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EDITED BY

Hai-Ning Liang,
Xi'an Jiaotong-Liverpool University, China

REVIEWED BY

Oyewole Oyekoya,
Hunter College (CUNY), United States
Paula Alexandra Silva,
University of Coimbra, Portugal

*CORRESPONDENCE

Cayley MacArthur,
✉ cayley.macarthur@uwaterloo.ca
Eugene Kukshinov,
✉ eugene.kukshinov@uwaterloo.ca

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Experiential disparities in social VR: uncovering power dynamics and inequality

Cayley MacArthur^{1*}, Eugene Kukshinov^{1*}, Daniel Harley¹,
Trisha Pawar², Nirali Modi³ and Lennart E. Nacke¹

¹Stratford School of Interaction Design and Business, University of Waterloo, Stratford, ON, Canada,
²Indian Institute of Technology Guwahati, Guwahati, India, ³Indian Institute of Technology Jammu Jagti,
Jammu, India

Social Virtual Reality (SVR) offers new forms of social interaction, identity expression, and embodied experiences, but it has also revealed significant issues related to social inequalities and unequal power dynamics within virtual worlds. Employing a critical, intersectional approach, we investigate how existing power dynamics and inequalities shape individual experiences and interactions in SVR, shedding light on the differences between the ways that dominant groups and marginalized groups (in relation to race and gender specifically) experience SVR. Analyzing qualitative survey data, we discuss the complex relationship between power dynamics and key SVR affordances, including expectations around perceived anonymity, limited options for avatar customization, practices for self-representation, and actions relating to embodied social interactions. Identifying the specific ways that power and privilege are reenacted in virtual environments, our work calls for deeper engagements with the ways that non-dominant identities and experiences continue to be marginalized in SVR.

KEYWORDS

identity, race, gender, social VR, power, privilege, inequality, virtual reality

1 Introduction

Social Virtual Reality (SVR) has created new possibilities for social interaction, community building, identity expression, self-expression, and other immersive experiences that revolve around embodied interaction and communication (McVeigh-Schultz et al., 2018; Freeman et al., 2022a; McVeigh-Schultz and Isbister, 2022; Wei et al., 2022). Yet early examinations of these environments have also revealed troubling accounts of how these same affordances have been used for sexual violence and harassment (Freeman et al., 2022b), particularly towards women and/or avatars that present as women (Schulenberg et al., 2023a), with recent reports documenting accounts of racism, homophobia and other harms within SVR (SumOfUs, 2022).

Within this context, we argue that the ongoing efforts to better incorporate critical perspectives in human-computer interaction (HCI) research (Bardzell and Bardzell, 2013; Fox et al., 2016; Schlesinger et al., 2017; Rankin and Thomas, 2019; Chivukula and Gray, 2020; Erete, 2021) offer an important foundation for current examinations of SVR. Acknowledging the nuanced and multidimensional intersections of identities in relation to existing power structures (Crenshaw, 1991), we examine qualitative data from a survey study (N = 101) to draw attention to the ways that the experiences of people representing dominant identities in SVR (in this case, representing Western power structures privileging

White men) may contrast experiences from people representing historically marginalized identities (particularly along lines of race, gender, and sexual orientation). For the purposes of this study, we do not use “dominant” to mean “most populated” in SVR (although prior research suggests that SVR spaces are likely male-dominated (Blackwell et al., 2019; Freeman et al., 2022b; Schulenberg et al., 2023a)), but rather to refer to the power to enforce, enact, or benefit from the normative expectations of Western culture. In SVR, for example, this might include avatars and avatar customization options that privilege representations of Whiteness over other racial and/or cultural backgrounds, or events and social activities that privilege heteronormative expectations of gender and/or sexuality. These and other forms of dominant power arrangements are further reinforced by the companies that have the ability to define technological and interactive norms for VR, with California-based Meta occupying an oversized market share (Ubrani et al., 2023).

We highlight the need for designers and developers of virtual environments to consider the impact of power imbalances and social inequalities on user experiences, and the ways that these imbalances reflect existing disparities that are reinforced by dominant culture across online and offline spaces. For individual users, power imbalances can be felt or experienced across a range of factors related to SVR use. Specifically, our study documents significant differences in experience relating to perceptions, attitudes, practices, and expectations around issues like anonymity, safety, comfort, representation, and novel forms of (embodied) communication. Building on related inquiries into social and technological inequity and privilege in other domains like video games (Kukshinov and Shaw, 2022), our results underscore the importance of creating safe and respectful virtual environments that account for the ways that power dynamics and inequalities affect experiences while also drawing attention to opportunities for more inclusive virtual spaces and interactions.

Our study also has implications for broader discussions around diversity and representation in digital media. By examining how avatar choice and representation can impact individuals' sense of identity and belonging in virtual environments, especially in relation to existing power structures, the study highlights the importance of creating virtual spaces that are diverse and inclusive, and that accurately reflect the needs of non-dominant groups. Overall, we argue that it is necessary to consider how the interplay between the expectations and affordances of SVR continue to marginalize specific identities and experiences while privileging others.

2 Related work

2.1 Avatars, representation, and use

In the context of the platforms that shape current conceptions of SVR, considerations for digital affordances (Gaver, 1991) can refer to the many ways that users perceive, use, interpret, etc. the various features, properties, and interaction possibilities of digital media, including the ways that users might reinterpret or challenge a given affordance (Shaw, 2017). Within SVR, a key affordance of current platforms is the ability to use avatars for verbal and embodied communication with other simultaneous users. Prior research has

shown that some SVR users choose or customize avatars with a focus on culturally-situated representations (McVeigh-Schultz et al., 2019), or engage in experimentation (Freeman et al., 2020), or explore a variety of virtual personas (Maloney et al., 2021b), including immersive dwellers (Zheng et al., 2023) who are said to play or experiment with avatars in front of virtual mirrors.

