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MEDIA AND COMMUNICATION

Volume 13

2025

Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies

Edited by Felix Reer, Teresa de la Hera, and Salvador Gómez-García

Open Access Journal

ISSN: 2183-2439

Media and Communication, 2025, Volume 13
Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies

Published by Cogitatio Press
Rua Fialho de Almeida 14, 2º Esq.,
1070–129 Lisbon
Portugal

Design by Typografia®
http://www.typografia.pt/en/

Cover image: © Sabrina Bracher from iStock

Available online at: www.cogitatiopress.com/mediaandcommunication

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https://doi.org/10.17645/mac.9857

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EDITORIAL

Open Access Journal

Games and Game Studies Are Meaningful—Are They?

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Submitted: 9 January 2025 **Published:** 13 February 2025

Issue: This editorial is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

Building on the idea that digital games are more than trivial pastimes and can have deeper meanings, this article collection brings together emerging findings from the field of game studies. The foundation for this thematic issue was laid at the 2023 symposium of the Digital Games Research Section of the European Communication Research and Education Association (ECREA) held in Madrid. The articles in this collection examine the rich content of games as cultural artifacts and how they encourage reflection, the role of games as social environments and learning tools, the dynamics of identity negotiation and socialization in gaming contexts, the societal perceptions of games, and the increasingly important roles of games and game studies in mediatized societies.

Keywords

cultural artifacts; digital games; eudaimonia; game studies; meaningfulness; media effects; serious games

1. Introduction

The foundation for this thematic issue was developed in 2023 at the symposium entitled *Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies*, organized by the Digital Games Research Section of the European Communication Research and Education Association (ECREA) in Madrid. The event examined the diverse facets of games' meaningfulness, fostering dialogue on what constitutes meaningful engagement in gaming and exploring the future trajectory and cultural relevance of game studies as a field.

For a long time, digital games were regarded as trivial and superficial entertainment, primarily providing *hedonic* gratifications such as fun and amusement (Oliver et al., 2016). In general, game studies is still a relatively new research field, and within media and communication studies, it is often perceived as a niche topic (Chess & Consalvo, 2022; Siitonen et al., 2021). However, in recent years, digital games have become more complex and differentiated, and interest in their deeper meanings as cultural artifacts and social environments has increased (e.g., de la Hera et al., 2021; Reer & Quandt, 2020). For example, more researchers are now focusing on the *eudaimonic* aspects of gaming, examining the potentials of digital games to elicit self-reflection, social relatedness, psychological need satisfaction, and emotional engagement (Daneels et al., 2021; Jacobs & Jansz, 2021; Possler et al., 2023; Reer & Quandt, 2020). Further, scholars have called for game studies to be taken more seriously and to recognize the central role they can play in an increasingly convergent media culture (Chess & Consalvo, 2022).

Against this background, this collection of articles positions games as cultural artifacts with the power to engage deeply with questions of identity, ethics, and social norms. In this sense, the authors explore how these experiences extend beyond traditional academic frameworks, arguing that games—through their immersive and interactive nature—invite players into unique forms of engagement with profound personal and social implications.

The articles in this issue approach game studies from diverse perspectives, each contributing to a nuanced understanding of games' role as instruments of cultural insight and social impact. This plurality underscores the heterogeneity of game studies, a field that thrives on multiple methodological approaches. In the following section, we provide an overview of the articles, highlighting how they explore the meaningfulness of games in today's media landscape.

2. Articles Included in the Thematic Issue

The article collection begins with contributions that focus on the diverse content transported in games and the significant roles they play in different societal contexts.

In the first article, Que et al. (2025) demonstrate that mobile games can hold deeper meanings by representing intangible elements of Chinese cultural heritage, such as folklore, traditional crafts, dialects, and customs. By weaving cultural heritage into character design, world-building, and combat mechanics, these games provide players with an immersive, culturally rich experience that promotes understanding and appreciation of Chinese traditions. Through a thematic analysis of 30 Chinese mobile games, the authors situate game content within broader social and historical contexts, emphasizing the potential of games as tools for cultural education and representation.

Further examining the rich content of games and the messages they convey, Soto de la Cruz et al. (2025) provide a comprehensive review of the scientific literature on how digital games communicate contemporary political discourse. Based on a review of 25 journal articles, the authors propose a new framework for categorizing political messages communicated through games, which they call the PRICE model— participation, representation, ideology, conflict, and education. Their study notes that first-person shooters and newsgames are frequently analyzed in this context, likely due to their immersive qualities and broad audience reach.

Delving deeper into the meanings of war-themed first-person shooters, Pattison (2025) examines how players experience and interpret games of the *Call of Duty* franchise. Through 25 thematic interviews, the author explores how these games evoke emotions such as guilt, discomfort, and remorse—particularly when players are confronted with war and violence. These emotional responses often prompt players to engage in self-reflection, positioning them as active agents in constructing meaning from their gaming experiences. Although commercial war games are frequently criticized for glorifying conflict, the author suggests that they can also foster introspection, encouraging players to question the realities of war.

Commercial games can not only encourage self-reflection, but can also teach valuable skills and serve as tools in learning contexts. Sanz et al. (2025) investigate the unique educational affordances of different versions of *Cities: Skylines* (i.e., digital, board game, and virtual reality) in urban planning education. The study identifies the specific educational strengths of each format: The digital version enables simulations of urban systems, the board game promotes collaborative planning and policy discussions, and the virtual reality version engages students in sustainable design practices and urbanization. The findings underscore the adaptability of games to various learning objectives and their significant potential in enhancing urban planning education.

In line with the idea that educational games must be thoughtfully designed to maximize their learning potential, Reyes-de-Cózar and Merino-Cajaraville (2025) provide a systematic review of serious game design models and propose a novel framework called FABLE (fun and balanced learning experience). FABLE highlights the importance of balancing entertainment with educational goals to create impactful and engaging learning experiences. By aligning game mechanics with learning outcomes, the model provides a structured approach to developing serious games that effectively promote meaningful learning.

