Master Thesis

Sex Sells: Examining the Influence of Sexist Attitudes, Gender, and Gamer Identity on Avatar and Creator Perceptions in Gaming Environments

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Abstract

Over the past years, the gaming industry has experienced rapid growth, accompanied by a growing scientific interest in the industry. A focus point of this research direction can be found in the different presentations of female avatars as well as the behavior directed at women within the industry. However, research examining how stereotypical avatars and their respective creators are perceived in gaming environments and predictors of these perceptions remains sparse. To fill in this gap, the present experimental study investigated the influence of gender on gaming avatar perceptions, while controlling for ambivalent sexist attitudes and gamer identity. Participants (N = 92) rated eight female and eight male avatars, which were equally distributed among female and male creators. Participants' sexist attitudes were measured using the Ambivalent Sexism Inventory (ASI) and the Ambivalent Sexist Inventory for Men (AMI), with scores for hostile and benevolent sexism calculated. Further, Participants gamer identity was measured using the gamer identity scale. The avatars were evaluated based on their perceived adherence to gender norms, their likeliness to be objectified, and their playability. Further, creators were rated based on participants willingness to team up with them and their perceived capabilities. It was found that both avatar and creator gender influenced avatar perceptions. Avatars were rated as more gender normative when avatar and creator gender matched. Creators of male avatars were generally perceived as more capable, and participants showed a higher willingness to team up with them. In contrast, the influence of ambivalent sexist attitudes and gamer identity were limited and only applied to specific avatar-creator gender combinations. Game developers should consider offering more diverse avatars, without reinforcing traditional gender stereotypes by oversexualizing female characters or reducing them to secondary roles.

Introduction

With several million gamers worldwide and various games being released every week, gaming has long evolved from niche to mainstream. The industry has had tremendous growth over the past decades and continues to grow exponentially (Newzoo, 2024). However, this growth has not been without controversy, since especially women have been systematically treated differently in gaming environments than men (Bègue et al., 2017). Often viewed as outsiders, or worse, intruders, women rarely receive the same treatment as their male counterparts and are regularly confronted with remarks concerning their gaming capabilities (Shaw & Chess, 2016; Dewinter & Kocurek, 2017).

A famous example of the negative evaluation of women in gaming is represented by the Gamergate incident, which occurred in 2014, when Eron Gjoni published a lengthy blog post about his ex-girlfriend and Game Developer, Zoe Quinn. The hateful blog post contained (unsubstantiated) speculations that Zoe had cheated on him with professionals within the gaming industry, to promote her latest game (Bustos-Ortega et al., 2023). Leading to a heated social media discussion, allegedly about ‘ethics in games journalism’ (#Gamergate). Problems related to ethical behaviour in the industry were sparsely discussed, instead, criticism fixated on a different problem within the gaming community: women (Heron et al., 2014).

In the weeks and months following Gamergate, Zoe and other well-known female game developers received an overwhelming number of graphic rape and death threats. Even being forced to leave their homes because their addresses were leaked and appeared in threatening letters (O’Donnell, 2022). Apart from Zoe, other female game developers, gamers, scholars, journalists as well as male supporters were the main targets of the Gamergate hate and harassment wave (Shaw & Chess, 2016). Whether even one of these harassing actions can be attributed to fighting for ethics in games journalism is more than questionable.

The Gamergate incident brought to light the deep-seated issues of sexism and gender bias within the gaming community. The industries vicinity to sexism is evident in various areas,

including gaming productions, gender representations, and gaming environments. Women account for only a small fraction of game developers and often face workplace discriminations and lower salaries than male developers (Sweetser et al., 2013; Weststar & Legault, 2018). Although the Gamergate incident happened over a decade ago, the misogyny within the gaming sector persists till today, as can be seen by the recent lawsuit against Blizzard in 2021 (Foust, 2024). The lawsuit persists, that managers within the company tolerated and partially reinforced sexual misconduct against female employees (Foust, 2024). Further, female gender portrayals in games consistently present women as secondary or stereotypical roles, reducing the characters to mere appearances (Bowey et al., 2017). As gamers, women are often perceived as intruders rather than allies, disturbing the male-dominated gaming domain and challenging the traditional (male) 'gamer' identity simply by their presence (Shaw & Chess, 2016; Dewinter & Kocurek, 2017).

Despite growing awareness of these issues, there remains a need for research that specifically examines how gender, sexist attitudes, and gamer identity influence perceptions of sexist content in games.

Ambivalent Sexism

The term sexism describes negative stereotypical attitudes and behaviors directed at one gender (Glick & Fiske, 1996). Sexism can appear both openly and covertly and it further varies depending on whether men or women are confronted with it or are the recipient (Benatar, 2012; Morillo et al., 2022).

Ambivalent sexism comprises two sets of sexist attitudes, namely hostile and benevolent sexism. Together they are often referred to as ambivalent sexism, due to their contrasting nature (Glick & Fiske, 2018). Hostile sexism describes unambiguously adverse attitudes directed at men or women (Martinez-Pecino & Durán, 2019). This openly adverse form of sexism has been linked to the rejection of gender equality and a desire to maintain traditional gender roles, with the associated gender hierarchies (Barreto & Ellemers, 2005a).

Examples of statements compromising hostile sexist attitudes against women are "Women seek to gain power by getting control over men" and "Many women get a kick out of

teasing men" (Glick & Fiske, 1996), while hostile sexism directed at men includes statements like "Most men sexually harass women, once they are in a position of power over them" (Glick & Fiske, 1999).

In contrast, benevolent sexism is more subtle and therefore harder to detect. Although it also uses stereotypical gender roles, the tone of the message is much more positive (Glick & Fiske, 1996). Even more so, benevolent sexism can elicit prosocial behaviours from the recipient, all while reinforcing traditional gender roles which are restricting both genders (Barreto & Ellemers, 2005b). Benevolent attitudes directed at women include the conception that women are superior in moral sensibility and deserve to be rescued first in an emergency (Glick & Fiske, 1996). In contrast, benevolent sexism directed at men includes expectations of them taking higher risks, especially for the sake of others (helping/rescuing others) (Glick & Fiske, 1999). Lastly, benevolent sexism related to both genders, assesses the need for a heterosexual relationship between men and women as a necessity for a happy and fulfilled life (Glick & Fiske, 1996; Glick & Fiske, 1999).

To summarize, both men and women can be the cause of sexism and their recipient, sexism is neither limited to harassing actions nor to sexist acts directed only at women. Although more inclusive, these terms still exclude non-heterosexual individuals, since the relationship between men and women is displayed as a need for a fulfilled life.

Ambivalent Sexism in Gaming Environments

More recent research examined how ambivalent sexist attitudes are displayed in gaming environments. Hostile sexism (ASI) has been linked to aggressive, demeaning behaviour against female avatars and to their objectification (Fox & Potocki, 2016, Gabbiadini et al., 2016). Additionally, players with high hostile sexist attitudes (ASI) were found to perceive creators of female avatars as less competent than creators of male avatars (Fox & Tang, 2014; Kaye et al., 2017). These differences in competence perception between the two genders even persisted when avatars performed identical tasks, with identical outcomes (Nowak & Rauh, 2005). In contrast, participants with strong benevolent sexist attitudes (ASI) viewed female avatars in a rather

idealized way, perceiving them as needing protection rather than focusing on their sexualization (Stermer & Burkley, 2012; Fox & Tang, 2014; Fox & Potocki, 2016).

Regarding the influence of ambivalent sexist attitudes directed at men and their influence on avatar perception research has been more sparsely. Nevertheless, hostile sexist attitudes (AMI) were found to predict a more demeaning behaviour directed at sexualized male avatars (Fox & Potocki, 2016; Gabbiadini et al., 2016). Further, male avatars were more likely perceived as heroes and protectors if benevolent sexist attitudes were high (Stermer & Burkley, 2012).

Interestingly, the study conducted by Breuer et al. (2015) demonstrated that participants with high ambivalent sexist attitudes were more likely to accept typical gender portrayals of characters in games, especially when hostile sexist attitudes were high. These portrayals incorporate the limitation of female characters to being mostly displayed as sex-objects and reduced to their attractiveness. In contrast, male characters in games are typically created with the intention of appearing strong and competent (Breuer et al., 2015).

Based on these studies, it is hypothesized that high hostile sexist attitudes (ASI) predict a high sexualization of female avatars and a low perceived capability of their creators (Fox & Potocki, 2016). Further, high benevolent sexism might predict a higher perceived adherence to gender norms of female avatars, accompanied by lower objectification ratings and a high willingness to play these avatars (Glick & Fiske, 1996; 1999; Fox & Tang, 2014). For male avatars, strong hostile sexist attitudes (AMI) could negatively influence the gender norm ratings as well as their willingness to play the avatars (Glick & Fiske, 1999, Fox & Potocki, 2016; Gabbiadini et al., 2016). Lastly high benevolent sexism (AMI) is hypothesized to predict higher gender norm ratings, especially if avatars are masculine, combined with a higher willingness to play these avatars (Stermer & Burkley, 2012).

Portrayal of Female and Male Characters in Games

Ambivalent sexism is deeply embedded in the differences in gender representations in games. Although perceived as a minority, women account for nearly half of the gaming population (Paaßen et al., 2017). Despite this nearly equal distribution of genders between gamers, the focus of game development remains centered on the young, white, heterosexual male

(Everett et al., 2017; Bowey et al., 2017; Cote, 2020b). Consequently, video games continue to be predominantly marketed to appeal to the male gaze, as reflected in the portrayal of both male and female gaming characters (Behm-Morawitz, 2017).

This is exemplified by the over-sexualization of female characters, presented with exaggerated breasts and impossibly thin bodies (Dill & Thill, 2007; Downs & Smith, 2010). Additionally, female characters are rarely depicted to be the center of the game, instead, they serve to fulfill passive roles (Lynch et al., 2016). Their portrayal is mostly limited to overly sexualized, helpless tropes, with the main purpose of supporting the development of the male main character (Bowey et al., 2017; Bègue et al., 2017). Even as strong main characters, female characters remain oversexualized, as can be seen by one of the most famous examples of Lara Croft (Bowey et al., 2017). These representations align with both hostile and benevolent attitudes, undermining women's capabilities and autonomy.

In contrast, male characters are portrayed as protagonists, the story's heroes, the saviors of the village, or at the very least, the rescuers of the helpless woman (Behm-Morawitz, 2017; Bowey et al., 2016). Most of the time, male characters are portrayed as white, hyper-muscular men, with a substantial amount of muscle mass (Burgess et al., 2007; Bowey et al., 2017. In ambivalent sexism terms, male character representations align with benevolent sexist attitudes, by portraying males as protectors, driven by a sense of duty to help others. These portrayals suggest that men must be strong and should sacrifice themselves for the greater good, reinforcing traditional gender stereotypes.

These differences in gender representations highlight the industry's focus on catering to a male-centric view, with objectifications according to male wish fulfillment (Fox & Tang, 2014; Heron et al., 2014). The contrasting gender portrayals may not only shape players' gender roles but also contribute to the marginalization and objectification of female gamers, impacting their gaming experience and (lack of) gamer identity.

The influence of Personal Attitudes on Gaming Perception

One might assume that the gaming experiences of female gamers would be significantly harmed by the ever-present sexist portrayal of females in games. However, personal sexist

attitudes and beliefs are far more likely to affect individual experiences of sexist gaming content (Roets et al., 2012; Bowey et al., 2017).

This is supported by the Social Cognition theory (Fiske & Taylor, 1991), which implies that individuals interpret information based on pre-developed mental structures or schemas. These schemas are shaped by individual experiences and serve as guidelines, navigating individual perception, memory, and behaviour (Fiske & Taylor, 1991). For example, a (role) schema might include the expectation that women should primarily act as mothers and housewives, based on the gender schema that views women as inherently more nurturing than men. If a woman does not fit into this role schema, individuals might experience discomfort or readily dismiss the information, because it challenges their perception of the world (Fiske & Taylor, 2020). How individuals interpret information based on schemas becomes evident when looking at Baldwin's (1992) study, which demonstrated that individuals with well-developed schemas concerning rejection were more likely to perceive rejection in ambiguous social situations. Hence, individuals with pre-existing schemas are more likely to interpret information according to those structures, even with little support for their schema.

In that sense, gamers without sexist attitudes who play sexist games are likely to enjoy those games less than gamers with aligning sexist attitudes. Although it should be noted that sexist games do not enhance the enjoyment of sexist gamers, they just do not harm enjoyment (Bowey et al., 2017). Thus, it is assumed that people with strong ambivalent sexist attitudes have pre-existing schemas related to gender roles and stereotypes. These, in turn, influence how sexist media is perceived and interpreted. If a representation of a hypersexualized, trope female character aligns with personal beliefs about women, the stimuli will likely be regarded as ‘normal’. In contrast, if the representation of the woman challenges the existing sexist schema, the portrayal might be dismissed as unrealistic, creating feelings of discomfort and/or resistance (Fiske & Taylor, 2020). Therefore, it is assumed that pre-existing ambivalent sexist attitudes influence the perception of sexist media.

Repeated Exposure to Sexualized Media

Although pre-existing schemas affect our perceptions, repeated exposures to certain stimuli can also (re-)shape our pre-existing schemas (Cline et al., 1973). In other words, individuals who are continuously presented with media that includes certain attitudes, begin to adopt these attitudes (Cline et al., 1973). In line with this, Gerbners (2002) Cultivation Theory assumes that our perception is influenced by continuous exposure to certain media. The media we consume is assumed to form our perceptions of reality, making us believe, that the real world starkly resembles the world depicted in the media (Gerbner et al., 2002). The study of Fox and Potocki (2016) examined the influence of long-term consumption of sexist media on consumers perceptions of gender roles and stereotypes. Their research indicates that longitudinal exposure to sexist media increases consumer acceptance of gender stereotypes and sexist behaviours (Fox & Potocki, 2016).

Applying the theory to the context of the present study, it can be assumed that regular consumers of sexualized media are more likely to believe that the real world conveys comparable sexist values and norms as presented in the media. Decreasing regular consumers' sensibility to sexist content, while increasing the likelihood of accepting sexist attitudes displayed in real life. Therefore, individuals who frequently play sexist video games may adopt the presented opinions and attitudes over time.

Furthermore, the Desensitization Theory suggests that reactions to stimuli decrease, with repeated exposure to said stimuli (Cline et al., 1973). For example, the study by Gabbiadini et al. (2016) assessed the influence of repeated exposure to violent media, through the channels of video games, on participants' perceptions and opinions concerning violence. The authors found that after frequent exposure to violent content, participants showed diminished empathy regarding victims of violence and an increase in aggressive behaviors (Gabbiadini et al., 2016). In the context of this study, it is assumed that participants who regularly engage with sexist gaming content, display a reduced response to the stimuli of sexist content. Thus, regular consumption of sexist media is believed to affect the way consumers react to sexism, by decreasing the likelihood of negative responses and increasing general acceptance of sexism.

In sum, both theories suggest that consumers of sexist media become accustomed to it over time. Consequently, they notice sexism less frequently, and if they do, they perceive it as less severe. Moreover, they consider the sexist portrayals within the media as the norm, possibly projecting them into real life. Individuals who are regularly exposed to (sexualized) video games, may be habituated to sexist imagery, unable to recognize the sexualized components as such. Hence, gamers and non-gamers could potentially significantly differ in terms of sexist attitudes and the perception of sexualized media.

The Dilemma of the Gamer Identity

There is no one definition of a gamer, or attributes related to a gamer identity (Paaßen et al., 2017). The term 'gamer' has long been used to describe and, predominantly, make fun of behaviours and appearances of those within the group. Gamers in the media were presented as socially awkward, unattractive, unpopular, young males (Williams et al., 2008). Therefore, the gamer stereotype was not considered particularly desirable. More recent studies have challenged this view of the stereotypical gamer, concluding that the differences between online gamers, offline gamers, and non-gamers are insignificant (Kowert et al., 2014). Typical gamers were found to be in their 30s, equally (un)motivated, (un)athletic, and (un)popular as their non-gaming counterparts (Kowert et al., 2014). Or, in other words, none of the above-mentioned stereotypes were found to apply to gamers.