The use of avatars is also closely tied to the relative anonymity within SVR platforms, and has been discussed in prior work about introverted users participating in activities by using avatars instead of face-to-face communication (Wei et al., 2022), or regarding self-disclosure in SVR in terms of the information users reveal, or factors that contribute to self-disclosure (Ma et al., 2016; Maloney et al., 2020; Sykownik et al., 2022). More broadly, there continues to be a need to understand how anonymity is experienced and practiced in relation to other users, or how it relates to current forms of avatar creation, identity representation, and expression in SVR.

When SVR users opt to create avatars that closely match their physical selves with respect to gender, ethnicity, skin tone, and facial features, these choices are said to foster a sense of engagement, intimacy, and personal connection with their avatars (Maloney and Freeman, 2020). For example, recent research has how middle-aged women using SVR develop nuanced representations of age and gender achieved through variations in hair colour, texture, and body types (Morris et al., 2023). SVR can also be a platform for identity exploration (Freeman et al., 2022a), especially considering the representational fluidity that some SVR platforms can support.

Despite these positive opportunities for representation and expression, these same affordances of avatar creation and anonymity can facilitate identity tourism (Nakamura, 2013), especially when dominant groups exploit the identities of marginalized groups (Nakamura, 2020). In this sense, VR extends the under- or misrepresentation of marginalized groups seen in other media like television (Sink and Mastro, 2017) and video games (Kukshinov and Shaw, 2022; Breuer et al., 2015; Shaw et al., 2019).

A challenge in understanding each of these factors in more detail is that SVR studies have had difficulty recruiting diverse participants in their sample (Wei et al., 2022). A lack of focus on other identities compounds a larger critique in HCI research that focuses on a “single identity axis” (Sum et al., 2022), which highlights the need for an intersectional perspective (Crenshaw, 1991) that takes into account the multidimensionality of identity in relation to systems of power.

2.2 Interpersonal and interactive dynamics

SVR research has uncovered a variety of interpersonal instigations, harassment, or trolling actions (Maloney et al., 2020; Zheng et al., 2023). Verbal and nonverbal forms of harassment (Henley and Harmon, 1985) are reproduced in SVR beyond comments and threats by affordances that facilitate embodied assaults, such as touching, grabbing, and groping (Schulenberg et al., 2023a). As social spaces that are considered to be male-dominated (Blackwell et al., 2019; Freeman et al., 2022b; Schulenberg et al., 2023a), SVR has been shown to create risks for women or non-binary people (and other oppressed groups) simply by increasing the visibility of their gender and sexuality (Schulenberg et al., 2023a). As a result, members of marginalized

groups often have to hide their identity to avoid harassment (Freeman et al., 2022b).

Prior work has also shown younger individuals engaging in trolling behaviour, suggesting that they may not perceive certain actions as trolling or harassment but rather as an activity for their amusement (Maloney et al., 2021b). Trolling, however, can be interpreted as a reproduction of mainstream power dynamics in digital spaces (Phillips, 2016). In a study by Freeman and Maloney (2021), the authors reported numerous instances where normative and oppressive practices were observed to transfer to SVR, like the sexualization of female avatars. Although norms for appropriate behaviour in social VR are still emerging (Blackwell et al., 2019), behaviour that continues to affect the safety of SVR users involves disturbing acts, forcing attention, invading personal space, harassment, and other problematic and dangerous behaviour (Freeman et al., 2022b).

Current strategies to promote safety in SVR platforms include a variety of safety features, including a personal space bubble, private spaces, or blocking mechanisms (Kolesnichenko et al., 2019). Such mechanics, like muting users audibly and visually, are reactive measures that do not eliminate the effect or possibility of additional comments, attacks, or threats: “even if they mute a certain user, others surrounding them can still hear that user and then behave accordingly” (Freeman et al., 2022b, p. 11). In response, there are relevant recommendations to improve SVR platforms, with attempts to make them safer (McVeigh-Schultz et al., 2018) and more inclusive (Gerling et al., 2022), even re-framing interpersonal harm through the lens of consent to explore new possibilities for “boundary setting” (Schulenberg et al., 2023b). Ultimately, however, the range of possible actions that appear to target non-dominant identities in SVR platforms (SumOfUs, 2022) all point to an ongoing need to examine and intervene on risks that these SVR users face, particularly if targeting their sensory experience may have negative physical and psychological effects (Gugenheimer et al., 2022).

2.3 Research framing

A growing corpus of Critical HCI research provides guidance, tools, and calls-to-action that can be leveraged for navigating some of the challenges described in SVR research while also extending current examinations of non-dominant experiences in SVR. For example, while prior work has typically focused on single identity axes—which are in themselves nuanced and complex—including examinations of LGBTQ+ individuals’ experiences (e.g., Acena and Freeman, 2021), women (e.g., Schulenberg et al., 2023a), and non-cisgender individuals (e.g., Freeman et al., 2022a; Reyes and Fisher, 2022), an intersectional approach stresses that our multifaceted identity markers are not mutually exclusive, requiring an examination of how particular configurations of identity are impacted by interconnected systems of power and oppression.

In our work, therefore, we sought to attend to what Hancock (2007) describes as the intra-category relationships between these identity markers. Examining the relationships between “categories of difference” (which refers to the dynamic and contextually relevant combinations of race, class, gender, sexual orientation, etc. from an intersectional lens) is an effort to consider more than one category of identity without prioritizing any one, while also holding space for

interpersonal, disciplinary, cultural, and structural factors (Hill Collins and Bilge, 2016) that might affect SVR experiences. These distinct but interconnected domains of power are summarized in Rankin and Thomas (2019) and are raised here insofar as to justify our goal to examine issues not from an “either/or” lens (e.g., race or gender), but a “both/and” lens (e.g., race and gender) (Rankin and Thomas, 2019).

Inspired by To et al. (2023), we also aim to highlight differences between dominant and non-dominant experiences not only to interrogate how systems of power are reproduced, but also to document moments and experiences of “flourishing” and self-actualization within SVR, particularly for users who are poorly represented across SVR platforms. By acknowledging a diversity of experiences within a given sample of SVR users, we aim to surface findings that can support pluralism in design (To et al., 2023).