Wei et al. (2025) contribute to the discussion on educational games with a focus on the design and impact of serious games aimed at promoting prosocial behaviors, specifically within the context of anti-bullying interventions. Their research examines how two design features—player-avatar similarity and in-game control—affect the narrative engagement, empathy, and prosocial intentions of players. One central finding of Wei et al.'s (2025) study is that the player's perspective (bully vs. victim) is decisive in determining whether these design features enhance empathy and prosocial intentions through increased narrative engagement.

Focusing on the social aspects of gaming, Gao et al. (2025) examine the development of romantic parasocial relationships and emotional bonds between female players and virtual characters in otome games. Through in-depth interviews with 25 female Chinese players, the authors find that female players establish intimate connections with male characters through game mechanics, such as character customization and branching narratives, as well as through their imaginative engagement. While these relationships are virtual, they impact players' perceptions of real-life intimacy and self-identity, providing emotional support and helping them manage negative emotions.

Further exploring gender in gaming contexts, Lynch et al. (2025) challenge conventional critiques of female stereotypes in games by focusing on the positive experiences players have when interacting with well-developed female characters. Through a mixed-methods approach with 751 participants, the authors reveal that both male and female players experience feelings of empowerment when engaging with strong female protagonists, suggesting that such representation can enhance players' well-being and offer eudaimonic gaming experiences.

Ruotsalainen and Meriläinen (2025) likewise take an interesting and novel perspective on gender in gaming by examining female players' hostile behaviors (instead of focusing on their role as victims). Conducting a critical discourse analysis of the subreddit r/GirlGamers, the authors examine how women discuss and critique each other's behavior, highlighting the complexity of female identity in gaming. They identify four main discourses and indicate the characteristics of the "ideal gaming woman," one who must balance different expectations, potentially restricting her freedom of expression and agency.

Liu et al. (2025) contribute to the discussion on hostile behaviors in gaming contexts by exploring how toxicity affects player retention and community dynamics. Drawing on the group engagement model and rejection-disidentification model, the authors propose a mediation model that is tested using gameplay data and survey responses from 1,217 players. The analyses reveal that both reporting toxic behavior and being reported contribute to decreased player engagement. The perceived discrimination of players and a weakened sense of community are identified as mediators.

Accounting for the complexity of the many different social and psychological dimensions of gaming, Sokka et al. (2025) introduce the digital gaming relationship framework (DGR)—a novel theoretical approach to understanding how and why games become meaningful to players. Based on concepts developed in sports and physical activity research, DGR assumes that the relationship between players and games is shaped by many factors (including individual, social, and cultural) and varies over one's lifetime. The authors emphasize that DGR goes beyond motivation-oriented approaches and understands meaning-making in gaming as an individual socialization process.

The contribution by Reer et al. (2025) shifts the focus away from players' experiences toward the question of how digital games are perceived by the public. Specifically, the authors examine attitudes toward the addictive use of games (gaming disorder) based on a survey of German internet users aged 16 to 84. The results show that many German citizens hold skeptical opinions about games and that gaming disorder rates are often overestimated. Moreover, individual gaming habits and demographic factors (such as age and gender) can influence how games and gaming are perceived.

In the final article of this thematic issue, Schwarzenegger et al. (2025) elaborate on the increasingly important roles of games and game studies in mediatized societies. They advocate for a holistic approach to game studies that acknowledges the broad influence of digital games and their integration with culture and other media. A core concept introduced in the article is "gamevironments," referring to the dynamic media ecosystems surrounding digital games. These ecosystems include "transmedia narratives, cross-media adaptations, social interactions, user-generated content, and the cultural and educational impacts of gaming" (Schwarzenegger et al., 2025, pp. 7–8). According to the authors, digital games have to be considered a vital part of mediatized life, significantly transforming culture and the public.

3. Conclusion

In the headline of this editorial, we posed a somewhat provocative question: "Games and Game Studies Are Meaningful—Are They?" The articles in this collection clearly demonstrate the complexity of games and gaming, showing that they can take on meaningful roles in different respects—be it as cultural artifacts that convey meaningful messages and encourage reflection, as tools for learning and socializing, or as

multilayered virtual worlds and platforms for identity negotiation and socialization. Given an increasingly convergent and mediatized society, the importance of game studies as a research field is likely to grow further in the future.

However, it is imperative to remain critical and reflective as we navigate the evolving landscape of digital media, ensuring that the study of games remains dynamic and responsive to societal shifts. We aim to inspire further dialogue and research in game studies, encouraging scholars to delve deeper into understanding the impact of games. We invite readers to join this conversation, contributing to a field that is as rich and varied as digital games themselves.

Acknowledgments

The editors would like to thank all the authors and reviewers who made this article collection possible. We also extend our gratitude to the team of the journal *Media and Communication* for their support and for accepting our thematic issue proposal.

Conflict of Interests

The authors declare no conflict of interests.

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Media and Communication
2025 • Volume 13 • Article 8749
https://doi.org/10.17645/mac.8749

ARTICLE

Open Access Journal

Dive Into the Past: Chinese Intangible Cultural Heritage Represented in Chinese Mobile Games

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Submitted: 27 May 2024 **Accepted:** 29 July 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

This study delves into the representation of intangible Chinese cultural heritage in Chinese mobile games. Nowadays, even with huge economic potential, Chinese mobile games are still faced with negative comments, especially from parents. To develop their reputation, Chinese mobile games have portrayed considerate Chinese intangible cultural heritage (ICH). The representation of cultural heritage in video games has been a subject of discussion for a long time, while console and computer games and tangible cultural heritage have been at the centre of academic studies. Hence, we strived to investigate how Chinese ICH is depicted in Chinese mobile games. A thematic analysis was conducted on data collected through analytical gameplay of 30 Chinese mobile games selected from Apple's App Store and the Chinese TapTap platform. Our analysis indicates that Chinese ICH is represented in Chinese mobile games to fulfil the persona of game characters, to create a more engaging and immersive game world experience, to provide more intense combat moments, to offer visually enjoyable virtual goods, and to deliver culturally driven updates during traditional festivals. Among the various forms of Chinese ICH, Chinese traditional craftsmanship is found to be used most frequently because of the huge effort it requires to be mastered, which could be educational to players. Theatrical traditions were found to be depicted in most game elements because they combine visual, audio, and motional elements. Lastly, folk and classical literature is portrayed in Chinese mobile games to provide a narrative resource that culturally resonates with players.