Despite the research-based reappraisal of the gamer stereotype, the connection between gamers and males persists. The concept of being a 'gamer' appears to be gendered, with men more likely to self-identify as gamers than women (Paaßen et al., 2017; Everett et al., 2017, Shaw & Chess, 2016). This male identification is further supported by the overwhelming number of popular and professional male gamers and the underrepresentation of female gamers (Paaßen et al., 2017; Weststar & Legault, 2018). In contrast to men, female gamers, irrespective of their self-identification as such, are regularly confronted with harassment, objectification, and sexual remarks within the gaming context (Paaßen et al., 2017; Kuss et al., 2022).

When playing online games, female gamers are three times more likely to receive hateful/sexist comments in online voice chats, compared to men (Kuznekoff & Rose, 2013;

Bègue et al., 2017). Further, if male gamers excel in online video games, their success is attributed to their abilities (Kaye et al., 2018). In contrast, if female gamers excel in video games, it is attributed to luck and likely accompanied by hostile remarks coming from less able male gamers, out of fear of losing prestige (Kaye et al., 2018). These findings highlight the different treatments of male and female gamers, with the latter generally being perceived as less competent and not worthy of the gamer definition (Kaye et al., 2018). This weakens women's connection to gaming and the concept of being a ‘gamer’, reinforcing the impression that these concepts contradict, while depriving women of many of the positive benefits related to gaming (Paaßen et al., 2017; Kuss et al., 2022).

These biases against female players are rooted in deep-seated sexism prevalent in contexts outside of gaming. As the study of Deaux and Emswiller (1974) found, men are generally perceived to outperform women. These biases even persist across gender stereotypical tasks, meaning that men were also perceived to outperform women in tasks that were perceived to be feminine (Deaux & Emswiller, 1974). Since gaming has been widely labeled as a male-dominated domain these gender biases might be even more easily attributed to women in gaming environments (Lewis & Griffiths, 2011). This is also in line with research indicating that female gamers are generally labelled as 'casual’ rather than ‘hardcore'' gamers, supporting the notion that female players are less skillful and cannot be regarded as ‘real gamers’ (Kaye et al., 2018). Therefore, it does not come as a surprise that many female gamers decide to play male avatars in an attempt to better fit in and not be noticed as ‘the intruder’ (Kaye et al., 2018). Although the gender spread of casual and hardcore gamers is nearly equal, stereotypes persist and female players are still viewed as less skillful than their male counterparts (Eklund, 2016)

Based on the literature, it is assumed that gender influences the perception of gaming-related media. It is hypothesized that male gamers are perceived as more capable than female gamers, and that participants are therefore more willing to team up with male creators. Furthermore, the mere presence of a female, regardless of whether she is the gamer or represented in the avatar, might influence how the avatar-creator combination is perceived. Thus, this study aims to investigate how gamer identity and exposure to different avatar and creator

gender combinations influence perceptions of avatars adherence to gender norms, objectification, and willingness to play. Further, it is examined whether female creators are treated and perceived differently than male creators, and whether these differences are further influenced by their choice of avatar gender and the gender of the participant.

Research Questions and Hypotheses

Based on previous research and theoretical frameworks, this study investigates the influence of gender on the perception of sexist gaming avatars. Further, the influence of personal ambivalent sexist attitudes and gamer identity on avatar perception are examined. The following research questions and associated hypotheses were formulated

Q1: *Do avatar-creator gender pairings influence the perceptions of creators and sexualized avatars?*

Hypothesis 1 Mismatched avatar creator gender pairings will receive lower perceived adherence to gender norms and capability ratings

Hypothesis 2 Female creators will receive lower capability and team up ratings than male creators

Q2: *Do sexist attitudes influence the perception of sexist avatars?*

Hypothesis 2 Avatars are perceived as more sexualized when participants hostile sexist attitudes are high

Hypothesis 3 Avatars are perceived as more gender normative when benevolent sexist attitudes are high

Q3: *Does Gamer identity influence the perception of sexist avatars?*

Hypothesis 4 People high in gamer identity will rate avatars as less sexualized

Pilot study

Two studies were conducted to cover the scope of this thesis. The first study aimed to select a small set of avatars that were generally perceived as sexist and objectifying. Further, it provided an unbiased assessment of avatars, based solely on their appearance.

Participants

Overall, 50 responses were recorded for the first study out of which 3 responses had to be excluded due to missing data. The final 47 responses consisted of 7 male (14.9%) and 39 female (83%) participants, as well as one non-binary person (2.1%). Participants' mean age was *M* = 21.8 years old (SD = 2.9). Participants were recruited via Qualtrics and Sona, a university internal system that grants students course credit as compensation for the time spent taking a survey.

Materials

For this study, 110 World of Warcraft Avatars served as the stimuli and were created using the website wowhead, a selection of avatars used in the pilot can be seen in Figure 1. Avatars were both male and female and additionally differentiated each other through, among other factors, races (elf, night elf, human, troll), skin colors, and amount of clothes. The primary outcome measures of this study were the perceptions of avatars, based on sexism and objectification scores, as well as their femininity and masculinity scores.

To measure these perceptions, four new items were created. Two items intended to measure how sexualized and objectifying avatars were perceived to be. To assess whether participants perceived avatars as sexualized, the item “This avatar is sexist” was created. Further, the item “This avatar is objectifying” was generated to evaluate how objectifying avatars were considered to be. Items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The other two items were created to evaluate how feminine and masculine avatars were rated. Thus, the items “This avatar is feminine” and “This avatar is masculine” were created. Participants had to rate these statements on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Figure 1

Selection of Avatars Created for the Pilot Study

Procedure

Before data collection started, ethical approval was obtained from the University of Twente ethics committee (request number: 240112). After the approval, participants were first presented with an outline of the study, informing them about the nature of the questions and the approximate time the study would take (20-25 minutes). Next, participants were asked two demographic questions concerning their age and gender, before finally being presented with informed consent. The informed consent enlightened participants about the purpose of the study, the need for them to answer questions truthfully, the use of their anonymized data, and their ability to withdraw from the study at any time.

Next, participants were presented with 110 World of Warcraft Avatars, varying in gender, clothing, and skin color. For each avatar, the same four statements were to be rated on a five-point Likert scale ranging from 1: Strongly disagree to 5: Strongly agree, with a neutral point at 3; Neither agree nor disagree. Avatars were to be evaluated based on their sexist and objectifying representation, as well as their feminine and masculine appearance.

Data Analysis

The data was analyzed with the help of SPSS (Version 27), first, three incomplete responses were deleted. Second, sexism and objectification scores were analyzed, to differentiate between high and low sexist and objectifying avatars. Further, it was tested whether female

avatars were generally perceived as feminine and male avatars as masculine, to ensure that questions were answered properly. Due to a variety of very similar avatars, only differentiating themselves through skin color, hair color, or pose, avatars were color-coded, to signal that they are variants of the same main avatar.

Results

Generally, female avatars were perceived as more sexist (M = 2.67, SD = 0.84), objectifying (M = 2.81, SD = 0.80), and feminine (M = 4.49, SD = 0.45) than male avatars (Sexism: M = 1.82, SD = 0.72; Objectification: M = 1.99, SD = 0.71; Femininity: M = 1.35, SD = 0.35). Male avatars were generally perceived as more masculine (M = 3.95, SD = 0.34) than female avatars (M = 1.92, SD = 0.51).

Female Avatars were selected based on high objectification and sexism scores. Female avatars rated high in sexism were generally also rated high in objectification, leading to the 13 most sexist avatars also being the 13 most objectifying avatars, as shown in Table 1.

Male Avatars were generally rated low in objectification and sexism scores, with only seven male avatars with a mean objectification score above 3 and one male avatar with a mean sexism score above 3 as shown in Table 2. For comparison, the highest-rated sexist female avatar had an overall mean rating of M = 4.13 (SD = 1.3), the highest-rated sexist male avatar had a mean score of M = 3.04 (SD = 1.5). Hence, male avatars were selected based on objectification sores and masculinity scores.

Table 1

Ranking of Female Avatars by Combined Sexism and Objectification Scores

Avatar	*M* Sexism	*M* Objectification	Total Score
Q27*	4.11	4.34	8.45
Q77*	4.13	4.30	8.43

Q28*	4.09	4.30	8.39
Q47**	3.96	4.26	8.22
Q45*	4.00	4.19	8.19
Q93	3.91	4.17	8.08
Q103	3.89	4.17	8.06
Q12*	3.85	4.06	7.91
Q79**	3.85	4.04	7.89
Q91	3.83	3.83	7.66
Q29***	3.72	3.89	7.61
Q16	3.74	3.83	7.57
Q78***	3.49	3.74	7.23

Note. The same number of * behind the Qs indicates that they are variants of the same main avatar, differentiated by features such as skin or hair color.

Table 2

Ranking of Male Avatars by Combined Sexism and Objectification Scores

Avatar	*M* Sexism	*M* Objectification	Total Score
Q39	3.04	3.72	6.76
Q18	2.89	3.43	6.32

Q48	2.89	3.40	6.29
Q37	2.91	3.34	6.25
Q33	2.77	3.38	6.15
Q61	2.83	3.21	6.04
Q60	2.74	3.06	5.80
Q113	2.57	2.98	5.55
Q17	2.62	2.89	5.51
Q70	2.45	2.91	5.36

Discussion

The pilot study aimed to make a justified decision of choosing highly sexualized and objectifying male and female avatars. In total, 16 avatars were selected for the second study, comprising eight male and eight female avatars. Female avatars were selected based on high sexism and objectification scores, the selection of male avatars proved to be more difficult. Although a variety of very revealing, half-naked male avatars were presented, they were generally not perceived as being highly sexualized. It is assumed that participants did not link the word ‘sexist’ to male avatars, leading to lower ratings. Nevertheless, male avatars were selected based on a combination of high objectification and masculinity scores.

Female Avatars were selected based on both high sexist and objectifying scores. Several avatars with a high sexist and objectification score, were different versions of the same avatar. For example, Q77, Q27, Q28, and Q45 were all different versions of the same main avatar. While Q77 was directly integrated into the main study, a new avatar was constructed based on the appearance of Q27, Q28, and Q45.

Male avatars were selected based on objectification scores and masculinity scores, while controlling for comparable outfits and human features. Many male avatars, that scored high in masculinity, had non-human features, for better comparability it was decided to only select those, without non-human features. To accurately compare avatars with male and female creators in the second study, male avatars had to be similar, either in scores or in (sexist/revealing) appearance. For example, Avatars Q18 and Q39 were chosen based on their relatively high objectification scores and comparable clothing styles. While avatars Q35 and Q113 were chosen based on similar (revealing) clothing styles and relatively high masculinity scores.

The original Avatar set, consisting of 110 Avatars, included several nonhuman characters, or ‘races’, to minimize possible effects on avatar perception based on race (troll, blood-elf, dwarf) we decided on a human-looking Avatar set for both genders. To have an equal amount of female and male avatars with lighter and darker skin color, the Avatars Q16, Q39 and Q91 were adjusted accordingly.

Limitations

Several limitations should be considered when interpreting the results of this study. First, the sample population was small and consistent mainly out of female participants ($N = 47$). Thus, the study's results poorly reflect the perceptions of male participants on sexist avatars. Second, results indicated, that male avatars were generally not perceived as sexist, regardless of how revealing they were dressed. One reason for these uneven ratings of female and male avatars could be attributed to the possible lack of associations between the term 'sexism' and male avatars. Additionally, the presented statements, regarding sexism, objectification, femininity, and masculinity were not based on extensive research, but instead were newly formulated for the use of this study. Thus, statements were not pre-tested for reliability and validity, which could affect the accuracy of the findings. Lastly, the avatars were poorly presented, with low-quality pictures and dark backgrounds, making it more difficult for participants to accurately recognize and rate the presented avatars.

Conclusion

The pilot study was conducted to make a sound decision regarding the selection of avatars perceived as sexualized and objectified, although these goals had to be adjusted for the male avatars. A sample of eight male and female avatars was selected for main study, in which additional measures and manipulations will be included to examine the possible effects of gender (Avatar, Creator, Participant), gamer identity and ambivalent sexist attitudes on avatar as well as creator perceptions.

Study 2

Method

The second study of this paper was conducted to evaluate the possible influences of avatar gender, creator gender, ambivalent sexist attitudes, and gamer identity on the ratings of avatars and creators. With the help of the pilot study, 16 sexualized avatars were selected and information for their creators was added (Appendix A).

Design

This study employed a 2 (Avatar Gender: male, female) × 2 (Creator Gender: male, female) repeated measures design, with Gamer Identity (low, low-moderate, moderate-high, high) and Participant gender (Male, female) as between-subjects factors. The dependent variables included measures of participants perceptions regarding avatars adherence to gender norms, reduction to looks, and their willingness to play the avatar. Furthermore, creators' perceived capabilities and participants willingness to team up with the creator were measured as dependent variables. Lastly, all participants were exposed to all four avatar-creator gender combinations.

Participants

Initially 362 responses were recorded, out of which 268 had to be deleted, due to incomplete data (N = 257), answering schemes (4), insufficient amount of time spent finishing the survey (3), insults directed at the researchers (2) or disagreeing to final consent (2). Data was incomplete when questions concerning the avatar perceptions or questionnaires were not answered. However, when demographic questions were not answered, the data was still included.

The final sample included 94 adults aged between 18 and 61 with a mean age of 27.59 (*SD* = 7.59). More than half of the participants were men (59.6%), about a third were women (38.3%) and two participants preferred not to say their gender (2.1 %). The majority of participants identified as heterosexual (69.1%), followed by bisexual (20.2%), pansexual (4.3%), homosexual (2.1%) and Asexual (1.1%). Additionally, 3.2% of participants indicated that they prefer not to say their sexuality. Half of the participants indicated a bachelor's degree (50%) as their highest education, followed by high school diploma (33%) and master's degree (9.6%). Participants reside in various areas, the majority in the Netherlands (26.4%), followed by Germany (14.3%) and the USA (14.3%). For an extensive overview of the samples characteristics refer to Appendix B.

Ethics approval was obtained before data collection from the University of Twente ethics committee (request number: 240229). The study was advertised through several different channels, namely Sona systems, Qualtrics, Prolific, and Reddit. Additionally, flyers were hung up on the campus of the University of Twente with QR codes that redirected directly to the Survey on either Sona or Qualtrics (Appendix C). If participation was conducted via Sona systems a compensation of .25 EC points was granted. If participation was conducted via Prolific a compensation of 3€/3$ was granted. Lastly, participants could enter their email to take part in the lottery for a 15€/15$ Amazon Voucher. Exclusion criteria for the study included participation in the pilot study and an age below 18 years. Moreover, sufficient English skills were needed to ensure that participants understood the study and the related questions correctly.

Materials

Pre-selected sexualized and objectifying avatars were the stimuli of this study (Figure 2). The primary outcome measures of this study were the sexist perceptions of avatars, based on gender norms and objectification scores, the sexist ambivalence directed at men and women, and the Gamer Identity of participants. Secondary outcome measures include the sexist ambivalence toward female and male avatars, the willingness to play and team up with avatars as well as the capability rating of the presumed creator.Thus, the materials used in this study consisted of established scale measures and newly developed items.

Figure 2

Selection of highly objectifying and sexualized Avatars

Note. The Avatars were selected based on their sexualization and objectification scores. The female avatar to the left was rated highest in sexualization and objectification scores, while the avatar to her right was amongst the lowest rated avatars of the final avatar set. The left male avatar was rated most sexualized and objectified, while the avatar to his right indicated lower ratings.

Established Measures.

