How do we make the virtual world a better place? Social discrimination in online gaming, sense of community, and well-being

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ABSTRACT

This study investigates the experience of social discrimination and its potential influences on users' psychological well-being and sense of community in the context of online gaming. A survey of 890 players of *World of Tanks*, a team-based massively multiplayer online vehicle combat game, found evidence of social discrimination experienced by gamers. Specifically, the players were treated differently based on their group membership whereby low-ranked and young people were likely to be discriminated against in game. Additionally, personal traits such as neuroticism and low agreeableness were significantly positively associated with experienced discrimination, suggesting the role of individual differences in predicting the likelihood of one experiencing discrimination. Encountering online discrimination was further associated with gamers' lowered feelings of belonging to the online community, however no significant effect of discrimination on sociopsychological well-being was found. The theoretical and empirical contributions of the study are discussed, including possible antecedents and consequences of online discrimination in gaming and beyond.

1. Introduction

The extant research, notably in social psychology studies, has found ample evidence of social discrimination in everyday life as well as in organizational contexts (e.g., Comi & Grasseni, 2012; Tynes & Markoe, 2010). However, less is known about discrimination in online spaces. As past research mainly focused on race as the most popular predictor of social discrimination, scholars have called for an exploration of other forms of discrimination (Lewis et al., 2015). The present study examines the experience of online discrimination on the basis of the visible rating of skill and on age. Group membership status is less studied, but highly salient in online competitive spaces including video games (Leavitt, Keegan & Clark, 2016; Schrader & McCreery, 2008). The study also concerns the role of individual personality – an area largely neglected in the current literature – in predicting online discrimination. It focuses on the case of the massively multiplayer online game *World of Tanks* (WoT) – a social and competitive space where myriad gamers of different backgrounds interact with one another and compete.

Discrimination, defined as harmful behaviors and actions toward members of subordinated groups (Fishbein, 2014), has theoretically and empirically been situated in the context of intergroup conflicts. The extant research has traditionally paid little, if at all, attention to individual differences such as personal traits as possible predictors of discrimination (Motti-Stefanidi & Asendorpf, 2012). For instance, it is unclear whether and how some unfavorable personal attributes such as neuroticism and a lack of agreeableness might potentially contribute to, or (in)directly cause, an incident of social discrimination. As personality may determine the quality of human relationships (Hammick & Lee, 2014) and affect perceived/experienced discrimination (Motti-Stefanidi & Asendorpf, 2012), it is valuable to investigate how personality differences precipitate discrimination. Therefore, besides the group membership-based forms of discrimination in terms of skill and age, this study addresses discrimination based on individual personality, thus significantly contributing to the literature of online discrimination empirically and theoretically. The study focused on experienced discrimination.

Building on the theoretical underpinnings of social discrimination, this study aims to contribute to the literature in two main ways. First, the study reinforces the notion of group-based discrimination via an empirical account of online discrimination due to membership status in an emerging digital platform – online gaming. While the theorizing of discrimination has mainly been tested on race and gender discrimination, this study discusses the lesser-studied forms of discrimination based on skill and age. Second, this study aims to theoretically expand the extant theorization of discrimination by considering the role of individual personality, apart from the long-standing role of group membership, in predicting discrimination.

Furthermore, this study examines how online discrimination can potentially influence users' psychosocial well-being and sense of community. Current understanding of the consequences of online discrimination is somewhat limited despite early studies that have reported on the adverse effects of both online and offline discrimination on target people's quality of life (Lewis et al., 2015; Tynes et al., 2008; Tynes & Markoe, 2010). Also, very little is known about how experiencing online discrimination would influence users' psychological well-being and feelings of belonging to their online communities. This study aims to fill these gaps, combining the tradition of online discrimination research and that of Internet studies, which have focused more on community dynamics in online spaces. It also adds an underexamined line of research on online discrimination and a novel research context of team-based gaming.

Given the fact that around half of the world's entertainment spending is on online gaming and that it is also emerging as an extremely popular social activity (Statista, 2021a), it is really important to study social interactions where they occur. A 2018 forecast revealed that the global sales of video games in 2017 yielded nearly 105 billion U.S. dollars and are expected to reach nearly 140 billion by 2021 (Statista, 2021b). Also, video gaming has become increasingly popular, with over two billion gamers worldwide in 2020 (Statista, 2021c), making it even a more important social activity and a field worth studying.

Also, social discrimination in the real life has been shown to critically impact the well-being of affected individuals and groups. The quality of social interactions in virtual space can impact online user's psychological well-being and life quality (Choi and Lim, 2016; Erfani & Abedin, 2018). Online gaming is of no exception (Osmanovic & Pecchioni, 2016). Therefore, it is imperative to study online social discrimination to understand its possible antecedents and effects.

The structure of the paper is as follows: Theoretical frames are explicated for understanding social discrimination, followed by a review of the literature on the antecedents and consequences of discrimination, especially in online environments. With the framework established, hypotheses are presented for the study context of *World of Tanks,* which are then tested via an analysis of a data set derived from both server-side unobtrusively collected behavioral data and a matched player survey.

2. Discrimination theory and hypotheses

2.1. Group membership

Discrimination is typically conceptualized as a form of social bias toward a group and its members (Fishbein, 2014). It denotes not only the distinguishing of social objects but also denying 'individuals or groups of people equality of treatment which they may wish' (Allport, 1954, p. 51) due to their group membership (Otten & Moskowitz, 2000). Within communication studies, social psychology, and related fields, social identity theory (SIT; Tajfel & Turner, 1979) provides a contextual framework for understanding the asymmetrical intergroup relations. The theory makes two critical assumptions concerning intergroup relations: (i) the group-membership statuses of individuals or groups of people are often unequal, and (ii) social groups are in competition with each other for status and power. SIT posits that people derive part of their self-knowledge from their membership and are motivated to maintain a positive image of the in-group compared to the out-group (Ellemers et al., 2002). Consequently, those belonging to inferior groups such as low-skilled workers or people of a lower class might be subject to social prejudice and stereotypes (Ellemers et al., 2002).