Keywords

Chinese culture; Chinese mobile games; intangible cultural heritage; cultural heritage representation

1. Introduction

Nowadays, smartphone hardware and software technologies are evolving to provide new opportunities for more exquisite visual design in mobile games, which supplements the flexibility and easy accessibility that mobile games are already gifted with. China, as one of the biggest markets for mobile games, has gained attention from leading Chinese game investment companies ("Why mobile games are so popular," 2022). Even with their considerable economic potential, mobile games developed by Chinese game studios and initially played by Chinese players have to deal with negative reputations, especially from parents of teenagers ("Chinese parents look happy," 2021). The debates on the harmfulness and worthiness of video games began decades ago (Haddon, 1988; Kirkpatrick, 2016). To develop their public image, Chinese mobile game studios have opted to portray a significant amount of Chinese intangible cultural heritage (ICH) in their games. These studios either adapted their previous computer games with a large slice of historical inspiration to mobile platforms, or created new mobile games with Chinese ICH as part of their design.

China enjoys a long history of cultural heritage, especially of the intangible variety, encompassing traditions, performing arts, social practices, festive events, and so on (UNESCO, n.d.). This provides abundant resources for game content creation. It is an effective way to disseminate Chinese ICH through new digital technology, which promotes China's national reputation and stimulates cultural identities of Chinese players in mobile games (Edney, 2015; Fung, 2014). With the evolving reputation of Chinese mobile games and the growing depiction of Chinese ICH, it is socially relevant to understand how Chinese ICH is represented within these games.

Our previous systematic literature review on the representation of cultural heritage in entertainment video games (Que et al., 2023) showed that there has been a focus on tangible cultural heritage depicted in video games (e.g., Champion, 2020; López, 2021). We also found that there is a research orientation towards mainly Western culture in English-language academia. In terms of game platform, a large number of studies have focused on video games released on computer and consoles, while mobile games have received little attention. Therefore, in this article, we focused on Chinese ICH represented in Chinese mobile games by investigating 30 mobile games developed by Chinese studios. Our research was led by the research question:

> RQ: How is Chinese ICH represented in mobile games developed by Chinese studios?

2. Video Games, Chinese Cultural Heritage, and Representation

2.1. The Representation of Chinese Cultural Heritage

Cultural heritage is understood as the social, historical, and aesthetic legacies that are inherited from generation to generation (UNESCO Institute for Statistics, 2009). Within cultural heritage, ICH refers to the "traditions and living expression inherited from our ancestors and pass[ed] on to our descendants" (UNESCO, n.d., para. 1). Chinese ICH representation in media has been explored in the fields of film, new media, and anime, while its representation in video games has received less attention. For example, Tan (2022) explored the potential of film as the carrier of Chinese ICH, Han and Sun (2024) investigated the innovative dissemination of Chinese ICH through the short-video platform TikTok as a kind of new media, while Wang (2021) analysed the depiction of Chinese ICH in some representative Chinese anime. In game studies,

especially in mobile games studies, Chinese academia has only discussed the potential of video games in representing Chinese ICH by investigating single games. For example, Cui et al. (2021) discussed the representation of Chinese Hangzhou cuisine in a light game based on the WeChat platform. Gao and Liu (2024) analysed how the game Honor of Kings (TiMi Studio Group, 2015) plays a role in disseminating Chinese ICH. Research on single games only provides results regarding limited game mechanisms and Chinese ICH aspects. Therefore, it is vital to conduct a comprehensive study on Chinese mobile games of mainstream genres with a systematic analysis of various aspects of Chinese ICH.

2.2. The Representation of Cultural Heritage in Video Games

Previous academic studies have extensively explored the representation of cultural heritage in video games. Based on the systematic literature review we conducted (Que et al., 2023), previous studies on the representation of tangible cultural heritage in video games paid special attention to the depiction of architecture (e.g., Champion, 2020; López, 2021; Wright, 2022), historical people (e.g., Dong & Mangiron, 2018; Yao & Chen, 2022), and minority populations (e.g., Miller, 2008; Nacher & Jankowski, 2021; Nijdam, 2021; Wills, 2021). Conversely, the representation of ICH in video games is less studied. Additionally, based on our review (Que et al., 2023), existing studies do not clearly distinguish between tangible and intangible cultural heritage, studying both aspects at the same time. Hence, there is an academic gap in the study of the representation of ICH specifically. Existing studies into the representation of ICH in video games focus their attention on the representation of historical times (e.g., Finney, 2017; López, 2021; Šisler et al., 2022). There are also a few studies into the representation of minorities' behaviours (e.g., Chism, 2020; Locke & MacKay, 2021) and languages (e.g., Kuin, 2016; Zabecki, 2019). In the English academic realm, studies mainly conduct research on Western cultural heritage represented in video games, such as the battlefields in Europe during the First and Second World Wars (e.g., Šindelář, 2022) and European myths (e.g., Bainbridge & Bainbridge, 2007; Šisler, 2017). Our literature review suggests that there are only a few studies focusing on the representation of cultural heritage in mobile games (e.g., Yao & Chen, 2022), leaving a huge academic gap in cultural heritage study.