Ambivalent Sexism Inventory (ASI). The ASI developed by Glick and Fiske (1996) was used to measure participants' hostile and benevolent sexism directed at women. The inventory comprises 22 items and is divided into two subscales namely, Hostile Sexism (HS) and Benevolent Sexism (BS). The HS subscale measures negative stereotypes and attitudes connected to women, the BS subscale measures positive stereotypes and attitudes toward women (Appendix D). Participants assessed each statement on a 6-point Likert scale ranging from 0 (strongly disagree) to 5 (strongly agree). The ASI has demonstrated good internal consistency in previous research, with an average Coefficient alpha reliability above .085 (Glick & Fiske, 1996:

Zakrisson et al., 2012). Reliability scores differ slightly between the two subscales, with generally higher coefficient scores measured for the HS scale (Glick & Fiske, 1996; Zakrisson et al., 2012). In the present study, the ASI showed a Cronbach's alpha coefficient of .432 across both scales.

Ambivalent towards Men Inventory (AMI). The Ambivalence Toward Men Inventory (AMI) developed by Glick and Fiske (1999) serves as a counterpart to the ASI, measuring ambivalent sexist attitudes toward men. Like the ASI, the AMI is divided into two subscales. The first subscale, Hostile Sexism (HM), measures negative stereotypical attitudes toward men. The second subscale, Benevolent Sexism (BM), measures positive stereotypical attitudes towards men (Appendix E). The scale consists of 20 items rated on a 6-point Likert scale, ranging from 0 (strongly disagree) to 5 (strongly agree). Previous research established that the AMI has good internal consistency, with Cronbach's alpha coefficients above 0.80 (Glick & Fiske, 1999). The Cronbach's alpha coefficient for the AMI in the current study was 0.85.

Gamer Identity Scale. The Gamer Identity Scale, developed by Yim et al. (2023) was used to measure the extent to which participants self-identify as gamers. The scale includes nine items and asks participants to reflect on their relation to gaming, "Gaming is a central factor to my self-concept", their engagement with the gaming community, "I am an active member of the gaming community" and their motivations related to gaming, "I have numerous goals related to gaming" (Appendix F). Items were rated on a 5-point Likert scale ranging from 0 (strongly disagree) to 5 (strongly agree). The new scale has demonstrated a high internal consistency, with a Cronbach's alpha coefficient of .90 and a Composite Reliability of .90 (Yim et al., 2023). In the previous study, the scale demonstrated excellent internal consistency, based on a Cronbach's alpha coefficient of 0.93.

Adapted Measures.

Adapted AMI and ASI Items for Avatar Perception. To evaluate participants' ambivalent sexist attitudes towards male and female avatars, six items from both the AMI and ASI were adapted to relate to the avatars (Glick & Fiske, 1996; Glick & Fiske, 1999). Three statements from each subscale were selected, resulting in three benevolent sexism items and three hostile

sexism items from each Sexism Inventory. The rephrasing of the items is mainly reflected in the replacement of the words “Men” or “Women” with “This Avatar”. Resulting in items like “This avatar would put themself in danger to protect others”, instead of the original item “Men are more willing to put themselves in danger to protect others” (Glick & Fiske, 1999). Or “This avatar would need to be rescued first in a disaster” instead of the reversed item “In a disaster, women need not be rescued first” (Glick & Fiske, 1996). Participants rated each item on a 5-point Likert scale ranging from 0 (strongly disagree) to 5 (strongly agree).

Newly Developed Items.

Gender Norms, Objectification and Playability of Avatars. Three new items were created to evaluate participants' sexist perceptions of avatars. Based on the results of the pilot study, it was hypothesized that participants did not relate the term ‘sexist’ to male avatars. Thus, the first item was rephrased from “This avatar is sexist” to "This avatar adheres to gender norms". The second item "This avatar is reduced to her looks" was included to evaluate whether avatars are perceived as objectifying. Further, one item was created to evaluate participants willingness to play the avatars, “I would play this Avatar”. Items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Team up and Capability of Creator. Two new items were created to evaluate participants perceptions of the avatar’s creators. To assess whether participant would like to team up with a creator, the item “I would team up with this Avatar and its creator” was created. Further, the item “The creator is a capable gamer” was generated to evaluate participants ratings of the creators’ capabilities in the gaming context. Items were rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Procedure

In this study about avatar and gamer perception, respondents were to read and agree to the informed consent. If they were to accept, they were to be asked questions concerning their demographic data. In the study information respondents were to be informed about the anonymization of all submitted data and its use in two master theses, which were to be published later. Further, they were to be enlightened about the option of terminating participation by

closing the tab. The study took approximately 20 minutes, depending on their engagement with the survey material. Thereafter, they were to answer questions regarding 16 World of Warcraft avatars and the gamers who created them. They were asked to take a few seconds to examine the avatars and gamers before proceeding to the questions below. Next, they were to answer questions regarding their gaming experience and their opinions about various relational circumstances.

Before the presentation of the final consent, participants were shown the debrief, explaining the manipulation of the study and presenting the related Research Questions and Hypotheses. Due to the sensitive topic of the survey, links as well as phone numbers were displayed for participants who felt lasting discomfort, due to the topic of sexism. Afterwards, participants had to finally agree or disagree to submitting their data.

Data Analysis

Prior to the analyses, the data was screened to detect responses with missing values, answering patterns, and fraud. Responses that coincided with at least one of the screening goals, were deleted from the data set. The data was then checked for floor and ceiling effects, occurring when 15% of the answer scores are on either the scale's lowest (floor) or highest (ceiling) continuum. Further, it was tested whether the data was suitable to be analyzed with the repeated measures ANOVA and Multiple Regression Analysis.

All statistical analyses were conducted using IBM SPSS Statistics (Version 27). Mean scores for the ASI and AMI scales, as well as sexist attitudes across different avatar groups, were computed. Data were analyzed using repeated-measures ANOVA with a within-subject factor (Avatar Gender and Creator Gender) and a between-subjects factor (Participant Gender).

Results

Do Avatar-Creator Pairings Influence Avatar and Creator Perceptions?

A series of 2 (Avatar Gender: Male, Female) by 2 (Creator Gender: Male, Female) mixed-design ANOVAs were conducted to evaluate participants perceptions regarding various avatar attributes. In each analysis the avatar and creator genders functioned as within-subjects factors, while participant gender functioned as a between-subjects factor. The analyses explored

different dependent variables, including the avatars perceived adherence to gender norms, their perceived reduction to looks, and participants willingness to play the avatar. Moreover, participants' willingness to team up with the avatar-creator pairs as well as their perception regarding the creators gaming capabilities were examined.

Before running the ANOVAs, the assumptions of normality, sphericity, and homogeneity of variance were tested. Violations of these assumptions were found in several cases; sphericity and normality were violated most frequently, as a result, the appropriate corrections were applied (e.g. Greenhouse-Geisser correction for sphericity). Considering that the avatars chosen for this study were highly sexualized, non-normal distributed ratings of these avatars were to be expected. A detailed overview of the assumption tests for all analyses is provided in Appendix G.

Avatars Perceived Adherence to Gender Norms

Participants ($N = 92$) rated the statement "This avatar adheres to gender norms" on a scale ranging from 0 (Strongly disagree) to 5 (Strongly Agree), with higher scores indicating a higher adherence to gender norms. Overall, male avatars received an average rating of 3.49 ($SD = .72$), and female avatars received a slightly higher average rating of 3.65 ($SD = .78$).

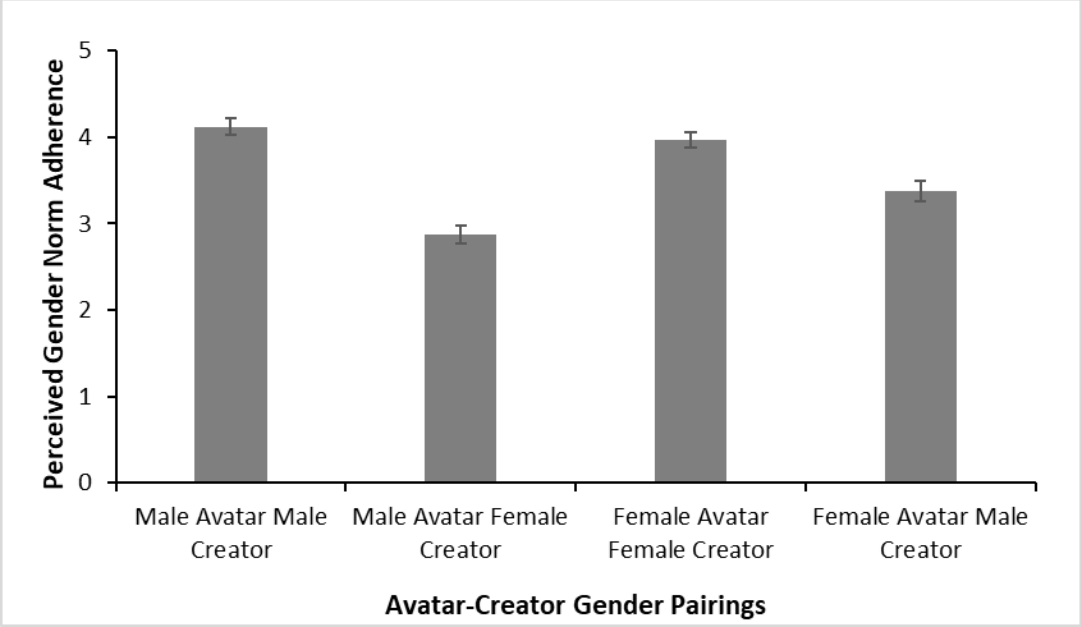
The ANOVA indicated a significant effect of avatar-creator gender pairings on avatars' perceived adherence to gender norms $F(2, 184) = 47.58$, $p < .001$, $\eta^2p = .346$. Pairwise comparisons using the Bonferroni correction revealed that male avatars with male creators were rated significantly higher in adherence to gender norms than male avatars with female creators $M = 1.25$, $SE = .12$, $p < .001$. Similarly, female avatars with female creators were rated as adhering more to gender norms than female avatars with male creators $M = 0.60$, $SE = .13$, $p < .001$. When comparing across avatar gender, no significant difference was found between the ratings of male avatars with male creators and female avatars with female creators $M = 0.16$, $SE = .07$, $p = .13$. In contrast, the ratings of male avatars with female creators were significantly lower than the ratings of female avatars with male creators $M = -0.50$, $SE = .10$, $p < .001$. Lastly, there was neither a significant interaction between participant gender and the avatar-creator gender pairings

$F(2, 184) = 1.87$, $p = .16$, $\eta^2p = .020$, nor did participant gender significantly affect the overall gender norm ratings of avatars $F(1, 90) = 1.53$, $p = .22$, $\eta^2p = .017$.

In summary, the avatar-creator gender pairings influenced how gender-normative avatars were perceived to be. Same-gender pairings were perceived as adhering more strongly to gender norms than cross-gender pairings, and male avatars with female creators were perceived as adhering least to gender norms (Figure 3). Participant gender did not significantly influence the avatar's gender norm ratings, neither when looking at the four avatar-creator groups, nor when looking at all avatars together.

Figure 3

Mean Gender Norm Ratings by Avatar-Creator Gender Pairings



Note. Error bars represent ±1 standard error.

Reducing Avatars to Looks/Objectification

Participants (N = 92) could score the statement regarding each avatar's reduction to looks on a scale from 0 to 5, with higher scores indicating a high objectification of avatars. Overall, female avatars received an average rating of 3.49 (SD = 0.78), while male avatars received a lower average rating of 2.70 (SD = 0.79).

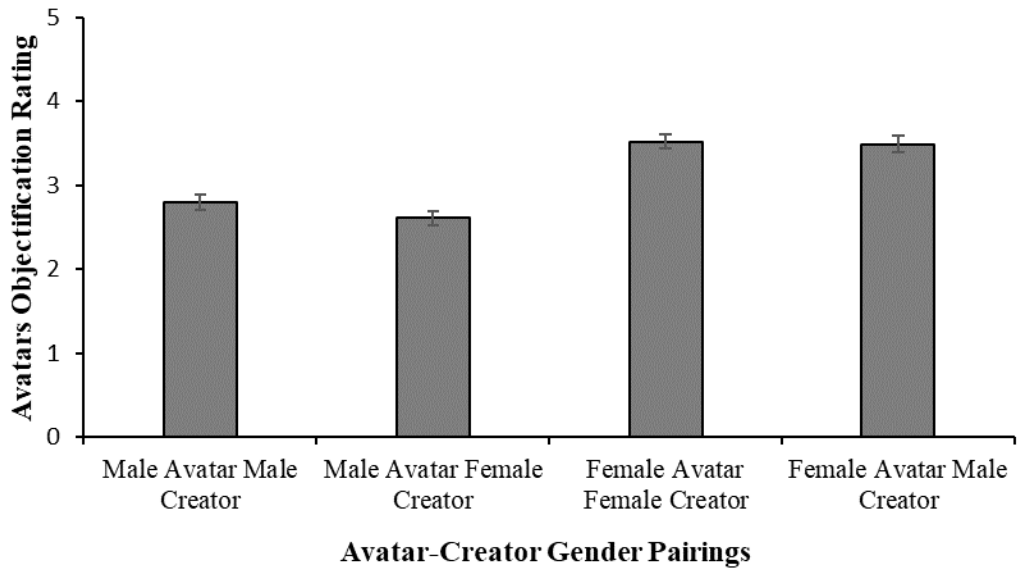
The analysis indicated a significant effect of the avatar-creator gender pairings on the avatars perceived objectification $F(3, 245) = 57.65$, $p < .001$, $\eta^2p = .39$. Pairwise comparisons were conducted using the Bonferroni correction to examine the differences between the four avatar-creator gender conditions. It was found that female avatars with female creators were significantly more objectified than male avatars with male creators $M = 0.72$, $SE = .095$, $p < .001$ and male avatars with female creators $M = 0.91$ $SE = .097$, $p < .001$. Similarly, female avatars with male creators were significantly more objectified than male avatars with male creators $M = 0.69$, $SE = .090$, $p < .001$ and male avatars with female creators $M = 0.88$, $SE = .091$, $p < .001$.

No significant difference between the ratings of male avatars with male creators and male avatars with female creators $M = 0.19$, $SE = .081$, $p = .12$, or between female avatars with female creators and female avatars with male creators were found $M = .029$, $SE = .070$, $p = 1$. Participant gender was not found to have a significant interaction effect on the avatar ratings, neither when looking at the avatar-creator gender pairings $F(3, 245) = 0.18$, $p = .90$, $\eta^2p = .002$, nor when looking at the overall avatar ratings $F(1, 90) = 0.27$, $p = .60$, $\eta^2p = .003$. Thus, men and women showed similar ratings, among the four avatar-creator gender groups and averaged among all avatars.

Concluding, it was found that only the gender of the avatar, not the avatar-creator pairings, significantly influence the avatar's objectification ratings. Precisely, female avatars were reduced to looks significantly more than male avatars, irrespective of creator and participant gender (Figure 4).

Figure 4

Mean Objectification Ratings by Avatar-Creator Gender Pairings



Note. Error bars represent ±1 standard error

Willingness to Play the Avatar

Participants (N = 92) could score the statement regarding whether they would play each avatar on a scale from 0 to 5, with higher scores indicating that the participant would play the avatar. Overall, male avatars received an average rating of 2.90 (SD = 0.90), and female avatars a slightly lower average rating of 2.74 (SD = 0.95).

The avatar-creator gender pairs did not have a significant effect on participants' willingness to play the avatar $F(2, 180) = 1.25$, $p = .29$, $\eta^2p = .014$. Instead, participant gender had a significant interaction effect on the avatar-creator gender pairings $F(2, 180) = 9.51$, $p < .001$, $\eta^2p = .096$. As shown in Figure 5, male participants indicated a higher willingness than female participants to play male avatars with male creators. All other avatar-creator pairings received higher willingness-to-play ratings from female rather than male participants. For detailed means and standard errors across avatar-creator gender pairings, refer to Table 1. No

significant differences were found when looking at male and female participants ratings of all avatars, irrespective of gender pairings $F(1, 90) = 2.35$, $p = .13$, $\eta^2p = .025$.

Generally, the avatar-creator pairings did not significantly influence participants' willingness to play the avatars. However, when participants were split by gender, a significant difference between male and female participants in the avatar ratings was found. Although no significant effect was found when looking at all avatar ratings, without splitting them into their avatar-creator gender groups.

