Which character do you choose? Influence of character attachment and female representation on players' enjoyment in video games

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ABSTRACT

In the realm of digital entertainment, video games have evolved from simple pastimes into a complex cultural phenomenon. This research delves into the dynamics of player enjoyment within video games, particularly examining the roles of character attachment and female representation. The portrayal of female characters in video games has long been critiqued for perpetuating stereotypes and marginalizing women within gaming narratives. Despite advancements, issues persist regarding the portrayal of roles available to female characters. Simultaneously, character attachment posits that players' emotional bonds with in-game characters significantly shape their gaming experiences. This thesis addresses the question: *"To what extent is players' enjoyment with video games influenced by character attachment and the lack of representative female characters?"* A quantitative approach was adopted, using a survey to collect data gathered from diverse platforms. Key findings show the pivotal role of character attachment in shaping player enjoyment. Identification with in-game characters emerged as a predictor of enjoyment, highlighting the immersive and emotional depth that players derive from their interactions within game worlds. Factors such as suspension of disbelief, control, and responsibility showed insignificant impact on enjoyment, challenging previous assumptions about their centrality in gaming experiences. It suggests that while these elements contribute to the immersive experience, they do not independently drive enjoyment to the same extent as character attachment. Regarding female representation, the study revealed that despite widespread concerns about stereotypical depictions, the direct influence of these portrayals on enjoyment was minimal. Female representation did not significantly predict players' overall enjoyment levels, suggesting that while cultural and ethical concerns remain, they may not directly affect players' enjoyment within gaming contexts. While players and critics often call for better representation of women in games, these improvements do not necessarily enhance the enjoyment of the gaming experience for most players. The study also explored the role of gamer identity in shaping enjoyment. Findings indicate that the strength of an individual's gamer identity, particularly among heavy gamers who spend between 12-21 hours per week gaming, significantly influences their enjoyment levels. This category of gamers consistently reported higher enjoyment compared to casual or hardcore gamers, suggesting that a balanced engagement with gaming activities fosters greater enjoyment.

KEYWORDS: Enjoyment, video games, female representation, character attachment, survey.

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1. Introduction

In the landscape of digital entertainment, video games have emerged not only as a thriving industry but also as a profound cultural and social phenomenon. Since their creation, video games have captivated audiences worldwide, offering interactive experiences that transcend traditional forms of media. From the classic days of Pong and Space Invaders to the sophisticated narratives and immersive worlds of modern gaming, this medium has evolved into a cornerstone of leisure activities, boasting a market that continues to expand even in times of economic uncertainty (Boyle et al., 2012, p. 772).

Video games have surpassed entertainment to become a cultural phenomenon, captivating millions of players worldwide. As the industry evolves, so too does the discourse surrounding its portrayal of gender, particularly in the representation of female characters. A growing body of research suggests that the depiction of women in video games often reinforces stereotypes and perpetuates gender biases (Lynch et al., 2016, p. 576). From sexual objectification to relegation to secondary roles, female characters frequently face marginalization within game narratives (Friedberg, 2015, p. 34; Kondrat, 2015, p. 172). Nasr (2020, p. 4) highlights the persisting low levels of gender diversity within the gaming industry, an aspect that has long characterized the gaming landscape.

The appeal of video games lies not just in their technological advancements but also in their ability to deliver enjoyment to players. Understanding what contributes to this enjoyment has been a challenge in academic research. Scholars have explored various facets of gaming experiences, from psychological theories of enjoyment (Nabi & Krcmar, 2004, p. 290) to the role of narrative and character engagement (Sweetser & Wyeth, 2005, pp. 1-2; Bowman et al., 2016, p. 87). Central to this, is the concept of enjoyment itself, which entails emotional, cognitive, and behavioral dimensions shaped by the interactivity and immersion inherent in gaming (Vorderer et al., 2004, p. 391; Feng et al., 2008, p. 2).

Character attachment is conceptualized as the emotional bond and identification players develop with their in-game characters (Kao & Harrell, 2018, p. 3). This attachment influences how players perceive themselves within the game world and their overall engagement with the narrative and gameplay experiences.

The representation of female characters in video games holds societal and academic significance, reflecting broader cultural norms and impacting perceptions of gender roles. Academic discourse shows how these representations can reinforce stereotypes or challenge them, influencing players' attitudes toward gender equity. Character attachment, a factor in player engagement, not only affects gameplay experience but also shapes players' identification with, and perceptions of in-game characters, including female characters. Understanding the dynamics between character attachment and female representation in video games is becoming important

for advancing inclusive game design practices and promoting diverse, empowering portrayals that resonate positively with players, contributing to more equitable digital environments and societal attitudes toward gender diversity.

This thesis seeks to investigate the factors influencing players' enjoyment of video games, focusing particularly on character attachment and the representation of female characters. The research question guiding this study is: *"To what extent is players' enjoyment with video games influenced by character attachment and the lack of representative female characters?"*

Moreover, this research recognizes the significance of character attachment and gamer identity in mediating the relationship between representation and enjoyment in video games. Character attachment suggests that players' emotional investment in and identification with game characters play a crucial role in shaping their gaming experiences (Rehak, 2003, p. 110). Similarly, gamer identity, as conceptualized through labels such as 'hardcore gamer' and 'casual gamer,' influences individuals' engagement with games and their perceptions of gaming culture (Neys et al., 2014, p. 197). By incorporating insights from character attachment theory and gamer identity research, this study aims to explore how players' attachment to female characters and their identification as gamers influence the relationship between representation and enjoyment.

A quantitative research approach was employed to systematically investigate patterns and relationships among these variables. Specifically, this study utilized a survey to explore correlations between character attachment, perceptions of female representation, and levels of enjoyment experienced by players. The survey was distributed across various platforms, including Reddit, Instagram, WhatsApp, and Facebook, ensuring a diverse and global participant pool. The survey instrument incorporated validated measures to assess character attachment, intrinsic motivations within gaming contexts, dimensions of enjoyment, perceptions of female representation in video games, and demographic information.

Chapter 4 presents the empirical findings of the study, discussing correlations between character attachment, perceptions of female representation, and levels of enjoyment reported by participants. This chapter examines the implications of these findings for game design practices, player engagement strategies, and the broader discourse on gender inclusivity within gaming communities. Chapter 5 combines the research findings, discusses their theoretical and practical implications, and offers recommendations for future research directions.

By addressing these elements, this thesis aims to contribute insights into how character attachment and female representation intersect to shape player enjoyment in video games. The study shows the academic rigor of investigating these phenomena while also highlighting their societal relevance in advancing discussions on gender representation and media effects in contemporary digital cultures.

2. Theoretical framework

To answer the research question, this thesis explores the representation of female characters in video games and the concept of character attachment, analyzing how portrayals have evolved and their impact on players and the gaming industry. By examining the industry's response to changing social norms and player demographics, the thesis provides a comprehensive understanding of gender representation complexities in video games. Additionally, it integrates insights on player enjoyment, using frameworks like self-determination theory to explore how diverse and relatable female characters can enhance gaming experiences and foster inclusivity.

2.1 Player Enjoyment

Digital games have drastically changed our leisure activities since the 1970s, when computer games such as Pong and Space Invaders were first introduced in the UK. Digital games provide engaging and pleasurable experiences, resulting in the quick rise of the digital games industry, which has become the most rapidly growing entertainment sector, in spite of global economic declines (Boyle et al., 2012, p. 772). Despite the clear popularity of digital games, as evidenced by sales, player counts, and playing time, understanding this appeal has proven difficult (Nabi & Krcmar, 2004, p. 289). Researchers such as Vorderer, Klimmt, and Ritterfeld (2004, p. 391) have pointed out that the nature of media enjoyment has often been overlooked in research.

2.1.1 Enjoyment

Digital games offer an experience that no other medium does. Because playing video games is an interactive medium, players can have a more intense, rich and engaging experience (Mekler et al., 2014, p. 927). According to Bowman et al. (2016, p. 86) entertainment is defined as experiences that fulfill our fundamental psychological requirements. One of the main objectives of video games is to make the player enjoy themselves. Immersion in a story and the effects that follow from it enhance the enjoyment experience (Sweetser & Wyeth, 2005, pp. 1-2). Enjoyment, which is frequently considered to be the core experience of gaming, has been found to be the main incentive for playing digital games. But defining it is difficult and frequently confused with other psychological aspects of the player experience, such as pleasure or appreciation (Mekler et al., 2014, pp. 927-928).

The term "enjoyment" refers to a general positive attitude and preference for media content. Since enjoyment includes liking media content, the term "liking" is often used to evaluate positive opinions about a show or character. However, enjoyment and liking are often used interchangeably, although they have slightly different meanings. Enjoyment is better suited to describe the overall experience of watching or playing, including situational and contextual factors.

While liking indicates cognitive or emotional reactions to a media message, enjoyment surpasses these reactions as well as the complete media experience. Therefore, someone might like a media message but not enjoy the viewing or playing experience as a whole (Nabi & Krcmar, 2004, p. 290).

Research by Nabi and Krcmar (2004, p. 296) has provided a tripartite model of media enjoyment that can be applied to understanding enjoyment in computer game play. This model breaks down enjoyment into three dimensions: affective, cognitive, and behavioral. The affective dimension includes emotions such as empathy, positive and negative moods, and specific states like horror, sadness, and suspense. The cognitive dimension involves judgments about the game's characters and story, including perceived realism, story coherence, and message quality. The behavioral dimension incorporates the player's engagement with the game, including their intent to play and behaviors during gameplay (Feng et al., 2008, p. 2).