Given the range of potential harms that historically marginalized people face in SVR, we ask the following question.

RQ: How do SVR users interpret, perceive, and/or articulate their understanding of their contexts and behaviours in social VR? What strategies do SVR users adopt to navigate and/or mitigate potential harms in their SVR interactions?

3 Methods

This study is part of a larger research project, which focuses on exploring experiences and interactions within SVR. After the study was approved by our university’s research ethics board, data was collected through a survey administered on [Qualtrics.com](https://www.qualtrics.com), using [Prolific.com](https://www.prolific.com) as the primary means to sample participants. Geographical limitations were not imposed to allow for broader global participation. The survey underwent two pilot tests to refine the questions, with adjustments made to wording and question sequences, and the addition of new questions. After the third pilot test, the main survey was distributed over a 2-day period. Before analysis, participants were pseudonymized with alphanumeric codes (e.g., P1, P2, etc.). Participant numbers were assigned prior to responses being screened, hence our final sample comprised 101 participants, but participants could have received a label between P1 to P120.

3.1 Sampling

A total of 120 people were initially recruited to participate in the study, consistent with previous work such as Sykownik et al. (2022). Participants had to be over 18 years old and report ownership of a VR headset to be eligible. As a result of balanced sampling, the dataset comprised 54 female, 60 male, and 6 non-binary participants. After screening, 19 participants’ responses were excluded for reasons such as empty or non-English responses, copied content from public sources, or AI-generated responses, identified through AI detection software like GPTZero. The final sample involved 101 participants, including 41 female, 55 male, and 5 non-binary participants. When collecting data on gender, participants could select from: male, female, non-binary/third gender, prefer not to say, or prefer to self describe (with a text

box). No participants chose the latter two options. When we refer to the non-binary/third gender participants in our findings, we will default to the term non-binary for concision, but we acknowledge that there is a diversity of identities within this category that can be more closely examined in future work. The sample also featured individuals from diverse racial backgrounds, including 45 White (of which 29 identified as men)¹, 26 Black, 18 Hispanic, 6 Asian, 4 mixed-race individuals, 1 Latino and 1 Latina. When collecting race/ethnicity data, participants could choose from: Asian, Black, Hispanic, Mixed race, White, Other (with text box), or prefer not to say. No participants opted out of this question, and two participants self-described as Latino and Latina, respectively. Given the lack of diversity acknowledged in the recent studies on SVR (e.g., Freeman et al., 2022b; Wei et al., 2022), this attention to demographic details was an attempt to add more descriptive specificity to our sample, but as we describe in 5.3, these efforts only represent a first step.

3.2 SVR platforms representation

Our sample exhibited a platform distribution consistent with previous research (Sykownik et al., 2021). VRChat, AltSpace (which was recently shut down), Meta Horizon Worlds, RecRoom, Neos, and Bigscreen were identified as popular platforms. Within our sample, 48 participants indicated VRChat as their primary platform, 28 preferred Meta Horizon Worlds, 11 opted for BigScreen, 6 chose RecRoom, and the remainder used various platforms like Neos VR, Pavlov VR, Bean VR, or AltspaceVR. 31 participants exclusively used one specific platform, either VRChat or Meta Horizon Worlds.

3.3 Survey design and questions

While SVR platforms offer varying degrees of social interaction, we did not restrict data collection to specific platforms. Our goal was to develop a more comprehensive overview of SVR user engagement to better understand common experiences and expectations across platforms, with questions striving to provide a breadth of responses across a range of topics. The survey included demographic questions, inquiries about platform usage frequency, headset preferences, preferred platforms and other platforms used, and open-ended questions to capture participants' insights and perceptions about their SVR use. Collecting structured qualitative data through open-ended questions allowed for both depth and variety in the dataset, enabling participants to articulate their perspectives while also facilitating comparability between the individual cases (Lochmiller, 2021).

The survey questions aimed to stimulate responses regarding how people use SVR in various circumstances, and how they feel about certain situations and concepts that can reflect social inequalities. They were developed based on an analysis of SVR

affordances, considering existing taxonomies (Handley et al., 2022), reports (McVeigh-Schultz et al., 2018), and relevant SVR research (Maloney et al., 2021a; Freeman et al., 2022a; Wei et al., 2022). These questions explored aspects like the meanings of representation and anonymity (including comparisons within different modalities); how participants chose/customized avatars and how often they changed them; participants were asked about their motivations for using the safety features and their perceptions of uncomfortable and unsafe situations in SVR; finally, they were asked questions to determine their attitude in conversations with other users (during various communicative stages) and to assess the attitude towards non-verbal encounters from both strangers and known users. Please see all survey questions in the [Supplementary Material](#).

3.4 Data analysis

In this study, we implemented Reflexive Thematic Analysis (RTA) as outlined by Braun and Clarke (2019) to conduct a comprehensive examination of the collected data. Our analytical approach drew from a foundation of existing SVR research (Freeman et al., 2022b; Wei et al., 2022), an understanding of SVR systems and taxonomies (Handley et al., 2022), and critical theoretical frameworks (Crenshaw, 1991; Nakamura, 2013; 2020; Schulenberg et al., 2023a). Within the framework of RTA, our coders participated in the analytical process. The reporting of results necessitated ongoing scrutiny of the assumptions guiding data interpretation and coding (Braun and Clarke, 2019).

Our commitment to data triangulation and the incorporation of diverse perspectives led us to engage four coders in the analysis (Humble, 2009; Carter et al., 2014). We started the analysis with an initial reading of all data collected (Braun and Clarke, 2019). The primary researchers undertook this reading, seeking to grasp the entire dataset's themes and nuances. Preliminary codes were developed during this process, which were then shared and discussed with other team members, mirroring a collaborative approach similar to that described by Maloney et al. (2021b). These themes were grounded in the research objectives and social issues that reflect power imbalances, such as issues of (media) representation, power abuse, or matters of safety.