3. Methodology

To investigate how Chinese ICH is represented in Chinese mobile games, we carried out a thematic analysis (Braun & Clarke, 2021). We used Apple's App Store and TapTap for game sampling. Apple's iPhone is famous for its huge player base and dominant market share among mobile game platforms (Haider, 2022). TapTap is the biggest platform for mobile games information, rankings, and gameplay guides in Chinese-speaking regions (King, 2024), making our sampling regionally embedded.

We conducted purposive sampling to collect mobile games for our analysis (Flick, 2007, Chapter 3). The following sampling criteria were taken into consideration: (a) the games are developed by Chinese companies; (b) they have evident representation of Chinese cultural heritage; and (c) they are listed in the top 50 ranking of 2024 and most recommended ranking in 2024 on the platforms. We opted for top-ranking mobile games for the considerable public attention they have gained. It is socially valuable to investigate how Chinese ICH is integrated into Chinese mobile games that are already successful in the market. Following these criteria, we selected 30 games for analysis. Among the sampled mobile games, role-playing games (RPGs) were the largest category (14/30). Other genres of games analysed were multiplayer online

battle arena games, dress-up games, simulation games, love games, real-time tactics games, and shooting games. In terms of continuity, most of the games (24/30) provide constant updates of new content and activities, while other games can be played offline.

To guide our data collection process, we adopted the "utilitarian" analytical play approach as described by Mäyrä (2008), in which analytical play links game content to a wider social, cultural, and historical context. This process requires special attention to "structural elements" like game rules and interaction with players, and "thematic elements" like representations of symbols and messages. With this objective, we gathered data from the three areas of study of game analysis raised by Fernández-Vara (2019), which are (a) the context in which the game content is released, (b) an overview of information about the game, and (c) the formal elements of textual and audio-visual representations. As such, we started data collection by gathering information on the selected games, including game genre, development engine and company, allowed number of players, and available server. We then recorded our gameplay, taking screenshots, video and audio recordings, and notes of those moments in the games in which we identified traces of Chinese ICH. Lastly, we gathered external and contextual data, including continuous game content released at special times of the year. We also gathered videos that the developers posted online for a better description of the ICH they depicted in the games.

The codebook for our analysis was drawn from the categorisation of Chinese ICH by the State Council of the People's Republic of China (2008), consisting of 10 categories of ICH: (a) folk literature, (b) traditional music, (c) traditional dance, (d) theatrical tradition, (e) folk art, (f) traditional sports and entertainment, (g) traditional fine arts, (h) craftsmanship, (i) traditional medicine, and (j) folk customs. Under each category, there are Chinese national ICH cases listed with detailed descriptions provided, based on which we could effectively identify depictions of Chinese ICH in our listed games. We used this categorisation as our theoretical framework to identify the Chinese ICH depicted in our sampled games, and hence investigated how different categories of Chinese ICH are integrated into Chinese mobile games. For the detailed codebook that guided this research, please see the Supplementary File, Appendix A.

To analyse the collected data, we conducted a thematic analysis (Braun & Clarke, 2021) on Atlas.ti. Concretely, we started the analysis by familiarising ourselves with the gaming content we collected from analytical gameplay. We began our gameplay by collecting general information regarding the games in advance, which assisted us in estimating what kinds of Chinese ICH are expected to be identified in our selected games. We then conducted the analytical gameplay through different game elements to have a complete overview of the game content, such as observations of game characters, game world exploration, combat experience, and game store browsing. This was conducted to make sure there was nothing significant missing regarding Chinese ICH. The Chinese ICH elements identified were coded by documenting them with screenshots, video recordings, and audio recordings. The ICH elements, together with the associated game content, were coded together. Then, we identified the representation of Chinese ICH in the games with the assistance of the codebook. We continued by identifying the initial sub-themes of how Chinese ICH is integrated within the analysed games. Then, we reviewed all the sub-themes and developed them based on their similarities and differences. We finished the analysis by refining all the sub-themes and grouping them into bigger themes.

4. Results

This section presents the results of our game content analysis, encompassing the different categories of Chinese ICH identified in Chinese mobile games and how the categories are represented in the games under analysis. We have divided the results of our analysis into five main themes: culture-driven character design, culturally immersed players' game experience, culturally based combat game mechanics, culturally inspired virtual goods design for monetisation, and culturally based game updates. A coding tree with an overview of the themes and sub-themes identified is presented in the Supplementary File, Appendix B.

4.1. Culture-Driven Character Design

Fourteen out of the 30 games analysed integrate a variety of Chinese ICH in character design, including the position of characters in the game, their background story, and their skill design. This is commonly seen in mobile games with gacha mechanics which treat game characters as random items that players get from banners. It is also evident in RPGs where avatars of players serve different positions in a team.

4.1.1. Folk Literature-Inspired Character Design

Folk literature, understood here as orally passed-on stories and mythologies, provides an abundant source of folk belief, traditional symbols, and motional traditions. These ICH elements are commonly used in Chinese mobile games' character design (8/30), especially in their skills design, usually to attribute them mysterious, heroic, and formidable characteristics. An example is Xiao, a character within Genshin Impact (miHoYo, 2020), a gacha game with various rare characters. He is a god-like character who has fought the demon and been affected by miasma. His persona is represented by a mixture of divinity and uncontrollable madness. Xiao's character design (see Figure 1) is inspired by a creature in Chinese folk literature that connects divine beings with monstrous spirits, namely Shanxiao, which caters to the sense of fatalism that Chinese people prefer

Figure 1. Character portraits of Xiao, Mao Xiangling, and Yunjin in Genshin Impact. Source: miHoYo (2020).

seeing in an immortal character. This mixed persona discussed in Chinese folk literature is borrowed both for his visual design and his skills design. When casting his elemental skill, there are tangled strokes of black and cyan blue boosted around Xiao's body. When casting his elemental burst, Xiao puts on a mask inspired by Chinese Nuo culture, and his skill motions are borrowed from Nuo culture's "demon dance," which shows his complex and powerful persona. As such, the borrowed folk literature is manifested in the visual, narrative, and motional character design, and it is commonly seen in Chinese mobile games, in which character levelling-up is one of the central mechanisms.