Given the growth of immersive experiences in virtual worlds, theoretical models are introduced to conceptualize the nature of online intergroup prejudice. A popular framework is the *social identity model of deindividuation effects* (SIDE) (Lea & Spears, 1991), which suggests that affordances such as anonymity and limited visual cues in computer-mediated communication can promote negative behaviors. Specifically, the paucity of individuating cues such as facial expressions, gestures, or eye contacts in virtual interactions can make group membership (i.e., social identity) salient and induce adoption of group norms even more compared to face-to-face communication (Lea & Spears, 1991; Postmes et al., 1998). With little visual cues of their anonymous conversation partners, users experience *deindividuation*, or a loss of a sense of self, and defer instead to salient group memberships. Such reduced focus on personal cues differences and increased attention to group membership results in other users, particularly those in outgroups, being depersonalized and stereotyped, and behavioral disinhibition may occur (Postmes et al., 1998).

The present study draws on the SIT theory or SIDE model to shed light on the dynamics of intergroup prejudice investigated in the literature. At the same time, the theoretical perspectives presented in SIT and SIDE can provide a contextual framework for understanding the dominant theorization of online social discrimination. In fact, the emerging literature on online discrimination (Lewis

et al., 2015) has discussed the experience of discrimination by minority groups due to their disadvantaged social identities (e.g. racial minorities, women of color, LGBTQ persons). For instance, research has examined race and gender discrimination in virtual spaces (Tynes et al., 2008; Tynes & Markoe, 2010). In a study of 264 adolescents, Tynes and colleagues (2008), for example, found that blacks and multiracial/other-race youth reported more experienced discrimination than white youths in text messaging, chat rooms, discussion forums, and social network sites.

Research has also explored racial bias on online gaming (Altenried, 2017). Adachi and colleagues (2015) suggest that intergroup competition and cooperation affect intergroup attitudes and behaviors, including prejudice and discrimination in videos games. Specifically, competition between groups in video games for symbolic resources, such as ranking, win rate, and points may elevate intergroup racial bias on the one hand, while intergroup cooperation may reduce prejudice on the other hand. One reason for group membership being revealed in a massively multiplayer online (MMO) game is that players often are cognizant of whether they are competing against or cooperating with players from different social groups thanks to in-game communication channels. In some games such as the *Call of Duty* series, for instance, players can put their nations' flags beside their names, making their likely ethnic membership visible to other players (Adachi et al., 2015). Some other studies (e.g, Esmaeili & Woods, 2016; Fox & Tang, 2017), from the perspective of the SIDE model, provided substantive evidence on gender harassment in online gaming. In other words, using SIT and SIDE theories studies have consistently found evidence of discrimination or social bias, whether online or offline, towards members from another gender/racial group. However, less is known about discrimination based on age and skill/ranking differences despite prior studies suggesting potential bias towards people of the same age group or social class.

Skill is an indicator of social and professional status, job performance, and competence (Yu, 2016). Prior studies have found mixed results regarding the association between social status and perceived discrimination in the everyday life (Motti-Stefanidi & Asendorpf, 2012). In the organizational context, low-skilled workers are more likely to encounter hiring discrimination (Comi & Grasseni, 2012; Krings et al., 2011) and/or are socially discriminated against in their workplace (Yu, 2016). These findings are in line with the stereotype content model (Fiske et al., 2002) positing that low competence stereotypes are associated with feelings of disrespect and lead to exclusion (Cuddy et al., 2008).

Although status differences is a major feature of the online world in general and online gaming in particular (Lu et al., 2014), little is known about how they associate with online discrimination. There has not been, in fact, a study examining whether a gamer's (low) skill would predict his/her experience of online discrimination. Aiming to expand the theorizing of (online) discrimination and provide empirical evidence on discrimination based on skill or competence, this study poses the following hypothesis:

H1. Low-skilled players are more likely to experience discrimination than high-skilled players.

Increasing attention has also been paid to age-related discrimination in various social contexts. For instance, regarding hiring practices in organizations, age discrimination is robust: Older workers are often perceived as less competent but warmer than younger workers; however, elderly candidates are frequently discriminated against even if the job requires person-oriented skills (Krings et al., 2011). Nevertheless, research shows less consensus regarding everyday life contexts. A study found that both young and older adults are perceived as having lower status relative to middle-aged adults (Garstka et al., 2004). Meanwhile, more studies suggest that adolescents and young adults are oftentimes subject to prejudice and discrimination as opposed to older groups (Hart, 2009; Richard, 1983). Such perceived or experienced age discrimination was due to the fact that young people were perceived to have less power (Cameron, 1970), influence, and prestige (Richard, 1983), thus being treated less favorably in various social contexts. The theorization of discrimination concerning age bias in online context is, however, scarce and not well studied. To address this, the study poses the following research question:

RQ. Are younger players more likely to experience discrimination than older players?

2.2. Individual differences

While the dominant theorization of discrimination, like that of the dynamics of intergroup relations suggested by SIT and SIDE, emphasizes group-based membership as the cause, there is less consideration of individual differences such as personal traits. This is so despite prior studies that have demonstrated that prejudice is not only a function of group memberships and intergroup relations but also of individual differences (Reynolds et al., 2007). It is intriguing, however, that when it comes to personal traits, studies have predominantly considered them in relation to the penetrator, not the discriminated (Dovidio, 2010). The focus was on pathological personalities (Allport, 1954) such as intolerance of ambiguity, a preference for hierarchies (Webster & Kruglanski, 1994), and a low level of agreeableness and openness to experience (Graziano et al., 2007), which make individuals more likely to show prejudice towards others. There is generally a lack of corresponding research on whether and how one's personality can predict the likelihood of their experience of being discriminated against.