Figure 5

Interaction Between Participant Gender and Avatar-Creator Gender Pairings on Willingness to Play

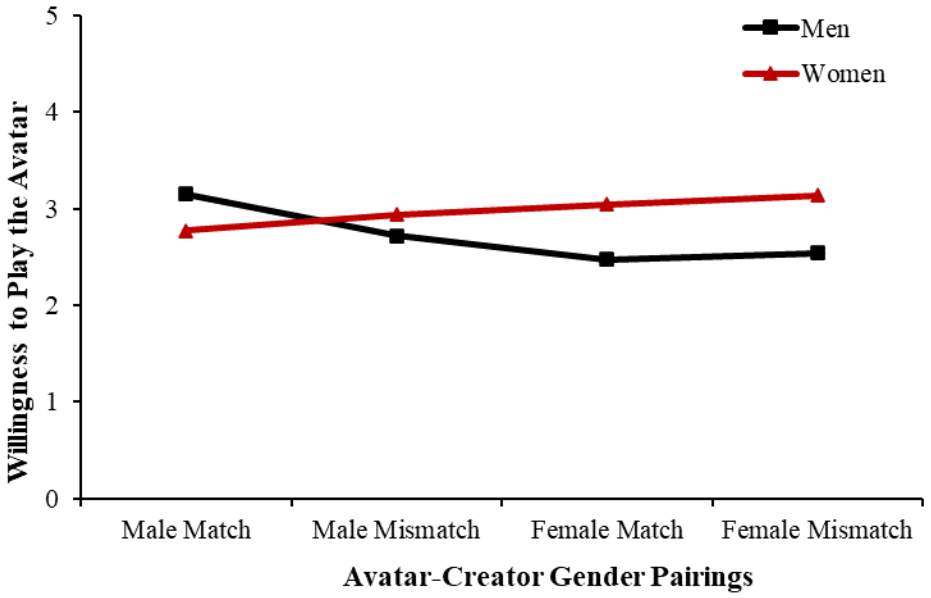


Table 3

Means and Standard Deviations for Willingness to Play the Avatar-Creator Pairings by Participant Gender

Avatar-Creator Pairing	Male Participants		Female Participants	
	M	*SD*	*M*	*SD*
Male Avatar Male Creator	3.15	0.95	2.77	1.13
Male Avatar Female Creator	2.72	0.94	2.94	1.01
Female Avatar Female Creator	2.48	1.02	3.05	0.98
Female Avatar Male Creator	2.54	0.95	3.14	0.84

Concluding, the study revealed that the avatar and the creator gender had a significant influence on how avatars were perceived regarding adherence to gender norms and objectification. Same-gender avatar-creator pairings were perceived as adhering more to gender norms, and female avatars were generally perceived as more objectified than male avatars. In contrast, the creator gender did not significantly affect participants' willingness to play the avatars, although participant gender did interact with avatar-creator pairings in this regard. Overall, these findings suggest that perceptions of sexist avatars are shaped by avatar gender, creator gender and participant gender, depending on the examined perception (gender norm adherence, objectification, willingness to play).

Willingness to Team up with the Creator

Participants ($N = 92$) could score the statement regarding whether they would team up with the avatar and its creator on a scale ranging from 0 to 5, with higher scores indicating that the participant would team up with the pair.

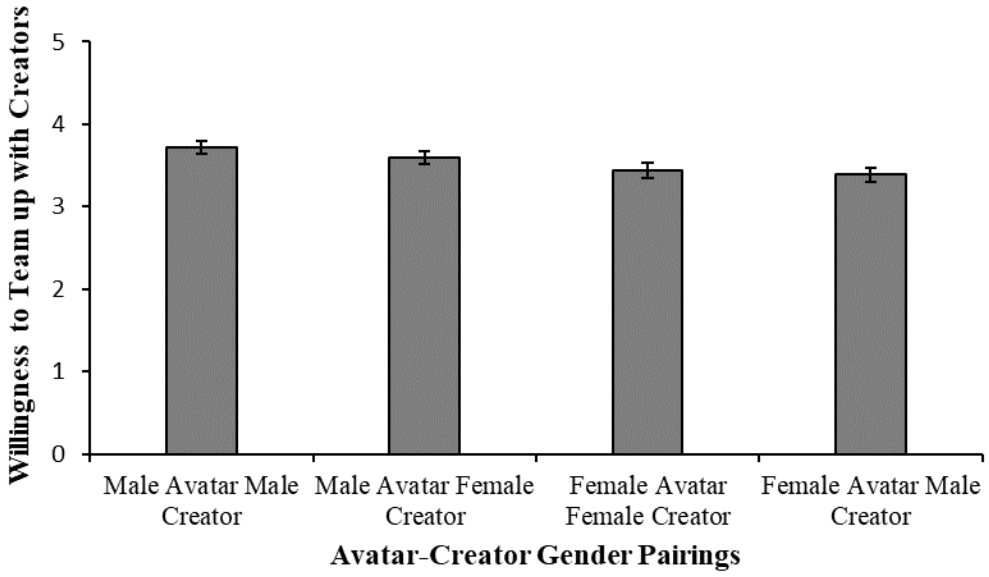
Participants' willingness to team up with the creators and their avatars significantly differed depending on avatar-creator gender pairings $F(3, 251) = 7.60$, $p < .001$, $\eta^2p = .078$. Pairwise comparisons were conducted using the Bonferroni correction to examine the differences between the four avatar-creator gender pairings. Participants indicated a significantly higher willingness to team up with male creators of male avatars compared to female creators with female avatars *M*

= 0.27, *SE* = .076, *p* =.003 and male creators with female avatars *M* = 0.32, *SE* = .084, *p* = .001. Further, there was no significant difference between the ratings of male and female creators with male avatars *M* = 0.11, *SE* = .068, *p* = .62, or between male and female creators with female avatars *M* = .051, *SE* = .065, *p* = 1.

Thus, participants' willingness to team up with the avatar creator teams differed among the groups, with a higher willingness to team up with creators of male avatars, and highest ratings for male creators with male avatars , as shown in Figure 6. Participant gender did not significantly influence overall creator ratings $F(1, 90) = .094$, $p = .760$, $\eta^2p = .001$, nor did it account for differences in ratings between the four avatar-creator gender groups $F(3, 251) = 1.054$, $p = .366$, $\eta^2p = .012$.

Figure 6

Willingness to Team up with Creators in different Avatar-Creator Pairings



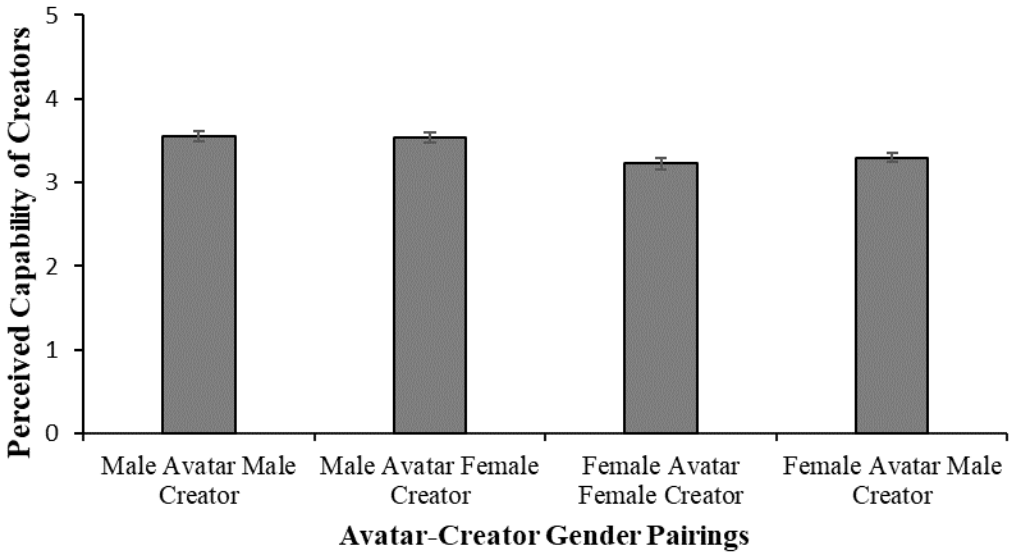
Perceived Capabilities of Creator

The analysis investigated whether the avatar-creator gender pairings influenced participants perceptions of creators capabilities. Participants (N = 92) could score the statement regarding the creator's capabilities on a scale from 0 to 5, with higher scores indicating a perceived capable creator.

The capability ratings of the creators varied significantly across the four avatar-creator gender conditions $F(2, 216) = 16.474$, $p < .001$, $\eta^2 p = .155$. Pairwise comparisons were conducted using the Bonferroni correction to examine the differences between the four avatar-creator gender conditions. It was found that male creators with male avatars received significantly higher capability ratings than female creators with female avatars $M = 0.321$, $SE = .069$, $p < .001$ and male creators with female avatars $M = 0.248$, $SE = .054$, $p < .001$. Female creators with male avatars also received higher capability ratings than both female creators $M = .313$ $SE = .068$, $p < .001$, and male creators with female avatars $M = 0.241$, $SE = .055$, $p < .001$. There was neither a significant difference between the capability ratings of male and female creators with male avatars $M = 0.007$, $SE = .045$, $p = 1$, nor between the ratings of female and male creators with female avatars $M = -.073$, $SE = .049$, $p = .864$. Thus, as seen in Figure 7, creators capability ratings were influenced by avatar gender, with creators of male avatars perceived as more capable.

Figure 7

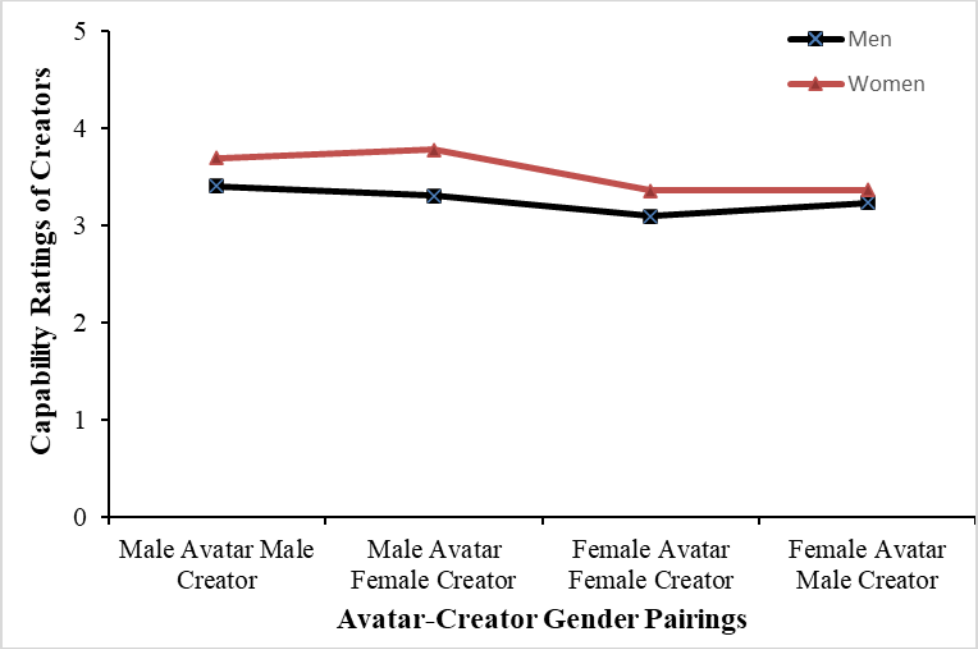
Mean of Creators perceived Capabilities by Avatar-Creator Pairings



A significant interaction effect between participant gender and avatar-creator pairings was found $F(2, 216) = 2.94$, $p = .045$, $\eta^2p = .032$. Moreover, the overall creator ratings did significantly differ among male and female participants $F(1, 90) = 7.957$, $p = .006$, $\eta^2p = .081$. Further exploration of the interaction between participant gender and avatar-creator pairings revealed that female participants consistently rated creators as more capable than male participants across all conditions, as illustrated in Figure 8.

Figure 8

Capability Ratings of Creators by Avatar-Creator Pairings



To sum up, creators were perceived as more capable when they were playing a male avatar rather than a female avatar, regardless of creator gender. Furthermore, the participant gender significantly influenced capability ratings, with female participants giving higher ratings, across all avatars and when looking at the avatar-creator pairings.

Overall, the analysis examined that participants willingness to team up with the avatar-creator teams was significantly influenced by the gender pairings, with participants most likely teaming up with male creators of male avatars. Similarly, creators of male avatars were generally perceived as more capable, and male creators of male avatars were perceived as most capable among the four avatar-creator gender groups.

Do sexist attitudes influence avatar perception?

Several multiple regression analyses were conducted to examine whether participants' hostile sexism (HS) and benevolent sexism (BS) scores significantly predict perception ratings of avatars (adherence to gender norms, reduction to looks, playability) and creators (willingness to team up, capability) while controlling for participant gender. Although participant gender was not a central focus of the hypothesis, it was included as a control variable to account for potential

impingements on avatar ratings. For an overview of mean scores and standard deviations regarding participants ambivalent sexist attitudes refer to Table 4.

Table 4

Means, Standard Deviations, and Range of Ambivalent Sexist Attitudes

Measure	*M*	*SD*	Range
Hostile Sexism (AMI)	2.11	1.05	0 - 5
Benevolent Sexism (AMI)	1.56	.97	0 - 4.3
Hostile Sexism (ASI)	2.03	.63	.36 - 3.45
Benevolent Sexism (ASI)	2.35	.36	1.45 - 3.18

For male avatar-creator gender pairs only the AMI scores were used, similarly, for female avatar-creator pairs only the ASI scores were used. In contrast, for mismatched pairings, i.e. male avatars with female creators, both the AMI and the ASI scores were used as predictors. The assumptions of linear regression were tested, linearity was violated for all combinations of predictor variables and dependent variables, while all other assumptions were met.

Ambivalent Sexism and Perceived Adherence to Gender Norms

Four Multiple Regression analyses, one for each avatar-creator gender group, were conducted to examine whether hostile sexism, benevolent sexism, and participant gender predict participants' perceptions concerning avatars' adherence to gender norms. For an overview, predictors that were significant or approached significance are presented in Table 5.

Table 5

Summary of Predictors that were Significant or Approached Significance in the Multiple Regression Analyses

Avatar-Creator Pairing	Predictor	*B*	*SE B*	ß	*t*	*p*
Female Avatar, Male Creator	HS ASI	-0.80	0.24	-.45	-3.33	**.001**
	BS ASI	1.07	0.34	.34	3.15	**.002**
Male Avatar, Female Creator	HS ASI	-0.52	0.22	-.33	-2.34	**.02**
	BS ASI	0.61	0.32	.22	1.94	.06
Female Avatar, Female Creator	Participant Gender	0.33	0.14	.25	2.40	**.02**
	BS ASI	0.44	0.25	.19	1.77	.08

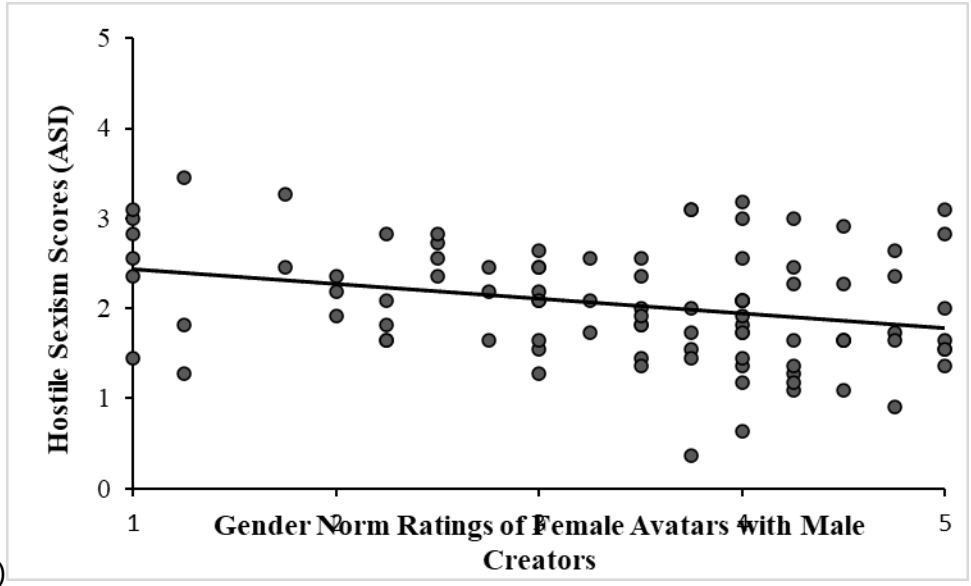
Note. Only predictors that were significant or approached significance are included for brevity and significant predictors are indicated by a bold p-value.

