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A VIRTUAL SAFE SPACE? AN APPROACH OF INTERSECTIONALITY AND SOCIAL IDENTITY TO BEHAVIOR IN VIRTUAL ENVIRONMENTS

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ABSTRACT

Health measures in response to the Covid-19 pandemic have confined millions to their homes and minimized social contacts. During this period, a significant proportion of social activities—including work, education, and recreation—moved to digital media platforms. Among these platforms, social virtual reality (VR) has gained importance offering “alternative” realities in which users can engage with others, participate in cultural and sports events, complete education-related activities, and (mental) health treatments, to name but a few functions. With the increasing popularity of social VR and the expanding range of activities these platforms can host, hitherto-unexplored questions arise regarding social interactions and the representation of virtual bodies. Therefore, the objective of this paper is to outline a potential framework for assessing how avatars that represent various body types and demographic characteristics, such as gender or ethnicity, may impact behaviors and identity. The paper presents a theoretical study that combines social identity theory and theories of intersectionality and applies them to the case of digitally created human-like bodies. By doing this, it illuminates the challenges and benefits virtual reality platforms and digital body representations hold—including remote social interactions due to social isolation and social dynamics based on online personas.

Keywords: social virtual reality, intersectionality, social identity, virtual body, avatars.

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1 INTRODUCTION

Health measures in response to the Covid-19 pandemic have confined millions to their homes and minimized social contacts. This strengthened mediated communication and what Slater (2002) labels as media users' *disembedded* presence—social interactions where physical time and space are homogenized into a simultaneous online presence, akin to Marshall McLuhan's (1964) global village. During this period, a significant proportion of social activities—including work, education, and recreation—moved to digital media platforms. Among these platforms, extended (virtual, augmented, and mixed) reality technologies (collectively: XR) have gained importance offering “alternative” realities in which users can engage with others, participate in cultural and sports events, complete education-related activities, and (mental) health treatments, to name but a few functions. Some of the most widely publicized examples from this period include XR events, such as scientific conferences (e.g., the Immersive Learning Research Network's virtual conferences), museum tours (e.g., by Rijksmuseum and Museum of Modern Art, New York), concerts (e.g., by Lindsey Stirling and Billie Eilish), and performances (e.g., at Metropolitan Opera).

During such a global health crisis, new living circumstances can be managed using digital media and virtual communication channels (Wiederhold 2020; Siani and Marley 2021). However, the effects of the Covid-19 pandemic on digital media consumption notwithstanding, it is perhaps safe to declare that XR platforms' underlying popularity is also important from the standpoint of other phenomena. For instance, they provide communication channels and environments for various activities while decreasing carbon footprints of traveling. XR platforms can also offer the means for socializing for those in temporary or permanent isolation (e.g., hospitalized people) as well as for people with limited mobility, such as those living with disabilities.

Regarding the growing application of XR platforms and their advantages in closing geographic gaps and presenting embodied experiences, a note on technology adoption is in order. It is incontestable that digital media is embedded into Western populations' social lives through the widespread use of various social media platforms and messaging apps. At the same time, while statistical data presents the increase of extended reality's market value, accessibility to technology still shows mixed trends for the general public (Alsop 2021a, 2021b, 2021c). On the one hand, some devices to access XR content, such as head-mounted displays (virtual reality headsets), are often costly and the hardware may be bulky, uncomfortable, and complicated to use. This implies the technology's constraints on everyday application. On the other hand, however, XR content is often available on ubiquitous appliances, such as computers or smartphones that are present in many households. For instance, virtual reality spaces (e.g., AltspaceVR) are generally based on immersive systems and applications but some of them are configured even for two-dimensional access on computers or portable smart devices. Similarly, some

augmented reality (AR) contents—for example, AR filters that can create virtual bodies out of users’ self-images—are designed for smartphones and tablets and are implemented in a wide range of social media and communication applications. The AR capacity of mobile devices is perhaps the most significant factor responsible for XR’s collective pervasiveness.

This paper focuses on the particular case of social virtual reality (VR), an internet-based telepresence¹ platform for social interactions. Social VR is operated by immersive technology and presents three-dimensional computer-generated environments (Dzardanova, Kasapakis and Gavalas 2018; McVeigh-Schultz et al. 2018; McVeigh-Schultz, Kolesnichenko and Isbister 2019). Social VR platforms can host a wide range of real-time activities in which users take part in the form of customizable avatars² who can interact with each other in a shared space through voice conversations or live chat. These activities can be small (private) and large scale (public)—anything from friendly get-togethers, work meetings, and home movie nights to group fitness classes, lectures, and arena concerts (see Figures 1–2).

