

Research Article

Conquering Gender Stereotype Threat in “Digit Sports”: Effects of Gender Swapping on Female Players’ Continuous Participation Intention in ESports

Lujie Hao,^{1,2} Qinghua Lv,¹ Xiaosan Zhang ,³ Qingquan Jiang ,⁴ Songxian Liu,⁴ and Lin Ping⁵

¹School of Business, Huaqiao University, Quanzhou 362021, China

²Economics and Business Administration Institute, Fuzhou University of Foreign Studies and Trade, Fuzhou 350202, China

³Research Centre for Belt & Road Financial and Economic Development, Xiamen National Accounting Institute, Xiamen 361005, China

⁴School of Economics & Management, Xiamen University of Technology, Xiamen 361024, China

⁵Chinese Entrepreneurship Research Center, Minjiang University, Fuzhou 350108, China

Correspondence should be addressed to Xiaosan Zhang; zxs@xnai.edu.cn and Qingquan Jiang; jiangqingquan@xmut.edu.cn

Received 14 April 2020; Revised 30 May 2020; Accepted 16 June 2020; Published 6 July 2020

Academic Editor: Chenxi Huang

Copyright © 2020 Lujie Hao et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

As a sportification form of human-computer interaction, eSports is facing great gender stereotype threat and causing female players’ withdraw. This study aims to investigate the relationship between gender-swapping and females’ continuous participation intention in eSports, the mediating effect of self-efficacy, and the moderating effect of discrimination. The results demonstrate (1) that the effect of gender-swapping on continuous participation intention in eSports was not significant, while gender-swapping had a significant association with self-efficacy, and self-efficacy had a significant association with continuous participation intention in eSports; (2) that gender-swapping had an indirect effect (via self-efficacy) on continuous participation intention in eSports; and (3) that discrimination moderated the effect of self-efficacy on continuous participation intention. Female players who had experienced discrimination displayed higher continuous participation intention in the context of self-efficacy enhanced by gender-swapping.

1. Introduction

ESports is a typical sportification form [1] of human-computer interaction [2, 3]. Similar to traditional sport, gender stereotype threat exists in eSports and causes a significant gender imbalance in the eSports industry. Taking Chinese eSports as an example, female participants account for only 24.3% [4]. Although emerging mobile eSports attract more and more female participants, eSports are still typically male-dominated and are full of negative stereotypes of females, such as that male players are more competent [5]. Therefore, female players often receive less positive comments [6] and experience discrimination in eSports [7]. Females are considered to have a lower skill level and require

more protection [8], and hypersexualized female avatars make male players associate female players with sex, and this has a negative impact [9]. Furthermore, discrimination causes female players to experience greater oppression in the game [5], forcing them to withdraw from eSports.

It would seem that gender stereotypes threat discourages female participation in eSports. Therefore, female players sometimes attempt to dispel gender stereotypes by gender-swapping [10–12]. A few initial studies have found that gender-swapping impacts females’ gaming psychology and experience [13], including both online and offline behaviors [10]. However, the relationship between gender-swapping and females’ continuous participation intention in eSports is little discussed.

The present study aimed to explore the relationship between gender-swapping, self-efficacy, and females' continuous participation intention in eSports in a sample of Chinese female college students. A moderated mediation model was tested, in which self-efficacy mediated the relationship between gender-swapping and continuous participation intention in eSports, and discrimination moderated the relationship between gender-swapping and self-efficacy and the mediation effect of self-efficacy.

1.1. Relationship between Gender-Swapping and Continuous Participation Intention in ESports. Online gaming permits players to mask their actual gender, and players can create an identity opposite to their actual gender through gender-swapping. Gender-swapping is common among players [14]. Griffiths et al. conducted a survey of 8694 players and found that 10% of women had utilized gender-swapping during the game [11]. In Hussain and Griffiths' survey, the gender-swapping ratio was as high as 68% [12]. According to Fox and Tang, females may try to avoid gender discrimination by gender-swapping [15]. In this way, gender-swapping has become a way of making gaming fair for female players [12]. Royse et al. found that a female's psychological experience changes when they control male avatars [13]. In addition, gender-swapping changes the offline behavior of female players. Huh and Williams found that female players who conduct long-term gender-swapping display more masculine behaviors [10].