With competence in the context of video games, the challenges players face offer chances to validate their competence by attributing success to their skills and efforts. Overcoming these challenges becomes pivotal for enjoying the game since most games constantly introduce new tasks and obstacles. This frequent exposure provides players with numerous opportunities to feel competent and successful, thereby boosting their self-esteem and fostering continuous positive emotions throughout gameplay. The ongoing satisfaction of mastering new game challenges becomes a significant aspect of enjoying gaming experiences (Klimmt, Blake, et al., 2009, p. 2).

Oliver et al. (2015, p. 3) found that enjoyment and appreciation derive from different characteristics of video games. They discovered that gaming competence and sensations of autonomy were associated with self-reported game enjoyment. Conversely, the motivation for playing games lies in seeking enjoyment as a lasting incentive (Mekler et al., 2014, p. 928). Furthermore, video games are rapidly evolving into a medium that emphasizes both narrative and gameplay (Benedetti, 2010, para. 7). The latest generation of gamers shows a heightened interest in immersive experiences within emotionally and narratively rich worlds (Bowman et al., 2016, p. 87).

The relationship between character-player similarity and media enjoyment is also noteworthy. Players often engage in character creation based on both the game's plot and their personal goals, assessing how well the character fits their aspirations (Trepte & Reinecke, 2010, p. 175). Positive appraisals of these characters, in terms of both game-related and personal goals, enhance identification with the characters, leading to greater media enjoyment. Identification with the character involves the player assuming the identity, goals, and perspective of the character, which can significantly boost enjoyment. This imaginative merging of player and character fosters a deeper connection and emotional engagement, thereby amplifying the overall gaming enjoyment (Klimmt, Blake, et al., 2009, p. 3). More about character attachment will be elaborated in paragraph 2.2.1.

So, findings from Feng et al. (2008) suggest that the tripartite model's affective, cognitive, and behavioral dimensions provide a comprehensive framework for measuring enjoyment in computer games. The affective component aligns with the emotional highs and lows experienced during gameplay, while the cognitive component relates to the player's analytical engagement with the game's narrative and characters. The behavioral component, incorporating actions and decisions during gameplay, reflects the active participation and immersion that contribute to the overall enjoyment experience.

Research has shown that video games can offer meaningful entertainment beyond mere pleasure, contributing to the player's sense of purpose and emotional well-being. This dual aspect of enjoyment, incorporating both immediate pleasure and deeper appreciation, drives players to engage with video games and persist in their gameplay. As video games continue to evolve, the interplay of narrative depth, character identification, and fulfillment of psychological needs remains central to understanding and enhancing player enjoyment (Zhang, 2021, p. 13).

2.1.2 Self-determination theory

Video games can be used to meet the needs of players. Self-determination theory (SDT) defines these demands as competence, autonomy, and relatedness (Ryan & Deci, 2000, p. 320). The belief is that the more a video game matches SDT needs, the more fun and enjoyable the player experience will be (Oliver et al., 2015, p. 12). Autonomy is the desire to self-organize experiences and behaviors and act in line with one's own sense of self. Competence, on the other hand, is the desire for challenge and the experience of one's own competence. Third, relatedness refers to the need to experience community and feel connected to other individuals and groups in some way. SDT is a well-studied motivation theory that applies to activities in all aspects of life as well, including work, love, and play (Neys et al., 2014, p. 197).

SDT explains gaming experiences in terms of how well they satisfy players' intrinsic motivations (autonomy, competence, and relatedness), thereby enhancing gameplay enjoyment (Przybylski et al., 2010, p. 157; Ryan et al., 2006, p. 349). Autonomy is defined as "a sense of willingness or volition when doing a task" (Ryan et al., 2006, p. 349), and it rises when games provide players with numerous in-game options, such as choosing their character's gender (Przybylski et al., 2010, p. 156). A lack of options and control over character choices might reduce perceived autonomy and enjoyment (Kim et al., 2015, p. 695). Competence is defined as "a need for challenge and feelings of effectance", which is heightened when players believe that their selected or created characters can effectively navigate and handle game challenges (Przybylski et al., 2010, p. 155). Finally, relatedness refers to feeling linked to other players and characters. Providing representative female characters and the opportunity to choose one's gender might enhance this sense of connection and inclusivity (Kim et al., 2015, p. 696; Ryan et al., 2006, p. 350). Therefore

formulating the following hypothesis:

H1: *Players who self-report higher levels of (a) autonomy, (b) competence, and (c) relatedness will show a higher degree of enjoyment in video games.*

Customization and the ability to choose character attributes, including gender, are critical aspects of autonomy, which will be touched more upon in paragraph 2.2.1. Games that offer such choices not only enhance player autonomy but also contribute to a more personalized and engaging gaming experience. This flexibility can significantly intensify players' sense of control and personal relevance in the game, thereby increasing overall enjoyment (Kim et al., 2015, p. 696). As previously said, autonomy contributes to why people find some experiences rewarding and enjoyable (Przybylski et al., 2010, p.156). Multiple studies have found that a player's in-game autonomy enhances game enjoyment. As a result, giving players the choice of choosing female characters and ensuring that such characters appear positively and representatively might meet their demand for autonomy while also increasing their overall enjoyment. (Ryan et al., 2006, page 352).

2.2 Characters

For many games, the player can control a character which most of the time will serve as the main protagonist in the game. The character is the embodiment of the player within the game's story. Being able to play the character requires the player's attention, instead of simply watching a movie or television show; the player has influence over their character, allowing them to perform whatever actions they want within the limitations of the game rules (Friedberg, 2015, p. 12).

2.2.1 Character attachment

In addition to their emotional bonds with living and beautiful things, humans often form connections to fictional characters in media. Characters are "agents through whose actions a drama is told" (Fullerton, 2008, p. 40) in video games, where players can interact with or manipulate non-player characters (NPCs) or take control of them. Character attachment (CA) in games is considered essential for creating engaging and emotionally rich experiences (Kao & Harrell, 2018, p. 3). In this context, character attachment surpasses the sense of liking, connection, and closeness a player feels towards any in-game character, whether they are player characters (PCs) or NPCs (Bopp et al., 2019, p. 314).

The attachment to a game character can be deeply immersive and emotionally engaging. Character identification involves imagining oneself in the character's shoes and seeing the world through their eyes. This experience is characterized by a temporary loss of self-awareness and a

heightened emotional and cognitive connection with the character. The degree to which players see the character as an extension of themselves can significantly impact their gaming experience, often referred to as character identification (Teng, 2017, p. 602).

There are four characteristics that are important for a good collaboration between the player and the character, which are defined by Rehak (2003, p. 110), Lewis et al. (2008, pp. 515-516) and Lie et al. (2013, p. 260): (1) the player can identify with the in-game character (Identification); (2) feeling a heightened sense of control over the in-game characters actions (control); (3) the player is able to accept the character's world as "real" for the sake of the gaming experience (suspension of disbelief); (4) the player feels more responsible for the in-game character's well-being (responsibility). These aspects of character identification improve the effectiveness of media, increase user enjoyment, and boost immersion (Trepte & Reinecke, 2010, p. 175). With these four characteristics the following hypothesis can be formulated:

H2: *The four characteristics (a) identification, (b) suspension of disbelief, (c) control and (d) responsibility of CA, will positively influence video game enjoyment.*

These different characteristics can suggest potential associations between that and aspects of enjoyment (Bowman et al., 2016, p. 89). In addition to these, the concept of extended-self demonstrates that strong attachments between players and their in-game characters foster a sense of unity. Customization plays a significant role here. Personalized characters enhance self-activation and identification, creating a deeper emotional bond and increasing immersion in the game world (Kim et al., 2015, p. 697). This customizable interaction is crucial, as it not only augments the gaming experience but also solidifies the player's attachment to their character. Thus, understanding character attachment involves recognizing how players perceive and emotionally connect with their in-game characters, leading to a richer and more immersive gaming experience.

2.2.2 Representation in Media

Video games have become a popular media pastime, therefore it can be interesting to look into how male and female characters are portrayed (Downs & Smith, 2009, p. 721). A survey study from 2015-2020 by Clement (2022) shows that in 2020 18% of protagonist in video games are female and 23% male, compared to 9% and 32% in 2015, respectively. In the same study, the bigger part of a protagonist in a video game (i.e. 54%) is stated as ‘multi’, meaning both genders were protagonists or a choice of character’s gender was available (Statista, 2022). Video game players frequently have more options to choose between playing as a non-human character, like a robot or an anthropomorphized creature, than a female character, according to Downs & Smith (2009, p. 723). Given the widespread popularity of digital gaming, examining its cultural and social-

psychological effects has become a significant focus in academic research (Cassell & Jenkins, 2000, p. 5). Since game characters are a prominent part of the gameplay experience, it is not surprising that their portrayals are a frequent subject of media studies. Historically, white male characters have been predominant in video games. An analysis of 133 games by Williams et al. (2009, p. 828) revealed an overrepresentation of white males compared to female characters and those from minority ethnic backgrounds. Although there is no current comprehensive data on character representation, a non-profit organization reported that out of the video games showcased at a major gaming expo in 2019, only six featured female protagonists while 28 focused on male protagonists (Sarkeesian & Petit, 2019, para. 6). A gender gap remains (Tompkins & Martins, 2021, p. 3).