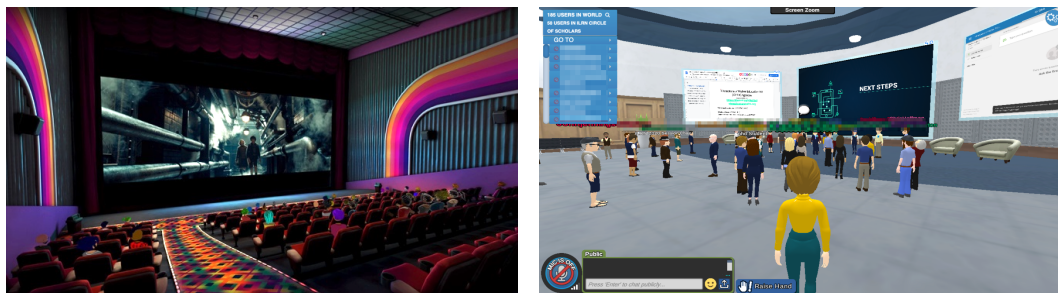


Figure 1: A virtual cinema screening in Bigscreen VR. Image source: <https://www.facebook.com/bigscreenvr>. Figure 2: The Immersive Learning Research Network’s (iLRN) virtual campus by Virbela. Screenshot by the author.

With the increasing popularity of social VR and the expanding range of activities these platforms can host, hitherto-unexplored questions arise regarding social interactions and the representation of virtual bodies. Therefore, the objective of this paper is to outline a potential framework for studying the links between the digital manifestation of body characteristics and social behavior in extended reality environments. It focuses on how the graphical representation of users epitomizing various body types and demographic characteristics—such as gender or ethnicity—may impact behaviors and identity. The paper presents a theoretical study that applies theories related to the studies of social identities (particularly, social identity theory and intersectionality) to the case of digitally created human-like bodies. By

¹ Telepresence, a term introduced by cognitive scientist Marvin Minsky (1980), refers to remote participation through telecommunication tools. In virtual reality and human–computer interaction studies, it demonstrates the extent to which a virtual environment can induce a feeling of “being there.”

² An avatar in an online word—including social VR—denotes the two or three-dimensional graphical representations of a user in that specific digital space.

doing this, it aims to illuminate the challenges and benefits extended reality platforms and digital body representations hold—including remote social interactions due to social isolation and social dynamics based on online personas.

The study builds on a theoretical framework of social identity theory and intersectionality. Social identity theory (SIT) is used for predicting in-group and intergroup behavior: a social group to which an individual belongs defines their relations to members and non-members (Tajfel and Turner 1986; Huddy 2001; Hogg 2006). Here, I build on the thesis that interactions with others depend on identifications with social groups—keeping in mind that users' online identities might differ from real-life identities. The problem of such malleable digital identities links SIT to intersectionality, which highlights an individual's multiple identities (based on, for instance, the intersections of gender and ethnicity) and the way these identities include or exclude them from social groups (Crenshaw 1989, 1991; Dill and Zambrana 2009). Although, intersectionality does not only contextualize the factors for social advantages and oppression based on the combination of two or more demographic characteristics (see Jones 2003). Besides being a framework of analysis, it also serves as a tool for promoting political change in national, transnational, and global contexts (see Ngan-Ling Chow, Texler Segal and Tan 2011).

Social identity theory and intersectionality are rarely linked because of their epistemological and methodological differences (see Warner 2008; Taksa, Powell and Jayasinghe 2015): while SIT highlights cognitive processes that shape inter and in-group relations, intersectionality observes social and political statuses—often from a feminist perspective. This combined theoretical framework, however, allows for an analysis of social identities both from internal and external angles; that is, through the questions of self-identification and autonomous behavior as well as group identification and peer pressure, respectively.

The analysis begins with an in-depth discussion of the theoretical framework based on the amalgam of social identity theory and intersectionality. I will argue for the combination of these two distinct approaches and explicate their potential uses for studies of online and virtual behavior in relation to extended reality. Then, I turn to the practical, ethical, and aesthetic aspects of virtual bodies. Following the discussion of body representations, the paper will conclude by presenting potential behavioral patterns across social groups in social VR and arguing for the future directions of research based on its findings.

2 SOCIAL IDENTITIES ONLINE AND OFFLINE

Social identities are adaptable; one can assimilate with social groups chosen by or assigned to them. Studies of social identity from a social psychological point of view stem precisely from this point, namely, human behavior related to being part of or excluded from a group (Tajfel et al. 1971; Turner 1975; Tajfel and Turner 1979). The approach is based on Henri Tajfel's thesis of positive social identity:

recognizing one's own group and assigning positive values to it in comparison to other groups to achieve and maintain integrity (Tajfel 1972). This implies that allocating individuals into groups would make them identify themselves through their group membership rather than their individual values. According to Tajfel, the underlying process involves categorization, identification, and comparison, the latter of which eventually leads to positive distinctiveness (Turner and Reynolds 2016).