Although more and more females are participating in eSports, the title of "gamer" is considered to be exclusive to males [16]. For females, eSports is rife with stereotype threat [17, 18] and discrimination [19, 20]. Shen et al. found that although female players have enough game skills, some still feel that their ability is inferior to that of males of the same level [21], which caused dearth of female players in this eSports community [22]. This lack of confidence comes from stereotypes of female players [23]. Perceiving negative gender stereotypes decreases female players' performance [17] and excludes them from the mainstream eSports circle [24], which weakens their participation intention in eSports; in other words, the higher the females' awareness of the threat of gender stereotypes, the more likely they are to quit eSports. Removing this gender stereotype threat will play an important role in enhancing female participation in eSports; gender-swapping plays a role in "gender masking" and allows female players to escape stereotype threats which can enhance females' continuous participation intention in eSports. Thus, we propose the following hypotheses.

Hypothesis 1. Gender-swapping is positively associated with females' continuous participation intention in eSports.

1.2. The Mediating Role of Self-Efficacy. According to the Proteus effect theory, players' behavior and cognition is consistent with their game avatar's characteristics. For example, players who chose a "good-looking" avatar showed more intimate online social behavior [25]. An avatar's

gender also affects players' behavior and cognition: Peña et al. found that when randomly assigned to a female avatar, both male and female participants showed a feminine communication paradigm (e.g., emotional and often apologized) [26]. Lehdonvirta et al. confirmed that male players assigned to male avatars are less help-seeking than those with female avatars [27]. One study [10] reported that females who manipulated male avatars were more likely to display male behaviors. These conclusions indicate that players tend to exhibit a behavior consistent with the avatar's gender stereotype. For eSports games, male avatars generally have aggressive attributes and female avatars often have auxiliary attributes, thus creating the stereotype that male avatars are stronger than female avatars. Therefore, when females control male avatars, they behave in a manner consistent with the stereotypes of male avatars. Through gender-swapping, they are classified as nonstereotype target groups and improve their performance by the stereotype lift effect. Lee et al. demonstrated that regardless of participants' gender, when assigned to female avatars, their mathematics test scores were lower than the scores of those who were assigned to male avatars, confirming that an avatar's gender influences a participant's performance [28]. Similarly, in a study in which all participants were female, those who were assigned to male avatars gained better scores than those with female avatars, further confirming that female players display a better performance when engaged in gender-swapping [29]. Kaye and Pennington found that when associated with a nonstigmatized gaming identity, females' performance deficits may be mitigated [17]. Royse et al. argued that female players have a superior feeling when gender-swapping [13], indicating that female players construct a game identity through gender-swapping which enhances their game self-efficacy.

Social cognitive theory emphasizes the influence of self-efficacy on an individual's behavior and tendencies, suggesting that people like to engage in things that they are more capable at, which means that if an individual is more self-effective about accomplishing the task, he/she will have a greater intention to participate. In the field of information systems, Tsai et al. found that self-efficacy affected a user's intention of using technology [30]. In the gaming field, players' judgment of self-ability has been shown to affect their decision to continue playing games. If players consider that they can gain game skills easily, they tend to have a strong continuous intention; otherwise, they quit playing [31]. On the other hand, when encountering a strong adversary or difficult situations, players with a high self-efficacy who keep fighting and gain skill or level promotions also experience a sense of accomplishment [32]. These positive experiences result in a higher gaming frequency and a continuous intention to play [33]. Therefore, female players' self-efficacy is positively correlated with their continuous participation intention in eSports. Hence, we propose the following two hypotheses.

Hypothesis 2. Gender-swapping is positively associated with self-efficacy and self-efficacy is positively associated with the participating intention of female players in

e-sports, and gender-swapping has indirect effects on the participating intention of female players in eSports through self-efficacy.

