think so. I think it has a lot to do with my experience. (Interview 3, Participant 4)

This participant's account pointed to their everyday experiences with racism and how this marked their distance from privilege. In the same interview, when commenting on being able to pick an avatar that was nicely dressed, they lamented that if the simulation were a real-life

situation, "people are going to treat [them] really nicely . . . because, you know, [they] was looking differently."

Layered onto this, 78% of the participants self-reported feeling aware or very aware of how privilege can limit others' access to services (see Table 3).

Table 3. Participants' self-reports about being more aware of how privilege can limit others' access to services

Scale description	Number of participants	Response rate
Very unaware	0	0.00%
Unaware	0	0.00%
Neutral	5	21.74%
Somewhat aware	6	26.09%
Very aware	12	52.17%
Total	23	100%

This increased knowledge of privilege was evident in the ability of many participants to apply the simulated experience to events in their own lives, where this knowledge was practically applicable. One participant's quotation underlines this increased knowledge: "I certainly want to work harder at addressing my own privilege in areas where I can help close the gap for others" (Interview 4, Participant 5).

In sum, the findings mentioned above support VAM's effectiveness in boosting the participants' perception of expansion in their understanding of how privilege operates in society (Banakou, Hanumanthu, and Slater 2016; Chen et al. 2021). The findings also show that the VAM moves beyond exploitative notions such as "identity tourism," which occurs through "placeholder embodiment"—whereby participants adopt age, gender, or race identities without embodying the specific concerns relevant to the marginalization of that group (Fox and Ahn 2013; Zhang, Deldari, Yao, and Zhao 2023). Thus, this research enhances existing scholarship on how focusing on complex social dynamics (Corriette et al. 2023) can increase participants' empathetic understanding.

Content was more effective than traditional methods

Although the survey and interview protocol included no question comparing the effectiveness of the VAM with that of traditional teaching methods, a few participants in the interviews indicated that they found the former more effective. To this point, one participant shared:

> Doing modules where you sit on your computer and watch a video and then have to answer some questions and stuff afterwards, my mind wanders for sure. So, for something like this [the VAM], where I actively needed to be participating in it, you know, to talk about select options, helped me to understand the content. (Interview 5, Participant 9)

The above quotation reinforces a growing body of literature (Dubiel, Kaminska, Zwolinski, Ramic-Brkic, Agostini, and Zancanaro 2025; Zhang, Zhang, Li, and Luo 2023), which shows that because of simulated learning, VR, especially programs that have avatars, has a greater potential to engage participants in more complex interpersonal content. Consistent with the research, participants mentioned that through VR's embedded and interactive nature, they felt as though "the person [the avatar] was actively speaking to me the way that you know and the live human being with [me]" (Interview 2, Participant 2). Additionally, in interview five, participant nine mentioned how being able to swap bodies through the avatar and hearing the avatar speak in their voice "definitely caused [them] to be more engaged in the content." Using avatars, the VAM's situated content increased the participants' learning about privilege.

Increased potential for advocacy

Equipped with increased knowledge about how privilege functions in society, many participants mentioned that they felt more capable of engaging in advocacy against the misuse of privilege after the VAM. Seventy-four percent (74%) of our survey participants felt they were equipped or very equipped to stand up to someone using their privilege to limit their access to services (see Table 4).

Table 4. Participants' self-reports about being more equipped to stand up to someone using their privilege to limit their access to services

Scale description	Number of participants	Response rate
Extremely under equipped	0	0.00%
Under equipped	2	8.70%
Neutral	4	17.39%
Somewhat equipped	7	30.43%
Very equipped	10	43.48%
Total	23	100%

The following quotation from participant one in interview one summarized this point: "Now I know it [advocacy] is important. It's like we have to take part in it . . . raise our hands, raise our voice and say it is not good" (Interview 1, Participant 1). Furthermore, more than half of the participants (65%) either agreed or strongly agreed that participating in the VAM had allowed them to develop new learning strategies and educate others about the misuse of privilege (see Table 5).

Table 5. Participants' self-reports being more able to develop new learning strategies and educate others about the misuse of privilege

Scale description	Number of participants	Response rate
Strongly disagree	0	0.00%
Disagree	2	8.70%
Neutral	1	4.35%
Somewhat agree	5	21.74%
Agree	7	30.43%
Strongly agree	11	34.78%
Total	23	100 %

Participants in the interviews reinforced this, noting that the VAM strengthened the likelihood of them being advocates against the misuse of privilege. This is summarized in the following quotation:

> I think it's just strengthened my ability to speak about privilege, because I'm very open, and about that stuff especially. Um, my boyfriend is white. . . . Um, it educated me more about other privileges that I wasn't aware of . . . and I also just, I guess, maybe [I am] more confident that now that I have more knowledge about it, I can cover all the bases rather than just talking about my limited knowledge. (Interview 2, Participant 2)

The VAM strengthened the participants' perception that they can be future advocates against the misuse of privilege. This indicates that the VAM is a useful teaching tool that can supplement the literature on experiential approaches to combating anti-racism and its associated concepts, such as privilege (Garrett 2024; Tate and Bagguley 2016). Facilitating such measures requires systemic support from higher education leadership as well as strategies to make it easier for students (and faculty) to do this work.