One of the most persistent criticisms of video games is the prevalence of stereotyping, particularly in the representation of gender (Lynch et al., 2016, p. 576). In the realm of video games, the stereotyping of female characters is a pervasive issue, like manifesting sexual objectification. Women in video games are often portrayed as objects of the male gaze, with a focus on youthfulness, skintight clothing, and slim figures. Women are developed in these kinds of games to be either a sexual object or an assistance to male characters, often dressed provocatively (Kondrat, 2015, p. 172). Video game female characters in the 1990s were frequently sexualized, presented as damsels in distress, and submissive to male characters (Dietz, 1998, p. 435). Dietz's study was conducted more than ten years ago, and still nowadays, female characters remain underrepresented and more often partly nude, with unrealistic body images and inappropriate clothing for their roles in the game realm (Williams et al., 2009, p. 828; Lynch et al., 2016, p. 577). Most female characters are portrayed with disproportionately large body parts. Female characters exposed their midriffs and their bottoms, and bared their breasts in terms of attire (Lynch et al., 2016, p. 572). Lastly, according to Downs and Smith (2009, p. 723), female characters were classified as wearing sensual clothing twice as frequently as male characters.

The representation of women in such a manner is argued to be detrimental, as it can lead to the internalization of harmful expectations by both male and female players, reinforcing ideas that women are weak, victims, or mere sex objects (Kondrat, 2015, p. 173; Salter & Blodgett, 2012, pp. 402–403). Friedberg (2015, p. 34) argues that women fundamentally fulfill different roles in games. The roles of women are used to drive the story forward, not by their own actions, but for example, through the violence or harm done to them. The women's role is often secondary to the protagonist, for engagement in the story, or to help create the starting point of a journey or quest.

Although, as Solska (2022, p. 209) argues, video games have mainly been using male gendered protagonists, the representation of women in characters is evolving, away from over-sexualization, subjugation, and marginalization. While more progressive features have been displayed by female video game characters throughout time, certain negative aspects still exist.

According to a quantitative content analysis study conducted over a 31-year period, sexualization of female video game characters peaked in the mid-1990s and started to diminish in the early 2000s (Lynch et al., 2016, p. 576). But while being portrayed as extremely skilled fighters, eleven gender-stereotypical female characters were found to be sexually objectified and to lack meaningful relationships in the game narratives (Tompkins & Martins, 2021, p. 3). This was explored through an interpretative analysis of the characters.

2.2.3 Feminist theory

Feminist theory is not just about women, it is about the best ways to understand and improve the lives of both men and women, and anything outside this dichotomy (Ferguson, 2017, p. 270). A shift of women's social status has been happening in the last years, but there are still certain challenges that arise across various media platforms. While gender relations are constantly improving, new constraints are also beginning to appear (Kondrat, 2015, p. 178). Kondrat (2015, p. 178) explains that when female characters are introduced into the game, there is a high probability that she will be sexualized. Even though the target audience has become more diverse, it does not change the perception of female gender by video game companies. The video game industry is still very much male-dominated (Soukup, 2007, p. 160), which are using these established social norms of sex-role expectations.

The industry was not (and appears to still not be) interested in developing video games for both genders (Kondrat, 2015, p. 179). For the game industry it is important that games are developed for girls, so that the diversity of women's lifestyles, interests and identities can be shown (Cassell & Jenkins, 2000, p. 20). Fortunately, several game companies understand the importance of incorporating the feminine gender into video games (Kondrat, 2015, p. 179). Thus, formulating the following hypothesis:

H3: *A representative portrayal of female characters positively influences video game enjoyment.*

As feminism gained momentum, it became increasingly apparent that a variety of cultural factors might influence and mold a woman's interests, preferences, and worldview (Castell & Bryson, 2000, p. 235). Stereotyping arises from the fact that disproportionate data is used to represent the female gender and that the majority of ideas and explanations regarding gender and gaming are based on what the genders claim they play or would prefer, rather than the context in which they are played (Hayes, 2005, p. 23). This demonstrates the importance of finding a balance between representing female and male genders and making video games for everyone, rather than just one gendered target group (Kondrat, 2015, p. 180).

2.3 Identification

2.3.1 Social Identity Theory

Social identity theory (SIT) can help explain how players identify with characters and how this affects their enjoyment. Players' identification with in-game characters can enhance their enjoyment by allowing them to see themselves reflected in the game world. This identification is particularly relevant when considering the representation of female characters, as it influences players' perceptions of inclusion and relatability within the game (Trepte & Reinecke, 2010, p. 175). Originally designed to explain intergroup relations and conflicts, social identity theory has expanded into a more comprehensive social psychology framework that looks at how identity and self function within group dynamics (Hogg, 2016, p. 3). At its core, SIT posits that individuals derive a significant part of their identity from the social groups they belong to and that this group membership carries emotional and value significance (Hogg, 2016, p. 6). In the context of gaming, these groups can include gaming communities or in-game groups.

In digital games, the player's role is far more active compared to traditional media. Digital games assign an active role to players, who assume an in-game identity and participate directly in the virtual action. This results in a closer mental association between the player and their character. Gamers often refer to their characters using first-person pronouns, reflecting a deeper sense of embodiment and presence within the game (Van Looy, 2015, p. 4). When players create or choose characters, they often do so in a way that reflects their social identity, enhancing their sense of belonging and immersion in the game. This process of character creation and customization allows players to align their in-game characters with their real-world identities or explore different facets of themselves in a safe and controlled environment (Teng, 2017, p. 602). The choice of character that mirror the player's gender, appearance, and personality traits can foster a stronger connection to the game and increase enjoyment (Trepte et al., 2009, p. 67).

However, the ability to choose dissimilar characters also plays a crucial role. This flexibility supports identity exploration and experimentation, enabling players to engage in identity play and try out different personalities or traits they may aspire to in real life (Trepte & Reinecke, 2010, p. 172). Adolescents, in particular, are prone to engage in wishful identification with game characters, choosing characters that possess qualities they admire or wish to develop (Konijn & Bijvank, 2009, p. 183). This process can serve to reduce feelings of frustration about one's actual self and offer an avenue for exploring desired characteristics, thus functioning as a form of identity experimentation (Van Looy, 2015, p. 4). SIT provides a framework for understanding how the interplay between character similarity and dissimilarity can impact players' identification with their characters, subsequently influencing their gaming experience. Games provide a virtual space where players can safely and controllably explore different versions of themselves, experimenting with various social roles and personal traits without facing real-world consequences (Van Looy, 2015, p. 5).

Moreover, the degrees of freedom provided by the game significantly influences this identification process. Games that offer a high degree of customization and choice allow players to express their individuality more fully, tailoring their character to closely match their ideal self-concept (Klimmt, Hefner, & Vorderer, 2009, p. 361). This customization can range from physical appearance to moral decisions and personality traits, giving players a broad spectrum of possibilities to explore and express different aspects of their identity. These degrees of freedom can enhance the player's emotional investment and immersion, making the gaming experience more personally meaningful and satisfying (Trepte & Reinecke, 2010, p. 176). Games with limited character customization might still foster identification through narrative and character development. Even when choices are constrained, strong storytelling and well-developed characters can lead players to form deep connections and see themselves reflected in the game's protagonists (Klimmt, Hefner, & Vorderer, 2009, p. 356). The balance between freedom and structure in character representation thus plays a crucial role in shaping the player's self-perception and overall enjoyment. This can result in deeper character identification and can even affect real-life behaviors, like adopting healthier habits or making style changes inspired by in-game experiences (McDonald & Kim, 2001, p. 243). Van Looy (2015, p. 4) emphasizes the significance of inclusive and diverse character representations in games, as they can improve players' feelings of belonging and satisfaction, thus contributing to their overall enjoyment in gaming.

2.3.2 Gamer identity

The term ‘gamer’ is often used to describe people who play video games, and news articles frequently highlight the evolving demographics of gamers. The gaming demographic has expanded and is evolving, challenging traditional notions. The Entertainment Software Association reported in 2022 that 48% of game players are female and 52% male, signifying a shift in market interests (Entertainment Software Association, 2022, p. 2). This surge in female gamers, alongside an increase in the age range of players, suggests that video games have become a significant and influential form of media (Kondrat, 2015, p.173).

The gaming community is diverse, and individuals identify with gaming to varying degrees. The concept of Gamer Identity Strength (GIS) suggests that the strength of one's identity as a gamer influences their persistence in gaming activities (Neys et al., 2014, p. 198). Labels such as 'Hardcore gamer,' 'Casual gamer,' and 'Heavy gamer' are used to categorize individuals based on their level of commitment and identification with gaming. These categories reflect a spectrum of engagement within the gaming community. The identity of ''hardcore gamer'' is frequently used by those who want to (proudly) show the strongest possible association with gaming and gamers, whereas ''casual gamer'' is an acknowledged identity for those who do not view gaming as a fundamental component of their identity. The phrase ''casual gamers'' originated in the gaming industry, and

people who do not consider playing games to be extremely important. A third title is currently being applied in the industry, that of ''heavy gamers''. This identity is used to separate those who spend the most amount of time gaming from those who play less (Neys et al., 2014, p. 198). Video games may very well be the medium via which significantly involved people shape and express their behaviors (Lepp et al., 2023, p. 1). With this concept, the following hypothesis can be formulated:

H4: *The strength of an individual's gamer identity (GIS) positively influences their enjoyment of video games.*

How people identify as gamers is not the same as who counts as a gamer. Identification provides for self-definition of the individual rather than relying on static concepts of identity given from the outside (Shaw, 2012, p. 28).

3. Methodology

3.1 Research design

The aim of this research was to investigate how the level of character attachment and the lack of representative female characters influence players' enjoyment of video games, which was based on self-reported levels of enjoyment and levels of character attachment, that have been elaborated above. Therefore, this study aimed to uncover the relationship between the two independent variables and dependent variable and formulated hypotheses grounded in theoretical foundations. A quantitative research approach was employed, as it is well-suited for examining general patterns and relationships among the factors (Babbie, 2014, p. 25), it is also well-suited to study a larger group of people, which will allow to make generalizations based on the sample (Swanson & Holton, 2005, p. 30).