There are five other selected games that gain inspiration from Chinese folk literature for character design. For example, in the gacha RPG Arknights (Hypergryph & Studio Montagne, 2019), there is one species with the horns of Loong (Chinese dragon), which is a noble and powerful image in Chinese folk literature. In these games, rare characters are mostly designed as noble, heroic, and powerful, so game designers mainly use folk literature, especially folk mythology, for characters' background and skill design. This not only fits the expected strength of a rare character, but it also caters to the expected stereotypical image of immortals in Chinese culture.

Elements regarding immortal beings, demons, and monsters in folk literature help the games provide folk and exaggerated visual designs manifested in characters and their skills. The folk literature works are all used to fulfil the pre-established character personas in mobile games. Such character design shows the detailed research conducted by game developers, which enhances the cultural depth of these games and their characters.

4.1.2. Traditional Craftsmanship-Inspired Character Design

Traditional craftsmanship encompasses the skills required for traditional crafts, and our analysis shows that such elements are also used in Chinese mobile games' character design. In five out of the 30 selected games, traditional craftsmanship cultural heritage is used as an inspiration for character design. Such implementation is shown, for example, in MMORPGs (massively multiplayer online role-playing games) and games with gacha mechanics. In the game Moonlight Blade (Tencent Games, 2020), one aspect of character design that is inspired by traditional craftmanship is Tangmen, a kung fu school for avatars that is inspired by traditional Chinese wooden puppetry and robot-making. Concretely, avatars from Tangmen can use machine-building and puppet control to attack opponents. Another example is the character Mao Xiangling (see Figure 1) in Genshin Impact (miHoYo, 2020). She is designed to be a famous cook in the game. Not only is she gifted with Pyro (fire element) talent that is closely related to cooking, but also her elemental skill consists of a chilli pepper that boosts her damage capacity. The cultural elements of cooking and fire are hence integrated into the character design of Mao Xiangling.

Certain craftsmanship is selected by Chinese mobile games because of the popularity it enjoys. Cuisine and culinary traditions are the cultural pride of Chinese people and are deeply embedded into Chinese people's daily lives. Hence, Xiangling is culturally and emotionally connected to Chinese players. Additionally, wooden puppetry and robot-making represent the long history of sophisticated Chinese craftsmanship, so Chinese mobile games use them in character design to show how certain kung fu avatars are powerful and maestros in building tools for combat.

4.1.3. Theatrical Traditions-Inspired Character Design

Theatrical traditions refer to traditional Chinese live performing traditions, such as singing, dancing, and dialogues. Traditional Chinese dramas and operas are sometimes used by Chinese mobile game designers as inspiration for character design (4/30). Representations of Chinese theatrical traditions are related to the design of RPGs' characters, especially within those games with gacha mechanics. Concretely, Chinese mobile games tend to borrow the whole identity of theatrical performers to design the background story of their characters. For example, Yunjin, a character from Genshin Impact (miHoYo, 2020), is inspired by the well-known Beijing Opera (see Figure 1). Her moves, including elemental skills, idle pose, and figure expression, were all inspired by the Beijing Opera. The game also dedicated a cut scene to her Beijing Opera performance that summarised a side-quest narrative.

Another example of theatrical tradition-inspired character design was found in MMORPGs, in which the avatars are often treated as players themselves. In this case, the use of theatrical traditions as design inspiration is relatively indirect. In the game A Chinese Ghost Story (NetEase, 2016), a damage dealer role that players could choose is called Zhankuang (Berserker). To cater to Zhankuang's image of fanaticism, the designers were inspired by a famous part of traditional Chinese Kun Opera, Ye Ben (Fleeing by Night), which illustrates a heroic story and includes many masculine, strong, and wide-open moves. The game used these moves as Zhankuang's attacking motions. Theatrical traditions combine visual, audio, and motional features, from which there could be lots of elements used in games. Chinese theatrical traditions enjoy a long-lasting reputation but low audience attention in legacy media. Hence, integration of theatrical traditions brings about more media exposure and could be educational for gamers.

4.2. Culturally Immersed Players' Game Experience Design

Twelve out of the 30 Chinese mobile games analysed take inspiration from Chinese ICH for players' game experience design. This is mostly seen in RPGs where an immersive game world is needed for players to explore. It is also evident in simulation games where the game world itself is designed for players to plan and run. In the following sections, we discuss how the design of the game experience is inspired in Chinese mobile games by oral expressions, classical and folk literature, and traditional craftmanship.

4.2.1. Oral Expressions for Nostalgia

Oral expression is understood as a cultural heritage only passed on through human voices. In our analysis we identified that Chinese dialects are frequently used in the game world design of Chinese mobile games (7/30). For example, Treacherous Waters Online Mobile (NetEase, 2022) entails a story taking place in China's Song dynasty when China's capital cities were Kaifeng and Hangzhou. In the game, these two cities are depicted with detailed cultural elements. While exploring these cities, players can encounter non-player characters (NPCs) that speak the dialects of the local regions represented as well as NPCs that are travellers from other regions who speak different dialects. In total, Treacherous Waters Online Mobile (NetEase, 2022) uses over 20 different dialects to depict a rich game world in which players can find connections to their hometowns' oral expressions. This way, it creates a game experience that is culturally close to players' identity. Hence, the game serves as a virtual space to fulfil the players' nostalgic needs.

Following the same logic, oral expression is also included in simulation games. In the game Canal Towns (Coconut Island Games, 2020), players are required to plan a city and upgrade it to a prosperous region in China's Ming dynasty. The NPCs in this game are either historical people or fictional characters that can work for the players. Some characters in Canal Towns (Coconut Island Games, 2020) speak certain dialects to cater to their persona. For example, a florist in this game speaks Shanghai dialect and starts the conversation by complimenting the players. This portrays a calculative image of the florist who is good at running a business, because Shanghai people have a stereotypical image of being calculating and strict in budgeting. Dialects have a clear directivity towards people from a certain region, which helps create a vivid and lively persona for NPCs. This NPC design approach fosters a more attractive game experience for players.