There are social, geopolitical, and cultural systems according to which individuals may be assigned to groups (Abrams and Hogg 1990, 2010): people can belong to groups based on their nationality, religion, sex and gender, sexual orientation, political view, interests, hobbies, and many other factors. These groups function according to internal rules that determine the range of included populations (the conditions of membership) and define certain norms regarding members' actions or even characteristics. For instance, a country's population is based on the place of living and an ethnic group's members may be defined by a common language, ways of expressions (e.g., dialect), or bodily characteristics (e.g., skin color). However, besides historical and organically constructed structures, group membership can derive from spontaneous connections between people, too. This means that one can identify oneself as part of a group of unfamiliar individuals that gathered, for instance, to watch a concert as much as being part of a nation with common history, social, and cultural formulae.

Building on theories regarding identification with a group, Turner and Reynolds (2016) note the importance of interpersonal and intergroup behavior—the engine to personal and social identities. In this regard, we must consider the factors that would define and can be used to predict an individual's attitude and roles. These factors include one's status within the group, attitudes toward group members, and the group's perceived legitimacy and stability (Tajfel and Turner 1979, 1986). Such an approach to group psychology is suitable to explain conflicts and behaviors based on prejudices even in online spheres: perceiving one's position within the context of a group can affect perceptions of others.

Online systems function according to specific standards that create frameworks to shape communities, behaviors, as well as the aesthetic and functional elements of spaces, tools, and participants. These frameworks form social structures and interactions that define participants' group-related identities. It may be compelling to observe these identities as extensions or mediated manifestations of real-life identities; but as previous research suggests (and as many of the cases examined along this essay illustrate), online and offline presence form identities and social behaviors on separate grounds (Slater 2002; Orgad 2009; van Zoonen 2013). Highlighting this, Slater (2002) argues that online identities can momentarily replace real-life identities. Correspondingly, Orgad (2009) claims that online and offline identities can be equally "real:" one is not inherently more reliable in terms of social interactions or social identities than the other. Digital spheres have evolved and transformed since the moments these studies freeze; the current generation of

social interaction platforms enables increasingly high sensory immersive experiences and realistic representations. Yet, I argue for the relevance of defining the parallels between online and offline social identities particularly in relation to XR. Moreover, in the lack of a coherent social and technological ecosystem or unified frameworks and practices in online social interactions, it is important to observe the social constructs that specific technologies—such as extended reality—afford, dictate, or even hinder.

3 AN INTERSECTIONAL APPROACH TO DIGITAL BEHAVIOR

In internet-based communities, online identities characterize group memberships and group-related attitudes. An online identity may have varying correspondence to offline (physical-world) identities and discrepancies between these can be based on an online community's social structure, a platform's technical affordances, or personal choices (e.g., choosing to hide or disclose certain characteristics or demographic markers).

Interactions in social VR spaces are executed through avatars with different levels of fidelity, detail, or communication capacities depending on the particular space's design principles or purposes. For instance, in Virbela, a social virtual reality platform for hosting professional events, avatar representations are tied to business demeanor and expressions, and users are encouraged to disclose their real-life full names and professional affiliations. Contrarily, AltspaceVR, which involves popular culture events and free-time activities, allows for more personal freedom in avatar representation and communication. Users' social identities can be represented by "imaginative combinations" (AltspaceVR 2020, par. 3): the platform supports the freedom of body representation by offering a wide range of accessories as well as body types and skin tones (including alternative tones, such as pink or green) to support curiosity and comfort in expressing one's identities.

An online identity is based on a constructed persona that, besides visual (body) representations, consists of a variety of verbal and textual elements, such as name or moniker and personal information. As introduced above, this persona (a "technoself," see Luppardini 2012) allows for a great degree of experimentation (Code and Zap 2009) and, as such, corresponds to, complements, or replaces—or intentionally masks—real-life identities (van Zoonen 2013; Marciano 2014). For instance, one's avatar may conform to gender identifiers that deviate from the user's own gender. Or, the avatar can show different ethnicity or age-related characteristics than the user themselves. This may disembodify a user from their offline identities and potentially lead to misrepresentation or misinterpretation of social characteristics. However, it also enables dynamic transitions between online social groups and greater flexibility of self-identities tied to group memberships.

Such malleability of digital identities somewhat opposes notions related to identities formed by external forces (including social, geopolitical, and cultural

systems), while it draws attention to contexts of social interactions and their effects on one's identities. This suggests that demographic markers or social categories of any sort are inadequate to define one's social identities not simply because individual identities may shape in order to adapt to collective identities and group memberships, but because they are largely context-dependent.