1.3. The Role of Discrimination. Hussain and Griffiths reported that female players have a higher gender-swapping ratio, and removing the gender stereotype threat is the main motivation for gender-swapping [12]. One study on First Person Shooting games showed that 75.9% of the females surveyed said they had been discriminated against in the game [16]. According to stereotype threat theory, the experience of being discriminated against initiates female players' awareness of negative gender stereotypes, resulting in a negative gaming experience and worse performance [18]. Behm-Morawitz and Mastro confirmed that females who have been discriminated against had lower game self-efficacy [34]; female players wanted to be treated fairly and tried to prove that they could play as good as males [16]. Because of the stereotype lift effect, female players perform better when utilizing gender-swapping. In addition, the more the female players are afflicted with negative gender stereotypes, the stronger the stereotype lift effect they gain through gender-swapping. Peck et al. proved that, in the context of gender stereotype threat priming, females who were assigned to male avatars gained significantly higher memory test scores than those with female avatars [35], indicating that stereotype threat priming moderated the stereotype lift effect. For this study, the experience of discrimination was the factor priming female players' gender stereotype threats. As a result, female players who have experienced discrimination gain stereotype lift and achieve higher self-efficacy would induce higher continuous participation intention than those who have not been discriminated against, which means that discrimination can moderate the effect of self-efficacy on continuous participation intention and the mediating effect of self-efficacy. Based on this, we propose the following hypotheses.

Hypothesis 3. Discrimination moderates the relationship of self-efficacy with continuous participation intention of female players in eSports.

Hypothesis 4. Discrimination moderates the mediating effect of self-efficacy of gender-swapping on the continuous participation intention of female players in eSports.

2. Methods

2.1. Participants. A total of 637 female undergraduates, enrolled in six large Southeastern public universities in China, mainly aged between 18 and 22 years, participated in the study. These students listed MOBA (Multiplayer Online Battle Arena) and TPS (Third Person Shooting game) as the eSports genre they mainly played. After eliminating the invalid questionnaires, a total of 475 valid questionnaires were collected.

2.2. Measures

2.2.1. Gender-Swapping. ESports players have several avatars, and gender-swapping happens in certain rounds, but not in all rounds. In order to measure the extent of female players' gender-swapping behavior, this study adapted the gender-swapping scale developed by Kuwik and Baluch (2010). The three items measure the time females spent controlling a male avatar (e.g., I would like to spend more time controlling a male avatar), the degree of female avatar ownership (e.g., I would like to have more male avatars than female avatars), and the degree of enjoyment of playing as a male avatar (e.g., I would prefer and enjoy controlling male avatars). Participants rated their answers on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), with a higher score on the inventory indicating a higher extent of gender-swapping [36]. Cronbach's α was 0.908 ($M = 2.48$, $SD = 1.00$).

2.2.2. Self-Efficacy. Self-efficacy is the players' self-judgment of their ability to achieve a specific task in eSports. This study used an adapted version of the self-efficacy scale compiled by Yao (2006). The five-item scale measured the female players' self-efficacy in eSports (e.g., I have already gained game skills.). Participants rated their answers on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), with a higher score on the inventory indicating better self-efficacy [37]. Cronbach's α was 0.821 ($M = 3.28$, $SD = 0.79$).

2.2.3. Continuous Participation Intention in ESports. The continuous participation intention in eSports was measured by a scale compiled by Yao (2006). The two-item scale measured the female players' continuous participation intention in eSports (e.g., I will continue to play this game in future). Participants rated their answers on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree), with a higher score on the inventory indicating a higher continuous participation intention [37]. Cronbach's α was 0.847 ($M = 3.32$, $SD = 0.84$).

2.2.4. Discrimination. The experience of discrimination is the priming factor of the stereotype threat for female players. In this study, this variable was a dichotomous yes-no measure that indicated whether the female players had been discriminated against in eSports.

2.3. Statistical Analysis. Pearson's correlations and descriptive statistics were used to test all the variables. Three sets of hierarchical regression analyses were performed to examine the relationships between variables in this study model. The PROCESS macro for SPSS (model 4) was employed to test mediation models [38], and through adding discrimination as a moderator, moderated mediation models were further examined (PROCESS model 14, see Figure 1). In both the mediation analyses and moderated mediation analyses, effects were calculated using

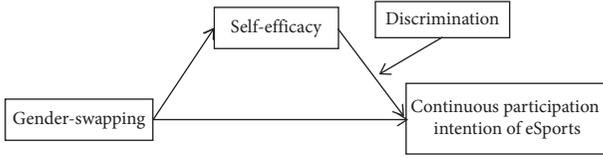


FIGURE 1: The research model.

5000 bootstrapping samples, generating 95% confidence intervals of the bias-corrected bootstrap type, and were considered significant when 0 fell out of the confidence interval [39].