The extant conception of discrimination, while mainly seeing group membership as the antecedents of discrimination, have largely neglected the roles of individual differences such as personalities. It is so although research on social relationships suggests that personalities are often used to describe toxic people (Glass, 2015) and those who are disliked by others (Aumer et al., 2015). For instance, Aumer and colleagues (2015) found that people tend to view hated others as less open, agreeable, emotionally stable and conscientious than they perceive themselves or the person they love. Also, people with annoying traits and behaviors disturb others and are prone to inharmonious relationships (Kowalski, 2003).

Motti-Stefanidi & Asendorpf (2012) were one of the first teams that examined the role of personality traits using the Big Five scale

to predict perceived discrimination. They found that Big Five personalities, including openness, conscientiousness, extraversion, and agreeableness, along with other measures such as negative life events, low GPA and self-efficacy predicted lower personal discrimination among two groups of immigrant students in Greece. Personal discrimination is defined as discrimination oriented towards one directly, as opposed to that towards other members in one's group. Additionally, when youth, independent of ethnicity, reported high perceived group discrimination, individual differences including personal traits contributed to whether they would translate it into personal discrimination (Motti-Stefanidi & Asendorpf, 2012). Some other studies, despite not focusing on personalities per se, suggested the association of personalities to discrimination. For instance, personalities, such as warmth, when combined with an old worker's skill, can predict the likelihood of his/her being subject to reduced hiring discrimination (Cuddy et al., 2008). This is also in line with the stereotype content model (Fiske, Cuddy, Glick & Xu, 2002) positing that high warmth stereotypes are associated with personal liking and trigger helping.

This study concerns personal traits, as measured by the Big Five personality items, aside from the group-based statuses of skill and age discussed earlier, as possible antecedents of discrimination. In line with past studies' findings, we anticipate that neuroticism, a personal trait typically denoting negative emotions such as anxiety and anger (Jeronimus et al., 2016), is likely to relate to discrimination. Neuroticism was found to be associated with a pessimistic approach toward work and apparent anxiety linked with work and social behaviors (Ormel et al., 2013). Therefore:

H2. Players showing higher levels of neuroticism are more likely to experience discrimination.

On the other hand, those bearing high scores on other Big Five traits such as agreeableness, extraversion, openness, and conscientiousness might be less likely to be discriminated against. These traits are often perceived as favorable and tied to positive relationships. Agreeable individuals who value getting along with others, for instance, are generally seen as considerate, kind, generous, trustworthy and helpful (Kaufman et al., 2019), and thus are more likely to be liked by others (Bamford & Davidson, 2019). Openness and extraversion, being social traits, are similarly associated with happiness (Lischetzke & Eid, 2006), harmonious relationships and interpersonal liking (Connelly et al., 2014). Conscientiousness, typically associated with those who are self-disciplined, responsible, and achievement-oriented, is also anticipated to be a favorable trait especially in the context of teamwork and a task-oriented environment like game play (Robert & Cheung, 2010). Therefore:

H3. Players showing higher levels of (a) agreeableness, (b) extraversion, (c) openness, and (d) conscientiousness are less likely to experience discrimination.

2.3. Discrimination's consequences

2.3.1. Psychological well-being

The tradition of research on discrimination has been consistent in reporting adverse consequences of social discrimination on the target people's psychological well-being and mental health. For example, gender discrimination was found to associate with psychological distress, depression and anxiety (Corning, 2002). Age discrimination has led to reduced self-esteem, job satisfaction, job involvement and feelings of personal control (Hassell & Perrewé, 1993), and higher intention to quit or retire (Redman & Snape, 2006).

Although an emerging body of research has examined the effects of online negative behaviors (e.g., bullying) on psychological functioning (Fox & Tang, 2017), a great deal is not yet understood about the consequences of online discrimination, though a small and growing set of findings has found adverse effects. For instance, online racial discrimination was positively associated with both depressive and anxiety symptoms (Tynes & Markoe, 2010; Tynes et al., 2008). These implications are reflective of the broader research on the online-offline relationship, suggesting that online behaviors impact people's lives in the real world (Lin, 2019). In line with the prior findings, we propose the following hypothesis:

H4. Online discrimination negatively associates with gamers' psychosocial well-being.

2.3.2. Sense of community

Studies have examined the connection between the psychological climate and feelings of belonging in online spaces such as online forums, SNSs, as well as video games. While positive relations may foster a sense of connectedness among members of online communities, toxic behaviors/actions such as hate speech, cyberbullying and social exclusion can undermine community bonding (Chiou et al., 2015; Cook et al., 2019). A study on a university community, for instance, found that discriminatory racialized materials and discourse about target people could spread rapidly through campus communities online and potentially lead to a decreased sense of cohesion among the community members (Tynes & Markoe, 2010).

With regards to online gaming, past research suggests that video games offer players a social space to extend real-life relationships, meet new people, and form relationships of varying strength (Williams et al, 2006). However, playing digital games with others can also result in feelings of being socially excluded (Birk et al., 2016). While online connections facilitate increased social capital and community improvement, ostracism and toxic behaviors might lead to harmful effects such as reduced feelings of belonging to the gaming community (Birk et al., 2016). There has, however, not been a study specifically measuring possible consequences of social discrimination in game on players' sense of community. In line with prior findings on online interactions and community cohesion, this study poses the following hypothesis:

H5. Online discrimination negatively associates with gamers' sense of community.