The question of context as a driving force behind individual and collective identities links virtual identities to the approach of intersectionality. SIT does not question the overlaps between social groups—that individuals can belong to multiple groups at the same time and identify with each of them (Hogg 2006).³ Rather, as Hogg argues, the most *salient* identity governs mental processes, where salience is dependent on the momentary social context. Although this is apt for our case, investigations of behaviors in extended reality and other online spaces require a complementary approach. SIT is effective for assessing cognitive processes that define the ways in which individuals perceive social relations through their memberships in (or exclusion from) groups. Intersectionality, in contrast, provides an analytical framework for estimating the effects of apparent characteristics of digital bodies that could define an individual's (avatar's) potential privileges and disadvantages within particular online communities.

Intersectionality observes power structures to define social dynamics across individuals and groups (Dill and Zambrana 2009). Unlike SIT that operates on the level of group dynamics, self-enhancement, and social comparison, intersectionality presents the role of demographic, apparent, and other characteristics of humans on a societal level (Taksa, Powell and Jayasinghe 2015). Intersectionality has a base in feminist studies, more specifically the black feminist movements, which defined the frameworks of systematic oppression based on intersecting social identities.⁴ This base steers the approach toward the political and social means of inclusion and discrimination: it concerns how different identities and memberships in different social groups (that is, the combination thereof) would reinforce discrimination (Davis 2008). This calls attention to the combined effects of multiple identities or social-group memberships; for example, when women of minority groups (e.g., black women) are discriminated against or are victims of abuse based on both their gender and race (Crenshaw 1991).

There have been attempts to connect SIT and intersectionality and integrate them theoretically or methodologically. For instance, SIT's salience concept mentioned above was applied to the question of inclusion and discrimination

³ Although the recent scholarship of social identity theory allows for observing an individual's multiple social identities based on group memberships, early definitions by Tajfel proclaimed that social identity is tied to an individual. Thus, one can only establish a single identity based on their knowledge deriving from group membership(s) (Tajfel 1981).

⁴ Black feminism criticized mainstream feminist movements obscuring marginalized groups based on race, class, immigrant status, and others. According to the 1977 Combahee River Collective Statement, black feminism highlights how black women's "sexual identity combined with their racial identity [would] make their whole life situation and the focus of their political struggles unique" (Combahee River Collective 2000, p. 265; see also, Taylor 2017).

highlighting that the most salient identity (e.g., race *or* gender) in certain social contexts defines behaviors toward an individual more than other identities or characteristics (Holvino 2012). However, as Taksa, Powell, and Jayasinghe (2015) note, the two approaches' integration may do even more: it could “ensure the self-concept is understood as more complex than a neat package of atomistic identities waiting to be awakened by the appropriate salience stimulus” (Taksa, Powell and Jayasinghe 2015, p. 523; on the critique of atomism, see also Geerts and van der Tuin 2013 and Puar 2012).

As it was introduced earlier, online identities are socially constructed and context-dependent rather than simply being the mediation of offline identities (which are not least constructed and context-dependent). This approximates the Goffmanian concept of contexts guiding identity; the idea that one acts and presents oneself differently in different social situations (Goffman 1956, 1986). Additionally, the forms of social interactions and identity presentation (one's way of presenting themselves) both off- and online depend also on the audience (Marwick and boyd 2011).⁵ Yet, as argued above, accommodating identities to social scenarios and groups on extended reality platforms may go beyond behavior. It also concerns the choices in representing one's identity and potential fit to a social system through a digital persona and body. For instance, the aforementioned social VR platform, AltspaceVR allows for a wide variety of options for forming an avatar's body shape, skin color, and overall appearance and it is openly declared that these options serve users' safety and comfort when using the platform (AltspaceVR 2020). Avatars appearing with blue, green, or other unlikely skin tones may presumably eliminate biases based on real-life race (manifested by skin color) in the virtual world and foreground other elements that conform to (or contravene) a community's social structure and its expectations from its members.

As Marwick (2013) argues, social behavior within online communities is based not only on how a user decides to present themselves but also on structural factors, such as a platform's technical mechanisms and the enabled forms of interactions. This account highlights that online platforms' behavioral frameworks and the interaction mechanisms afforded by a given technology (e.g., text, sound, image, and the combination of these) delimit the amount of information regarding one's apparent identifying characteristics other users can access. For example, participation in professional online networks, such as Virbela, would require sharing verifiable personal information, whereas, on other platforms, one's look, name, or other personal identifiers are often buried under fictional identities.