To begin the analysis process, we randomly selected an initial subset of 20 participant responses and assembled them as training data. The four researchers undertaking the data analysis subsequently coded these responses independently. This coding process was reviewed by the primary researchers to maintain consistency across all four coders. Following this phase, we constructed a second set of codes using the new tags and codes derived from the initial 20 participant data sets, and the four coders proceeded to independently analyze the full dataset. To facilitate focused coding and interpretation, the overall dataset was divided into six equal and manageable sections, and at all times, two independent coders were assigned to each section. As such, each portion of the data was coded by at least two of the researchers, and discussed in calibration sessions. Our analysis comprised four training sessions and six coding sessions, each extending for an hour or more, affording sustained and consistent attention to the data throughout the process.

¹ In our reporting of race data, we follow current APA guidelines by capitalizing both Black and White. For more information on capitalization patterns, please see <https://cssp.org/2020/03/recognizing-race-in-language-why-we-capitalize-black-and-white/>.

Upon completion of the coding sessions, we convened a research team meeting to supervise the review, discussion, and ultimate consolidation of the identified topic-related codes into themes. This step was essential to promote coherence and consensus within the research team. In instances where discrepancies emerged between two coders, resolution was sought through the expertise and relevant knowledge of a designated researcher, recognizing their pivotal role in data analysis (McDonald et al., 2019). As Braun and Clarke (2019) emphasize, RTA encourages a reflexive and nuanced interpretation of the data, prioritizing the process of making sense of the data over rigid adherence to prescribed procedures. We approached the identified themes as interpretive narratives about the data, shaped by researchers' skills and theoretical perspectives (Braun and Clarke, 2019). These final themes were discussed by the research team, seeking to develop a more precise depiction of their meanings and culminating in the presentation of a comprehensive study narrative.

We used a shared Miro board for independent rounds of coding and data analysis. This way we were able to visually (re)assemble and connect responses to make sense of them. When identifying themes, the two primary researchers participated in several affinity diagramming sessions, where individual pieces of tagged data were placed on to digital post-its, and the researchers collaboratively grouped them according to perceived relationships. It is possible that one piece of data could belong to multiple subthemes. For example, when examining when SVR users said they felt most represented by their avatar, one participant said "One time at a comedy club I was with a Seinfeld avatar and people gathered around for my jokes. It was a great feeling" (P35). This was considered to be part of subthemes relating to feeling represented by a figure from popular culture, feeling represented through recognition or acknowledgement, and also feeling represented by commanding attention or focus from a group. These subthemes could then be analyzed in relation to broader themes relating to privilege and/or representation.

In the sections to follow, we present the results of our reflexive thematic analysis. Overall, our themes involved individual interpretations and perceptions of anonymity, representation, and safety in SVR; other themes reflected participants' attitudes to SVR features and events in the contexts of embodied virtual conversations and avatar customizations. Throughout, we rely on qualitative rather than quantitative data to foreground individual responses and experiences to provide a descriptive account of the data. In doing so, we follow the recommendations of Soden et al. (2024) for presenting interpretive research. Given our research question, key themes are not necessarily represented by their prevalence in the dataset, but whether they illustrate information that is relevant to the research question (Braun and Clarke, 2006). With this approach, specific configurations of identity markers may be more represented than others in a particular thematic section based on what that section is describing. This is the case, for example, in 4.1, where the focus is on how privilege is enacted and therefore primarily focuses on people broadly representing privileged identities (often White men). This, in turn, offers a contrast to the next two themes, which describe ways people broadly representing non-dominant groups (e.g., women and racialized people) experience and describe a need for safety features (4.2) and a need for representation (4.3). However, based

on our intersectional foundations we recognize that people within these groupings will have different relationships to power and dominant culture based on several other factors that we are not directly analyzing. We discuss these limitations of our approach in 5.3.

4 Results

This section presents the three themes that we identified in our data. Our first theme, "Re-enacting privilege" (4.1) describes the reification of offline privilege, asserted through behaviours that would be considered socially undesirable offline, but are perceived to be without consequence for people who hold relative social and/or cultural forms of power. Next, in "A need for safety features" (4.2), we describe the disparities in awareness and use of safety features in SVR platforms, such as muting, blocking, or using personal space or personal boundary features. Finally, in "A need for representation" (4.3), we describe the intersection of expression and representation in SVR avatars, and the role this plays in SVR user experiences. Note that we do not correct typos, misspellings, or other errors in participants' responses that we quote directly.

4.1 Re-enacting privilege

When we asked our participants what representation meant to them (we asked: *What does it mean for you to be represented by the avatar in SVR?*), White men who were already regularly represented by default avatars and customization options did not perceive representation to be relevant: "I really do not care. I'd use any avatar so I do not need representation. It is not a true representation of myself anyways" (P56). In these cases, the avatar was an object to inhabit rather than an expression of identity. As P41 noted, "It does not really represent me it is more of a I really like this character so I'm using this." Men were also more likely to report using avatars to inhabit characters from popular media. P91 wrote, "I love loading up videogame characters and seeing myself in the virtual mirrors, there is no perfect example, but I love the overall feeling of it." Similarly, P35 described using an avatar from the TV show *Seinfeld* for impromptu stand-up comedy: "One time at a comedy club I was with a Seinfeld avatar and people gathered around for my jokes. It was a great feeling" (P35). For some of these participants, it meant "nothing" to be represented by the avatar: "nothing, it is usually just for laughs" (P62), or "nothing really, it is not a big of a deal as these questions make it seem" (P18), or "An avatar is more or less just a placeholder for me" (P79). One participant seemed to acknowledge that his identity was the default option: "A white male, pretty generic, so I'm unphased. I'm a white male, so I'm represented well all over" (P69).