For female avatars with male creators the model was statistically significant, $F(5, 86) = 4.59$, $p = .001$, and the predictors accounted for 21.1% of the variance ($R^2 = 0.21$). Hostile sexism against women was a strong negative predictor ($B = -0.80$ ß $= -.45$, $p = .001$), while benevolent sexism against women was a positive predictor ($B = 1.07$, ß $= .34$, $p = .002$) of gender norm ratings, as illustrated in Figure 9. A similar trend was observed for male avatars with female creators. For these avatars the model was also significant $F(5, 86) = 2.50$, $p = .04$, and the predictors accounted for 12.7% of the variance ($R^2 = 0.13$), with hostile sexism against women as a significant negative predictor ($B = -0.52$, ß $= -.33$, $p = .02$) (see Figure 10). However, benevolent sexism toward women only approached significance, $t(86) = 1.94$, $p = .06$, suggesting a trend where higher benevolent sexism scores predict higher gender norm ratings.

Figure 9

Scatterplots Showing the Relationship Between Gender Norm Ratings and (A) Hostile Sexist Attitudes and (B) Benevolent Sexist Attitudes for Male Avatars with Female Creators

A)



B)

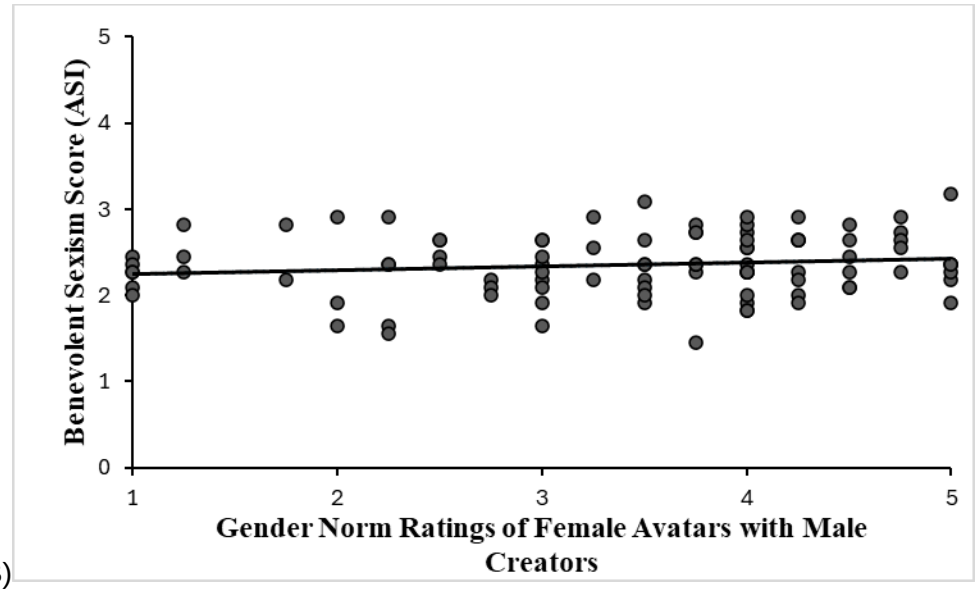
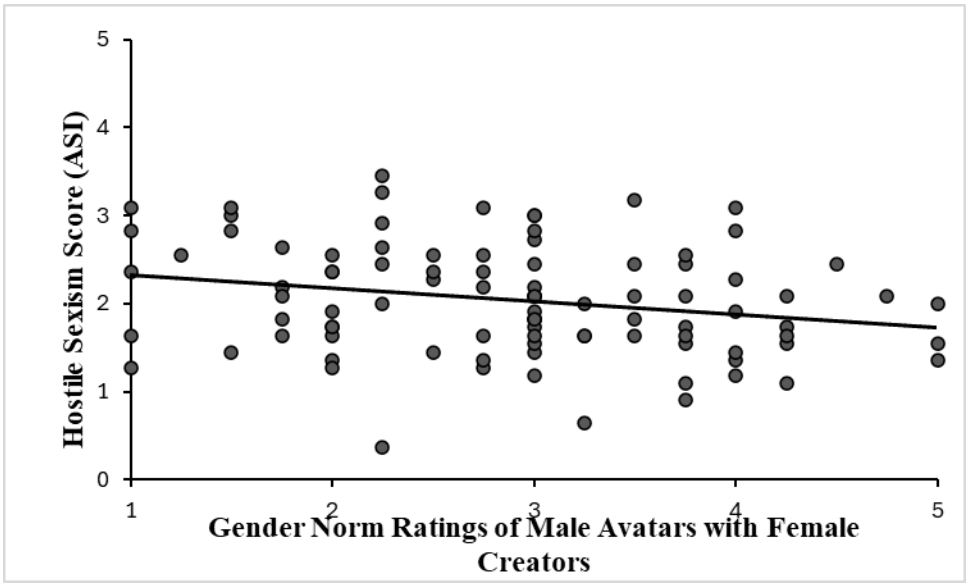


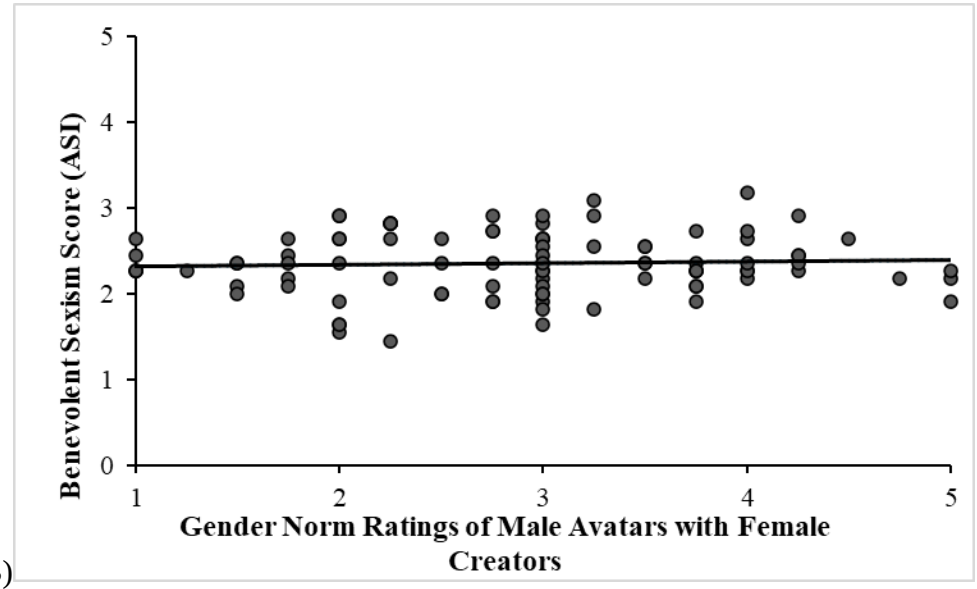
Figure 10

Scatterplots Showing the Relationship Between Gender Norm Ratings and (A) Hostile Sexist Attitudes and (B) Benevolent Sexist Attitudes for Male Avatars with Female Creators

A)



B)



The model for female avatars with female creators was statistically significant, $F(3, 90) = 3.58$, $p = .02$, the predictors accounted for 10.6% of the variance of the dependent variable ($R^2 = 0.11$). Participant gender significantly predicted gender norm ratings ($B = 0.33$, $ß = .25$, $p = .02$),

female participants indicated higher gender norm ratings for female avatars with female creators compared to male participants. Benevolent sexism approached significance, $t(90) = 1.77$, $p = .08$, suggesting a trend where higher benevolent sexism scores might predict higher gender norm ratings of female avatars with female creators. Lastly, for male avatars with male creators none of the predictors significantly influenced gender norm ratings, $F(3, 90) = 1.37$, $p = .26$, and accounted for only 4.4% of the variance of the gender norm ratings ($R^2 = 0.04$).

Overall, ambivalent sexist attitudes only impacted the gender norm ratings of avatars in mismatched avatar-creator gender pairings. Furthermore, only ambivalent sexist attitudes against women (ASI) were found to predict gender norm ratings, with high hostile sexism scores predicting lower gender norm ratings and high benevolent sexist scores predicting high gender norm ratings. For female avatars with female creators the participant gender had a significant impact on the gender norm ratings, with female participants indicating a higher perceived adherence to gender norms of the avatars.

Ambivalent Sexism and Reduction to Looks

Four multiple regression analyses were conducted to assess whether hostile sexism, benevolent sexism, and participant gender predict the ratings indicating the avatars perceived reduction to looks (i.e. objectification) across the four avatar-creator gender pairings.

The analyses indicated that no model was statistically significant and none of the predictors significantly accounted for the variances of the objectification ratings. For male avatars with male creators the model was not statistically significant, $F(3, 90) = 0.94$, $p = .43$, the predictors accounted for only 3% of the variance $R^2 = 0.03$. For male avatars with female creators the overall regression model was not significant, $F(5, 86) = 0.48$, $p = .79$., the predictors accounted for only 2.7% of the variance of the dependent variable ($R^2 = 0.03$). Similarly, the model for female avatars with female creators was not statistically significant, $F(3, 90) = 0.77$, $p = .52$, and the predictors accounted for 2.5% of the variance ($R^2 = 0.03$). Lastly, for female avatars with male creators the model was not significant, $F(5, 86) = 0.59$, $p = .71$, the predictors accounted for only 3.3% of the variance of the dependent variable ($R^2 = 0.03$).

To conclude, across all four avatar-creator pairings, the models were not statistically significant, and the predictors accounted only for a small fraction of the variance of objectification ratings. Thus, neither ambivalent sexism nor participant gender predicted variances in avatar objectification ratings.

Ambivalent Sexist Attitudes and Willingness to Play

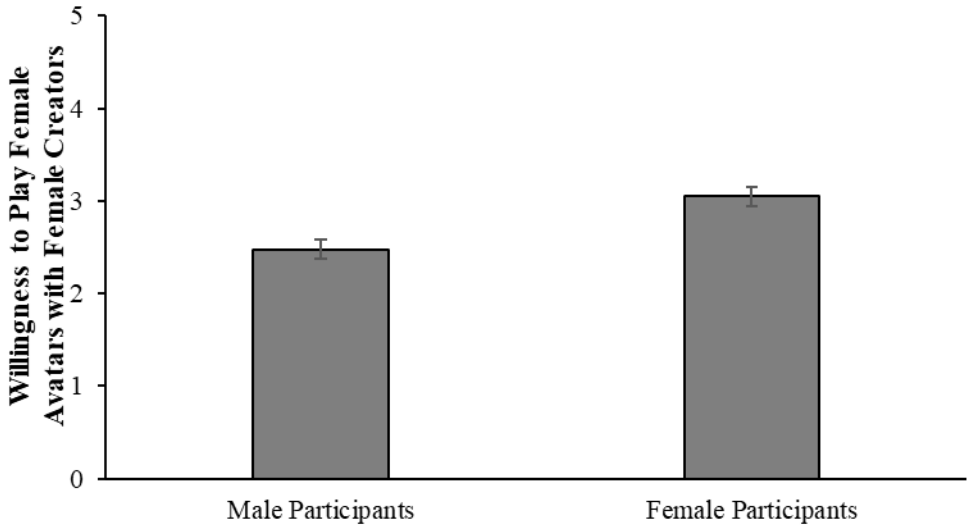
Four multiple regression analyses were conducted to examine whether hostile sexism, benevolent sexism, and participant gender predicted participants' willingness to play avatars across different avatar-creator pairings.

The regression models indicated that participant gender significantly predicts participants willingness to play female avatars. For female avatars with female creators, the model was statistically significant $F(3, 90) = 3.31$, $p = .02$, and the predictors accounted for 9.9% of the variance ($R^2 = 0.10$). Participant Gender significantly predicted participants willingness to play the avatar ($B = 0.47$, $ß = .28$, $p = .009$). Similarly, for female avatars with male creators, the model was statistically significant $F(5, 86) = 2.61$, $p = .03$, and the predictors accounted for 13.2% of the variance ($R^2 = 0.13$). Participant gender significantly predicted avatars playability scores ($B = 0.65$, $ß = .34$, $p = .006$). As presented in Figure 11, female participants indicated a higher willingness to play female avatars, regardless of creator gender.

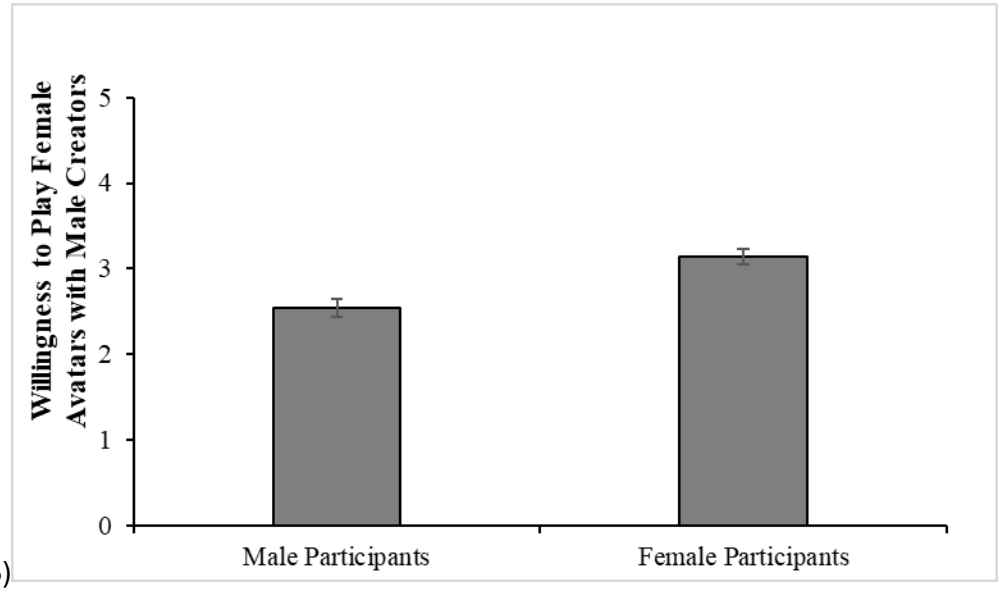
Figure 11

Mean Willingness to Play Ratings for Female Avatars with Female Creators (A) and Female Avatars with Male Creators (B) by Participant Gender

A)



B)



Note. Error bars represent ±1 standard error

In contrast, the regression models examining the willingness to play male avatars were not statistically significant. The model for male avatars with female creators was not significant, $F(5, 86) = 0.90$, $p = .48$, and the predictors accounted for 5% of the variance of the avatar ratings ($R^2 = .050$). However, benevolent sexism against men approached significance $t(86) = -1.73$, $p =$

.09, suggesting a trend where benevolent sexism against men might be related to a lower willingness to play male avatars with female creators. Lastly, for male avatars with male creators the regression model was not statistically significant $F(3, 90) = 0.87$, $p = .46$, and the predictors accounted for only 2.8% of the variance ($R^2 = 0.03$).

To conclude, ambivalent sexist attitudes did not significantly predict participants willingness to play avatars in varying avatar-creator gender pairs. Instead, the participant gender influenced participants willingness to play female avatars, with female participants indicating a higher willingness than male participants.