3. Study context

This study uses the online game *World of Tanks* (WoT) – a massively multiplayer online team-based combat game using vehicles. Several features of the game illustrate theory-grounded operationalizations of the hypotheses. In particular, the game's overall design and technological affordances allow for the revealing of players' group membership or social identities (e.g., age, skill, gender) while simultaneously facilitating continuous online interactions which help nuanced personal/individual differences emerge.

As Lo (2008) noted, the display of skill, rank and group membership in a game can determine a gamer's symbolic identity to others. *World of Tanks* shows every player's overall win rate, which is an indication of their success and competence in the game. A high win rate means the player is likely to be both good at the game and experienced while a low one means the opposite. When choosing teams and making contacts, players will often prefer a more talented teammate.

This game also has a mixing of age, which is not as common in the offline world. Users are able to identify the age of other users in the game via various ways of interactions with one another. To play this game, players use the game's built-in voice system or Discord to communicate with their team members before and during any battle. They can also send text to one another via team chatbox and public commentary threats.

WoT also offers ample spaces for social interactions, team cooperation, and observable behaviors (Murnion et al., 2018). Although visual cues are limited, the gaming environment affords immediate verbal and non-verbal cues and extensive interactions via multiple communication channels such as group text messaging and voice chats in/outside battles, public discussion threads, social media connection, and texting, chatting and emailing among players. These channels can help players recognize one another's group membership statuses (e.g., age, nationality, languages) and even individual traits such as personalities (Adachi et al., 2015). As users can interact via various communication channels making their identities and their behaviors visible to one another, discrimination may occur. WoT thus resembles a small military-themed society with various forms of intergroup and interpersonal relations.

4. Methods

4.1. Procedures

This study uses a combination of in-game and online survey data. With the cooperation of the game's publisher, Wargaming.net, we acquired players' in-game profiles including their win rates, battle counts, type of tanks unlocked, and time in game. Additionally, with the cooperation of Wargaming, we distributed a survey to a randomized population of WoT active gamers living in North America including the US and Canada. Survey participants had played more than 300 battles, a level of experience the company determined as past the initial "newbie" phase. The participants were not offered any compensation for their participation, which is typical for the company. The survey ran for one week between the 4th and 11th April 2019 and attracted a total of 2011 participants. The major measures of the survey were embedded along with several other batteries of questions unrelated to this paper, obscuring the intent and the hypotheses.

After removing respondents who skipped any survey questions, there were 890 complete cases. While the participants' IDs were anonymized to ensure their confidentiality, they were matched to their in-game data from the company's data warehouse. Survey data included their real-life profiles including gender, age, and clan membership. A clan is a group of players who form a team within which players will work with their brothers-in-arms to fight for victory and battle against other clans in special matches (Wargaming.net, 2021). The majority of the participants were male (98.09%), whose age ranged from 18 to 79 ($M = 45.27\ SD = 15.17$), showing that this is a male centric game. In terms of race and ethnicity, 86% were White.

4.2. Measures

Social discrimination was measured by the 9-item *everyday discrimination scale* (Williams et al., 1997) adapted for the online gaming context. This is popular scale used to measure perceived and experienced discrimination in the everyday life. These questions ask to what extent the player was, if at all, experiencing adverse online situations including (i) being treated with less courtesy, (ii) being treated with less respect than other people, (iii) being called names and insulted, (iv) being threatened or harassed, to name a few. They also asked if they experienced incidents whereby people act as if they think the player was not smart, or dishonest, or that the player was not as good as others. The survey participants were asked to rate how often they experienced these forms of discrimination in their WoT game play on a scale from 1 to 6, where the higher score indicated a greater degree of experiencing discrimination. The scores were averaged to form an index for experienced social discrimination (Cronbach's *alpha* = 0.88, $M = 1.23$, $SD = 0.84$).

Psychological well-being was measured by the 8-item *flourishing scale* (Diener et al., 2009). This scale examines the levels of satisfaction with one's life, one's social life, and one's engagement in daily activities. Participants were asked about to what extent they agree with the Likert scale items, with 1 being extreme disagreement and 5 being extreme agreement, inquiring about their quality of life such as "I lead a purposeful and meaningful life," "I am engaged and interested in my daily activities," and "I actively contribute to the happiness and well-being of others." The scores were averaged to form an index for perceived psychological well-being (Cronbach's *alpha* = 0.85, $M = 3.68$, $SD = 0.64$).

Sense of community was measured by the 4-item scale developed by Kim (2011) adapted for WoT game players. The sense of community scale, measuring how users perceive a sense of group membership, is considered highly relevant in the online gaming

context (Tseng et al., 2015). Participants were asked to respond to Likert scale questions regarding how much they felt they belonged to the online community (e.g. "Even though we were physically in different locations, I still felt I was part of a group of friends in the game") where the higher the score, the higher sense of community. The scores were averaged to form an index for perceived sense of group membership (Cronbach's *alpha* = 0.79, $M = 3.15$, $SD = 0.96$).