Some White men in our sample perceived the relative anonymity of their avatars in SVR as offering a lack of consequences for expression: "It is cool because I can express myself without any consequences and without fear" (P15). Men in our sample were more likely to view SVR environments as less restricted spaces than what they experienced in real life, interpreting SVR platforms as free spaces for whatever interactions they deemed appropriate. A White man stated: "If talking to strangers, then it is

completely different to real life. If you say something offensive to somebody in real life, there's a nonzero chance you'll get punched in the face. That cannot happen in VR so it changes the dynamic" (P56). Men in our sample more frequently reported dominating conversations and framed aggressive and harassing behaviour as fun or as a way to attract attention to themselves. One White man said:

"I primarily use VRChat to start arguments/troll. I find the place with the most people, walk up to one of them and say whatever comes to my mind. Just like walking up to a stranger in real life, except with different conversation starters. For example, in the past I've literally opened up conversations with the C word. You would not do that in person." (P56)

Variations of these attention-seeking strategies appeared to be common for men in our sample: "A really good way to get attention is to raise your voice a little, or make strange noises, there are many ways, even ask an uncomfortable or interesting question" (P6). Men would describe being aggressive, as they would raise their voice or crash into walls (P37) to get attention, or they would "just start speaking louder or physically put yourself in front of others so your voice is heard louder because of proximity" (P33). One participant described how he would talk with strangers "when it feels right" for him: "I can draw attention, by simply walking up to someone's face and just telling them to talk to me" (P75). P92, a White man who said that "trolls used to be fun," also suggested that "touching strangers is a good icebreaker." For individuals located in relative positions of power, this broad use of avatars and a perceived freedom to act without consequence appeared to facilitate a tendency to reassert a privilege they possess in offline spaces.

4.2 A need for safety features

The experiences that women and people of colour described suggest that they were often the target of the inappropriate behaviour described in the previous subsection. A participant who identified as a Latina woman described one user who would target her, causing her to self-exclude from virtual spaces: "If they say offensive, rude things directed to me or my friends, I silence them. But I mostly just turn away and search for a different world to avoid contact with certain users" (P102). Women and people of colour were more likely to report using the personal space features to take a break from others or to quiet down, as P58 describes: "Usually strangers who do this are obnoxious, rude players and I tend to block them for not respecting my space." This was also common for participants with other underrepresented identities. For example, one participant who identified as White and non-binary employed safety features to exert control over their experience: "I always have the 'Personal Space' (or its correspondent across all games) on because I feel more comfortable being in VR like that. I often get startled when people suddenly appear close to me or scream without me expecting it, hence why I have it on" (P98). Some users reported opting to teleport away, go to a new world, or log off instead of using personal space features: "If it gets to the levels of harassment I generally block them and/or report them" (P102). One White woman found these safety features difficult to use, but she anticipated a need for them: "I do not use them because I have

not quite figured out how that works yet, and I have not been harassed by anyone yet" (P83).

White male participants in our sample only felt unsafe in SVR if they were not heterosexual and facing homophobia (P18), or feeling social anxiety as P91 describes: "I've felt mentally unsafe when dealing with people who are rude, as I am a socially anxious person, and have felt like taking off the headset." In contrast, racialized participants described several instances of feeling unsafe in SVR, including an incident "when a user started making rants and started swearing and making threats" (P64, Black, male), or when "a person in VR started being rude and racist, he got too close to me, so, I left the room" (P53, Hispanic, female). One Black man (P27) described how he would feel if another avatar in SVR stared at him: "It feels unsafe as you do not know their motives or how they would respond to you." These participants reported that in addition to being trolled or spoken to aggressively, some users would also try to touch them. While a virtual sense of touch from friends was sometimes seen as positive, as with P55 "I'm happy because we're doing an act of friendship" or as P44 describes, "It feels a little exciting because [it] means maybe we will start talking and become closer," virtual touch from strangers was negatively perceived overall. This was particularly the case for women, as with P83: "I get creeped out, just like I do in real life. It has not happened too often but I really dislike the feeling." P49 said that it made her "scared because why [do] you need to touch someone you do not know?"

In contrast to the regular use of the safety features by women and people of colour, men were less likely to report awareness of, or having used, safety features such as the "space bubble" in *AltspaceVR* or the "personal boundary" tool in *Meta Horizon Worlds*. When White men reported using safety features, it was to address an annoyance, as P16 describes: "I do not use them unless there's someone annoying or trying to block my view, or throwing something at me." White men in our sample were able to ignore (or not notice) other more significant forms of oppression or abuse, as they registered only a few issues: "Rude people but that's about it, in VR, touching, etc. does not weird me out, if anything just gets annoying" (P41). One of the White male participants, who stated that he "can be anyone I want to be by changing my avatar," had to mute others for being racist while embodying and role-playing with avatars that were not White (P75), demonstrating both an act of identity tourism and the targeting that people face when using avatars that are perceived to be outside the norm. Overall, participants showed differing degrees of need to use the safety features often in relation to their identity, suggesting that for some, participation in SVR required an active use and awareness of these affordances.

4.3 A need for representation

For participants in non-dominant groups, representation was generally perceived as more meaningful and often involved self-reflection; they described seeking avatars as representing "them," the "real them," "their identity," and so forth. In the case of a Hispanic woman: "it means a lot to see myself represented with an avatar, I feel like she needs to look like me to feel like it is me and feel comfortable" (P53). It was especially meaningful for non-binary participants in our sample. Given that there are many ways for non-

binary people to present their gender in SVR, there is no defining feature of a non-binary avatar. Crucially, however, these participants were not forced to adopt particular avatars with specific features, rather, they were in control of how they self-represent. As a Black non-binary participant stated: “I get to see myself/others like me [and others] get to see themselves through me. It makes one more comfortable and confident when surrounded by people who look like them. Representation makes one feel that they belong” (P120). People of colour expressed the need for customization options to more accurately represent themselves, including more body styles, skin colours, or broader identifiers: “Black people are not really represented in by an avatar, but it was cool when I found an afro hair to put on an avatar” (P116). P39, a Black man, said “If there is an update to reflect for example, my ethnicity better like hair style, skin colour I will customize it further.” Frequent customization was also described as a mode of self-expression: P120, who is Black and non-binary said “I change the look according to what I have currently in real life. So that it is the most true reflection of myself” (P120). Women and non-binary people generally were more often motivated to change surface-level aspects of their avatars (e.g., hairstyle, clothes, accessories) due to changes to their physical selves, i.e., to reflect these changes. A Hispanic woman said, “I change it when I change my personal style, for example, when I radically change my hairstyle or clothes, I try to keep my avatar looking like me” (P53). For P28, a Black woman, the same desire for self-representation caused her not to change her avatar: “I do not change it, because that is who I really am” (P28).