The lack of unambiguous demographic markers—that would otherwise define power structures in offline social interactions—compels an investigation of users' representation in online spheres. Thus, before analyzing the effects of social

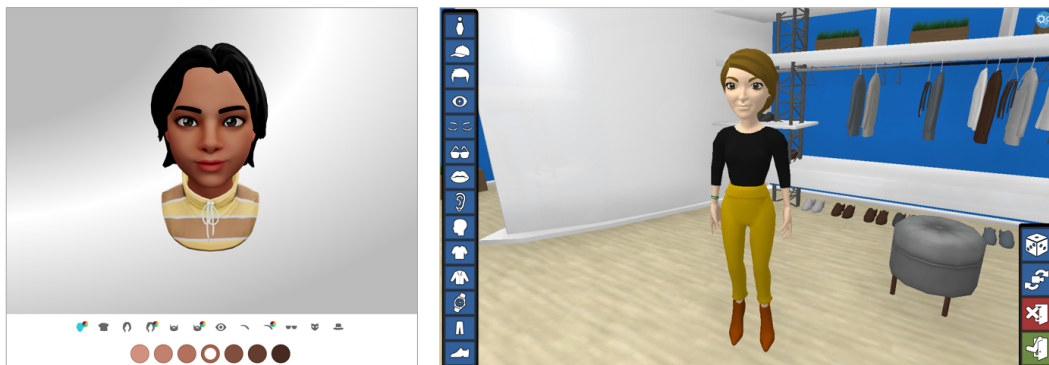
⁵ As Marwick and boyd (2011) argue, social interactions are often complicated by the merging of different audiences. In online spheres, information and messages may travel quickly across audiences (e.g., by using the retweet function on Twitter) and the combination of different audiences reflects differently on identity presentations and the original source's identity.

identities in virtual reality, I turn to the issue of virtual bodies. This includes the frameworks of customizations and sensory representations that may connect or distance users from their physical-life selves, prompt discriminatory or privileged treatments, and define behaviors within and across groups.

4 VIRTUAL BODIES

Customizations of a user's body representation on social VR platforms (and even when using AR filters) often enable choosing the amount of self-exposure. This means that users are generally free to determine how they want to present themselves and how much they want to disclose of their real-life selves and apparent characteristics that otherwise may define their social or political identities. This freedom of choice can affect social dynamics in virtual spaces and raises questions of body representation as well as individuals' relationships with others of different social groups represented by bodily characteristics or clothing.

Avatars used in social VR are generally designed using basic pre-existing templates of gender, skin and hair color, clothing, and other features (see Figures 3–4). Some platforms offer customizations to make one's avatar look very much like them: by uploading a self-image (in more advanced cases, by performing a 3D scan), the avatar can become a life-like or even a photorealistic depiction of the user. These solutions have been praised for authenticity, for the ways they increase the sense of embodied experiences, and for avatars being adorned with a personality (Selvet 2016; Rubin 2019).



Figures 3–4: Avatar customization platforms by ReadyPlayerMe and Virbela. Screenshots by the author.

While realistic avatars that correspond to users' real-life bodies have started to replace the less elaborate depictions on many social virtual reality platforms (Faulkner 2021), avatars of floating busts with limited customizability are still common. Avatars' elaborateness often depends on how vital the role of virtual bodies and bodily characteristics are in completing the activities a platform affords. For example, realistic avatars developed to be used in the Facebook Metaverse (see Robertson 2021) not only look like photographic images of users, but eye and face

tracking also allow for simulating eye movements and mimicry for increasing fidelity in virtual communication. ReadyPlayerMe renders photos into digital faces or bodies that hold some identifiable characteristics (Figure 5). Contrarily, avatars in Bigscreen VR, a virtual reality application for simulating movie theaters and organizing social movie screenings, are limited to basic features, such as skin and hair color and gender (see Figure 6). The reason behind the latter is perhaps that users mainly just see their own avatars' hands and rarely their full bodies and that the application is designed for movie watching implying that attention is directed to the screen rather than to each other's avatars. Yet another example is the appearance of avatars in the virtual worlds offered by Second Life, where one can easily be represented as a fictional character (for instance, a vampire) or an animal.



Figure 5: An avatar automatically created from an uploaded image in ReadyPlayerMe. Figure 6: An avatar customized for the same parameters using the built-in options in Bigscreen VR. Screenshots by the author.

According to the above, photorealistic representation—on one end of the spectrum of life-like vs. cartoonish representation of users in extended reality spaces—can increase embodied experiences compared to those with little or no correspondence to the user's own body. This means that the more a virtual body visually corresponds to a physical body in its motion or appearance, the stronger the sensation of ownership of the represented body (i.e., the sensation that “this is my body”) will be (see Slater et al. 2008; Slater 2009; Lugin, Latt and Latoschik 2015). In addition, avatar characteristics and users' verbal and non-verbal communication through them can positively affect social engagement (Latoschik et al. 2019; Sykownik, Emmerich and Masuch 2020). Latoschik and colleagues (2017) provide evidence that avatar realism impacts the quality of social interactions: when a user interacts with photorealistic avatars, they develop a higher sense of ownership of their own body than when they interact with a wooden mannequin and this affects engagement with others.