The data was collected using the method of using a survey. The survey was used to collect original data from a great number and diverse range of individuals who have played video games in a relative short time span (Babbie, 2014, p. 261). The survey consisted out of an online questionnaire, which allowed the research to measure respondents' level of enjoyment, behavior, identification with characters, their gamer identity and female representation and backgrounds (Neuman, 2014, p. 49). This study specifically utilized an online survey to distribute the designed questionnaires through Qualtrics.

The use of internet opened up the possibilities to reach a wider pool of people. Online, virtual communities, such as gaming and feminism have been utilized on platforms like Reddit. Reddit is a social media platform where users vote on submitted material and share, discuss, and exchange diverse news and links. The website itself is made up of a network of connected subforums, or "subreddits," that discuss a wide range of subjects. Subreddits can be used to target particular demographics and special interest groups when needed (Shatz, 2016, p. 539). The online survey also insured that the results were of quality and reliable, as video gamers were accustomed with the online environment. Additionally, the online questionnaire required less work to complete and provided respondents with more flexibility in terms of time and location, increasing the chance of higher response rates (Babbie, 2014, p. 290). The survey was offered in two languages, English and Dutch. The English version was provided as the primary version to reach a broader international audience. Additionally, a Dutch option was included in the questionnaire to accommodate participants in Dutch-speaking communities who may not be proficient in English, which can help prevent non-response bias (Zavala-Rojas & Saris, 2017, p. 485).

Utilizing the virtual communities on Reddit, the survey was distributed on different subreddits. Those subreddits eventually consisted of r/SurveyExchange, r/takemysurvey and r/SampleSize to reach a wider international audience. Unfortunately the following subreddits r/Feminism, r/Games, r/GirlGamers, r/gaming which would be used primarily and would contain a

higher rate of the target audience, didn't allow surveys to be posted. Because the last mentioned subreddits didn't allow surveys the first three subreddits were therefore used instead. Next to Reddit, also utilizing other social media, the survey was distributed through Instagram, WhatsApp and Facebook and reshared through the researchers' social network to reach a wider audience.

This study used quantitative methods for data analysis. The data collected from the online survey were processed using SPSS. Various stages of data preparation were carried out in SPSS to enable subsequent analyses. This process included data cleaning and a factor analysis. After these preparations, hierarchical regression analyses were used to investigate the associations between variables and evaluate the hypotheses.

3.2 Sampling

The units of analysis in this study are video game users aged 18 and up. The age limit is a way to avoid possible ethical issues regarding the consent of minors. Since the study attempts to uncover the influence of character attachment and a lack of representative female character on their enjoyment while playing video games, no further restrictions on age, nationality, gender or educational level are specified in the sample criteria. Participants were well informed on the purpose of the research, with an description at the beginning of the questionnaire. The informed consent was shown at the start of the survey, when participants were informed that their replies were voluntary, anonymous, and confidential, and would only be used for academic purposes. Only once they agreed on consent will the survey begin.

This research successfully recruited 238 respondents from the initially targeted sampling frame. The aim was to reach 50% male and 50% female respondents as equally as possible, with room for respondents who may identify differently. However the study reached 52,9% female and 43,9% male respondents, with 2,5% identifying as non-binary or a third gender.

Participants will be recruited through the aforementioned methods. These users form the sampling frame and should be representative of the target population. Here, the method of self-selection sampling will be used, which can also create self-selection bias, in which individuals not part of the target group are responding to the survey. But, primarily, self-selection allows potential participants to make a voluntary decision to take the survey and become part of the sample (Elston, 2021, p. 1).

3.3 Sample and Procedure

Everyone who participated in the survey were presented with the questions in a fixed order. First, they started with the consent form, followed by their preferred character choice, self-indicated hours of playtime on a weekly basis, character attachment, their self-determined levels of competence, autonomy and relatedness. After that the survey continued with enjoyment and

female representation to finish with some demographic questions. When respondents answered the question if they have ever played a video game before with no, they were sent to end of the survey. This research recorded 238 responses. N = 157 remained valid in further analyses after data cleaning.

In this final sample the percentage of male respondents was 43,9% and female respondents was 52,9%. In the research 2,5% identified as non-binary or a third gender, and 1% percent preferred not to answer. The average age of the whole sample is 24.65 (*SD* = 5.93) ranging from 18 to 50. Most of the participant had a high educational level with university bachelor's degree (36%) or started university but have not obtained a degree yet (22%). In the sample 66,9% indicated to have a preference towards a gender when given the choice of selecting a character, of which 59% said to prefer a female character and 22,9% a male character, 15,2% selected they rather play with an anthropomorphized character. The average gaming time of the sample was between 1-12 hours per week, with 50,3%, which makes the majority of the sample fall in the category casual gamer. 23,6% said they currently don't play games anymore and 17,8% spend around 12-21 hours gaming per week, falling into the category of heavy gamer. For the category hardcore gamer 8,3% indicated they play more than 21 hours per week. The respondents were not asked to pick the category by title, but instead were asked to choose from the four different options by hours spend gaming.

3.4 Measurement

When the respondents started with the survey questions they were asked to think of their favorite video game character or, if they did not have one, from the game they played last. The respondents were also provided with four examples or characters if they could not think of any. An overview of this statement can be found in appendix A and an overview of the concepts can be seen in table 1.

Character attachment. Character attachment was one of the independent variables, together with the female representation in this research. For this research character attachment was conceptualized as four different characteristics based of Rehak (2003, p. 110) and Lewis et al. (2008, p. 516) 17-item character attachment scale. The four characteristics were (1) Identification; (2) control; (3) suspension of disbelief and (4) responsibility. One question from the control characteristics was removed after the pilot test, as it showed to be too much of a leading statement towards an answer. For each item, participants were asked to rate in terms of how well it describes themselves, based on a 7-point Likert scale: (1 = strongly disagree, to 7 = strongly agree).

Gamer identity. Individual's gaming identity was measured using the time spent on video games. The participants were asked to estimate how many hours a week they spend playing video games. This will be guiding in determining in which category they will be; Hardcore, Heavy or Casual. The gamer identity scale from Neys et al. (2014, p. 202) was therefore utilized to support

the category of gamer. The participants got the option to choose between four categories of hours spent gaming per week, 0 hours, I don't play games anymore, 1-12 hours (Casual gamer), 12-21 hours (Heavy gamer) and 21+ hours (Hardcore gamer).

Intrinsic motivations. Based on Ryan et al.'s (2006) SDT scale, looking into players' intrinsic motivations, were measured using 11 items on a 5-point scale (1 = strongly disagree, 5 = strongly agree). These items assessed autonomy, competence, and relatedness. This tool is especially appropriate for this research because it was created specifically for digital games. A 4-item scale was used to gauge competency. An example of items included were "I felt very capable and effective". Four items formed the autonomy measure, which asked respondents how much they felt free to pursue their interests and how many opportunities they saw to do so. Items like "I did things in the game because they interested me" were included. Three items were used to gauge respondents' feelings of relatedness to other players, such as "I find the relationships I form in the game fulfilling".

Enjoyment. The concept of enjoyment in this study is measured through a series of questions adapted from Fang (2010, p. 882). These 10 questions cover the three dimensions of enjoyment: affective, behavioral, and cognitive responses. Respondents rated their agreement with each statement on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Female representation. Female representation in video games was measured through a series of questions from Kondrat (2015, pp. 184-185). These questions aim to capture the respondents' perceptions and opinions regarding how female characters are depicted in video games. A 5-point Likert scale ranging from 'excellent' to 'poor' was used to measure the importance and impact of diverse female representation. Binary choice questions, yes/no options, are used to gather clear, definitive responses on the perception of stereotyping. Additionally, multiple-choice questions allowed respondents to identify specific types of stereotyping they observe in games.

Demographics. Participants were asked questions about their gender, age, and level of education, which will be assessed based on self-report.

Table 1

Overview of the concepts, their variables and indicators

Concept	Variable	Indicator
Gamer Identity Strength	Hardcore gamer	Amount of hours spent gaming
	Heavy gamer	Amount of hours spent gaming
	Casual gamer	Amount of hours spent gaming
Character attachment	Identification	7 point Likert- scale
	Control	7 point Likert- scale
	Suspension of disbelief	7 point Likert- scale
	Responsibility	7 point Likert- scale
Intrinsic motivations	Competence	5 point Likert- scale
	Autonomy	5 point Likert- scale
	Relatedness	5 point Likert- scale
Enjoyment	Affective	5 point Likert- scale
	Cognitive	5 point Likert- scale
	Behavior	5 point Likert- scale
Female representation	Representation	5 point Likert- scale
	Stereotyping	Select options

3.5 Reliability of the measurements

Factor analysis and reliability testing were performed on the scales used to measure the aforementioned variables as part of the data preparation procedure. To determine if the items in a given group could function together, the internal consistency of the scales was tested, even in cases where prior research had offered strong support for them.

Factor analysis was conducted to explore the underlying structure of enjoyment components composed of three dimensions: affect, behavior and cognition, in relation to playing a video game. The correlation matrix revealed several patterns among the variables studied. Key correlations include positive associations between feeling unhappy and worried while playing the game (r = 0.393), as well as negative associations between feeling happy and both feeling exhausted (r = -0.252) and feeling miserable (r = -0.520) during gameplay. Conducted factor analysis using Principal Component analysis extraction method with Oblimin rotation with the fixed number of factors (= 3.00), *KMO* = 0.693, χ^2 (df = 45, N = 157) = 349.332, $p < 0.001$, indicating a reasonably good fit for the analysis (see table 2). The factors presented were labelled based on the original questions of Fang (2010, p. 882).