Women, non-binary people, and people of colour were all more likely to choose avatars who shared similar features to their own. In these cases, they reported a heightened sense of representation related to their identification with the avatar: “I felt represented when I could have a smaller sized, woman avatar because I’m small in real life” (P97); for White women such as P97, this was fairly straightforward. Participants’ first time using their avatars was often noted as being the most memorable: “When I first made my RecRoom avatar, I made it look as exact to me as possible to the point where my partner was able to find me in the room almost immediately without knowing what my avatar looked like before” (P108). For participants questioning their gender or feeling gender dysphoria—distress relating to mismatched gender compared to gender presentation (Liang et al., 2023)—embodying a particular gender is not done just for fun, but rather as an affirming experience. One White non-binary participant described experiencing gender euphoria (the joy when one’s gender and gender presentation align) when uploading their avatar to VRChat for the first time: “The very first time I uploaded the avatar I made into VR Chat and looked into the (virtual) mirror, I felt a bit euphoric. It was perfect” (P98).

For many women and people of colour in our sample, the need to see themselves represented by their avatars was also coupled with the relative anonymity of SVR as a way to express control over how they were seen. P83 described this form of anonymity as contributing to feeling comfortable and safe: “I feel safe, I feel like no one can judge me and I can relax and be myself.” The feeling of anonymity felt empowering (P61), making people feel more confident and invincible (P42). In such instances, there was a perceived opportunity to express themselves, with a lack of judgment of their appearance, or without the direct gaze of others. These participants suggested they felt less anxious while

talking with other users in SVR compared to using more traditional teleconferencing tools (such as Zoom or Microsoft Teams), as was the case for P96: “Svr makes me feel more relaxed as I have a set avatar, zoom is more pressure and makes me feel like I’m being watched and have to watch what I say so I do not make a bad impression.” P84 described virtual meetings overall as being both more chaotic and more comfortable than their traditional counterpart: “It is more comfortable to talk behind a mask or with the camera turn [ed] off in virtual conversation. Virtual conversations are more chaotic than the real ones. I feel more secure in virtual meetings.” These comments appeared to confirm prior work that suggests that VR may be able to play a role in supporting underrepresented users to feel empowered to participate in online social activities (Wei et al., 2022), though the previous subsection complicates this finding.

5 Discussion

5.1 Situating our results: privilege, safety, and representation

Looking across the three areas of analysis in Section 4 reveals important nuances to the data, and stark contrasts between how individuals interpret and experience SVR. While they all may share the same space, their interpretations of that space and its perceived possibilities are shaped by their relationship to existing power structures.

Our results (perhaps especially in Section 4.1) demonstrate how individuals from dominant social groups (particularly men, and especially White men) are benefiting from the current affordance structures of SVR to reproduce their existing position of power. These men were more likely to describe their relative anonymity as offering a lack of consequences in social VR and generally displayed nonchalance about their avatar choices. Possessing a “default” identity (that is, one that effectively matches avatar defaults and customization options in SVR) extends privileges of representation in other media (Kukshinov and Shaw, 2022). Similarly, becoming “bored” with one’s identity and indulging in uncritical explorations of other racial and gender attributes is an extension of the type of identity tourism problematized by Nakamura (2013), who called attention to the phenomenon of “toxic empathy”: when users are not critically engaging with the implications of embodying avatars that represent racialized bodies. In such cases, we might interpret the privileged use of SVR features as amplified by ignorance as a cultural-psychological tool that affords denial of, and inaction about, injustice or inequality (Nelson et al., 2013). While there are hopes for the “Proteus effect” to help mitigate bias through embodied experiences in VR (Yee and Bailenson, 2006), existing research features highly structured tests with predefined environments and interactions (Liu, 2023). While we hope for the prosocial benefit to extend, further research in unstructured SVR environments should explore this further. The reasons a participant chose to “inhabit” another race or gender was not always clear. For example, P37 (a Hispanic man) said: “I like to be things that i are not IRL, like muscular or tall or a cat or a girl, something diferent.” SVR environments lack the direct structuring and scaffolding for any of the reflexive questions of “inhabiting”

another identity, as discussed by Nakamura (2020). Even with good intentions to understand one's own bias or privilege, it is also a privileged subject position to imagine that the experiential knowledge of briefly using an avatar is equivalent to lived experience. Future work may examine intentions more directly, but the cavalier approach observed in this work suggests that some SVR users are not adequately considering the problematic use of avatars that might otherwise be used by people in non-dominant groups.

Our participants' descriptions of instances where they felt uncomfortable or unsafe in SVR underscored how a "virtual" experience does not always mean a "safe" one. One complicating factor is that the meaning of "safety" varies widely across individuals and groups. While this can be linked to research that has shown that individual users' ideas of what constitutes online "harassment" are both subjective and highly personal (Blackwell et al., 2019), there were stark differences in the situations causing users from dominant groups to feel unsafe or uncomfortable compared to those described by individuals from historically marginalized groups. Men described being annoyed or uncomfortable in situations that impacted the quality of their experience (e.g., loud noises, obnoxious users, interruptions), whereas women, people of colour, and non-binary participants all shared situations that often related to other users questioning or challenging their identity, or to protect themselves from intentional acts of virtual abuse and harassment (e.g., inappropriate questions, sexual innuendo, non-consensual virtual touch).