Graphic realism in digital bodies' appearance tends to increase the sensation of interacting with human agents as opposed to computer-generated ones. In contrast, non-realistic (or at least non-photorealistic) representations of human bodies in virtual environments are less likely to lead to anthropomorphism, the

attribution of human qualities to virtual bodies. Thus, users can attribute human traits to a figure based on how it looks. According to the theories related to the uncanny valley, a human-like object or figure (e.g., robot or animated character) evokes an uncanny sensation if it incompletely resembles a real human and its eeriness decreases only if this resemblance shifts either toward a “perfect” human or to non-humanoid representation (Mori, MacDorman and Kageki 2012). Avatars in virtual reality spaces hold a high level of human traits being operated by and linked to human users. And, although they may fall into the uncanny valley them being too human-like but not human enough, empirical results show that avatars’ *exact* appearance has marginal effects on users’ perception of them as strange, eerie, or uncanny (Latoschik et al. 2017). This may suggest that users of a given extended reality system accept the aesthetics of the platform—including the design, elaborateness, and fidelity of the environment and figures. Verbal and non-verbal interactions with fellow users through their digital bodies can also lead to the acceptance of these figures representing humans (see Patel and MacDorman 2015) and can compensate for the lack or deficiency of social cues (Roth et al. 2016).

The spectrum of realistic–unrealistic (or rather, life-like–cartoonish) representations is perhaps as broad as many different digital platforms exist; and, in the case of social virtual reality, a high level of realism is expected generally from platforms that afford activities similar to offline ones (Maloney and Freeman 2020). For instance, video gaming platforms that involve engagement with fictional worlds may be less realistic, while those that involve social gatherings and live events (such as Oculus Venues or Virbela) would demand higher expectations of realism. Yet, what is a general tendency among social VR and avatar-designing applications (e.g., ReadyPlayerMe) in the early 2020s is the limited range of choices for customizations. As introduced above, avatar designing functions in the majority of the mentioned applications or platforms allow some options for choosing one’s gender (or choosing “unspecified”), skin color, hair, and offer basic items of clothing. These, however, often follow stereotypical representations, for example, a female body is petite, and a male body is muscly, and barely cover the range of bodily characteristics of everyday humans. Body type, including size and disabilities, are rarely among the customizable features; body shape is often tied only to the options for gender. Another striking limitation is the apparent age of avatars: representing characteristics of people of different ages are limited to settings of hair color or accessories, such as glasses. For example, when uploading a photo of an elderly woman to ReadyPlayerMe’s avatar designing site, the system generates an avatar with a face that appears the same way as a teenager’s face only with gray hair.

Clothing can be a strong identifier for demographic characteristics (e.g., gender, class) and can signal subcultures, interests, or hobbies on which social identities and group memberships can be based. The options for clothing items (clothes, shoes, accessories) or other objects such as sports equipment or crutches are also often toned down with little options for customization. The range of these items depends on the profile or target audience of a given platform. For example,

Virbela, which is marketed as a social virtual reality application for professional uses, offers business-like attires, whereas elsewhere (e.g., ReadyPlayerMe, WaveXR) avatars can more likely be adorned with a wide range of extravagant items, such as angel wings or space suits, than with traditional (folk) garments and accessories.

The limitations in customizing one’s avatar to match their real-life looks and social identifiers inherently lead to fake representations—not only by choice but also because of necessity. While an in-depth ethnographic review of avatars and their elaborateness is out of the scope of this paper, it is nevertheless important to recognize users’ *disembodied embodied* presence in online spaces before turning to the potential impacts of body representation on social behavior. Disembodied, because a virtual body may display simplified, artificial, or unrealistic characteristics. Embodied, because one takes ownership of this new body as the vessel for self-presentation, communication, and, therefore, identity.

In the following, I will turn to potential social behaviors and power structures in virtual reality spheres and the ways in which users with avatars of various appearances can be subjected to varying degrees of discrimination.

5 SOCIAL BEHAVIOR IN VIRTUAL SOCIAL PLATFORMS

Extended reality platforms create what Ceuterick (2021) calls “transitional or liminal spaces” between physical and virtual worlds (p. 93). In virtual environments, a user’s physical body functions simultaneously with another, digital body. A user’s body representation is generally related to the audience (e.g., fellow users) and can be adapted to one’s personal narrative and communication strategies. The use of avatars may impact the connection (or even divide) between digital and physical-world identities and transport identity-related issues to physical realms: for example, avatars can create false identities and body images and can negatively impact trust and interpersonal connections (see Agar 2019).