3. Results

Means, standard deviations, and the intercorrelations for the variables utilized in each analysis can be found in Table 1. Gender-swapping was not significantly associated with a continuous participation intention in eSports ($r=0.081$, $p > 0.05$). Gender-swapping was associated with self-efficacy ($r = 0.144$, $p < 0.01$), which was associated with a continuous participation intention in eSports ($r = 0.483$, $p < 0.01$).

Then, the proposed moderated mediation model was tested (see Table 2). Gender-swapping was a positive predictor of self-efficacy ($\beta = 0.11$, $p < 0.01$), and self-efficacy was a positive predictor of continuous participation intention (CPI) ($\beta = 0.45$, $p < 0.001$). Moreover, gender-swapping was not significantly associated with CPI ($\beta = 0.016$, $p > 0.05$), and H_1 was not supported. The PROCESS Model 4 was employed to test the indirect effect of gender-swapping on CPI. The indirect effect indicated that self-efficacy mediated the effect of gender-swapping on CPI ($\beta = .052$, $SE = 0.021$, $p < 0.05$, $CI [0.014, 0.096]$), and H_2 was supported.

To address H_3 and H_4 , PROCESS Model 14 was conducted. Results showed a significant moderating effect of discrimination between self-efficacy and continuous participation intention ($\beta = -0.22$, $SE = 0.09$, $95\% CI = [-0.40, -0.043]$), and H_3 was supported. The interaction was plotted at the no discrimination experience group and discrimination experience group (see Figure 2). As expected, when self-efficacy was high, the discrimination experience group had a higher continuous participation intention compared to the no discrimination experience group. Moderated mediation analyses showed that self-efficacy remained a significant mediation effect for both the discrimination group ($\beta = 0.062$, $SE = 0.030$, $95\% CI = [0.01, 0.12]$) and the no discrimination group ($\beta = 0.038$, $SE = 0.017$, $95\% CI = [0.0075, 0.076]$), but pairwise contrasts between conditional indirect effects were insignificant ($\beta_{contrast} = -0.025$, $SE = 0.018$, $95\% CI = [-0.067, 0.0007]$). Therefore, discrimination did not moderate the indirect effect of self-efficacy (see Table 3), and H_4 was not supported.

4. Discussion

eSports, like traditional sports, create an unfair environment for females to experience discrimination [40–44], which can makes them more likely to withdraw from eSports

TABLE 1: Descriptive statistics and Pearson’s correlations between the variables.

Variable	1	2	3	4
1. Discrimination	1			
2. Gender-swapping	0.03	1		
3. Self-efficacy	-0.049	0.144**	1	
4. Continuous participation intention	-0.09	0.081	0.483**	1
M	1.438	2.48	3.28	3.32
SD	0.497	1.00	0.79	0.84

Note. ** $p < 0.01$, * $p > 0.05$, M = mean, SD = standard deviation.

altogether. To escape gender stereotypes, female players may choose male avatars when participating in eSports. Gender-swapping affects a female player’s gaming psychology [13] and performance [28, 29]. However, questions regarding the relationship between gender-swapping and a female player’s participation in eSports and the influence path remain largely unknown. We formulated a moderated mediation model to answer these questions. This study aimed to extend the knowledge on gender-swapping in the eSports literature.

First, regarding our first aim focusing on the association between gender-swapping and a female’s continuous participation intention in eSports, the relationship between the two factors’ was not significant ($\beta = 0.068$, $p > 0.05$), suggesting that gender-swapping does not directly affect females’ continuous participation intention. The analysis showed that gender-swapping positively predicted self-efficacy, and self-efficacy positively predicted females’ continuous participation intention, and the mediation test highlighted the mediation role of self-efficacy. According to the theory of stereotype lift, when female players control male avatars, they classify themselves as part of non-stereotype target groups, gain a stereotype lift effect, and enhance their self-efficacy and game performance; a high level of self-efficacy improves females’ continuous participation intention in eSports. The conclusions are consistent with the previous finding [13, 28, 29], revealing that gender-swapping affects continuous participation intention in eSports for female players indirectly.