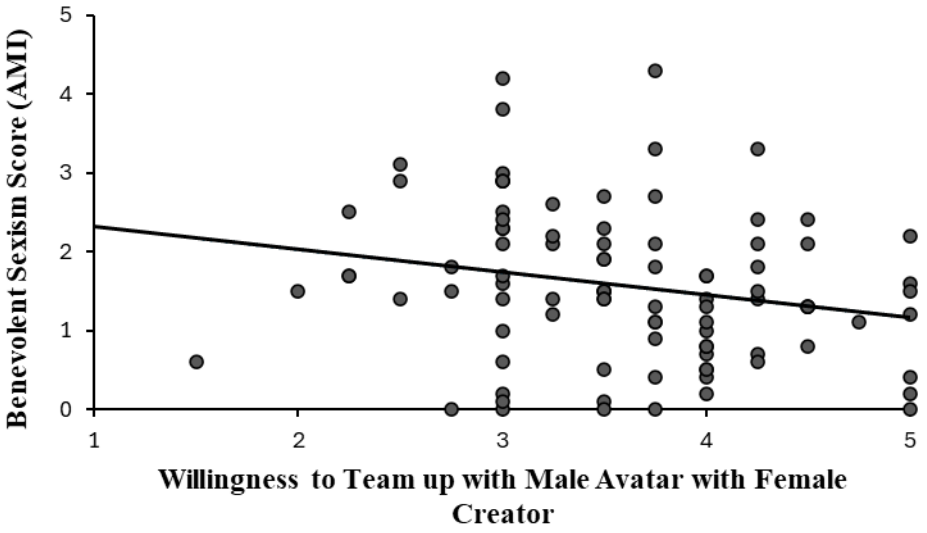
Ambivalent Sexist Attitudes and Willingness to Team up

Four multiple regression analyses were conducted to inspect whether hostile sexism, benevolent sexism, and participant gender predicted participants' willingness to team up with the avatar-creator pairings.

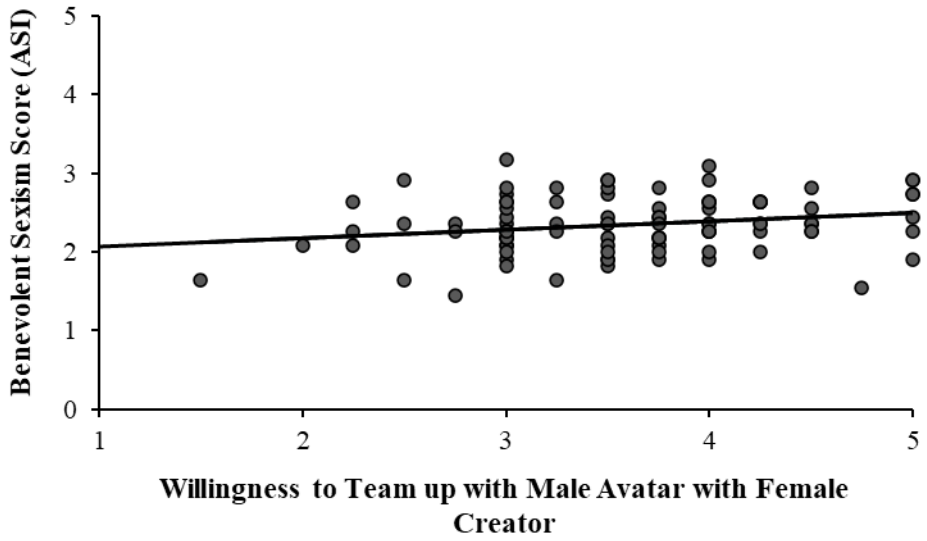
For male avatars with female creators the overall regression model was statistically significant, $F(5, 86) = 3.07$, $p = .01$, the predictors accounted for 15.1 % of the variance of the dependent variable ($R^2 = 0.15$). Benevolent sexism against men ($B = -0.20$, $ß = -.27$, $p = .04$) was a negative predictor of team-up-ratings while benevolent sexism against women ($B = 0.71$, $ß = .23$, $p = .003$) was a positive predictor (Figure 12).

Figure 12

Scatterplots Representing the Relation Between Benevolent Sexist Attitudes Against Men (A) and Benevolent Sexist Attitudes Against Women on Willingness to Play Male Avatars with Female Creators



A)



B)

These findings suggest that benevolent sexism predicts participants willingness to team up with female creators of male avatars. High benevolent sexist attitudes against women predicted a higher willingness to team up with the avatar-creator pair. In contrast high benevolent sexist attitudes directed at men predicted a lower willingness to team up with the

avatar-creator pair. Other avatar-creator pairings were not significantly influenced by ambivalent sexist attitudes or participant gender.

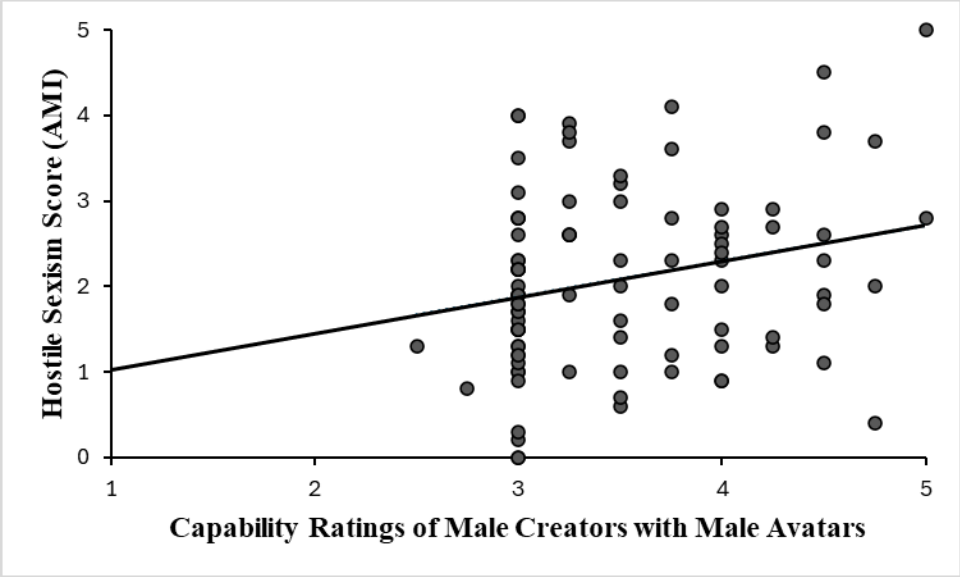
Ambivalent Sexist Attitudes and Creators perceived Capabilities

Four multiple regression analyses were conducted to inspect whether hostile sexism, benevolent sexism, and participant gender predicted creators' capability ratings.

Although the regression model was not significant for male avatars with male creators $F(3, 90) = 1.98$, $p = .12$, and the predictors accounted for only 6.2% of the variance of the dependent variable ($R^2 = 0.06$), hostile sexism was a significant predictor ($B = 0.13$, $ß = .23$, $p = .03$). With hostile sexist attitudes against men predicting higher ratings of the male creator's capabilities (see Figure 12).

Figure 13

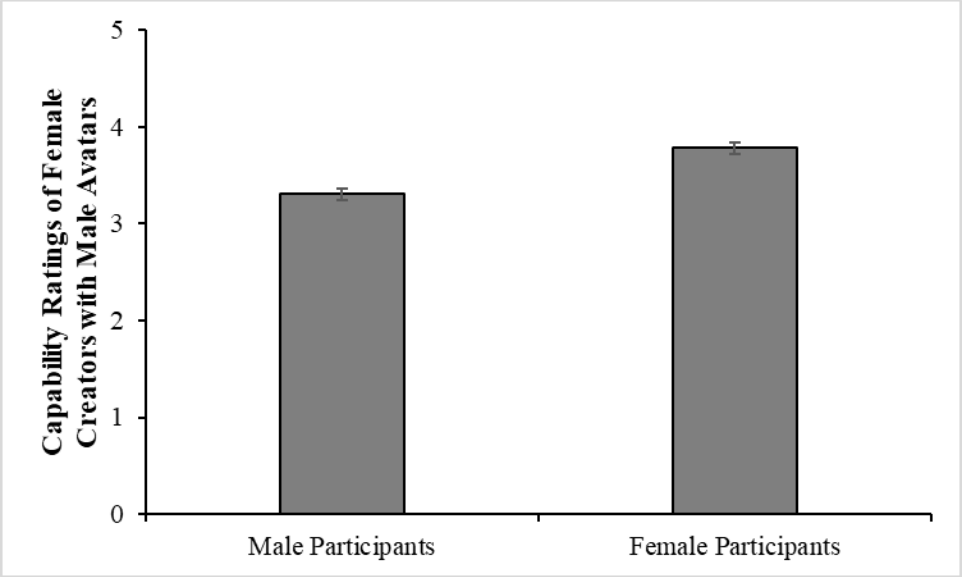
Scatterplot Representing the Relation Between Hostile Sexist Attitudes Against Men and the Capability Ratings of Male Creators with Male Avatars



For female creators with male avatars the overall regression model was statistically significant, $F(5, 86) = 3.84$, $p = .003$, the predictors accounted for 18.3 % of the variance of the creator's capability ratings ($R^2 = 0.18$). Participant gender was a significant predictor ($B = 0.35$, $ß = .28$, $p = .02$), with female participants rating female creators with male avatars as more capable, compared to male participants (see Figure 14).

Figure 14

Mean Capability Scores for Female Creators with Male Avatars by Participant Gender



Note. Error bars represent ±1 standard error

For female creators with female avatars, the predictors accounted for only 2.6% of the variance ($R^2 = 0.03$) and the model was not significant, $F(3, 90) = 0.80$, $p = .50$. Similarly, for male creators with female avatars the overall regression model was not significant, $F(5, 86) = 0.88$, $p = .50$, and the predictors accounted for 4.8% of the variance of the creator's capability ratings ($R^2 = 0.05$).

Overall, capability ratings were only influenced by hostile sexism scores (AMI) for male avatars with male creators. Here, hostile sexism predicted higher perceptions of male creators'

capabilities. Further, participant gender was a significant factor in perceptions of female creators' capabilities with male avatars. With female participants perceiving female creators with male avatars as more capable than male participants perceived them to be.

Does Gamer Identity influence avatar and creator perceptions?

A series of 2 (Avatar Gender: Male, Female) by 2 (Creator Gender: Male, Female) mixed-design ANOVAs were conducted, to examine the effect of gamer identity scores on the perception of several avatar and creator attributes. In each analysis the avatar and creator genders functioned as within-subjects factors, while the gamer identity (low, moderate-low, moderate-high, high) functioned as a between-subjects factor. The analysis evaluated different dependent variables, including the avatars perceived adherence to gender norms, their perceived reduction to looks and participants willingness to play the avatar. Additionally, participants willingness to team up with the avatar-creator pair as well as the creators perceived gaming capabilities were analyzed. The gamer identity data had to be adjusted for the analysis, participants were divided into four groups, based on their gamer identity scores, with each group representing a quartile.

Prior to conducting the ANOVAs, the assumptions of normality, homogeneity of variances, and sphericity were checked. Sphericity was violated in all cases, thus, the appropriate corrections, for example, Greenhouse-Geisser were applied. Normality was also violated in many cases, however ANOVA is robust to violations of normality, particularly with larger sample sizes.

Gamer Identity and Gender Norm Perception

Regarding participants gender norm ratings, the analysis showed a significant effect of Gamer Identity, $F(3, 90) = 2.95$, $p = .04$, $\eta^2 = .09$. Post-hoc comparisons using the Bonferroni test indicated that participants in the moderate-low gamer identity group generally rated avatars as adhering significantly less to gender norms than participants in the high gamer identity group $M = -0.55$, $SE = .19$ $p = .032$.

The interaction between avatar condition and gamer identity was not significant, $F(6, 182) = 1.19$, $p = .31$, $\eta^2 = .038$, suggesting that the four different avatar-creator gender pairings were rated similarly among participants with varying levels of gamer identity.

To summarize, gamer identity did influence the overall perceptions of avatars adherence to gender norms, the low-moderate gamer identity group gave significantly lower gender norm adherence ratings compared to the high gamer identity group. When examining the influence of gamer identity on the perception of the four different avatar-creator groups, no significant effect was found, indicating a similar average rating across all groups.

Gamer Identity and Avatars Perceived Reduction to Looks

The ANOVA examined the relation between participants gamer identity scores and their ratings of avatars reduction to looks. The analysis revealed no significant effect of Gamer Identity, $F(3, 90) = 2.17$, $p = .097$, $\eta^2 = .068$, indicating that the different gamer identity groups did not differ in their ratings of avatars' reduction to looks. Further, the interaction between the four avatar-creator gender conditions and gamer identity was not significant, $F(8, 248) = 0.91$, $p = .51$, $\eta^2 = .030$. Thus, the objectification ratings of the four avatar-creator gender pairings did not significantly differ across the four gamer identity groups.

Overall, gamer identity does not significantly influence the perceptions of avatars in relation to their reduction to looks, neither when looking at all avatars together nor when looking at the four different avatar-creator gender groups.

Gamer Identity and Willingness to Play the Avatar

The analysis examined the effect of participants gamer identity on their willingness to play the avatars. Gamer identity was not found to have a significant effect on participants overall willingness to play the avatars $F(3, 90) = 1.23$, $p = .30$, $\eta^2 = .039$. Moreover, the interaction between the avatar-creator gender conditions and gamer identity was not significant, $F(6, 176) = 1.07$, $p = .38$, $\eta^2 = .035$. This suggests that the willingness to play avatars in varying avatar-creator pairings does not differ depending on participants gamer identity scores.

Overall, Gamer identity scores of participants were not found to influence the participants willingness to play different avatars. Neither when looking at all avatars together nor when differentiating between the four avatar-creator gender pairings.

Gamer Identity and willingness to Team up with avatar-creator pair

One mixed-design ANOVA was conducted, to examine whether gamer identity scores influence participants willingness to team up with avatars in different avatar-creator gender pairings.

The analysis revealed a significant effect of gamer identity, $F(3, 90) = 2.72$, $p = .049$, $\eta^2 = .083$, on participants overall ratings indicating whether they would team up with the avatars. However, post-hoc comparisons using the Bonferroni test indicated no significant differences in the mean scores of the four gamer identity groups. Although not significant, the moderate-low gamer identity group showed a lower willingness to team up with avatar-creator pairs than the high gamer identity group $M = -0.49$, $SE = 0.18$, $p = .059$.

Further, no significant interaction effect between the avatar-creator gender conditions and gamer identity was found, $F(9, 258) = 0.63$, $p = .77$, $\eta^2 = .021$. Suggesting that the different gamer identity groups rated the four avatar-creator genders similarly.

Overall, gamer identity had a limited effect on participants willingness to team up with avatar-creator pairs. Although a significant effect of gamer identity was found, these differences could not be supported by post-hoc comparisons. Thus, gamer identity did not significantly influence participants willingness to team up with avatar-creator pairs, neither when looking at all pairs together, nor when separating the pairs into their avatar-creator gender groups.

Gamer Identity and Creators Perceived Capability

The mixed-design ANOVA examined the effect of gamer identity on the creators' perceived capabilities. The analysis revealed no significant effect of Gamer Identity, $F(3, 90) = 0.46$, $p = .71$, $\eta^2 = .015$, indicating that the four gamer identity groups had similar ratings of creator's capabilities. The interaction between Avatar-creator gender pairings and gamer identity was not significant, $F(7, 224) = 0.88$, $p = .53$, $\eta^2 = .029$. This implies that participants with low, moderate-low, moderate-high, and high gamer identity scores did not rate the creators' capabilities significantly differently based on avatar-creator gender pairings.

To conclude, participants gamer identity did not influence the ratings of creator's capabilities, neither when looking at all creators together nor when separating creators into the four avatar-creator gender pairings.

Overall, gamer identity scores were found to have a moderate impact on certain perceptions related to avatars and creators, such as avatars adherence to gender norms and creators' perceived capabilities. Participants with higher gamer identity scores rated avatars as adhering more to traditional gender norms and creators as more capable. However, no significant influence of gamer identity on ratings concerning avatars' reduction to looks, willingness to play avatars, or willingness to team up with avatar-creator teams was found, when accounting for different gender pairings.