4.2.2. Classical and Folk Literature for Familiarity

Traditional literature, either classical or folk literature, provides abundant sources of inspiration for narratives, game world settings, and historical background design. Hence, Chinese mobile games with a huge budget, such as those developed by Tencent and NetEase, tend to choose classical and folk literature as the inspiration for the design of the game world experience for their RPGs. Open-world game design not only requires a tangible world to be explored, but also an attractive narrative that players follow willingly. To fulfil this goal, some Chinese mobile games (3/30) used classical and folk literature for world design.

For example, A Chinese Ghost Story (NetEase, 2016) is inspired by the Chinese classical book *Strange Stories in Oriental Society*, entailing stories of Chinese ghosts and spirits. The game is inspired by a chapter in the book about how a female ghost falls in love with a scholar, and it includes several well-known plots of the story in the game. This directly triggers players' familiarity with the original story, which makes the game story easier to comprehend and accept.

Another example is the game Moonlight Blade (Tencent Games, 2020), which has a game setting and narrative inspired by the famous folk book *Moonlight Blade*. This MMORPG requires the players to select a school of kung fu and follow the narrative by treating the avatar as themselves. Most of the kung fu schools represented in the game are mentioned in the original novel, and the narrative of the game follows a typical Chinese combat within martial brotherhood. Hence, we can conclude that Chinese literature is clearly represented in several mobile RPGs. All the classical literature works are well-known classics in China. By adopting the narrative and background settings that players are already familiar with, these mobile games aim to connect with the gamers right at the start of the gameplay.

4.2.3. Traditional Craftsmanship for Education

We previously discussed how traditional craftsmanship is used as a source of inspiration for character design in Chinese mobile games. In this section, we discuss how traditional craftmanship is used in these games to enhance the game experience, namely by providing an experience that can be educational for players, which we identified in five games out of 30.

In most MMORPGs analysed, such as Treacherous Waters Online Mobile (NetEase, 2022), A Chinese Ghost Story (NetEase, 2016), and Moonlight Blade (Tencent Games, 2020), the weapon cultivation system is inspired by traditional Chinese craftsmanship (see Figure 2). A common situation identified in these games is

Figure 2. Blacksmith system in Treacherous Waters Online Mobile. Source: NetEase (2022).

that players are required to go to a blacksmith with the weapons and resources collected. These games then provide an interface designed with elements of fire, coal, and hammer in which players can experience how traditional craftmanship manual skills and knowledge are used. The craftsmanship of weapon cultivation is designed as a vital game mechanic that is strongly connected to players' damage capacity. The players need to experience this process frequently in gameplay, resulting in training themselves with blacksmith skills and traditional weapon-making.

Compared to oral expressions and literature, most forms of Chinese traditional craftsmanship are rarely seen in daily life. However, some Chinese mobile games still opted to include them in their game world for players to experience. An example of such implementation is the game Canal Towns (Coconut Island Games, 2020), a city-planning simulation game. To gain certain resources, players are required to set up several optional factories for production. Three options in the game are mother-of-pearl production, a Yue porcelain kiln, and a paper-making mill (see Figure 3). Players are asked to participate in the production process of these crafts and use them to upgrade their city. These forms of craftsmanship are either rarely seen in people's daily lives,

Figure 3. Mother-of-pearl production, Yue porcelain kiln, and paper-making mill in Canal Towns. Source: Coconut Island Games (2020).

or people are so subconsciously accustomed to using these crafts in daily life that they rarely think about how these crafts are made. As such, while catering to the mechanics of simulation games and supplementing the world design, the inclusion of unknown craftsmanship serves the purpose of educating players.

4.3. Cultural-Based Combat Game Mechanics

In-game combat is one of the most essential mechanics in RPGs and real-time tactics games, as it is a way to demonstrate players' strength. In 14 out of the 30 games analysed, several audio-visual combat elements were found to be inspired by Chinese ICH. These traditional cultural elements were represented within combat game mechanics that are intense and eye-catching. In the next paragraphs, we discuss how combat game mechanics design in Chinese mobile games is inspired by traditional music and arts, and motional traditions.

4.3.1. Mix of Traditional Music and Traditional Arts for Combat Tension

In Chinese mobile games, it is common that a combination of in-fight music with quick and strong beats is played when the players encounter combat during gameplay. When the combats take place in games with a Chinese story background or in regions inspired by Chinese culture, traditional Chinese music is used to create tension between the players and their opponents. For example, in the turn-based RPG Honkai: Star Rail (miHoYo, 2023), Xianzhou Luofu (God ship Luofu) is a spaceship inspired by Chinese culture. When fighting against the main boss Huanlong (Phantylia, a leader of the Antimatter Legion) on this map, Star Rail (miHoYo, 2023) adopts the singing of the Chinese Dong ethnicity with their own language. This singing imitates the sound of nature to create a wide and holy atmosphere. In this game, it is used during the battle to represent a huge contrast between the protagonist and the enemy Huanlong to highlight the huge difficulty of beating the latter, thereby exaggerating the tension in this combat.

Visual elements are also used to intensify combat. One way of achieving this goal is by representing traditional arts in a fight. For example, the shape of the three-legged crow is borrowed from the famous Sun and Immortal Birds Gold Ornament, and it is placed in the special visual effects when the character Haiyue is fighting others in Honor of Kings (TiMi Studio Group, 2015; see Figure 4 in this article), while Chinese arts elements like auspicious clouds and landscape paintings are commonly seen in mobile games with combat

Figure 4. Character portrait of Haiyue in Honor of Kings. Source: TiMi Studio Group (2015).

elements, such as Honkai: Star Rail (miHoYo, 2023), Wuhua Mixin (Cipaishe Studio, 2024), and Genshin Impact (miHoYo, 2020). Chinese traditional arts provide abundant resources for arts patterns and cultural symbols, which are suitable for being borrowed into detail designs for visuality. These elements are usually mixed into fights to create dazzling visual experiences, stimulating the visual senses of players. Hence, at the same time that they enhance cultural depth with visual inspirations, these games increase the tension during combats to stimulate players' excitement.