Table 2

Factor and reliability analyses for dimensions of enjoyment

Statement	Affect	Behavior	Cognition
I feel miserable when playing this game	.816		
I feel unhappy when playing this game	.809		
I feel exhausted when playing this game	.741		
I feel worried when playing this game	.553		
I feel happy when playing this game	-.524		.398
I make loud comments even if nobody is around when playing this game		.866	
I swear when playing this game		.813	
I talk to myself when playing this game		.670	
The activities in this game or the actions of its character(s) are appropriate			.858
Playing this game or interacting with its character(s) makes me more intelligent			.657
R^2	.26	.21	.11
Cronbach's α	0.81	0.78	.63

Note. N = 157.

The four different characteristics; identification, control, suspension of disbelief and responsibility create the level of character attachment (CA), to see how well each characteristic attributes to CA a factor analysis was conducted. The analysis used Principal Component analysis (PCA) with Oblimin rotation with the fixed number of factors (= 4.00) *KMO* = .805, $\chi^2(190)$ = 1364.840, $p < .001$, as presented in table 3, which capture different aspects of how participants relate to their in-game characters. The first three components are labeled according to Lewis et al. (2008, p. 516) scale where most of the statements were included, the fourth component is a merger from question of identification and suspension of disbelief as these were introduced by Lie et al. (2013, p. 260):

Identification. This component reflects the emotional connection and immersive engagement participants feel towards their characters. Items with high loadings include "I enjoy pretending my character is a real person" (.765), "I could see myself being attracted to my character" (.720), and "I sometimes forget my own feelings and take on those of my character" (.666). This suggests that this factor surpasses the depth of emotional involvement and the extent to which players integrate their own identity with their character.

Suspension of Disbelief. The second component is characterized by participants' attention to the internal logic and coherence of the game world. High loadings on items such as "I concentrate on whether there are any inconsistencies within the video game" (.889), "It is important for me to check whether inconsistencies are present in the video game" (.884), and "I direct my attention to possible errors or contradictions in the video game" (.810) indicate that this factor does not involves a critical evaluation of the game's narrative and structural integrity.

Control and responsibility. This component captures the sense of control and agency participants feel over their character's actions. Significant loadings include "My character does what I want them to do" (-.815), "I enjoy controlling my character" (-.655), and "I get frustrated when my character does not perform the way I want them to" (-.634). This suggests that this factor reflects the extent to which players perceive their character as an extension of their own will and the importance of character responsiveness.

Immersion. The fourth component relates to the immersive experience and the degree to which players lose awareness of their surroundings. Items with high loadings include "I have forgotten myself during the game" (.757), "My character and I are one and the same" (-.674), and "I consider my character a friend of mine" (-.563). This factor indicates the extent to which players become deeply engrossed in the game, often blurring the lines between their real-world self and their in-game character.

Table 3

Factor and reliability analyses for character attachment characteristics

Item	Identification	Suspension of Disbelief	Control	Immersion
I enjoy pretending my character is a real person	.765			
I could see myself being attracted to my character	.720			
I sometimes forget my own feelings and take on those of my character	.666			
I enjoy pretending I am my character	.665			
I make decisions with my character's best interests in mind	.601		-.359	
I daydream about my character	.570			
I know what my character wants	.492		-.490	
I concentrate on whether there are any inconsistencies within the video game (R)		.889		
It is important for me to check whether inconsistencies are present in the video game (R)		.884		
I direct my attention to possible errors or contradictions in the video game (R)		.810		
I think about whether the action or the video game presentation was plausible (R)		.665		
My character does what I want them to do			-.815	
I enjoy controlling my character			-.655	
I get frustrated when my character does not perform the way I want them to			-.634	
I know what my character needs	.479		-.483	
I have forgotten myself during the game				.757

Item	Identification	Suspension of Disbelief	Control	Immersion
My character and I are one and the same				-.674
I consider my character a friend of mine				-.563
I have forgotten my surroundings during the game				.507
The characters I play reflect who I am				-.389
R^2	.28	.24	.20	.18
Cronbach's α	.82	.89	.78	.81

Note. *N* = 157. Reverse-scored items are denoted with an (R).

Table B1, which can be found in appendix B, presents an overview of the descriptive statistics and correlations among key variables studied in the context of video game enjoyment. The table includes mean (*M*) and standard deviation (*SD*) values for each variable, along with Pearson correlation coefficients (*r*) illustrating the relationships between these variables.

4. Results

4.1 Pre-test: difference between genders on gaming hours

To be able to get an indication of the dispersion of gender between the self-reported hours of gaming per week an independent t-test was conducted. The results show that male respondents (*M* = 2.43 on the 4 categories of gamer identity, *SD* = .89) spend on average more hours gaming per week than women (*M* = 1.8 on the 4 categories of gamer identity, *SD* = .68). Placing most of the respondents in casual gamer (1-12 hours) and heavy gamer (12-21 hours), $t(150) = 5.0$, $p < .001$.

4.2 Gaming motivations on enjoyment

Looking at the different aspects of self-determinism on enjoyment, to test H1a, H1b and H1c, a hierarchical regression analysis was conducted on all three motivations. A sum of the variables measuring autonomy was added in the first block, a sum of the variables measuring competence in the second block and a sum of the variables measuring relatedness in the third block. The results (see table 4) show that in model 3, which included autonomy, competence, and relatedness, $R^2 = 0.075$, indicating that 7.5% of the variance in enjoyment is explained by these predictors. $F = 3.535$, $p = 0.017$ indicates that the predictors collectively contribute significantly to the prediction of enjoyment at $\alpha = 0.05$. In model 3, relatedness ($B = 0.577$, $p = 0.003$) shows a significant positive association to contribute to enjoyment, indicating that higher levels of perceived relatedness are associated with higher levels of enjoyment. Autonomy ($p = .93$) and competence ($p = .96$) do not significantly predict enjoyment in this model.

Therefore H1c: higher self-reported relatedness will show higher enjoyment is accepted, H1a: higher self-reported autonomy will show higher enjoyment is rejected and H1b: higher self-reported competence will show higher enjoyment is rejected as well.

Table 4

Standardized Beta weights, R^2, and F-values for predictors of enjoyment from hierarchical regression analysis

Predictor	Model 1	Model 2	Model 3
Constant	23.670	23.185	20.401
Autonomy	.071	.044	.008
Competence	-	.065	.005
Relatedness	-	-	.270**
R^2	.005	.009	.075
ΔR^2	-	.004	.066
F-value	0.678	0.569	3.535*

Note. N = 157.

4.3 Character attachment on enjoyment

A hierarchical regression analysis was conducted to examine the effect of identification, suspension of disbelief, control, and responsibility on enjoyment (see table 5). The analysis included four models, progressively adding predictors to observe the incremental variance explained by each. Model 1, which included only identification as a predictor, explained a significant amount of variance in enjoyment (R^2 = 0.158, $F(1, 155) = 28.979$, $p < .001$). This model indicated that identification alone accounted for 15.8% of the variance in enjoyment. In Model 2, suspension of disbelief was added as a predictor, resulting in a slight increase in explained variance (R^2 = 0.167, $F(2, 154) = 15.459$, $p < .001$). However, the change in R^2 was not significant (ΔR^2 = 0.010, $F(1, 154) = 1.792$, $p = .183$). Model 3 included control along with identification and suspension of disbelief, explaining 17.9% of the variance in enjoyment (R^2 = 0.179, $F(3, 153) = 11.150$, $p < .001$). The change in R^2 remained non-significant (ΔR^2 = 0.012, $F(1, 153) = 2.276$, $p = .133$). Finally, model 4 added responsibility as a predictor, resulting in a small and non-significant increase in explained variance (R^2 = 0.182, $F(4, 152) = 8.469$, $p < .001$). The change in R^2 was marginal (ΔR^2 = 0.003, $F(1, 152) = 0.528$, $p = .468$).

Overall, the analysis demonstrated that identification was a significant predictor of enjoyment across all models, while suspension of disbelief, control, and responsibility did not

significantly contribute. The regression analysis highlights that identification has a clear and strong impact on enjoyment, therefore accepting H2a. Suspension of disbelief was not a significant predictor of video game enjoyment, rejecting H2b. Control was also not a significant predictor, rejecting H2c and responsibility also did not significantly predict video game enjoyment, rejecting H2d.

Table 5

Standardized Beta weights, R^2, and F-values for predictors of enjoyment from hierarchical regression analysis

Predictor	Model 1	Model 2	Model 3	Model 4
Identification	.397***	.365***	.317***	.282**
Suspension of Disbelief		-.103	-.095	-.103
Control			.122	.101
Responsibility				.070
R^2	.158	.167	.179	.182
Adjusted R^2	.152	.156	.163	.161
ΔR^2	.158	.010	.012	.003
F Change	28.979	1.792	2.276	0.528
Sig. *F* Change	<.001	.183	.133	.468

Note. $N = 157$. ***$p < .05$, **$p < .01$, *$p < .001$.

4.4 Influence of female representation on enjoyment.

Looking at the results from the question "Based on your gaming experience how do you think female gender is represented in video games?" it shows that $M = 3.44$ ($SD = 1.2$) on a 5-point Likert scale, meaning that 33,1% said "fair" and 29,3% said "poor". The question about if the respondents think the female gender gets stereotyped in games 75,8% said "yes" and 17,2% said "no". Of those who answered yes on the last question were presented with five option in which the female gender could be stereotyped with in games, according to Kondrat (2015, p. 184). An overview of the selected answers can be seen in table 6. The table shows that sexually objectified and female characters are dressed provocatively are the most chosen answer.