Discussion

Summary of Findings

This study aimed to evaluate whether the avatar gender, the creator gender, ambivalent sexist attitudes, and gamer identity influence the perception of sexualized gaming avatars. Several findings emerged based on the data analyses.

First, both female and male avatars were perceived to adhere more to gender norms when their creator had the same gender. Consequently, avatars in mismatched gender pairs were perceived to adhere significantly less to gender norms. Concerning avatars' perceived reduction to looks, it was found that female avatars were generally more objectified than male avatars, irrespective of creator gender. However, avatar and creator gender did not significantly influence participants' willingness to play the avatars.

Regarding the creator's evaluations, participants generally indicated a higher willingness to team up with creators of male instead of female avatars. Specifically, they were most willing to team up with male creators of male avatars. Similar results were obtained when examining the creator's capability ratings. Creators of male avatars were generally perceived as more capable than creators of female avatars, with male creators of male avatars receiving the highest ratings.

When exploring the impact of ambivalent sexist attitudes, notable patterns emerged in how participants assessed avatars and their creators. Ambivalent sexist attitudes against women were found to influence gender norm perceptions of avatars in mismatched avatar-creator pairs. High hostile sexism scores predicted low gender norm ratings while high benevolent sexism

scores predicted high gender norm ratings. Furthermore, high capability ratings of male creators with male avatars were predicted by hostile sexist attitudes against men.

Lastly, gamer identity scores affected both avatar and creator perceptions. Higher scores were associated with stronger ratings of avatars' conformity to gender norms and creators' abilities. However, the four avatar-creator gender pairs did not significantly influence these perceptions.

The Influence of Avatar-Creator Pairings on Perceptions of Avatars and Creators

Adherence to Gender Norms.

It was hypothesized that male avatars as well as female avatars will be perceived as more gender normative when creator gender and avatars gender align. The data of this study supported this hypothesis, with both male avatars created by males and female avatars created by females perceived as highly gender normative. In contrast, mismatched gender pairs were perceived to adhere significantly less to gender norms. These results support prior research conducted by Fox and Tang (2014) as well as Kaye et al (2017). Both studies suggested that a fit between avatar and creator gender would further reinforce traditional gender expectations and stereotypes, leading to an increased perception of avatars perceived adherence to traditional gender norms. In contrast, when female creators play a male avatar, traditional gender norms are challenged, and this incongruence might lead participants to perceive the avatars as less gender normative.

Objectification Ratings.

The hypothesis that male avatars will be less objectified compared to female avatars found support. Female avatars received significantly higher objectification rates, regardless of creator gender. This finding is consistent with the results of the pilot study, in which mostly female avatars received high objectification scores, while male avatars were generally not objectified but perceived as masculine. Prior research further supports these results, emphasizing that female characters in games are mainly reduced to their attractiveness through sexualizations, while male avatars were more likely portrayed as competent and strong (Downs & Smith, 2010; Martins et al., 2011; Bowey et al., 2016; Behm-Morawitz, 2017). These different portrayals of male and female characters might have led to a stereotypical evaluation of avatars, aligning with

the gender representations presented in games (Breuer et al., 2012). Cues concerning the avatar's looks were more visible than cues related to the creator gender, hence, it is not surprising that the gender of the creator had a limited impact on objectification scores. The persistence of the over sexualization of female avatars, regardless of creator gender, implies broader cultural as well as medial tendencies to sexualize female bodies, shaping gaming experiences (Kaye et al., 2017).

Willingness to Play the Avatar.

A higher willingness to play male avatars with male creators was hypothesized, however this study can only partially support this proposition. Male participants were indeed most willing to play male avatars with male creators and least willing to play female avatars created by females. This aligns with the idea, that men can more easily identify themselves with male avatars, since they can more easily relate to them (Eklund, 2016). Male avatars might serve as an additional tool to reinforce the traditional male identity of male players, leading them to favorise these avatars. Furthermore, the low willingness to play avatars created by females might be explained by the structural gender biases in the gaming environment. With both female gamers and female avatars generally perceived as inferior to male avatars and male creators (Lewis & Griffiths, 2011; Eklund, 2016; Kaye et al., 2018)

Interestingly, female participants preferred to play female avatars created by men and were least convinced to play male avatars, especially those with male creators. These results are unexpected, as prior research has found that female gamers prefer to play male characters to blend into the (perceived) male-dominated video game scene and attract less attention as a woman (Kaye et al., 2018).

Willingness to Team up with the Creator.

It was hypothesized that participants would indicate a higher willingness to team up with male creators instead of female creators, especially when the avatar is male. Although participants indicated the highest willingness to team up with male creators of male avatars, this was more due to the avatar rather than the creator gender. With participants generally indicating a higher willingness to team up with creators of male avatars, instead of female avatars. The hypothesis was grounded in prior research indicating that men are perceived to outperform

women, even when both genders receive the exact same results (Deaux & Emswiller, 1974). In gaming environments, there is a clear cut between male and female gamers and the supposed abilities projected onto each gender, with female gamers perceived as inferior to males (Eklund, 2016; Kaye et al., 2018). Given the association between gaming capabilities and masculinity, it was expected that participants would prefer male creators, with male avatars, traditionally created to signal competence and strength (Breuer et al., 2012).

Results were found to partially support the hypothesis; however the gender of the avatar was found to influence ratings more than the creator gender. Prior research supports these findings, indicating that male avatars are perceived as competent while female avatars are reduced to their attractiveness (Nowak & Rauh, 2005; Fox & Tang, 2014). Although it should be noted that these studies did not include the gender of the gamer and only focused on the avatar gender.

These findings imply that the visual gender attributes of gaming avatars may overshadow the less salient creator gender cues, influencing participants willingness to team up with them. This has important implications for understanding how gender perceptions manifest in avatar-based environments, where the design of the avatar may dictate interactions and perceptions more than the identity of the person behind the avatar. Future research should explore the conditions under which avatar characteristics, rather than creator gender, influence perceptions of competence and willingness to collaborate.

Capability ratings of Creators.

The hypothesis that male creators will generally be perceived as more capable than female creators, especially when creating male avatars receives limited support. Although male creators with male avatars were generally perceived as most capable, the gender of the avatar impacted the capability ratings far more than the gender of the creator. Creators with male avatars were perceived as most capable, with no significant differences between the creator genders.

However, it was expected that the assessment of players' skills would primarily focus on the gender of the player rather than the avatar gender. Prior research indicating that women are

structurally perceived as less competent than men, especially in (perceived) male-dominated domains like gaming (Deaux & Emswiller, 1974; Lewis & Griffiths, 2011). Female gamers are rarely evaluated as being skillfull gamers, instead they are assigned to the role of the less able casual player (Eklund, 2016; Kaye et al., 2018). These gender biases were expected to influence participants ratings of creator's capabilities based on creator gender.

The findings of this study are nevertheless supported by literature, which indicated that female avatars are perceived as less competent than male avatars, especially when participants demonstrate strong hostile sexist attitudes (Fox & Tang, 2014; Kaye et al., 2017). Additionally, these differences in capability perceptions between the genders were found to perists even when both avatars completed the same task, achieving the same results (Nowak & Rauh, 2005).

Notably, the above mentioned studies in support of the research findings did not include the gender of the creator and hence the influence of the creator was difficult to predict based on these studies. Participants may have made use of stereotypes related to male and female characters as typically portrayed in video games. With male characters appearing strong and competent (Breuer et al., 2012), and female characters mostly reduced to their attractiveness (Downs & Smith, 2010; Martins et al., 2011).

Another possible explanation for these findings might be the lower salience of the gender of the creator, which was only presented in text form. In contrast, the visual avatar gender cues where far more easily perceived and might have elicitied associations between male avatars and competence, particularly when those avatars embody traditional masculine traits. These findings suggest that the avatar gender plays a more important role in the assessment of creators capabilities than assumed.

Ambivalent Sexist Attitudes and Avatar Perception

Ambivalent Sexism and Gender Norm Ratings of Mismatched Pairs.

It was hypothesized that high hostile and benevolent sexist attitudes would predict lower gender norm ratings for avatars in mismatched avatar-creator gender pairs. This prediction was only partially supported. Only ambivalent sexist attitudes against women were found to influence the gender norm ratings of avatars in both mismatched avatar-creator gender groups. Moreover,

while hostile sexism was found to decrease gender norm ratings of mismatched pairs, benevolent sexism increased gender norm ratings.

These findings contradict previous research, which implies that individuals with strong hostile and/or benevolent sexist attitudes emphasize the importance of the adherence to gender stereotypes that are embedded in both ambivalent sexism forms (Glick and Fiske 1996;1999). A violation of these stereotypes was expected to occur when men create female avatars and women create male avatars. However, benevolent sexist attitudes inherit a more positive, albeit sexist, evaluation of one gender, which could lead to more favorable ratings of mismatched gender pairs (Glick & Fiske, 1996). More recent studies have further demonstrated that participants with strong benevolent sexist attitudes are more accepting towards women who challenge stereotypical gender roles (Stermer & Burkley, 2012).

Hostile Sexist Attitudes and Objectification.

It was hypothesized that hostile sexist attitudes would predict a greater objectification of male and female avatars and benevolent sexism a lower objectification. However, the results of this study could not support this hypothesis. Hostile sexism did not positively influence objectification ratings of avatars, contradicting prior research that indicated a link between the objectification of female avatars and strong hostile sexist attitudes (Fox & Tang, 2014; Fox & Potocki, 2016). Furthermore, benevolent sexist attitudes did not predict low objectification ratings for avatars. Previous literature found a connection between high benevolent sexist attitudes and a more idealized, less sexualized, view of women (Stermer & Burkley, 2012) and avatars (Fox & Tang, 2014; Fox & Potocki, 2016). Hence, it was proposed that high benevolent sexism would predict a lower objectification rate of female avatars.

Overall, ambivalent sexist attitudes were not found to predict objectification ratings of avatars. Prior studies have presented avatars in game-like environments rather than in static format, resulting in a more immersive gaming setting (Fox & Tang, 2014; Fox & Potocki, 2016). In contrast, the present study presented avatars as static images accompanied by information regarding the creators. These differences in presentation could have influenced the participants focus on avatar appearances. Furthermore, the present study also included information regarding

the creator of the avatar. This additional information could have potentially influenced (mismatched) avatar ratings, especially for participants with strong ambivalent sexist attitudes.

Ambivalent Sexism and Willingness to Play and Team up.

Neither the willingness to team up with the creator nor participants willingness to play the avatars were influenced by either of the ambivalent sexist attitudes. It was predicted that high ambivalent sexist attitudes would lead to a lower willingness of participants to connect with creators and play avatars of a mismatched gender pair. These results do not align with prior research indicating that hostile and benevolent sexism are deeply intertwined with the importance of adhering to traditional gender roles (Barreto & Ellemers, 2005a; Barreto & Ellemers, 2005b). While a larger effect for hostile sexism was to be expected, it is surprising that neither hostile nor benevolent sexism were found to influence the perception of avatars and creators in mismatched gender pairings.

These findings may be explained by the nature of gaming environments in which the personal display of identity (i.e. Avatars) is much more flexible, possibly reducing the impact of sexist attitudes on such judgments. Additionally, the study conducted by Nowak and Rauh (2005) demonstrated that the expectations of adhering to gender norms are more flexible in virtual environments, which may explain why hostile and benevolent sexist attitudes did not influence willingness to team up or play mismatched avatars (Nowak & Rauh, 2005).

Concluding, neither benevolent sexism nor hostile sexism was found to influence participants willingness to play or team up with avatar-creator pairs. This may be attributed to the greater flexibility of identity display that virtual environments such as online video games offer for gamers.

Hostile Sexism and Capability Ratings.

Hostile sexism was predicted to decrease female creators' capability ratings (ASI) and increase male creators' capability ratings (AMI). Prior literature suggested that hostile sexist attitudes are connected to a strong desire to act according to stereotypical gender roles (Baretto & Ellemers, 2005). These stereotypes include the perceptions of superior men and inferior women, especially in relation to their capabilities in male dominated domains (Baretto &

Ellemers, 2005). In other words, individuals with strong hostile sexist attitudes were predicted to perceive creators' capabilities based on stereotypical gender norms, with capable male gamers and less capable female gamers.

However, the hypothesis was only partially supported. Hostile sexist attitudes against men predicted higher capability ratings of male creators, supporting the idea that hostile sexist attitudes reinforce perceived male dominance in male-dominated domains (Barreto et al., 2009). This suggests that stronger hostile sexist attitudes toward men may lead to an increased perception of male creators' capabilities, serving as a confirmation for one's own gender stereotypes.

Interestingly, hostile sexism against women (ASI) did not significantly influence the ratings of female creators. The data of this study implies that the avatar gender has a greater influence on creators perceived capability, compared to the creator gender. Creators of male avatars were generally perceived as more capable, while no significant differences between the ratings of male and female creators were found. This may indicate that participants were more focused on the avatar's characteristics, associating male avatars with competence regardless of the creator's gender (Nowak & Rauh, 2005; Fox & Tang, 2014). Moreover, perceptions of creator's capabilities aligned with the perceptions typically ascribed to their respective avatars, with male avatars mainly portrayed as more powerful and capable than female avatars (Nowak & Rauh, 2005; Fox & Tang, 2014). Lastly, avatar and creator gender presentations varied in salience. While the gender of the avatar was clearly visible the creator gender was only implied by adding ‘female’ or ‘male’ to the creators informations. This may have influenced participants connection to male capability stereotypes for male avatars and female capability stereotypes for female avatars.

Gamer Identity and Avatar Creator Perceptions

Gamer Identity was not found to significantly predict or influence the perception of avatars or their creators. Despite the assumption, that gamers would be more accustomed to the sexualized representation of avatars and would thus perceive them as ‘normal’ rather than sexist, no differences were found. Solely for the gender norm ratings of avatars gamer identity had an

influence, with participants reporting a higher gamer identity perceiving avatars as generally more gender normative than participants with a low-moderate gamer identity. Hence, the findings of the study of Fox and Potocki (2016) which indicated that longitudinal exposure to sexist media increases consumer acceptance of gender stereotypes and sexist behaviours cannot be supported with the data of this study. Future research should focus on the specific games that participants play, to analyse whether participants actually play video games with sexualized images or characters.

Practical Implications

These findings have several practical implications, particularly for game developers and designers. Game developers should consider offering more diverse avatars, without reinforcing traditional gender stereotypes by oversexualizing female characters or reducing them to secondary roles. Since these oversexualizations of female characters in video games reinforce gender stereotypes and further support the inequality between male and female gamers (Behm-Morawitz, 2017). Instead, female avatars should be portrayed with an emphasis on their skill and agency, to also reduce biased perceptions of female creators (Bustos-Ortega et al., 2023).

Results also demonstrated a positive bias for male creators with male avatars, as they received the highest capability ratings and participants were also most likely to team up with these pairs. These positive bias, in turn, may influence how female creators with female avatars are perceived and treated within online games. Changing this bias through game presentation might be difficult, instead, fostering a gaming environment in which gamers, irrespective of gender or avatar they play, are seen as equally competent would likely contribute to a more inclusive gaming environment. However, avatar representation still matters, and repeated stereotypical gender portrayals further support the impression that gaming is a male-dominated domain, perceiving female gamers and avatars as outsiders (Cote, 2020). Gradual inclusions of strong, less sexualized female main characters can potentially contribute to the broader acceptance of unsexualized female portrayals in video games.

Limitations

Several limitations should be considered when interpreting the results of this study. First, the sample size of the pilot study and main study were relatively small and unevenly distributed among male and female participants. More importantly, the avatars of the pilot study were mainly rated by female participants, in contrast the second, main, study was predominantly completed by male participants. As a result, the selection of sexist avatars was mostly based on female perceptions while the further main analysis was mostly conducted by men. This disparity may have influenced the findings, as perceptions of sexism could differ between genders.