4.3.2. Motional Traditions for Fighting Moves

Motional elements are inevitably a centre of game design during combats. Some of the Chinese mobile games analysed (11/30) include fighting moves inspired by a variety of Chinese traditional moves. This finding is firstly evident in most MMORPGs, such as Treacherous Waters Online Mobile (NetEase, 2022), Fantasy Westward Journey (NetEase, 2015), and Moonlight Blade (Tencent Games, 2020). The optional schools of kung fu available for players at the start of the gameplay have their unique weapons and martial characteristics, such as blades, spears, and swords. As such, martial moves using these weapons of traditional Chinese kung fu are used in the schools that are part of the game.

A second source of inspiration in Chinese motional tradition was found in five RPGs where theatrical moves are used in motional design for combat. For example, the character Yunjin in Genshin Impact (miHoYo, 2020) is designed to be a Beijing Opera performer. Hence, her fighting moves are all inspired by the female warrior role in the Beijing Opera. This shows that motional elements from Chinese ICH used in combat move design do not only supplement the cultural depth of combat moments in these games, but also fulfil the visual needs required by fighting scenes, namely to be gorgeous and elegant.

4.4. Culturally Inspired Virtual Goods Design for Monetisation

Given the free-to-play mechanic that most Chinese mobile games share, visually decorating items have become their main source of monetisation. This only changes the exterior of game avatars, so in most cases players do not rely on in-game purchases to get stronger. Our analysis shows that Chinese mobile games' virtual goods design is often inspired by Chinese ICH (18/30). This is often seen in dress-up games and mobile games with character design as their focus. In the next paragraphs, we discuss how virtual goods design in Chinese mobile games is inspired by traditional literature and fine arts.

4.4.1. Traditional Literature-Inspired Virtual Goods

Traditional Chinese literature, including classical and folk literature, usually contains detailed descriptions of characters' costumes, some of which have become classics in Chinese people's minds. In eight out of the 30 games analysed, we identified purchasable costumes that are inspired by Chinese literature. For example, the dress-up game Miracle Nikki (Papergames, 2015) includes the classical costumes of three main characters in the novel *The Story of a Stone*, which is one of the four greatest classical literature books in China (see Figure 5).

This phenomenon is also evident in multiplayer online battle arena games, in which there are usually dozens of characters available. For example, the game Honor of Kings (TiMi Studio Group, 2015) got inspiration from

Figure 5. Clothes design inspired by *The Story of a Stone* in Miracle Nikki. Source: Papergames (2015).

the classical novel *Journey to the West* and put several famous characters from the novel into its "heroes pool." This game follows the appearance, used weapons, and character audio that are described in the novel, providing an authentic audio-visual representation of these characters. By getting inspiration from Chinese traditional literature for exterior character design, Chinese mobile games gain cultural and historical depth and aim to build connections with gamers more quickly.

4.4.2. Fine Arts-Inspired Virtual Goods

Chinese mobile games also use fine arts and traditional music to decorate the virtual goods they sell. This is commonly seen in most MMORPGs where they sell avatar costumes in their in-game stores, and these costumes are inspired by elements of Chinese fine arts. For example, Moonlight Blade (Tencent Games, 2020) offers players a variety of clothes as virtual goods that integrate properties of Chinese fine arts in their design, such as the colour of Chinese blue-and-white porcelain, the ice cracks on Chinese porcelain, and Chinese calligraphy.

Another example is how the game Treacherous Waters Online Mobile (NetEase, 2022) represents famous Chinese landscape paintings in its clothes design. This strategy is also seen in dress-up games, in which, for example, Miracle Nikki (Papergames, 2015) collaborated with the Suzhou Museum, using the fan calligraphy by Wu Kai from the Qing dynasty on its clothes design. Using arts in virtual goods design adds to the artistry of games' exterior, and also helps to disseminate this part of Chinese culture.

Many virtual goods with inspirations from Chinese ICH focus primarily on visual exterior design, such as costumes, make-up, and weapon decorations. Different from other microtransactions of virtual items that increase players' damage capacity, exteriors only affect the appearance of characters. Chinese literature and fine arts contribute to a deeper cultural significance in the artistic visuality. Thus, visuality and cultural depth together create a greater attractiveness of in-game visual purchases. Therefore, the players pay for the visuality instead of the damage capacity, which effectively protects those who only spend minimally.

4.5. Culturally Based Game Updates

To gain long-lasting user activity and monetisation, most Chinese mobile games provide regular updates with new narratives and time-limited activities. We identified how Chinese mobile games get inspiration from Chinese traditional festivals to design timely updates (15/30). During the Chinese New Year, for example, some folk arts and festival customs are represented in these games.

4.5.1. Folk Arts for Nostalgic Engagement

Folk arts are made by ordinary people and generally appreciated across all layers of the population. In eight out of the 30 games analysed, we have identified that Chinese mobile games get inspiration from Chinese folk art to depict an accessible and down-to-earth festive atmosphere. During periods coinciding with Chinese festivals, Chinese mobile games use folk arts as inspiration for the design of in-game activities and specific user interfaces, aiming to create a sense of nostalgia. For example, the game Genshin Impact (miHoYo, 2020) uses shadow play as an activity for players to enjoy. Shadow play is deeply embedded within Chinese New Year custom, but it is rarely seen in contemporary life. The game used shadow play to design the interface of time-limited activities for the Chinese New Year in 2023, namely the Lantern's Rite in the game (see Figure 6). An update was released during the Chinese New Year in 2024, which involved bright colours in lantern paintings and Chinese New Year paintings, together with the Chinese symbols of fire,

Figure 6. User interface for Lantern's Rite in Genshin Impact. Source: miHoYo (2020).

lotus, and mountains, to represent a prosperous society and create a celebrative atmosphere. The folk arts selected for these "festive updates" are commonly seen every Chinese New Year, affirming the Chinese festive traditions and customs and providing a wholesome and immersive festival experience for their players.