Table 6

Overview of selected answers on female stereotyping

Question	Not Selected (0)	Selected (1)	Most Common Response
Sexually objectified	18 (15.1%)	101 (84.9%)	Selected (84.9%)
Female characters are infrequent	66 (55.5%)	53 (44.5%)	Not Selected (55.5%)
Female characters are rarely protagonist of video games	52 (43.7%)	67 (56.3%)	Selected (56.3%)
Female characters are dressed provocatively	21 (17.6%)	98 (82.4%)	Selected (82.4%)
Female characters are mistresses	81 (68.1%)	38 (31.9%)	Not Selected (68.1%)

Note. N = 119.

A hierarchical regression analysis was conducted to examine the influence of female representation on video game enjoyment to test H3. Two models were evaluated (see table 7): the first model included the variable “female representation in video games”, and the second model added the variable “current portrayal effect on enjoyment”. Model 1 indicated that the predictor "Female Representation in Video Games" did not explain a significant portion of the variance in video game enjoyment (R^2 = .000, Adjusted R^2 = -.006). The standard error of the estimate was 5.35559, and the model's predictive power was negligible (F(1, 155) = .043, p = .836). Model 2 included both predictors but still did not significantly explain the variance in enjoyment (R^2 = .001, Adjusted R^2 = -.012). The standard error of the estimate slightly increased to 5.37146, indicating minimal improvement in the model fit (F(2, 154) = .064, p = .938). The results confirmed that neither model provided a significant fit. For model 1, the regression sum of squares was 1.240 with 1 degree of freedom, and the mean square was 1.240, leading to an F-value of .043 (p = .836). For model 2, the regression sum of squares was 3.711 with 2 degrees of freedom, and the mean square was 1.855, resulting in an F-value of .064 (p = .938). Both models indicated that the predictors did not significantly contribute to explaining the variance in video game enjoyment.

The analysis indicates that neither the female representation in video games nor the specific portrayal of unrealistic female body sizes and skin exposure significantly influences video

game enjoyment. The models did not provide a significant fit, and the predictors failed to explain the variance in enjoyment. Thus, H3, that female representation in video games affects enjoyment is rejected.

Table 7

Hierarchical regression analysis on influence of female representation on enjoyment

Predictor	Model 1	Model 2
How do you think female gender is represented in video games?	0.017	0.023
Stereotyping of female gender in video games		-0.025
Adjusted R Square	-0.006	-0.012
R^2	0.000	0.001
ΔR^2		0.001
p	0.836	0.938

Note. N = 157.

4.5 Influence of gamer identity on video game enjoyment

A hierarchical regression analysis was conducted to explore the impact of hours spent gaming on enjoyment, using dummy variables for different ranges of gaming hours (see table 8). Model 1, which included casual gamer = 1-12 hours, explained only 0.2% of the variance in enjoyment (R^2 = .002) and was not statistically significant (F(1, 155) = .254, p = .615). In model 2, adding heavy gamer = 12-21 hours significantly improved the model, explaining 7% of the variance (R^2 = .070), with an F-value of 5.830 (p = .004) (see table 9). Both variables in this model were significant predictors: casual gamer = 1-12 hours (B = 1.912, p = .043) and heavy gamer = 12-21 hours (B = 4.127, p < .001). Model 3 included hardcore gamer = 21+ hours, but this addition did not substantially increase the explanatory power (R^2 = .071) and remained statistically significant (F(3, 153) = 3.915, p = .010). In this model, only heavy gamer = 12-21 hours remained a significant predictor (B = 3.958, p = .003), whereas hardcore gamer = 21+ hours was not significant (B = -.649, p = .699). Overall, spending 12-21 hours gaming was the most significant positive predictor of enjoyment, therefore accepting H4b. While the effects of other ranges were less clear, H4a and H4c were both rejected.

Table 8

Standardized Beta weights, R^2, and F-values for gaming hours as predictors of enjoyment from hierarchical regression analysis

Predictor	Model 1	Model 2	Model 3
Constant	25.962	24.480	24.649
Casual gamer = 1-12 hours	.040	.180*	.164
Heavy gamer = 12-21 hours	-	.297**	.285**
Hardcore gamer = 21+ hours	-	-	-.034
R^2	.002	.070	.071
ΔR^2	-	.068	.001
F-value	0.254	5.830**	3.915*

Note. N = 157. *p < .05, **p < .01

4.6 Overview of hypotheses' acceptance and rejection

Based on the data gathered, a series of statistical studies were able to validate the hypotheses stated earlier in this study. Each hypothesis was verified and assigned a result of acceptance or rejection, as stated in the table below. The following chapter will go into greater detail about the conclusions drawn from these findings and results.

Table 9

Overview of hypotheses' acceptance and rejection

Hypotheses	Results
H1: *Players who self-report higher levels of (a) autonomy, (b) competence, and (c) relatedness will show a higher degree of enjoyment in video games.*	(a) Rejected (b) Rejected (c) Accepted
H2: *The four characteristics (a) identification, (b) suspension of disbelief, (c) control and (d) responsibility of CA, will positively influence video game enjoyment.*	(a) Accepted (b) Rejected (c) Rejected (d) Rejected
H3: *A representative portrayal of female characters positively influences video game enjoyment.*	Rejected
H4: *The strength of an individual's gamer identity (GIS) positively influences their enjoyment of video games. (1-12 hours)*	Rejected
H4: *The strength of an individual's gamer identity (GIS) positively influences their enjoyment of video games. (12-21 hours)*	Accepted
H4: *The strength of an individual's gamer identity (GIS) positively influences their enjoyment of video games. (21+ hours)*	Rejected

5. Discussion and conclusion

This chapter combines the findings of the study, discussing their implications for both the academic field and the gaming industry. By revisiting the research question, the analysis connects the representation of female characters and the concept of character attachment to player enjoyment.

5.1 Discussion

5.1.1 Autonomy, competence, relatedness and enjoyment

Here the hypothesis: how do levels of autonomy, competence, and relatedness impact player enjoyment in video games will be addressed. One of the central findings of this research is the significant influence of relatedness on player enjoyment. According to Self-Determination theory (SDT), relatedness refers to the need to feel connected to others and to experience a sense of belonging within a social context (Ryan et al., 2006, p. 350; Kim et al., 2015, p. 696). The hierarchical regression analysis conducted in this study supports this, revealing a positive correlation between perceived relatedness and enjoyment among players. Modern video games increasingly integrate social elements, such as multiplayer modes, online communities, and cooperative gameplay experiences. These aspects foster opportunities for players to build relationships, collaborate, and engage socially within virtual worlds. Such social interactions not only fulfill the fundamental human need for connection but also enhance immersion and enjoyment in gaming (Kim et al., 2015, p. 696). Therefore, game developers are encouraged to design experiences that promote and facilitate social connectivity to heighten player satisfaction and engagement.

Contrary to initial expectations and theoretical underpinnings of SDT, autonomy (the freedom to make choices) and competence (the sense of mastery and skill development) did not emerge as significant predictors of player enjoyment in this study. This finding challenges traditional assumptions and shows the complexity of motivational dynamics within gaming contexts (Przybylski et al., 2010, p. 156). While autonomy and competence remain important to the gaming experience, their isolated effects on enjoyment appear to be minimal. Instead, their impact may be more pronounced when integrated with other factors such as narrative depth, social connectivity, or character development. For instance, players may derive greater enjoyment when they exercise autonomy in decision-making within a socially rich and narratively compelling game environment (Ryan et al., 2006, p. 352).

The insights gleaned from this research have practical implications for game developers striving to enhance player engagement and enjoyment. Emphasizing relatedness through thoughtful multiplayer features, community-building tools, and inclusive design practices can significantly elevate the gaming experience. By fostering a sense of community and social

belonging, developers can tap into intrinsic motivations that drive player involvement and enjoyment (Kim et al., 2015, p. 696).

Moreover, while autonomy and competence did not independently predict enjoyment in this study, integrating these elements into holistic game designs remains crucial. Game developers should consider how choices and challenges contribute to the overall narrative and social fabric of the gaming experience. This integrated approach not only aligns with SDT principles but also enhances the complexity and richness of gameplay, thereby catering to diverse player preferences and motivations (Przybylski et al., 2010, p. 156).

Acknowledging the study's limitations, the sample size and diversity might have influenced the generalizability of the results. Future research should explore these dynamics across different demographics and gaming genres to validate and extend these findings. Furthermore, investigating how autonomy and competence interact with other motivational factors in more complex models could provide deeper insights into their roles in player enjoyment (Przybylski et al., 2010, p. 155).

5.1.2 Identification, suspension of disbelief, control, responsibility and enjoyment

Here the hypothesis: how do levels of identification, suspension of disbelief, control, and responsibility impact player enjoyment in video games will be addressed. The research findings reveal that identification is the most significant predictor of player enjoyment. The hierarchical regression analysis consistently demonstrated that identification explained a substantial amount of variance in enjoyment across all models ($R^2 = 0.158$, $p < .001$). This aligns with existing literature on character attachment, where players forge deep emotional bonds with their in-game personas, viewing them as extensions of themselves (Teng, 2017, p. 602; Bopp et al., 2019, p. 314). This emotional and cognitive engagement heightens immersion and contributes to overall enjoyment (Rehak, 2003, p. 110; Lewis et al., 2008, pp. 515-516; Lie et al., 2013, p. 260).

The findings show the importance of narrative depth, character development, and interactive storytelling in fostering strong identification. Games that offer meaningful choices, character customization options, and compelling narratives enable players to connect more profoundly with their characters. This connection enhances their investment in the game world and strengthens enjoyment (Kim et al., 2015, p. 697).