This study further found that discrimination moderated the relationship between self-efficacy and continuous participation intention. This finding can be explained by stereotype threat theory [45]. Compared with female players with no discrimination experience, females who have been discriminated against are more aware of the negative stereotypes of female players. Once the female players gain stereotypes lift through gender-swapping, mitigating performance deficits and enhancing self-efficacy [17], they would have a higher continuous participation intention. The result is supported by a previous study [35].

The abovementioned findings have interesting practical implications. Avatars are the self-presentation or extension of players in the virtual world [46], and players can choose an avatar with a gender opposite to their own. In the eSports context, females can improve their self-efficacy through gender-swapping, and felt that they had the ability to compete with their opponents, thus enhancing their

TABLE 2: Results of simple mediation analysis (process model 4).

(a) Result of simple mediation analysis								
Outcome	SEF				CPI			
Predictor	β (SE)	p	95% CI lower	95% CI upper	β (SE)	p	95% CI lower	95% CI upper
GS	0.11 (0.036)	<0.005	0.043	0.18	0.016(0.035)	0.066	-0.053	0.084
SEF	—	—	—	—	0.46 (0.045)	<0.001	0.38	0.55

(b) Result of the indirect effect				
GS→SEF→CPI	Effect (SE)	95% CI lower	95% CI upper	
	0.052 (0.021)	0.014	0.096	

Note. GS = gender-swapping, SEF = self-efficacy, CPI = continuous participation intention, SE = standard error.

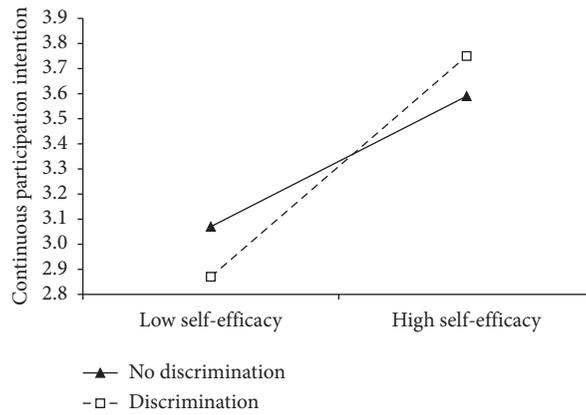


FIGURE 2: Moderating effect of discrimination for self-efficacy on continuous participation intention.

TABLE 3: Results of the moderated mediated model (process model 14).

(a) Results of the moderated mediated model analysis								
Outcome	SEF				CPI			
Predictor	β (SE)	p	95% CI lower	95% CI upper	β (SE)	p	95% CI lower	95% CI upper
GS	0.011 (0.036)	0.0017	0.043	0.18	0.018 (0.035)	0.57	-0.049	0.089
DIS	—	—	—	—	0.74 (0.30)	<0.05	0.14	1.33
SEF	—	—	—	—	0.77 (0.13)	<0.001	0.51	1.03
SEF*DIS	—	—	—	—	-0.22 (0.090)	<0.05	-0.40	-0.043

(b) Results of the conditional indirect effect of self-efficacy at different status of discrimination				
GS→SEF→CPI	Discrimination experience	Effect (SE)	95% CI lower	95% CI upper
	No (effect 1)	0.038 (0.017)	0.0075	0.072
	Yes (effect 2)	0.062 (0.026)	0.016	0.12
	Effect 1 minus effect 2	-0.24(0.018)	-0.067	0.0007

Note. GS = gender-swapping, SEF = self-efficacy, CPI = continuous participation intention, SE = standard error.

continuous participation intention in eSports. This was especially the case for females who had been discriminated against, for whom the continuous participation intention was higher. Therefore, eSports operators could add certain “masculine” elements to female avatars, such as a more muscular appearance, to moderately increase the ability of female avatars and weaken the impact of gender stereotypes on female players. On the other hand, the gender stereotype threat results the female’s underrepresentation and performance in math [47] and STEM [48] that discourage them pursuing science and technology [49]. While online learning becomes popular, educators could create a learning

application with avatar attributes; female students would benefit from this human-computer interaction way by embodying male avatars and have better performance [35].