Role of avatars in heightening participants' empathy

In the focus group, participants recounted that the ability to use an avatar, whether they selected it or not, enhanced their perspective-taking and empathy. For example, in interview five, Participant eight explained that the use of an avatar "could be a really good empathy-building tool" when teaching about privilege because it allowed them to see themselves in other people's shoes. Several social and environmental factors contributed to empathy building for most participants; still, the emerging literature on VR (Bertrand, Guegan, Robieux, McCall, and Zenasni 2018; Sora-Domenjo 2022) show that avatars can lead to more feeling for and with others. Moreover, in interview one, participant one mentioned that through the avatars' varied emotions expressed in the stimulation, they felt "different emotions that's very real," which made it easier

for them to engage with the content. Therefore, the avatars ensure that the participants can view information and experience emotions from other people's perspectives.

Need for a more detailed plan on how to address privilege

The data from both the survey and interviews showed that many participants felt better equipped to engage in advocacy. However, when asked, "Are you more comfortable in addressing privilege after the simulation?" during the interviews, many participants felt that they needed more prescribed strategies detailing how to combat the misuse of privilege in a more emotionally sensitive way. As one participant aptly shared: "I would benefit from, of course, a workshop or anything like that where I get some information or tips and tricks on how to address that in other people without the fear of, yeah, of hurting their feelings (Interview 3, Participant 3)." The need to consider and soothe people's feelings extends beyond considerations of their fragility to an understanding that conversations around anti-racism can create closure rather than opening in terms of building bridges of relatability about how racism, including privilege, impacts others (Kirkwood 2023). The participant cited above expounded further:

> I feel like if the conversation starts in a wrong way and they feel like they're being pushed in a corner, it's pointless because they do not understand. They just feel like they are being, yeah, they're being labelled as something, and there is no listening coming from them anymore. (Interview 6, Participant 10)

Consideration of other people's feelings may also be connected to a quintessentially "Canadian" sensibility encompassing a concern for being polite and not causing others to feel uncomfortable. Nevertheless, more research is needed that recommends scenario-based practices to guide these conversations, which can be uncomfortable depending on people's sociocultural backgrounds, so that they ensure more fruitful outcomes.

CONCLUSION

Building anti-racism teaching content that is empathic and impactful can be challenging. This research suggests that the use of realistic, engaging, and thorough VR content can serve as an effective teaching tool in helping participants to improve their understanding of privilege while cultivating their advocacy capacity. Connected to this, the VAM's use of avatars was effective in expanding participants' perspective-taking, something not often documented in traditional research. Finally, the VAM promoted critical reflection in participants, allowing them to examine their own position on the privilege spectrum.

Although the research contributes to the burgeoning literature on virtual reality's ability to teach anti-racism content, it has a few limitations. The first limitation is our small sample size, which limits the study's generalizability. The second limitation is the unequal degrees of prior exposure to anti-racism content among participants, as many had completed anti-racism modules in their higher education programs. The third limitation is that much of our discussion focused on points one to three of the literature, which explains VR's superiority over traditional methods in promoting anti-bias and anti-racism competencies and connected topics such as privilege, its power to make learning more holistic and its ability to enhance participants' empathy. The final limitation is possible response bias since the principal researcher is a professor at the institution where the participants studied. To reduce response bias, the third author, who at the time of the data collection recruited the

participants, led the quantitative data collection and communicated with the participants. The principal author and the second author led the focus group discussion.

Future research should include longitudinal studies with larger sample sizes of educationally diverse participants in order to explore the breadth of the literature. More research is needed to explore the avatar's role in promoting embodiment and empathy-building in anti-racism learning contexts.

NOTES

1. Here is an introduction to the VAM: Bodyswaps—Let's Talk About Race - Recognising Privilege
2. In the focus group, seven of the eleven participants shared that they did not choose their own avatars, whether because of a lack of knowledge about how to change the avatar or due to technical issues or another reason. Still, they explained that not choosing an avatar did not impact their engagement.
3. We chose to use the term interpersonal competencies instead of interpersonal skills because some scholars (see Berdanier 2021) critique the latter for being focused on measurable traits rather than the complex array of abilities that is associated with understanding the human experience.
4. Hamad et al. (2022) explain that VR can be immersive or non-immersive, noting that immersive VR, such as the one used in this study, uses a wearable head-mounted display (HMD) for users to interact with the content. They also note that non-immersive VR typically uses a variety of screens, like those used in flight simulations, to present visual information to the users.
5. The role of avatars in promoting embodiment is not prioritized in this paper, since our focus is on how the participants' privilege knowledge changed rather than on what caused that change.

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ETHICS

The George Brown College ethical review board approved this research.

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