In contrast to identification, suspension of disbelief, control, and responsibility did not emerge as significant predictors of player enjoyment in this study. The regression analyses revealed minimal added variance explained by these factors, suggesting that while they contribute to the overall gaming experience, their individual impact on enjoyment is limited. This finding challenges conventional wisdom regarding the role of these elements in enhancing player engagement and immersion (Trepte & Reinecke, 2010, p. 175; Bowman et al., 2016, p. 89). Suspension of disbelief, for instance, which involves players accepting fantastical or unrealistic elements within the game

world, is often considered crucial for immersion. However, its direct influence on enjoyment appears to be more context-dependent than previously thought.

Similarly, the degree of control players exert over their in-game actions and the responsibilities they assume within the virtual environment did not independently drive enjoyment. These elements may enhance the coherence and realism of the game world but may not be primary drivers of player satisfaction unless integrated with strong identification processes.

The results of the study have important theoretical implications and support the idea that the main goal of game design should be to promote identification. Characters and storylines that players can relate to should be developers' first priority since they encourage deep engagement and emotional connection. Developers can foster more player involvement and overall happiness by improving identification.

Moreover, the study encourages a re-evaluation of how suspension of disbelief, control, and responsibility are integrated into game design. Rather than focusing solely on their individual impacts, game designers should consider how these elements complement and enhance the identification process. Thoughtful integration can lead to more cohesive and immersive gaming experiences that resonate with players on multiple levels.

5.1.3 Female representation and enjoyment

Here the hypothesis: a representative portrayal of female characters positively influences video game enjoyment, will be addressed. Throughout this study, it became evident that female representation in video games remains a difficult issue. Historically, female characters have been stereotyped, often depicted in overly sexualized or subordinate roles compared to their male counterparts (Downs & Smith, 2009, p. 721; Lynch et al., 2016, p. 576). Despite some progress towards more nuanced portrayals, such as portraying female characters with agency and diversity, significant challenges are still there (Tompkins & Martins, 2021, p. 3). Theoretical perspectives from feminist theory emphasized the importance of representation in media, arguing that media portrayals influence societal norms and perceptions of gender roles (Ferguson, 2017, p. 270). This study aligns with previous research indicating that the representation of female characters in video games can perpetuate stereotypes and impact player perceptions (Kondrat, 2015, p. 172).

The findings of this study, however, did not support the hypothesis that representative portrayal of female characters positively influences video game enjoyment. The regression analyses revealed that neither the general representation of female characters nor specific aspects like sexualization significantly predicted enjoyment. This suggests that while representation is an important issue for cultural and ethical reasons, its direct impact on player enjoyment may be minimal.

5.1.4 Gamer identity and enjoyment

Here the hypothesis: The strength of an individual's gamer identity (GIS) positively influences their enjoyment of video games, will be addressed. Throughout the exploration of gamer identity in this study, we have delved into various dimensions that incorporate its theoretical underpinnings and empirical manifestations. Beginning with Social Identity theory (SIT), the theoretical framework illuminated how players' identification with in-game characters and gaming communities can significantly enhance their enjoyment by fostering a sense of inclusion and relatability (Hogg, 2016, p. 6). Moreover, empirical investigations into different categories of gamers, ranging from casual to heavy and hardcore gamers, provided essential insights into how distinct patterns in gaming habits correspond to varying levels of enjoyment.

The combination of findings from this study reveals a multifaceted relationship between gamer identity and enjoyment in video games. Contrary to initial expectations that gaming hours alone would predict enjoyment, the research shows that the specific category of gamer identity, particularly heavy gamers investing between 12 to 21 hours per week, consistently demonstrated a significant positive correlation with gaming enjoyment. This finding suggests that it is not just the amount of time spent gaming, but rather the intensity and depth of identification with gaming as a central aspect of one's identity that significantly impacts the overall gaming experience.

The alignment between one's real-world identity and the personas assumed in gaming contexts enhances immersion and engagement, contributing directly to overall satisfaction. This finding resonates with previous research that highlights gaming as a platform for identity exploration and expression, where players often project and explore facets of themselves through their in-game characters (Trepte & Reinecke, 2010, p. 172; Van Looy, 2015, p. 4). Identifying heavy gamers as predictors of enjoyment challenges stereotypes prevalent in gaming demographics. As the gaming community continues to diversify and evolve, acknowledging the nuanced identities within it becomes essential for understanding gaming motivations, preferences, and the broader cultural significance of gaming.

Additionally, while this study primarily focused on quantitative measures of gamer identity and enjoyment, future research could incorporate qualitative methods to capture deeper insights into the subjective experiences and motivations of gamers. Exploring how gamer identity evolves over time and its dynamic interaction with evolving game content could provide richer insights into gaming behaviors and preferences.

5.2 Conclusion

Character attachment, as shown by the research, significantly enhances player enjoyment in video games. Players who deeply identify with their in-game characters experience heightened emotional and cognitive engagement, which translates into greater overall enjoyment (Rehak,

2003, p. 110; Lewis et al., 2008, pp. 515- 516; Lie et al., 2013, p. 260). This phenomenon aligns with the concept that players often see their in-game characters as extensions of themselves, thereby fostering a strong sense of connection and enjoyment (Teng, 2017; Bopp et al., 2019). Next to that, the study found that the representative portrayal of female characters in video games did not significantly predict enjoyment. Despite ongoing concerns and theoretical frameworks highlighting the importance of diverse and non-stereotypical representations of gender in media (Ferguson, 2017, p. 270; Kondrat, 2015, p. 172), the empirical findings suggest that while representation is crucial for broader cultural and ethical reasons, it has minimal direct impact on player enjoyment. This finding shows the complexity of factors influencing player satisfaction and suggests that other elements, such as character attachment and narrative depth, may play more significant roles in shaping enjoyment (Downs & Smith, 2009, p. 721; Lynch et al., 2016, p. 576).

The research shows that while relatedness (social connections and community feeling), autonomy (freedom of choice), and competence (mastery of skills) are important theoretical components of player enjoyment in video games (Ryan et al., 2006, p. 349; Przybylski et al., 2010, p. 156), character attachment emerges as a dominant factor influencing enjoyment. Representation remains an important issue in gaming culture, its direct influence on player enjoyment is less pronounced, based on the current empirical evidence.

The integration of these findings highlights character attachment as a critical driver of player enjoyment in video games. Game developers aiming to enhance player satisfaction may benefit most from prioritizing narrative depth, character development, and customization options that facilitate stronger emotional bonds between players and their characters. These elements not only enrich the storytelling experience but also cultivate a deeper sense of personal investment and identification within the gaming community (Ryan et al., 2006, p. 350; Przybylski et al., 2010, p. 155). By focusing on creating compelling characters and immersive narratives, developers can foster environments where players feel more connected and invested, thereby enhancing overall enjoyment and engagement with their games.

In conclusion, while both character attachment and female representation are significant aspects of the gaming landscape, their impacts on player enjoyment vary considerably. Character attachment emerges as a dominant factor influencing satisfaction, suggesting avenues for future research and game development. Further studies could explore how different narrative techniques, character interactions, and customization options influence player attachment across diverse gaming genres and demographics. Moving forward, ongoing efforts to promote inclusive and representative portrayals of gender in video games remain crucial. These efforts not only contribute to fostering a more inclusive gaming community but also align with broader societal movements towards equity and diversity. By integrating diverse perspectives and ensuring more authentic representations of gender, developers can create environments that resonate more deeply with

players from diverse backgrounds. Incorporating these insights into game development practices can lead to the creation of richer, more nuanced narratives and gameplay experiences. By prioritizing character development, narrative depth, and inclusivity, developers can create games that not only entertain but also inspire and resonate with players on a deeper emotional level. As the gaming industry continues to evolve, understanding and addressing these factors will be crucial in shaping the future landscape of video game enjoyment.

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Appendix A. Questionnaire

Dear respondent,

Thank you for your interest in this research. I'm inviting you to fill in a questionnaire. In this questionnaire, I'm asking you some questions about video games (i.e. characters, enjoyment) and how you relate to different statements.

The questionnaire will take approximately 6-8 minutes to fill in. Please answer each question carefully and honestly, I'm sincerely interested in your personal opinions and feelings. There are no right or wrong answers.

CONFIDENTIALITY OF DATA
All research data remain completely confidential and are collected in anonymous form. I will not be able to identify you. There are no foreseeable risks or discomforts associated with participating in this research.

VOLUNTARY
If you now decide not to participate in this research, this will not affect you. If you decide to cease your cooperation while filling in the questionnaire, this will in no way affect you either. You can cease your cooperation without giving reasons.

FURTHER INFORMATION
If you have questions about this research, in advance or afterwards, you can contact the responsible researcher, Sabrina Hemmen, email: 667328sh@eur.nl. This research is under the supervision of dr. Elisabeth Timmermans.

Thank you for your participation.

If you understand the information above and would like to participate in this research, please select "Yes, I agree" to continue to the survey.

- ○ Yes, I agree (1)
- ○ No, I do not agree (2)

Have you ever played a video game?

- ○ Yes (1)
- ○ No (2)

Do you have a preference when given the choice of gender in a video game character?

- ○ Yes (1)
- ○ No (2)

When choosing a character, which of the following would have your preference?

- ○ Woman (1)
- ○ Man (2)
- ○ Animals/robots/other which have been given human like traits (e.g. Sonic, Yoshi) (3)
- ○ None of the above, please elaborate further: (4)

_____

How much hours do you spend on average on gaming in a week?

- ○ 0 hours, I don't play games anymore (1)
- ○ 1-12 hours (2)
- ○ 12-21 hours (3)
- ○ 21+ hours (4)

For the following questions you need to think of your favourite game character that you have played with, or the last one you played with.