This study has some limitations. First, the current sample was cross-sectional and used a Chinese female college sample, which lacked external validity. Although this group represents the main female participants in the current eSports, future research could expand the participants’ ages and occupations. Second, the effect of gender-swapping on the female players’ intention to continue participating in eSports may also be influenced by the female player’s individual traits. Future research should consider female

players with different personality traits. Third, the scale measuring continuous participation intention only contained two items, and whilst the scale's Cronbach's α was 0.847, showing an acceptable internal consistency, using more scale items in replications may be more effective. Fourth, this study neglected the antecedents of females' gender-swapping. Fox and Tang argued that discrimination is an antecedent of female players' gender-swapping [15], but the association between discrimination and gender-swapping was not significant in this study, which showed that discrimination does not lead to gender-swapping by female players in eSports. It remains a task of future research to explore the antecedents of females' gender-swapping behavior.

5. Conclusions

In summary, this study makes some theoretical contributions. In eSports, as a sportification form of human-computer interaction, females still experience great gender inequity and gender stereotypes. Different from traditional sports participants, part of female players in eSports use gender-swapping to dispel the negative impact of gender inequity. This study provides an empirical framework for testing the indirect relationship between gender-swapping and females' continuous participation intention in eSports and the moderating effect of discrimination. These results can shed light on the underlying mechanism between gender-swapping and females' continuous participation intention in eSports. Our findings may help the eSports industry to create a sustainable business environment by promoting female participation.

Data Availability

The data used to support the findings of this study are available from the first author or corresponding author upon request anytime.

Conflicts of Interest

The authors declare no conflicts of interest.

Acknowledgments

This work was supported by the Social Science Foundation of Fujian (grant nos. FJ2018B062 and FJ2019B101), Xiamen Science and Technology Plan Project (grant no. 2018S2247), Outstanding Young Academic Cultivation Plan Project of Fujian (grant no. JYTJQ201804), and Fujian Provincial Department of Science and Technology, Soft Science Research Plan Project (grant nos. 2019R0093 and 2019R0094).

References

- [1] G. B. Cunningham, S. Fairley, L. Ferkins et al., "ESport: construct specifications and implications for sport management," *Sport Management Review*, vol. 21, no. 1, pp. 1–6, 2018.
- [2] M. Pluss, K. J. M. Bennett, A. R. Novak, D. Panchuk, A. Coutts, and J. Franssen, "Esports: the chess of the 21st century," *Frontiers in Psychology*, vol. 10, p. 156, 2019.
- [3] J. Hamari and M. Sjöblom, "What is eSports and why do people watch it?" *Internet Research*, vol. 27, no. 2, 2017.
- [4] Tencent, *Report on the Development of China's eSports Industry in 2018*, Tencent, Shenzhen, China, 2019.
- [5] L. Vermeulen, E. Núñez Castellar, and J. Van Looy, "Challenging the other: exploring the role of opponent gender in digital game competition for female players," *Cyberpsychology, Behavior, and Social Networking*, vol. 17, no. 5, pp. 303–309, 2014.
- [6] O. Ruvalcaba, J. Shulze, A. Kim, S. R. Berzenski, and M. P. Otten, "Women's experiences in eSports: gendered differences in peer and spectator feedback during competitive video game play," *Journal of Sport and Social Issues*, vol. 42, no. 4, pp. 295–311, 2018.
- [7] L. K. Kaye, C. E. Gresty, and N. Stubbs-Ennis, "Exploring stereotypical perceptions of female players in digital gaming contexts," *Cyberpsychology, Behavior, and Social Networking*, vol. 20, no. 12, pp. 740–745, 2017.
- [8] A. Brehm, "Navigating the feminine in massively multiplayer online games: gender in World of Warcraft," *Frontiers in Psychology*, vol. 4, p. 903, 2013.
- [9] M. Z. Yao, C. Mahood, and D. Linz, "Sexual priming, gender stereotyping, and likelihood to sexually harass: examining the cognitive effects of playing a sexually-explicit video game," *Sex Roles*, vol. 62, no. 1–2, pp. 77–88, 2010.
- [10] S. Huh and D. Williams, *Dude Looks like a Lady: Gender Swapping in an Online Game*, pp. 161–174, Springer, Berlin, Germany, 2010.
- [11] M. D. Griffiths, M. N. O. Davies, and D. Chappell, "Breaking the stereotype: the case of online gaming," *CyberPsychology & Behavior*, vol. 6, no. 1, pp. 81–91, 2003.
- [12] Z. Hussain and M. D. Griffiths, "Gender swapping and socializing in cyberspace: an exploratory study," *CyberPsychology & Behavior*, vol. 11, no. 1, pp. 47–53, 2008.
- [13] P. Royse, J. Lee, B. Undrahbuyan, M. Hopson, and M. Consalvo, "Women and games: technologies of the gendered self," *New Media & Society*, vol. 9, no. 4, pp. 555–576, 2007.
- [14] M. Boler, "Hypes, hopes and actualities: new digital Cartesianism and bodies in cyberspace," *New Media & Society*, vol. 9, no. 1, pp. 139–168, 2007.
- [15] J. Fox and W. Y. Tang, "Women's experiences with general and sexual harassment in online video games: rumination, organizational responsiveness, withdrawal, and coping strategies," *New Media & Society*, vol. 19, no. 8, pp. 1290–1307, 2017.
- [16] M. A. McDaniel, *Women in Gaming: A Study of Female Players' Experiences in Online FPS Games*, pp. 1–34, The University of Southern Mississippi, Hattiesburg, MS, USA, 2016.
- [17] L. K. Kaye and C. R. Pennington, "'Girls can't play': the effects of stereotype threat on females' gaming performance," *Computers in Human Behavior*, vol. 59, pp. 202–209, 2016.
- [18] L. Vermeulen, E. N. Castellar, D. Janssen, L. Calvi, and J. Van Looy, "Playing under threat. Examining stereotype threat in female game players," *Computers in Human Behavior*, vol. 57, pp. 377–387, 2016.
- [19] K. L. Gray, "Deviant bodies, stigmatized identities, and racist acts: examining the experiences of African-American gamers in Xbox live," *New Review of Hypermedia and Multimedia*, vol. 18, no. 4, pp. 261–276, 2012.