The virtual body used to represent a user during social interactions in extended reality is an entity armored with the user’s intentions and personality, but its appearance and actions are also defined by the technological and design elements of a given platform. In other words, one’s social identity in extended reality spaces is an amalgam of their real-life and virtual identities defined by group memberships, power structures (e.g., dominance, discrimination), and an XR platform’s interaction mechanisms and affordances for designing one’s profiles. For example, in Bigscreen VR, where avatars are moderately customizable (and play little role in completing activities), one’s social identity is largely conditional to groups defined by shared interests or momentary omnipresence—similar to real-life scenarios. Social structures in such an environment form based on movie preferences and attendance of a specific screening; inclusion is tied to the spatial and temporal boundaries of a screening room and the screening itself. Users attending a specific screening share a value system (e.g., interests, knowledge) and experiences (e.g., the movie and audience experience), and—ideally—adhere to the social frameworks of

movie screenings. Contrarily, Virbela encourages users to tailor their profiles and avatars to match their real-life selves, including looks or job descriptions. This means that an avatar (with a nametag and company name; see Figure 2) is likely an authentic identifier and—besides presence in a shared meeting room or lecture theater—is the base for forming social groups and defining memberships that may be followed upon outside of the virtual space.

Communities in social virtual reality involve geographically dispersed populations that are, thus, connected by a shared activity or interests. Groups of users in Bigscreen VR are connected by the act of watching a chosen movie, by their interests in viewership and a particular film. Others, in Virbela, may be connected by a shared workplace or work-related event, such as a conference. In Wave XR or AltspaceVR, people gather for a concert or other types of live events. In this sense, these communities are formed based on shared values that define the principles of membership (Abrams and Hogg 1990, 2010). For example, those who attend a specific virtual concert are likely to have similar tastes in music. Or, to look at it from another angle, they join the concert *because* they have similar tastes in music.⁶

Virtual spheres determine the frameworks of a given activity—from the sensory aspects to those of community behavior: based on the involved software and hardware, each social virtual reality platform affords certain visual, sonic, and tactile engagement, communication methods, and behavioral formulas as well as various levels of fidelity and avatar elaborateness. Thus, to summarize, the shared values and a virtual environment's or platform's affordances have the power to form a community, while geographic factors—that often define physical-world communities—have little prominence.

Based on social identity theory, the above factors—shared values, interests, and technical means—may lead to users' identification with and positive reinforcement of group values. Members of a community, that is, users who attend a particular event or are present in a particular virtual environment, accept the norms that form and define the community; the way avatars look (e.g., their fidelity), the way they interact (e.g., verbal, text-based interaction), the level of customization, and other technical, sensory, and communication-related aspects, such as bodily involvement, viewing perspectives, or language. Attending a virtual room for physical activities involves the user's physical body in a different way (i.e., by using body tracking or controllers) than watching a concert and a virtual movie theater demands different communication and behavioral standards than a sports venue.

Because of the variety of different social VR spaces, there is hardly a single *virtual identity* as much as there is no single virtual representation of a user (see above). Like offline social systems, virtual environments strongly define behavioral frameworks and a user's engagement and assimilation with an often spontaneously

⁶ It must be noted that the conditions of membership also include one's access and ability to operate a virtual world via virtual reality systems and equipment.

forming community. These identities may correspond to one's physical-world life: their access to XR technology, taste in music or movies, and—to some extent and certain cases—even their appearance. This returns us to the earlier discussion of social identities: an individual can identify as a member of several groups at once, while stronger ties to a community and more salient identities govern. Strong ties are generally formed over time; national identity, religion, and even gender identification involve cultural, social, and behavioral frameworks that one assimilates with over a broader period of time rather than establishing them spontaneously (Abrams and Hogg 2010). Saliency, on the other hand, is related to momentary scenarios, where the situation dictates which identities become dominant (Hogg 2006). Thus, saliency can be governed by a virtual environment's or activity's affordances. For instance, Bigscreen VR's profile and technical framework would highlight one's identity as a movie fan (or their preferences of certain genres, directors, and the like) over apparent bodily characteristics with its moderate avatar customization options. Whereas, in virtual worlds designed with more emphasis on socializing and networking with a wide range of avatar customizations, such as AltspaceVR or Second Life, appearance would play a more significant role in establishing or declining social connections.

While some cultural, social, and behavioral frameworks are translated between one's physical-world and virtual identities, it is not to be forgotten that an online identity is tied to a constructed persona. This constructed persona involves a certain appearance, characteristics, and behavior outlined by a particular XR platform and one's own personality, social roles, and/or personal choices (see Code and Zap 2009; Marciano 2014). There may be countless motivations and preferences behind such persona: as an illustration, according to the respondents of a qualitative study by Maloney and Freeman (2020), some users find comfort in hiding behind their virtual reality avatars, which maintain their anonymity and protect their real-life selves.