Similarly, the ability to ignore threats or other issues that appear in SVR is a direct outcome of the privilege that dominant groups possess. Our data offered another reminder that virtual or digital environments often reproduce the same patterns of oppression that historically marginalized groups face in their everyday physical existence (Phillips, 2016). These replicated forms of power imbalances are especially necessary to consider due to the embodied facets of SVR, as greater embodiment, presence, and immersion can lead to more intense experiences of harassment (Freeman et al., 2022b). This suggests significant barriers to participation, with marginalized individuals further marginalized by the social and technological dynamics within these spaces, and by the need to adapt to the limited technological options to avoid these experiences. Yet highlighting how marginalized groups use these tools also shows important resistance in these spaces, with these accounts providing evidence of people leveraging available tools to reassert control and agency within virtual environments.

While a surface-level interpretation of the data might show that many of the participants felt empowered by the relative anonymity of SVR, or that they enjoy the opportunities to embody and customize avatars, or that they see new opportunities for self-expression, again the contrasts in experience point to opportunities to identify meaningful interventions. For example, prior research has suggested that anonymity, as a psychological state, may produce a sense of self-disinhibition (Suler, 2004) within virtual spaces such as SVR. For members of historically marginalized groups, the relative anonymity of SVR was not a license to exert power over others as it was with men in our sample; instead, they were empowered to participate in SVR spaces and seek out opportunities for self-expression. As with previous work (e.g., Freeman and Maloney, 2021), we observed a high-level tendency

among these participants to prefer avatars that were consistent with their physical selves. Nascent work on look-alike avatars (e.g., Frampton-Clerk and Oyekoya, 2022; Sonia et al., 2023) suggests that going beyond a visual likeness with one's avatar to actually having accurate representations of facial expressions can impact the perceived realism of an SVR experience. Although our data suggests that people who are otherwise poorly represented in digital spaces may prefer look-alike avatars so that they may better represent themselves, this raises questions of privacy since this often involves scanning and storing of facial data. Just as facial recognition surveillance disproportionately targets racialized individuals (Crockford, 2020), we also see a social surveillance and a policing of identity for those very same SVR users that find joy in representing their true selves online.

Given the reported associations between the ways that non-dominant groups align their real selves and their avatar representations, and the extent of related affective experiences (such as the gender euphoria described by some participants in our sample), we might extend considerations for the important role that SVR spaces might play for historically marginalized communities, such as the LGBTQ+ community as investigated by Walker and DeVito (2020). While our data shows that these participants still lack adequate customization options to appropriately represent their identity, interpreting these results in relation to work by To et al. (2023) offers the reminder not only to better facilitate these experiences, but also to document and highlight the positive ways that specific communities are finding joy and "flourishing" within SVR.

5.2 Recommendations and implications for future work

Throughout this research, several opportunities for further investigation arose, which we summarize below.

What are the norms in SVR subcommunities and how do they form? Previous work shows how understanding the formation of norms for appropriate behaviour is particularly challenging in VR environments (Blackwell et al., 2019). Our results provide insight into these questions by showing how dominant groups reenact and reassert their privilege by leveraging the platform's affordances. However, any remedial measures must consider non-dominant communities' experiences. For example, removing the anonymity of these spaces would be insufficient because it is also a tool for empowerment and self-expression. However, differences in the use of safety features point to opportunities to offer a greater consistency in the ways that safety and reporting features are implemented across platforms so that users do not have to re-learn these affordances for each new SVR environment. Doing this work requires active participation and collaboration between the users experiencing these forms of harm and the researchers examining these spaces.

What can we learn from a more holistic and more nuanced consideration of intersectional identities in SVR? In future research, it is necessary to include more identifiers in the analysis along with race and gender to truly encompass an intersectional approach in understanding SVR experiences. This would allow us to examine SVR users' experiences and differences more accurately. This was

the case in our data for participants who held privilege in one area but not another (e.g., Black men, or White non-binary people). As we have noted previously, research examining specific subcommunities in which marginalized identities *are* the norm, such as those for LGBTQ+ folks (Acena and Freeman, 2021) and women (Schulenberg et al., 2023a), are an important first step, but additional considerations for intersecting identity markers can more broadly take into account the ways that experiences are shaped by power structures that are replicated in SVR.

How might we better celebrate, highlight, and facilitate experiences of positive self-expression in SVR? Several participants from historically marginalized groups described joyful, empowering, and revelatory experiences in SVR. Without dismissing the significant and disproportionate challenges these users continue to face within SVR environments, these experiences also provide an important counterpoint to accounts that only apply a “lens of deficit and damage” (To et al., 2023). According to our participants, a first step towards improving these experiences is to provide more options to customize avatars and accurately represent themselves within virtual spaces. This also echoes broader initiatives within virtual environments that challenge Whiteness as default, including A.M. Darke’s Open Source Afro Hair Library² which is an artist- and community-led library of 3D assets for more diverse representations of Blackness in digital media. Again, implementing such initiatives more broadly in SVR would be insufficient if they are not led by the communities that are leading these efforts.

5.3 Limitations

The findings of this study provide valuable insights into differences in SVR experiences, however, several limitations should be acknowledged.

Despite our intention to focus on a variety of interconnected identity markers, our study ultimately focused on only a few aspects of identity, primarily race and gender, which did not fully capture the intricacies of individual experiences in SVR and of a nuanced intersectional approach (Crenshaw, 1991; Schlesinger et al., 2017; Thomas et al., 2018; Wong-Villacres et al., 2018). It is also essential to recognize that some participants may not feel comfortable sharing aspects of their identity, and the context of the survey in which this information is solicited can significantly impact responses. Based on information included in some participant responses, we were occasionally able to consider factors such as sexuality, age, and mental health as contributors to individual experiences, but this was not systematic and there were many resulting gaps in our examination of intersecting identity markers. One example of such a gap is that we may have trans participants included in our broad gender categories, but whose social experiences differ from those of the cisgender participants. As we discussed above, there is more nuance to be explored as each person has aspects of their identity that hold more social power and others that hold less; collecting and reporting on this data would facilitate engagement with a spectrum of power dynamics rather than a binary dominant/non-dominant model.