- [20] J. H. Kuznekoff and L. M. Rose, "Communication in multi-player gaming: examining player responses to gender cues," *New Media & Society*, vol. 15, no. 4, pp. 541–556, 2013.
- [21] C. Shen, R. Ratan, Y. D. Cai, and A. Leavitt, "Do men advance faster than women? debunking the gender performance gap in two massively multiplayer online games," *Journal of Computer-Mediated Communication*, vol. 21, no. 4, pp. 312–329, 2016.
- [22] R. A. Ratan, N. Taylor, J. Hogan, T. Kennedy, and D. Williams, "Stand by your man: an examination of gender disparity in league of legends," *Games and Culture*, vol. 10, no. 5, pp. 438–462, 2015.
- [23] J. L. Smith, "Understanding the process of stereotype threat: a review of mediational variables and new performance goal directions," *Educational Psychology Review*, vol. 16, no. 3, pp. 177–206, 2004.
- [24] L. Vermeulen, S. Van Bauwel, and J. Van Looy, "Tracing female gamer identity. An empirical study into gender and stereotype threat perceptions," *Computers in Human Behavior*, vol. 71, pp. 90–98, 2017.
- [25] N. Yee and J. Bailenson, "The Proteus effect: the effect of transformed self-representation on behavior," *Human Communication Research*, vol. 33, no. 3, pp. 271–290, 2007.
- [26] J. Peña, J. T. Hancock, and N. A. Merola, "The priming effects of avatars in virtual settings," *Communication Research*, vol. 36, no. 6, pp. 838–856, 2009.
- [27] M. Lehdonvirta, Y. Nagashima, V. Lehdonvirta, and A. Baba, "The stoic male," *Games and Culture*, vol. 7, no. 1, pp. 29–47, 2012.
- [28] J.-E. R. Lee, C. I. Nass, and J. N. Bailenson, "Does the mask govern the mind?: effects of arbitrary gender representation on quantitative task performance in avatar-represented virtual groups," *Cyberpsychology, Behavior, and Social Networking*, vol. 17, no. 4, pp. 248–254, 2014.
- [29] R. Ratan and Y. J. Sah, "Leveling up on stereotype threat: the role of avatar customization and avatar embodiment," *Computers in Human Behavior*, vol. 50, pp. 367–374, 2015.
- [30] P. Tsai, C. Tsai, and G. Hwang, "Elementary school students' attitudes and self-efficacy of using PDAs in a ubiquitous learning context," *Australasian Journal of Educational Technology*, vol. 26, no. 3, pp. 297–308, 2010.
- [31] D. Choi and J. Kim, "Study on the effect of the cognitive performance, self-efficacy and self-esteem on the players' flow experience during playing online games," *Journal of Korea Game Society*, vol. 13, no. 6, pp. 5–14, 2013.
- [32] S. Trepte and L. Reinecke, "The pleasures of success: game-related efficacy experiences as a mediator between player performance and game enjoyment," *Cyberpsychology, Behavior, and Social Networking*, vol. 14, no. 9, pp. 555–557, 2011.
- [33] J. E. Bigné, L. Andreu, and J. Gnoth, "The theme park experience: an analysis of pleasure, arousal and satisfaction," *Tourism Management*, vol. 26, no. 6, pp. 833–844, 2005.