Masked real-life characteristics notwithstanding, virtual personas may induce discriminatory behavior toward members of different social groups. As Gray (2012) highlights, sanctions within communities are generally induced by the perception of deviant identity, characteristics, or behavior, where deviance refers to the lack of compliance with a community's norms. Gray argues that harassment in cyberspace (specifically, in the case of MMORPGs⁷) is frequently linked to users' perception of another user's virtual persona as well as to stereotypes related to race, ethnicity, and sexual orientation. And while such acts of harassment are generally responses to one's visible characteristics or communication, they may rapidly die out, perhaps because of the discrepancies between the virtual and real-life self and the quick and simple ways of customizations. In other words, since many digital platforms allow for customizations in users' virtual appearances, negative responses to one's avatar

⁷ Massively multiplayer online role-playing games, where players appear and complete quests in the form of a character.

or persona may be dissociated from their actual identities. Also, stigmatization is often prevented by opting for an avatar that conforms to a given virtual community's norms or the majority of its members.

The perception of deviance is largely based on visible information, the most striking source of such information being avatar appearance. This leads to two implications. First, that a user's avatar is the most important statement of their virtual (often fictional) identity in a virtual environment. This means that one's virtual social identity is expressed by their avatar's displayed demographic characteristics and appearance—be those chosen or something that corresponds to their physical body and identity. Users, therefore, may choose their identities in relation to the virtual community.

According to the second implication, the characteristics of a virtual body will determine the user's position within the community. In addition, the perceived identities, as well as the combination of these characteristics, will determine discrimination and privileges. Discrimination and privileges are based on the value system that forms a virtual community. While a specific race, gender, or even hairstyle or clothing is regarded as typical or accepted in some communities, it might appear deviant and be punished elsewhere. But since virtual characteristics are easily modifiable, strategies for acceptance and for adapting an online community's profile can include changing the deviant characteristics, such as skin color or gender. However, as Gray (2012) notes, users are rarely able to completely distance themselves from their real-world identities. While changing demographic or other bodily characteristics in social VR may foster compliance with a social group, it also raises ethical issues around the clash between virtual and physical-world identities. It may trivialize identity and allow for "trying on" the bodies of other (sometimes marginalized) groups without being aware of group members' actual lived experiences.

6 CONCLUSION

Considering the combined theoretical framework of social identity theory and intersectionality, I argue that digital behavior and identities modulate based on two main elements. Firstly, the technological affordances of social VR platforms—specifically the options for designing one's bodily representation. Secondly, a user's perception of an online community's characteristics, social structure, and expectations from members. According to this triangular system of identity, technology, and community, a user would perceive whether they conform to or contravene a group's social frameworks and may choose to alter their identity (and the sensory representations tied to it) using the VR system's avatar customization options. The user's virtual body, then, may prompt reactions from social networks (e.g., inclusion or discrimination) which effectuates the same cycle of assimilation and design of avatar body representation.

Social VR and other XR platforms offer confined spaces that enable some experimenting with online personas that may maintain, complement, or contradict real-life identities while participating in social interactions. Such experimenting with body representation through avatars is considered a significant part of XR use (Schroeder 2002; Ducheneaut et al. 2009; Maloney and Freeman 2020). In some sense, these platforms can be considered “safe spaces,” where one can adjust their body representation and demographic characteristics to conform to the audience or a social group’s dynamics. In another, these spaces may involve negative social behaviors, such as discrimination or harassment, that are often based on avatar representation and the demographic characteristics an avatar or virtual persona presents: attitudes can change toward users who express out-of-group characteristics, indicating that interactions are biased based on demographic markers (Sacheli et al. 2015). Thus, changing one’s real-life gender or other demographic characteristics in XR spheres may even be used to avoid stereotypes or reinforce social roles (cf. Freeman et al. 2015).

This paper introduced a potential perspective of social behaviors in extended reality. The combination of social identity theory and intersectionality yields an overview of how identities may affect the dynamics of social groups and how social groups may affect the representation of bodily characteristics upon which prejudices and stereotypes are based. The inquiries this study pursues are vital for understanding the dynamics of the 2020s’ digital culture that will likely be influenced by increased online presence due to health-related measures and environmental protection. In addition, these inquiries are of importance because virtual social interactions may have a significant impact on online behavior even for children and adolescents in social and educational arenas. The behavior of these generations has long-term effects on social justice and social behavior. While the present paper supplements previous studies on extended reality from the perspectives of design, communication, and social interactions (see Maloney and Freeman 2020), further empirical investigations are necessary to test the links between body representation, identity, demographic characteristics, and social behavior during virtual activities. Moreover, investigations are required regarding the effects of avatars’ or other digital figures’ body language and other nonverbal cues on social behavior.

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