Furthermore, both the AMI and ASI include items that highly fixate on heterosexual relationships, which may have influenced participants' responses. For example, for the item “No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.”, differences in ratings may not accurately display sexist attitudes. Agreeing or disagreeing with this item may not reflect sexism but rather the participant’s sexual orientation. Specifically, we included a question concerning sexuality to account for potential differences in outcomes.

Another important limitation is the reliance on self-reports. Especially with sensitive topics like sexism, participants may be more inclined to provide socially acceptable responses, rather than responses based on their real beliefs and behaviours. Therefore, especially the AMI and ASI questionnaires may be subject to social desirability bias.

Furthermore, outfits of male and female avatars were not equally revealing, with several female avatars wearing nothing but a bikini, while only two male avatars were topless. The remaining 6 male avatars wore less revealing clothes than the majority of the female avatars. Therefore, differences in avatar perceptions may be based on the differences in revealing outfits.

Additionally, questions related to the avatars gender norms, objectification, playability and the creator’s capability were not tested, meaning that it is not clear whether these items measure what they were intended to. The same limitation holds for the ASI and AMI questions asked about the avatars (e.g. “This avatar would be too easy offended”). Participants reported difficulties relating these statements to the avatars, which resulted in a lot of “Neither agree nor

disagree" responses, thereby affecting the reliability of the responses.

Another issue that needs to be addressed is the fraudulent displays of answer options for the Gamer Identity Scale. Originally the scale ranges from 0 Strongly disagree to 7 strongly agree, however the scale was displayed with options ranging from 0 to 5. Therefore, results of the GIS need to be interpreted with caution, as the original scale would have provided a more nuanced picture of the participants gamer identity. Further some ASI items were fraudulently displayed. Two female avatars did not include a statement regarding control ("This avatar would seek power by getting control over men") but instead one avatar had the item "This avatar would be looking for special favors from others" twice and another featured the item "This avatar would seem to think she's better than most people" instead. Consequently, these questions were excluded from data analysis, resulting in missing data for a quarter of the female avatars. Lastly, the survey title read "Sex sells...," after nearly half of the data analysis was done. This may have introduced bias by priming participants to focus on sexual themes, potentially influencing their responses in unintended ways.

Future Research

Future research should focus on more natural situations in which participants encounter different avatars in real gaming environments. Afterwards participants can be asked which avatar creator pair they perceived to be as most and least capable. Furthermore, to adjust for differences in avatars, studies could be conducted with three different conditions. In the first (control) condition, avatars are presented without any information about a creator. In the second and third conditions, male and female avatars are presented, once with a male creator and once with a female creator. Thus, the same avatar will be rated in 3 different conditions, without creator, with male creator, with female creator, to be able to analyze the direct impact of the creator gender on the avatar.

Further, participants' general gaming experiences should be measured, especially with regards to the games they play and their frequency of gaming. This could further help to differentiate between gamers that play sexualized video games and those who may only play games that have no/little sexualized media. Since participants indicating a high gamer identity

could be playing games with and without sexualized content. Moreover, the kind of games that gamers interact with should be analyzed further. Since it is likely that gamers who focus on single player games, experience the magnitude of sexism in gaming differently compared to players of MMORPGs, with voice chat options.

Additionally, participants personal experiences with sexism in gaming and in general might also influence how they view sexist imageries. They could be more attuned to it and possibly observe sexism in ambiguous (gaming) situations. Lastly, participants general acceptance of sexism in gaming should be measured, as opposed to only measuring sexist attitudes related to real life. It is unclear whether some gamers perceive sexism in gaming as less harmful than sexism outside of gaming. It might even be the case that participants would despise the same sexist remarks in real life, which they found funny in an in-game scenario.

Conclusion

This study investigated whether ambivalent sexist attitudes, gamer identity, and different avatar-creator gender pairings influence how avatars and creators are perceived. Contrary to expectations ambivalent sexist attitudes were found to have a limited effect on avatar perceptions regarding objectifications. The influence of ambivalent sexist attitudes on perceptions was limited to gender norm perceptions of mismatched avatars (ASI), with high hostile sexism predicting lower gender norm ratings and high benevolent sexism predicting higher gender norm ratings. Further ambivalent sexist attitudes against men were found to predict high capability ratings of male creators with male avatars.

Gamer identity scores were found to influence avatars gender norm ratings and creators' capability ratings. With higher scores predicting higher ratings of avatars and creators, irrespective of avatar-creator gender pairings. Hence, participants with strong gamer identities did not differentiate between male and female creators or avatars. Instead, they perceived sexualized avatars as conforming to gender norms and creators as generally more capable. Lastly the avatar-creator gender pairings were found to significantly influence avatar perceptions in relation to avatars perceived adherence to gender norms. With avatars of matching avatar creator gender pairs being perceived as adhering significantly more to gender norms than avatars

of mismatched avatar-creator pairs. For the avatars objectification ratings as well as creators' capability ratings the avatar-creator gender pairs had a limited influence. Perception of avatars objectifications mainly dependent on the avatar gender, with female avatars receiving significantly higher objectification ratings than male avatars. Similarly, the capability ratings of creators were mainly influenced by the gender of the avatar, with creators of male avatars receiving higher capability ratings. These findings further emphasize the complexity and the many possible influences of individuals perceptions of sexist media.

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Appendices

Appendix A: Avatars included in Study 2 and the respective Creator Information

Figure 15

Gray Skin

Gamertag: Killswitch
Creator Gender: Male
Realm: Silvermoon

Figure 16

Red Bikini

Gamertag: DizzyDolly
Creator Gender: Female
Realm: Eredar

Figure 17

Blonde

Gamertag: TabulaRasa
Creator Gender: Female
Realm: Antonidas

Figure 18

Gold

Gamertag: FallenGod

Creator Gender: Male

Realm: Outland

Figure 19

Bikini

Gamertag: RedHusky
Creator Gender: Male
Realm: Argent Dawn

Figure 20

Crown

Gamertag: Heligoland
Creator Gender: Male
Realm: Well of Eternity

Figure 21

Headband

Gamertag: WhiteRabbit

Creator Gender: Female

Realm: Archimonde

Figure 22

Green

Gamertag: FrenchFry

Creator Gender: Female

Realm: Hyjal

Figure 23

Spiky

Gamertag: FrostbiteKnight

Creator Gender: Male

Realm: Frostmourne

Figure 24

Leather

Gamertag: FevreDream

Creator Gender: Female

Realm: Emerald Dream

Figure 25

Redarmor

Gamertag: Twisted Sister

Creator Gender: Female

Realm: Nemesis

Figure 26

Prince

Gamertag: GemFinder

Creator Gender: Female

Realm: Hakkar

Figure 27

B Fighter

Gamertag: CountingSheep

Creator Gender: Male

Realm: Garona

Figure 28

W Fighter

Gamertag: GhastlyKing

Creator Gender: Male

Realm: Eonar

Figure 29

B Chain

Gamertag: PhantomQueen

Creator Gender: Female

Realm: Ravencrest

Figure 30

W Chain

Gamertag: TheLoyalest

Creator Gender: Male

Realm: Frostwolf

Appendix B: Sample Characteristics

Table 10

Descriptive statistics of all demographic variables

	M	SD	N	%
Age in years	27.6	7.6	94	
Gender				
Male			56	59.6
Female			36	38.3
Prefer not to say			2	2.1
Sexuality				
Heterosexual				
Homosexual				
Bisexual				
Asexual				
Pansexual				
Prefer not to say				
Country of Residence				
Australia			1	1.1
Belgium			2	2.1
Canada			1	1.1
Chile			1	1.1
Czech Republic			1	1.1
Finland			1	1.1
France			4	4.3
Germany			13	13.8
Indonesia			1	1.1
Italy			1	1.1
Latvia			1	1.1
Netherlands			24	25.5
Poland			3	3.2
Portugal			3	3.2
Romania			1	1.1
Slovakia			1	1.1
South Africa			7	7.4
Spain			3	3.2

Sweden	3	3.2
Switzerland	1	1.1
Ukraine	1	1.1
United Kingdom of Great Britain and Northern Ireland	4	4.3
United States of America	13	13.8
Education		
High School	31	33
Bachelor Degree	47	50
Master Degree	9	9.6
PHD	1	1.1
other	5	6.4
World of Warcraft Experience		
I am playing WoW on a regular basis	26	27.7
I sometimes play WoW	6	6.4
I was playing WoW when I was younger	14	14.9
I know WoW but I have never played it	41	43.6
I do not know WoW	7	7.4
World of Warcraft Company		
Strangers	5	5.3
Friends	21	22.3
Online Friends	11	11.7
Alone	10	10.6
With others	3	3.2

Appendix C: Flyers for Participant Recruition

Figure 30

Flyer 1

Figure 31

Flyer 2

Appendix D: Ambivalent Sexism Inventory (ASI)

Table 11

Ambivalent Sexism Inventory

Latent Variable	Statement
B(I)	1. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.
H	2. Many women are actually seeking factors, such as hiring policies that favour them over men, under the guise of asking for "equality".
B(P)*	3. In a disaster, women ought not necessarily to be rescued before men.
H	4. Most women interpret innocent remarks or acts as being sexist.
H	5. Women are too easily offended.
B(I)*	6. People are often truly happy in life without being romantically involved with a member of the other sex.
H	7. Feminists are not seeking for women to have more power than men.
B(G)	8. Many women have a quality of purity that few men possess.
B(P)	9. Women should be cherished and protected by men.
H	10. Most women fail to appreciate fully all that men do for them.
H	11. Women seek to gain power by getting control over men.
B(I)	12. Every man ought to have a woman whom he adores.
B(I)*	13. Men are complete without women.
H	14. Women exaggerate problems they have at work.
H	15. Once a woman gets a man to commit to her, she usually tries to put him on a tighter leash.

H	16. When women lose to men in a fair competition, they typically complain about being discriminated against.
B(P)	17. A good woman should be set on a pedestal by her man.
H*	18. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.
B(G)	19. Women, compared to men, tend to have a superior moral sensibility.
B(P)	20. Men should be willing to sacrifice their own well being in order to provide financially for the women in their lives.
H*	21. Feminists are making entirely reasonable demands of men.
B(G)	22. Women, as compared to men, tend to have a more refined sense of culture and good taste.

Note. * Reversed items. B(P) = Protective Paternalism, B(G) = Complementary Gender Differentiation, B(I) = Heterosexual Intimacy

Appendix E: Ambivalence Towards Men Inventory (AMI)

Table 12

Ambivalent Sexism towards Men Inventory

Latent Variable	Statement
B(M)	1. Even if both members of a couple work, the woman ought to be more attentive.
H(S)	2. A man who is sexually attracted to a woman typically has no morals about doing whatever it takes to get her in bed.
B(G)	3. Men are less likely to fall apart in emergencies than women are.
H(S)	4. When men act to "help" women, they are often trying to prove they are better than women.
B(S)	5. Every woman needs a male partner who will cherish her.
H(G)	6. Men would be lost in this world if women weren't there to guide them.
B(S)	7. A woman will never be truly fulfilled in life if she doesn't have a committed, long-term relationship with a man.
H(G)	8. Men act like babies when they are sick.
H(P)	9. Men will always fight to have greater control in society than women.
B(M)	10. Men are mainly useful to provide financial security for women.

H(P)	11. Even men who claim to be sensitive to women´s rights really want a traditional relationship at home, with the woman performing most of the housekeeping and childcare.
B(S)	12. Every woman ought to have a man she adores.
B(G)	13. Men are more willing to put themselves in danger to protect others.
H(S)	14. Men usually try to dominate conversations when talking to women.
H(P)	15. Most men pay lip service to equality for women, but can´t handle having a woman as an equal.
B(S)	16. Women are incomplete without men.
H(G)	17. When it comes down to it, most men are really like children.
B(G)	18. Men are more willing to take risks than women.
H(S)	19. Most men sexually harass women, even if only in subtle ways, once they are in a position of power over them.
B(M)	20. Women ought to take care of their men at home, because men would fall apart if they had to fend for themselves

Note. H(P) = Resentment of Paternalism, H(G) = Compensatory Gender Differentiation, H(S) = Heterosexual Hostility, B(M) = Maternalism, B(G) = Complementary Gender Differentiation, BS (S) = Heterosexual Intimacy

Appendix F: Gamer Identity Scale

In the items listed below, the terms “game” and “gamer” should be understood in the context of video games and esports. Read each item carefully. For each item, indicate your level of disagreement/agreement using the choices provided. Choices range from "strongly disagree" to “strongly agree.”

1. I have numerous goals related to gaming
2. Gaming is a central factor to my self-concept
3. For me, being a gamer means more than just gaming
4. Gaming is something I think about often
5. I am proud of being a gamer
6. I do things that will help me in gaming
7. I am in groups that allow me to talk to others in gaming
8. I feel a strong connection with the gamer community
9. I am an active member of a gamer community

Participants were asked to rate their agreement with the illustrated statements on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). Originally, a scale ranging from

Appendix G

Variable	Assumption	Male Avatar, Male Creator	Male Avatar, Female Creator	Female Avatar, Female Creator	Female Avatar, Male Creator	
Gendernorms (ANOVA1)	**Normaility (Shapiro Wilk)**	***W*(92) = .891, *p* < .001**	*W*(92) = .976, *p* = .087.	***W*(92) = .943, *p* = .001**	***W*(92) = .933, *p* < .001**	
	Homogeneity of Variances (Levenes Test)	*F*(1,90) = .022, *p* = .882	***F*(1, 90) = 6.811, *p* = .011**	*F* (1, 90) = 2.735, *p* = .102	*F* (1, 90) = 1.147, *p* = .287	
	Sphericity (Mauchlys Test)					**χ^2(5) = 76.133, *p* < .001**
Objectification (ANOVA2)	**Normaility (Shapiro Wilk)**	***W*(92) = .972, *p* = .046**	*W*(92) = .975, *p* = .075	***W*(92) = .954, *p* = .003**	***W*(92) = .939, *p* < .001**	
	Homogeneity of Variances (Levenes Test)	*F* (1, 90) = .536, *p* = .466	*F* (1, 90) = 1.234, *p* = .270	*F* (1, 90) = 3.455, *p* = .066	*F* (1, 90) = 1.271, *p* = .263	
	Sphericity (Mauchlys Test)					**χ^2(5) = 18.949, *p* = .002**
Play (ANOVA3)	**Normaility (Shapiro Wilk)**	***W*(92) = .960, *p* = .007**	***W*(92) = .970, *p* = .031**	***W*(92) = .967, *p* = .018**	***W*(92) = .964, *p* = .012**	
	Homogeneity of Variances	*F* (1, 90) = 1.494, *p* = .225	*F* (1, 90) = .062, *p* = .804	*F* (1, 90) = .341, *p* = .560	*F* (1, 90) = .783, *p* = .378	

	(Levenes Test)				
	Sphericity (Mauchlys Test)				**$\chi^2(5) = 73.980, p < .001$**
Willingness to Team up (ANOVA 4)	**Normaility (Shapiro Wilk)**	$W(92) = .965, p = .015$	$W(92) = .974, p = .062$	$W(92) = .969, p = .027$	$W(92) = .961, p = .008$	
	Homogeneity of Variances (Levenes Test)	$F(1, 90) = 1.021, p = .315$	$F(1, 90) = 1.639, p = .204$	$F(1, 90) = .043, p = .836$	$F(1, 90) = .071, p = .791$	
	Sphericity (Mauchlys Test)					$\chi^2(5) = 16.072, p = .007$
Capability of Creator (ANOVA 5)	**Normaility (Shapiro Wilk)**	$W(92) = .863, p < .001$	$W(92) = .919, p < .001$	$W(92) = .939, p < .001$	$W(92) = .865, p < .001$	
	Homogeneity of Variances (Levenes Test)	$F(1, 90) = .043, p = .835$	$F(1, 90) = .222, p = .638$	$F(1, 90) = 2.481, p = .119$	$F(1, 90) = .228, p = .634$	
	Sphericity (Mauchlys Test)					$\chi^2(5) = 36.287, p < .001$