Personalities were assessed by a short version of the Big Five Inventory (BFI-10; Rammstedt & John, 2007) including extraversion, agreeableness, conscientiousness, neuroticism, and openness. Each BFI-10 scale consists of two items, which were selected from the original standard nine-item BFI-44 scales, and answers were given on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). This instrument was chosen because it was brief, but it maintained high reliability because the results from multiple samples and for two languages showed acceptable psychometric properties of the instrument in terms of test–retest reliability, convergent and discriminant validity (Rammstedt & John, 2007). In the present study, reliability coefficients for these two item subscales was calculated using Spearman-Brown formula (Eisinga et al., 2013). For each personality, the two subscale scores were averaged to form an index for extraversion (Spearman-Brown coefficient = 0.42, $M = 3.12$, $SD = 0.92$), agreeableness (Spearman-Brown coefficient = 0.26, $M = 3.64$, $SD = 0.82$), conscientiousness (Spearman-Brown coefficient = 0.45, $M = 3.90$, $SD = 0.82$), neuroticism (Spearman-Brown coefficient = 0.58, $M = 2.22$, $SD = 0.92$), and openness (Spearman-Brown coefficient = 0.29, $M = 3.74$, $SD = 0.84$). Note that the reliability scores highly depend on the number of items (Emons et al., 2007), and Spearman-Brown statistic that together with standardized coefficient alpha is not a meaningful indicator for very short scales covering broad personality facets (for details see Freudenthaler et al., 2008, Furnham, 2008, Rammstedt and John, 2007). Also, low internal consistency values of very short scales are not uncommon (Gosling et al., 2003, Romero et al., 2012), so, the BFI-10, with only two items to cover each personality dimension, is likely to have relatively poor reliability values, which however do not indicate low internal consistency (Carciofo et al., 2016). Given the high correlations with more comprehensive Big Five scales and high test–retest correlations, the BFI-10 is estimated to be reliable (Rammstedt & John, 2007).

To ensure the quality of the measures, we included in all the scales above an additional answer option of "I don't know" to avoid the situation that we could have forced the participants to choose the pre-set answers of the measures.

Skill was measured by win rate ($M = 0.49$, $SD = 0.03$) – an in-game score calculated based on each player's rate of winning in his/her matches of all time. In other words, this is not self-reported data, but is provided by the game's automatic system. This score is highly visible to the players, who then use that number to relatively rank one another.

Age was included in survey questions, which range from 18 to 79 ($M = 42.96$, Median = 48, $SD = 16.93$), to measure the gamers' actual age at the time of the survey.

Control variables include demographic variables such as education, political affiliations and clan membership. Of the 2011 participants, 16.74% have a high school or less than high school degree, 31.12% have some college but no degree, 15.61% have an associate's degree, and 36.52% have a bachelor's or higher degree. In terms of political affiliations, 55.51% lean to conservatives, 16.63% are more liberal ($M = 4.77$, $SD = 1.52$). In terms of clan membership, 74.16% of the participants are clan members. Battle count, or the number of battles a player had joined by the time of the survey, was also included to indicate players' overall time and experience in the game ($M = 17131.02$, $SD = 15379.21$). In addition, we used the Big Five personalities as control variables for H5 and H6. Although relatively understudied, personality characteristics represent an important threat to the validity of discrimination and its outcomes, because emotional stability (reversed neuroticism) is the main correlate of psychopathology, whereas extraversion and agreeableness are associated with positive mental health (Jeronimus et al., 2016; Lischetzke & Eid, 2006). Nevertheless, mixed findings were found regarding the effect of personalities on the relationship between discrimination and well-being outcomes (Lewis et al., 2015).

Table 1
Linear regression model predicting discrimination.

Variables	B	SE	p
Intercept	2.755	0.668	***
Neuroticism	0.117	0.036	**
Agreeableness	−0.099	0.037	**
Conscientiousness	0.042	0.042	
Openness	0.011	0.036	
Extraversion	0.016	0.035	
Age	−0.011	0.002	***
Clan membership	0.262	0.070	***
Win rate	−2.856	1.036	**
Battle count	0.000	0.000	
Gender	0.078	0.192	
Education	−0.002	0.023	
Income	−0.025	0.020	
Political affiliation	−0.014	0.021	
Religion	0.007	0.010	
Race	−0.007	0.021	

Note. '***' $p < 0.001$ '**' $p < 0.01$ '*' $p < 0.05$.

5. Results

5.1. Antecedents of discrimination

To test H1 through H3, and RQ, about the antecedents of discrimination, we ran a linear regression model (Table 1). The dependent variable was the mean score of the 9-item *everyday discrimination scale* (Williams et al., 1997). The independent variables included win rate (H1), age (RQ), and personalities (H2 and H3). We also included clan membership, battle count, and demographic variables as the control variables. Results showed that the clan membership is significantly positively related, suggesting that being in a clan is associated with less discrimination.

H1 predicted that players with higher win rates are less likely to be discriminated against. The hypothesis was supported. According to the regression results, win rate negatively and significantly associated the discrimination score ($B = -2.856, p < .01$), indicating that players with better performance and skills are less likely to be discriminated against.

RQ asked whether younger players are more likely to experience discrimination in the gaming environment. The result from the linear regression shows that age was negatively and significantly related to discrimination score ($B = -0.011, p < .001$), suggesting that younger people are more likely to become the targets of discrimination in this gaming environment.

H2 and H3 tested the influence of personalities on experienced discrimination. Specifically, H2 predicted that neurotic players are more likely to experience discrimination. The hypothesis was supported, as results showed that neuroticism ($B = 0.117, p < .01$) is positively associated with the discrimination score, indicating the more neurotic a player is, the more likely they will experience discrimination. H3 predicted that an agreeable (H3a), extraverted (H3b), open (H3c), and conscientious (H3d) player is less likely to experience discrimination. This hypothesis was partially supported. Agreeableness ($B = -0.099, p < .01$) was negatively associated with the discrimination score, indicating that a more agreeable player is less likely to be discriminated against. H3a was supported. However, no evidence showed that other personalities were associated with being discriminated against. Specifically, extraversion ($B = 0.016, p = .651$), openness ($B = 0.011, p = .756$), and conscientiousness ($B = 0.042, p = .319$) were not statistically significant, so H3b-H3d were not supported.