In this research, we did not specifically ask questions about ability/disability, a dimension that requires more attention in VR (Gerling et al., 2022). Recent research on physical disability and VR by Mott et al. (2020) provides a rich account of experiences among a small group of participants, and highlights implications pertaining to both VR hardware and software for people with limited mobility. Collecting data on these types of experiences on a larger scale would not only contribute to a growing body of literature on accessibility, disability, and VR, but also would have assisted with our overall interpretation of SVR experiences. These considerations could extend to hardware and software, as well as the effects of representation and the social characteristics of SVR interactions. Future research could benefit from exploring this aspect more comprehensively to gain a deeper understanding of, for example, the intricacies of communication, representation, and embodied interaction in SVR.

While we collected data related to annual income (in USD), we did not analyze for socioeconomic status due to a combination of factors: first, in our survey design our questions were worded such that we did not specify to participants whether to provide gross or net income, household income or individual income. Second, class can be considered with an intercategorical approach, taking into account how the effects of various intersecting identity factors may be more or less pronounced in different locations (Schlesinger et al., 2017). Our initial sample included participants from 15 different countries, and the definition of “class” varies between and within each of these areas along national and local lines. These limitations underscore the need for continued investigation into the complex dynamics of SVR experiences to offer a more comprehensive and culturally sensitive perspective.

Similarly, the participants in our study were drawn from diverse geographic locations around the world. While this global diversity enriched our research by extending beyond North America and Europe, it also presented a challenge in contextualizing participants’ experiences based on their specific cultural backgrounds or other related experiences. The lack of cultural context may limit the generalizability of our findings and highlight the need for further research that delves into the cultural nuances of SVR experiences. Our aim was to recruit a broad sample to offer comparisons that could provide a nuanced reading of the emerging literature on users’ attitudes, behaviours, and experiences in SVR. As such, we offer high-level descriptions of phenomena only. The categories by which we perform these comparisons are socially constructed, and assigning a single label fails to acknowledge the diversity of communities. No single participant “speaks for” e.g., women or Black people. Future research should move from our macro, intercommunity comparisons into a more nuanced intracommunity perspective; for example, investigating experiential disparities within and across disability communities, which must navigate broader societal pressures in tandem with internal community tensions.

As reported in Section 3.1, participant ethnicity was collected in a constrained way that may have simplified the actual heterogeneity of the sample. Suggestions from our institutional research ethics board were incorporated for collecting demographic information in the overall survey, and because the survey was part of a larger project on SVR, it was not tuned for the aims of this particular article. For example, the category “Asian” is insufficient to describe people from a continent representing over half the world’s population (interestingly, although we did not set any geographical restrictions for recruitment in Prolific, we had no participation from within Asian countries). A more detailed

² <https://afrohairlibrary.org/>

approach to collecting ethnicity data is warranted for this type of research. Although we note the number of insights already gleaned from this stage of the research is an important first step, we do believe that a more granular and considered approach would open up further opportunities in our analysis to explore more dynamic categorizations of identity. Recent work by [Chen et al. \(2023\)](#) offers advice for human-computer interaction researchers on collecting race and ethnicity data in a more deliberate way.

Finally, in doing critical and intersectional work, it is important to ensure that researchers represent the diverse populations they study to gain a deeper understanding ([Freeman et al., 2022a](#)). While we diversified our team's perspectives at the coding stage, the researchers leading and acquiring funding for this research also benefit from their proximity to dominant power structures. This can lead to important gaps ranging from study design to analysis. While the considerations we outline above offer opportunities to ensure a more inclusive and accurate portrayal of the complex phenomena under examination, as [Freeman et al. \(2022b\)](#) suggest, research teams can do more work to be representative of the populations they study. This is true in the case of our own research team as well. Our own approach may not fully account for variations in cultural perspectives and ethical considerations, and future studies should strive to incorporate a more globally informed view.

6 Conclusion

SVR has produced novel opportunities for social interaction, community building, identity expression, and immersive experiences while also exposing challenges for their users. This paper argues that SVR, like any technological innovation, can reproduce existing inequalities and power imbalances that are prevalent in society. Drawing on intersectional perspectives, we explore fundamental disparities between dominant and non-dominant groups concerning some intersecting facets of identity, such as race and gender. The study underscores the impact of anonymity, avatar customization, representation, and usage practices, all of which are profoundly influenced by social and cultural factors. Our data shows that dominant groups often carry their privileges into virtual worlds, while non-dominant groups must navigate these environments with heightened awareness and vulnerability. To foster a more inclusive and equitable SVR landscape, it is crucial to address these disparities and promote a greater understanding of the complex interplay between technology, identity, and power dynamics. As SVR continues to evolve, this critical examination serves as a foundational step toward ensuring that these immersive platforms are accessible, safe, and empowering for all users.

Data availability statement

The original contributions presented in the study are included in the article/[supplementary material](#), further inquiries can be directed to EK, eugene.kukshinov@uwaterloo.ca.

Ethics statement

The studies involving humans were approved by University of Waterloo Research Ethics Boards, which are composed in accordance with, and carry out their functions and operate in a manner consistent with, the institution's guidelines for research with human participants, the Tri-Council Policy Statement for the Ethical Conduct for Research Involving Humans (TCPS, 2nd edition), International Conference on Harmonization: Good Clinical Practice (ICH-GCP), the Ontario Personal Health Information Protection Act (PHIPA), the applicable laws and regulations of the province of Ontario. Both Boards are registered with the U.S. Department of Health and Human Services under the Federal Wide Assurance, FWA00021410, and IRB registration number IRB00002419 (HREB) and IRB00007409 (CREB). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

CM: Writing—original draft, Writing—review and editing, Conceptualization, Methodology. EK: Writing—original draft, Writing—review and editing, Conceptualization, Methodology. DH: Funding acquisition, Supervision, Writing—review and editing. TP: Formal Analysis, Writing—review and editing. NM: Formal Analysis, Writing—review and editing. LN: Funding acquisition, Writing—review and editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/frvir.2024.1351794/full#supplementary-material>

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