If you can't think of a character, here are a few examples:

Aloy, Horizon Zero Dawn

Lara croft, Thomb Raider

Joel Miller, The Last of Us

Arthur Morgan, Red Dead Redemption

This section will be about the video game character and you.

Please think of your favourite video game character.

Please indicate how much you agree with each of the following statements, or how true it is about you.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I sometimes forget my own feelings and take on those of my character (1)	○	○	○	○	○	○	○
I enjoy pretending my character is a real person (2)	○	○	○	○	○	○	○
I consider my character a friend of mine (3)	○	○	○	○	○	○	○
I enjoy pretending I am my character (4)	○	○	○	○	○	○	○
I could see myself being attracted to my character (5)	○	○	○	○	○	○	○
I daydream about my character (6)	○	○	○	○	○	○	○
The characters I play reflect who I am (7)	○	○	○	○	○	○	○

My character and I are one and the same (8)	○	○	○	○	○	○	○

Please indicate how much you agree with each of the following statements, or how true it is about you.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I enjoy controlling my character (1)	○	○	○	○	○	○	○
My character does what I want them to do (3)	○	○	○	○	○	○	○
I get frustrated when my character does not perform the way I want them to (4)	○	○	○	○	○	○	○

Please think of your favourite video game character.

Please indicate how much you agree with each of the following statements, or how true it is about you.

	Strongly disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree nor disagree (4)	Somewhat agree (5)	Agree (6)	Strongly agree (7)
I know what my character wants (1)	○	○	○	○	○	○	○
I know what my character needs (2)	○	○	○	○	○	○	○
I make decisions with my character's best interests in mind (3)	○	○	○	○	○	○	○

Please indicate how much you agree with each of the following statements, or how true it is about you.
*Reversed scale

	Strongly agree (1)	Agree (2)	Somewhat agree (3)	Neither agree nor disagree (4)	Somewhat disagree (5)	Disagree (6)	Strongly disagree (7)
I direct my attention to possible errors or contradictions in the video game (1)	○	○	○	○	○	○	○
It is important for me to check whether inconsistencies are present in the video game. (2)	○	○	○	○	○	○	○
I concentrate on whether there are any inconsistencies within the video game (3)	○	○	○	○	○	○	○
I think about whether the action or the video game presentation was plausible (4)	○	○	○	○	○	○	○
I have forgotten my surroundings during the game (5)	○	○	○	○	○	○	○

I have forgotten myself during the game (6)	○	○	○	○	○	○	○

This section will be about how you feel and play in a video game.

Please think of your favourite video game character.

Please indicate how much you agree with each of the following statements, or how true it is about you.

	Disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Agree (5)
I feel competent at this video game (1)	○	○	○	○	○
I feel very capable when playing (2)	○	○	○	○	○
I feel effective when playing (3)	○	○	○	○	○
My ability to play the game is well-matched with the game's challenge (4)	○	○	○	○	○

Please think of your favourite video game, or the last one you played for the following statements.

Please indicate how much you agree with each of the following statements, or how true it is about you.

	Disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Agree (5)
The game provides me with interesting options and choices (1)	○	○	○	○	○
I could always find something interesting in the game to do (2)	○	○	○	○	○
I did things in the game just for the fun of it (3)	○	○	○	○	○
I experienced a lot of freedom in the game (4)	○	○	○	○	○

Please think of your favourite video game, or the last one you played for the following statements.

Please indicate how much you agree with each of the following statements, or how true it is about you.
(This question relates to bond you form with other gamers)

	Disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Agree (5)	Not applicable (6)
I find the relationships I form in this game fulfilling (1)	○	○	○	○	○	○
I find the relationships I form in this game important (2)	○	○	○	○	○	○
I don't feel close to other players (who also play this game) (3)	○	○	○	○	○	○

This section will be about enjoyment in a video game.

Please think of your favourite video game character.

Please indicate how much you agree with each of the following statements, or how true it is about you.

	Disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Agree (5)
I feel unhappy when playing this game (1)	○	○	○	○	○
I feel worried when playing this game (2)	○	○	○	○	○
I feel happy when playing this game (3)	○	○	○	○	○
I feel exhausted when playing this game (4)	○	○	○	○	○
I feel miserable when playing this game (5)	○	○	○	○	○
I talk to myself when playing this game (6)	○	○	○	○	○
I make loud comments even if nobody is around when playing this game (7)	○	○	○	○	○
I swear when playing this game (8)	○	○	○	○	○
Playing this game or interacting with its character(s) makes me more intelligent (9)	○	○	○	○	○

The activities in this game or the actions of its character(s) are appropriate (10)	○	○	○	○	○

This section will be about female representation in video games.

Based on your gaming experience how do you think female gender is represented in video games?

- ○ Excellent (1)
- ○ Good (2)
- ○ Fair (3)
- ○ Poor (4)
- ○ Very poor (5)
- ○ Other (6) _____

In your own opinion, do you think that the female gender is stereotyped in video games?

- ○ Yes (1)
- ○ No (2)
- ○ No opinion (3)

You answered yes, what kind of stereotyping do you see in video games?

- [ ] Sexually objectified (1)
- [ ] Female characters are infrequent (2)
- [ ] Female characters are rarely protagonist of video games (3)
- [ ] Female characters are dressed provocatively (4)
- [ ] Female characters are mistresses (5)
- [ ] Other (6) _____

Do you feel that the current portrayal of female characters in video games, which tend to have unrealistic body sizes, and show more skin compared to male characters, affect your enjoyment of the game?

- ○ Strongly enhances my enjoyment (1)
- ○ Enhances my enjoyment (2)
- ○ No effect on my enjoyment (3)
- ○ Reduces my enjoyment (4)
- ○ Strongly reduces my enjoyment (5)

How important is it to you that video games represent diverse lifestyles, interests, and identities of women?

- ○ Extremely important (1)
- ○ Very important (2)
- ○ Moderately important (3)
- ○ Slightly important (4)
- ○ Not at all important (5)

What is your gender?

- ○ Male (1)
- ○ Female (2)
- ○ Non-binary / third gender (3)
- ○ Prefer not to say (4)

What is your age?

_____

What is the highest level of education you have completed?

- ○ Some primary school (1)
- ○ Completed primary (2)
- ○ Some Secondary school (3)
- ○ Completed secondary school (4)
- ○ Vocational or Similar (5)
- ○ Some university but no degree (6)
- ○ University Bachelors Degree (7)
- ○ Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS etc.) (8)
- ○ Prefer not to say (9)

Appendix B. Descriptive Statistics and Correlations Table

Table B1

Descriptive statistics and correlations for study variables

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Identification	157	25.4331	9.64383	—	-.308**	.417**	.580**	.303**	.248**	.485**	.166*	.227**	.452**	-.206**	-.012	.287**	-.059	-.001	.397**
2. Suspension of Disbelief	157	23.7771	7.38814	-.308**	—	-.194*	-.087	-.111	-.133	-.127	-.303**	-.064	-.065	.043	.005	-.067	.019	.165*	-.216**
3. Control	157	14.1019	3.86003	.417**	-.194*	—	.483**	.363**	.376**	.271**	.170*	.146	.253**	-.260**	.023	.135	.172*	-.072	.273**
4. Responsibility	157	13.1592	4.45276	.580**	-.087	.483**	—	.465**	.407**	.464**	.145	.120	.385**	-.270**	.056	.189*	.052	-.044	.292**
5. Competence	157	15.1465	3.91711	.303**	-.111	.363**	.465**	—	.468**	.278**	-.111	.043	.435**	-.405**	.044	.242**	.208**	-.078	.133
6. Autonomy	157	17.0955	2.79143	.248**	-.133	.376**	.407**	.468**	—	.225**	-.087	.091	.337**	-.316**	.144	.080	.114	-.088	.140
7. Relatedness	135	9.4444	2.56750	.485**	-.127	.271**	.464**	.278**	.225**	—	.054	.211*	.313**	-.254**	.101	.123	.032	-.071	.273**
8. Affect	157	10.7389	2.64368	.166*	-.303**	.170*	.145	-.111	-.087	.054	—	.124	.024	.004	.095	-.004	-.172*	-.044	.585**
9. Behavior	157	9.4777	3.47442	.227**	-.064	.146	.120	.043	.091	.211*	.124	—	.292**	.170	.176	.104	.041	-.068	.320**
10. Cognition	157	5.9618	1.96731	.452**	-.065	.253**	.385**	.435**	.337**	.313**	.024	.292**	—	.209	.208	.104	.093	-.037	.329**
11. Gaming=0 hours	157	0.2357	0.42577	-.206**	.043	-.260**	-.270**	-.405**	-.316**	-.254**	.004	.170	.209	—	.083	-.172*	-.003	.004	-.207**

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
12. Gaming=1-12 hours	157	0.5032	0.50159	-.012	.005	.023	.056	.044	.144	.101	.095	.176	.208	.083	—	.158*	.116	.144	.083
13. Gaming=12-21 hours	157	0.1783	0.38403	.287**	-.067	.135	.189*	.242**	.080	.123	-.004	.104	.104	-.172*	.158*	—	.116	-.012	.307**
14. Gaming=21+ hours	157	0.0828	0.27647	-.059	.019	.172*	.052	.208**	.114	.032	-.172*	.041	.093	-.003	.116	.116	—	-.067	.146
15. Female portrayal	157	3.20	0.911	-.001	.165*	-.072	-.044	-.078	-.088	-.071	-.044	-.068	-.037	.004	.144	-.012	-.067	—	-.156*
16. Enjoyment	157	26.1783	5.33914	.397**	-.216**	.273**	.292**	.133	.140	.273**	.585**	.320**	.329**	-.207**	.083	.307**	.146	-.156*	—

Note. **p < .01, *p < .05.