5.2. Discrimination's consequences

To test Hypothesis 4 about the association between discrimination and psychosocial well-being, we employed a linear regression model (Table 2). The dependent variable was the mean score of the 8-item *flourishing scale* (Diener et al., 2009), while the independent variable was the discrimination mean score. The BFI-10 personality mean scores, win rate, clan membership, battle counts, and demographic variables were included as control variables.

H4 predicted that the experience of discrimination is associated with reduced psychosocial well-being. The regression revealed that discrimination was not significantly associated with well-being ($B = -0.036, p = .063$). H4 is not supported with demographics, in-game scores, and personality variables controlled.

To test H5 about the association between experienced discrimination and sense of community, a linear regression model (Table 2) was run, with the discrimination score being the independent variable and sense of community scale being the dependent variable. We also included control variables such as demographic variables, personalities, and other in-game variables.

H5 predicted that the more discrimination a player perceived, the lower sense of community they have. The hypothesis was supported as the discrimination score was negatively and significantly associated with sense of community ($B = -0.154, p < .001$),

Table 2
Linear regression models using discrimination to predict well-being and sense of community.

Variables	Well-being			Sense of community		
	B	SE	p	B	SE	p
Intercept	2.623	0.412	***	3.307	0.670	***
Discrimination	−0.036	0.019		−0.154	0.031	***
Extraversion	0.113	0.021	***	0.166	0.035	***
Openness	0.048	0.022	*	−0.003	0.036	
Conscientiousness	0.214	0.026	***	0.040	0.041	
Neuroticism	−0.159	0.022	***	−0.018	0.035	
Agreeableness	0.173	0.023	***	0.126	0.037	***
Age	−0.002	0.001		−0.004	0.002	
Gender	0.144	0.117		0.110	0.192	
Income	0.038	0.012	**	−0.035	0.020	
Education	0.015	0.014		−0.058	0.023	*
Politics	0.011	0.013		0.053	0.021	*
Religion	−0.004	0.006		−0.007	0.010	
Race	−0.015	0.013		−0.002	0.021	
Win rate	−0.711	0.637		−2.229	1.031	*
Clan membership	0.035	0.043		0.249	0.070	***
Battle count	0.0000	0.0000		0.0000	0.0000	

Note. '***' $p < 0.001$ '**' $p < 0.01$ '*' $p < 0.05$.

suggesting the more discrimination encountered, the lower sense of community felt. This was true after controlling for personalities, demographic variables, as well as in-game variables.

6. Discussion

This paper finds evidence of online discrimination experienced in the virtual space by game players of *World of Tanks* - a team-based massively multiplayer vehicle combat game - on the basis of skill, age, and personality. The results also reveal possible impacts of experienced discrimination on the affected online users' sense of belonging to the online community. It suggests several antecedents that both improve and worsen players' experiences in the online environment. The study thus theoretically and empirically contributes to the literature of online discrimination and computer mediated communication – an emerging area of mounting interest in Internet studies, social psychology, communication studies, and related fields – in several ways.

First, the paper contributes to the online discrimination research tradition by suggesting skill and age as emergent antecedents of online discrimination. Particularly, the study found that younger people and low-skilled people are likely to experience discrimination in the online gaming environement of World of Tanks. The study results suggesting that low-skilled people are discriminated against online echo prior research on offline discrimination. For instance, it was revealed that low-skilled people (e.g. low-wage migrant workers, janitors) experienced discrimination and marginalization in their everyday life or workplace (Comi & Grasseni, 2012; Yu, 2016). Also, younger people are discriminated against perhaps because they are and/or are perceived as less mature, less agreeable, less warm and more aggressive/competitive than their older counterparts. In other studies, it was found that young gamers were perceived as caring more about winning and competitiveness than fun (Hromek & Roffey, 2009; Osmanovic & Pecchioni, 2016). Also, one of the most important motivations for young players was the self-challenge the individual felt to beat the game or to get to the next level and competition to beat others in game - the second strongest motive – followed by playing for diversion and for arousal (Sherry and Lucas, 2003; Greenberg et al, 2010). On the other hand, older/senior gamers valued cooperation, fun, and positive social interactions more, and in fact, social interaction and diversion gratifications were the best predictors to their length of gameplay (De Schutter, 2011; Gajadhar et al., 2010; Sherry et al, 2006).

The theorizing of discrimination taking place in the virtual world has traditionally mainly focused on race and gender as major variables, emphasizing various forms of discrimination experienced by people with disadvantaged gender and racial identities such as women and people of color. This illustrates the social identity theory (SIT)'s notion of intergroup prejudice and the social bias against people coming from less privileged backgrounds. The ultimate form of discrimination is theoretically conceptualized in the intersectionality framework (Crenshaw, 1989) describing multiple grounds of discrimination that are co-constituted to further marginalize certain individuals/groups who possess more than one disadvantaged identities. Internet studies scholarship has found evidence of intersectionality or multiple forms of discrimination, particularly in terms of race and gender, experienced by "intersectional" individuals and groups (e.g. women of color) on online platforms such as online forums and dating apps (Noble and Tynes, 2016). This study expands the theorization of online discrimination by suggesting skill/competence and age as predictors of discrimination. Also, the finding that reduced age predicts increased discrimination, independent of skill, affirms past research's suggestions that young people are discriminated against. The reason could be because younger age is socially and professionally associated with less prestige and experience (Richard, 1983). At the same time, it is possible that young people are discriminated against due to their personalities that are perceived as less agreeable and less warm compared to their older counterparts (Cuddy et al., 2008). As past studies on online discrimination paid more attention to experienced discrimination by adolescents and called for more research on adults (Lewis et al., 2015), this study offers an account on adult populations, expanding the current scope of the literature and the theorizing of online discrimination based on age. Future research could expand online discrimination theory further by exploring if intersectionality effects happen for those who possess both disadvantaged identities in terms of skill and age.