- [34] E. Behm-Morawitz and D. Mastro, "The effects of the sexualization of female video game characters on gender stereotyping and female Self-Concept," *Sex Roles*, vol. 61, no. 11–12, pp. 808–823, 2009.
- [35] T. C. Peck, M. Doan, K. A. Bourne, and J. J. Good, "The effect of gender body-swap illusions on working memory and stereotype threat," *IEEE Transactions on Visualization and Computer Graphics*, vol. 24, no. 4, pp. 1604–1612, 2018.
- [36] A. Kuwik and B. Baluch, "Gender differences in polish citizen's attitudes towards immigration to the UK," *Europe's Journal of Psychology*, vol. 6, no. 4, pp. 192–208, 2010.
- [37] T. Yao, *Research on the Continuous Use of Online Games Based on the Extended Theory of Planned Behavior*, Zhejiang University, Zhejiang, China, 2006, in Chinese.
- [38] A. F. Hayes, *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, Guilford Publications, New York, NY, USA, 2017.
- [39] A. F. Hayes, "An index and test of linear moderated mediation," *Multivariate Behavioral Research*, vol. 50, no. 1, pp. 1–22, 2015.
- [40] J. Fox and W. Y. Tang, "Sexism in online video games: the role of conformity to masculine norms and social dominance orientation," *Computers in Human Behavior*, vol. 33, pp. 314–320, 2014.
- [41] M. E. Ballard and K. M. Welch, "Virtual warfare," *Games and Culture*, vol. 12, no. 5, pp. 466–491, 2017.
- [42] S. Chess and A. Shaw, "A conspiracy of fishes, or, how we learned to stop worrying about #GamerGate and embrace hegemonic masculinity," *Journal of Broadcasting & Electronic Media*, vol. 59, no. 1, pp. 208–220, 2015.
- [43] M. Consalvo, "Confronting toxic gamer culture: a challenge for feminist game studies scholars," *Ada: A Journal of Gender, New Media, and Technology*, vol. 1, no. 1, pp. 1–6, 2012.
- [44] A. Salter and B. Blodgett, "Hypermasculinity & dickwolves: the contentious role of women in the new gaming public," *Journal of Broadcasting & Electronic Media*, vol. 56, no. 3, pp. 401–416, 2012.
- [45] C. M. Steele and J. Aronson, "Stereotype threat and the intellectual test performance of African Americans," *Journal of Personality and Social Psychology*, vol. 69, no. 5, pp. 797–811, 1995.
- [46] S. Bengtsson, "Avatar as second suit: power and participation in virtual work," *Games and Culture*, vol. 14, no. 5, pp. 560–578, 2019.
- [47] C. Good, J. Aronson, and J. A. Harder, "Problems in the pipeline: stereotype threat and women's achievement in high-level math courses," *Journal of Applied Developmental Psychology*, vol. 29, no. 1, pp. 17–28, 2008.
- [48] N. C. Krämer, B. Karacora, G. Lucas, M. Dehghani, G. Rüter, and J. Gratch, "Closing the gender gap in STEM with friendly male instructors? on the effects of rapport behavior and gender of a virtual agent in an instructional interaction," *Computers & Education*, vol. 99, pp. 1–13, 2016.
- [49] Y. Yücel and K. Rızvanoğlu, "Battling gender stereotypes: a user study of a code-learning game, 'Code Combat,' with middle school children," *Computers in Human Behavior*, vol. 99, pp. 352–365, 2019.