The study also contributes to the theoretical understanding of social discrimination by revealing the importance of individual differences, specifically personalities, as possible predictors of experienced discrimination. In particular, we found that, in the context of online gaming under study, those who are neurotic or anxious and unstable emotionally are more likely to be discriminated against, and so are people who are less agreeable or less collaborative with others. As the dominant theorization of discrimination conceptualizes discrimination in terms of intergroup relations, typically referring to the situation where minority groups are discriminated against due to their membership status, individual differences are often neglected. This study does not negate the roles of group membership: We found that there was group membership based discrimination, particularly in terms of skill and age, in this case study. However, we would like to emphasize the need for further understanding of the influence of personal traits in precipitating the experience of discrimination. With the emergence of personal traits that cause discrimination, we suggest that the conceptualization of social discrimination, either online or offline, is better to be expanded to include interpersonal factors.

It is interesting that past studies paid much attention to who the perpetrators are, especially with regards to their personalities, emphasizing personalities as the main predictors of prejudice on the part of the discriminators (Dovidio, 2010). Very little is, however, known about the personalities of those who are discriminated against. The findings of the present study show that personalities predict discrimination independent of other variables such as age and skill reveal that personalities are possibly one of the major and important causes of the experience of discrimination. The findings are compelling in the study's specific context because *World of Tanks* is a hard-core, team-based game where much collaboration, along with strong mentality, is required for a team to win. Those with low collaboration/teamwork skills and weak mentality are thus prone to be discriminated against and disliked by others. This is in line with past research suggesting that personality influences online communication patterns and outcomes (Hammick & Lee, 2014). Our study, therefore, at the very least, is likely generalizable to male-centric, online team-based competitive games. We suggest that future research continue to examine the role of personalities in predicting the likelihood of one's experiencing forms of discrimination

in other online team based games, and beyond that, in online contexts other than gaming. Besides the personal traits being examined in this study, it is recommended that future research explore other personalities, for instance self-esteem - an important trait that may be associated with social discrimination.

To better measure roles of personalities, we recommend that future research considers not directing research subjects to their group memberships as the cause of discrimination when measuring their experienced discrimination. Past studies, when using the everyday discrimination scale, typically included one follow-up question that allows the participants to choose one or more of their group memberships as the perceived causes of the discrimination (e.g., race, gender, income, profession). However, we argue, that doing so would automatically mask individual differences that may cause discrimination. At the same time, it is likely that individuals are unlikely to acknowledge their personal shortcomings. Therefore, an appropriate approach would be to not include the follow-up question in the survey instrument – the method that we chose – or to apply other methods such as natural/virtual observations or qualitative interviews to devise appropriate findings on discrimination based on either group membership or individual differences or both.

Further, the study offers a novel context for social discrimination - one that is occurring in the online gaming environment. While online discrimination has attracted increasing attention from scholars in various fields, more has been known about discriminatory practices in other online platforms such as social chat apps, chat rooms, dating apps. Little is known about the degree of discrimination taking place in the online gaming environment and how that happens, although past studies examined gender harassment and cyberbullying in video games (Esmaeili & Woods, 2016; Fox & Tang, 2017).

Using the case of online gaming, this study expands the current theorization of social identity and interpersonal interactions in computer mediated communication environments, particularly as illustrated by the social identity model of deindividuation effects (or SIDE model) (Lea & Spears, 1991). The model suggests that anonymity in online communication, which is manifest mainly in the paucity of visual cues (e.g. eye contacts, hand gestures, facial expressions), leads to negative behaviors toward outgroups due to *deindividuation* or loss of personal identities. In other words, losing online users' visual cues, which is a major feature of online interactions, makes users' group membership status more salient than their personal characteristics. As the result, the effects of intergroup relations and conflicts are amplified, particularly in the case when one group's identity is of lowered status, for instance racial/ethnic minorities, and so are subject to discrimination by other dominant groups.

However, this study reveals that personal traits might still display and influence the social interactions even if the interactions lack visual cues, because online verbal communication allows the interlocutors to get to know one another by other means such as verbal conversations/comments, emojis sent in chat boxes, avatar images displayed. And certainly, the effects of personal traits are even stronger when the online environment is not completely anonymous or allows users to express their individual characteristics through enhanced communication channels. Therefore, we argue here that there is a need to account for individual differences as another contributor to the toxic online interactions - that is the specific incidents of discrimination experienced by online users in this study, including but not limited to verbal insults, harassment, threatening language used by the perpetrators, which damaged the gaming environment and impacted the victims' sense of community. On the one hand, it is true that due to anonymity, online users including gamers may lack personal understanding of their communication partners, forming impressions of others based on a few personal cues acquired online (Hancok & Dunham, 2001). Also, the effect of group identification (or not) is strong in computer mediated communication such that people tend to overinterpret the limited cues achieved online – a process labelled by Walther (2015) as "hyper-personalizing" of online relationships that can lead to biased perceptions and group-based judgement when there is a lack of information available. On the other hand, it is also arguably true that with extensive interactions, personal traits might emerge. It is especially so in a less controlled environment where individual factors are not singled out and/or group membership are not primed (Christie & Dill, 2016). This is relevant in the context of team-based gaming where people have to collaborate extensively, and at times repeatedly, towards a common goal.

The fact that WoT is a small community can support the likelihood that people are likely to know one another at a personal level. Additionally, as suggested earlier, WoT allows for ample opportunities for interpersonal interactions via messaging, voice chat, and out-of-match connections that facilitate players to connect personally, going beyond the abstract perception of one another based on group membership.

Although personal traits influence in-game experience (Hammick & Lee, 2014), there is generally a dearth of research on personalities in online gaming, and beyond that, in other online environments. This study thus suggests the need for further examination of individual differences, along with intergroup processes like deindividuation, and their interactions that come into play in (natural) online interactions. Said another way, a single focus on group relations alone is not enough to understand how online behaviors, including but not limited to online discrimination, occur. For instance, online social discrimination was likely to be caused by both group-based identities (e.g. skill and age) and individual differences (e.g. neuroticism and agreeableness). As the users on *World of Tanks* could interact via various communication channels including voice chat, text messaging, and public discussion threats which made their identities visible and their personalities displayed, discrimination on various levels may have happened. Also, the game itself displays each player's rank, win rates, and other stats indicating their level of success and achievement (or lack thereof), those who are lower ranked may have been discriminated against by others.

Furthermore, this study has implications on the research on the relationship between online and offline worlds, an area of mounting interest in Internet studies and related fields. It suggests that many of the social norms and ills that exist offline are often reproduced in adult online communities. The findings are in contrast to the suggestion that the online world empowers minority groups and heals their offline impediments by allowing them to connect with support groups and express their real identities that might be concealed in the offline world (Marciano, 2014). Nevertheless, one can argue that, given the effects of personalities on experienced discrimination found in our study, we may want to ask whether the common tendency of victimizing the discriminated is appropriate all the time.

Apparently, some segments of online users were annoying themselves and because of which contributed to their experience of discrimination. Their personality, one of the causes of discrimination in this study, may perhaps either affect their perception of discrimination, which is in line with past research on the association of personality and perceived discrimination (Motti-Stefanidi & Asendorpf, 2012), or led to their unfavorable online behaviors discriminated against by others. Future research is benefited by further investigating these people and their personalities, for instance, by looking into predictors of the discriminated personalities, would be interesting.

The study also suggests the possible implications of online discrimination for the users' well-being and feelings of belonging to their online communities. It found that online discrimination experienced by gamers dampened their sense of community or their feelings of belongingness to the online community. This finding echoes earlier research studies that examined the adverse effects of toxic behaviors or interactions in online gaming and other online spaces that undermine their members' sense of connectedness and belonging (e.g., Birk et al., 2016; Cook et al., 2019). The study, however, suggests that online discrimination experienced by WoT gamers did not predict their psychological well-being in the real world. This finding contradicts earlier research findings (e.g., Tynes et al., 2008; Tynes & Markoe, 2010) that showed the link between online discrimination, particuarly racial discrimination experienced by adolescents and students on social networking sites and their school's online forum (e.g., Tynes et al., 2008; Tynes & Markoe, 2010) and the affected people's mental health and wellbeing in real life. The discrepancy perhaps can be attributed to the difference in the research contexts and the specific nature of the social relationships in the online gaming environment in this study: It is possible that gamers may have seen the MMO gaming environment as a transient, less permanent world where relationships are formed temporarily and may not lead to offline relationships, therefore what happens online stays online and such online relationships/encounters do not significantly influence their offline personal health and wellbeing, as opposed to a more influential online relationship, e.g., one formed between a close-knit group of college students on a campus. It is also possible that the lower-ranked gamers may have perceived their in-game ranking as a temporary indicator that would be improved at a later stage or when they progress in the game. We also note that our data analysis included a variety of control variables that have not always been used in prior research. These include demographics, in-game variables, and most importantly, personalities. Personality traits were found to have a significant relationship with psychological well-being (e.g., Emmons & Diener, 1985; Gupta & Parimal, 2020; Jeronimus et al., 2016). For instance, neuroticism is the main correlate of psychopathology while extraversion and agreeableness are associated with positive psychological well-being (Jeronimus et al., 2016; Lischetzke & Eid, 2006). Personalities, however, did not modify the effect of discrimination on sense of community, suggesting that experienced discrimination significantly impacted one's sense of connectedness to the online community. Future research is encouraged to continue to include control variables, including but not limited to personalities, to precisely test the likelihood of online discrimination causing adverse psychological wellbeing effects and/or sense of community. Future studies would also benefit from using a longer measure of personality as better, more reliable construct representation is achieved when a longer measure is used (Bakker & Lelkes, 2018; Eisinga et al., 2013).

Given the importance of these implications, interventions are recommended for gaming companies and researchers alike to seek ways to reduce the incidents of discrimination and its potential effects. The need for restraining one's attitudes and behaviors online should go to both the discriminator and the discriminated so that inexperienced, less competent people are more tolerated by the community while annoying people are able to be aware of the consequences of their personal shortcomings.

7. Conclusion

This study illuminates the experience of online discrimination and its implications for gamers' well-being and sense of community via the case of the game *World of Tanks*. As mentioned earlier, this is a very male-centric game, as some are (e.g., *Call of Duty*, *League of Legends*), we are not making the case that it is representative of all games any more than one would do for a randomly chosen TV show. Video games are traditionally seen as a hobby for males, but females are a growing part of the audience especially in mobile games (Statista, 2021d). *World of Tanks* is likely representative of team-based competitive male-centric spaces, which is only one part of the game world.

Nevertheless, the findings can potentially contribute empirically and theoretically to research on online discrimination in gaming and beyond. Future research on online gaming should continue to explore this topic by examining other games other than *World of Tanks* and in various communities so that we can have a bigger picture on the levels and manifestations of online gaming discrimination and its consequences. As WoT is only one game, studies examining other genres and audiences would extend or qualify the generalizability of this study's findings. Also, more rigorous methods such as experiments and longitudinal observations are welcome to apply to this arena to devise appropriate causal antecedents and consequences of online gaming discrimination.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The third author has previously worked as a consultant for the company that supplied the data for this study. Work on the study was not compensated.

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