4.5.2. Festival Customs in Time-Limited Activities

Chinese festive customs are also identified in mobile game updates. They occur in eight out of the 30 games analysed and include the representation of cultural activities and traditional performances of Chinese traditional festivals.

For example, players could participate in a dragon dance with their friends in the game A Chinese Ghost Story (NetEase, 2016; see Figure 7 in this article) during the 2024 Chinese New Year update. The game also used the godlike symbol of a dragon to offer players a ride which was a time-limited reward only available during the 2024 New Year celebrations. Another game that uses traditional festival-inspired updates is Genshin Impact (miHoYo, 2020). This game specially designed a new character who is a professional lion dancer. It also integrated the traditional Chinese lion dance into a time-limited activity for players to compete against each other, which was again only available during the New Year celebrations.

The representation of festival customs is mostly seen in mobile games where there is an avatar controlled by players. An avatar representing players' identity is expected to create a deeper sense of immersion when players participate in the time-limited activities during special festivals. Combined with the online promotion video data, we found that these games chose classic and well-known traditional Chinese festival customs in order to promote Chinese culture, such as the dragon dance, lion dance, lantern riddles, and shadow play. Integrating these customs with game elements is used to connect to players' emotional needs for entertainment, family union, and nostalgic feelings during these periods.

Figure 7. Dragon dance activity in A Chinese Ghost Story. Source: NetEase (2016).

5. Conclusion

This study aimed to answer the research question of how Chinese ICH is represented in Chinese mobile games. A thematic game content analysis of 30 Chinese mobile games was conducted to investigate how different categories of Chinese cultural heritage are represented in these games, including in-game character design, players' game experience design, combat mechanics, virtual goods design, and game updates. This empirical study contributes to fill in the research gaps raised in our previous systematic review (Que et al., 2023). Concretely, it supplements the academic gap whereby most related studies focused on a tangible aspect of cultural heritage depicted in video games. Additionally, we focused on analysing mobile games, which fills the academic gap whereby mobile games have been ignored by most cultural heritage studies. Lastly, we provided a non-Western perspective of cultural heritage study, filling the gap whereby most relevant studies have focused on American and European cultural heritage.

Our analysis firstly showed that Chinese mobile games get inspiration from Chinese folk literature, craftsmanship, and theatrical tradition to design the background story and skills for their game characters. This is especially manifested in the design of the moves and visual effects of game characters. Secondly, we found various forms of ICH represented in players' game experience design in Chinese mobile games, including oral expression, folk literature, and traditional craftsmanship. These elements of cultural heritage are manifested in both the general narrative background and detailed daily experience in the game world. Thirdly, we identified elements from traditional Chinese music, arts, and motional traditions represented during the combat scenes in Chinese mobile games. These audio-visual elements are mixed in combat game design to bring an intense and exciting fighting experience. Fourth, we found uses of traditional literature, fine arts, and traditional music in Chinese mobile games for monetisation purposes. Lastly, we found Chinese traditional festival-related ICH represented in the updates of some of the Chinese mobile games analysed, including folk arts and festival customs. They are used to design time-limited activities and interfaces during Chinese traditional festivals, with the purpose of increasing user interactivity at special times of the year.

Our analysis suggests that Chinese mobile games largely focus on depicting traditional Chinese craftsmanship, theatrical traditions, and literature. Craftsmanship requires years of dedication and is rarely seen in daily life. By integrating craftsmanship into game mechanics, these games invite the players to participate in the production of crafts, which serves the purpose of educating players and disseminating Chinese culture. Secondly, theatrical tradition encompasses music, dance, cultural symbols, and classical stories. Functionally, it is convenient for games to integrate these elements in character design, combat design, and clothes design. Culturally, different Chinese theatrical traditions have their own origins, which demonstrates China's regional characteristics. The historically significant theatrical traditions receive low audience attention in legacy media. Using theatrical elements in games offers more interactive moments in games and educational knowledge to the games. Lastly, Chinese traditional literature is largely used in RPGs for background narrative and experience design. Stories already exist in classical literature, and they are mostly known to the players. This is considered economical to game designers in terms of time and money. Besides, the cultural and historical value of classical literature is educational to the players by creating an interactive world experience for players to immerse themselves in. These three categories of Chinese ICH are largely represented in Chinese mobile games, while other categories mentioned in our theoretical framework gain less representation in our selected games, especially traditional medicine and Quyi.

The results of this study are guided by the theoretical framework provided by the State Council of the People's Republic of China (2008). Based on our analysis, we firstly conclude that this categorisation of Chinese ICH is instrumental in serving the purpose of analysing the representation of Chinese ICH in digital games. With this study, we were able to identify complementary categories of Chinese ICH that were not considered in this framework. Concretely, our research identified the uses of traditional oral expression in game design, mostly Chinese dialects. Additionally, we differentiated uses of classical arts and folk arts in our analysis, in which classical arts served to create elegant and historic visual design, while folk arts are suitable for designing approachable and down-to-earth visuality. This differentiation could make a big difference to the messages brought by game developers, so it should be incorporated within the framework for game content analysis. This theoretical addition provides a more solid framework for future studies investigating ICH in game content.

This study has provided a more profound insight into the representation of ICH in mobile games. However, it still has its limitations. Firstly, most of our selected games are RPGs and MMORPGs that focus on character, world, and narrative design, meaning other game genres, such as multiplayer online battle arena, real-time tactics, and dress-up games are less represented in our sample. Therefore, future research could pay more attention to these game genres. Secondly, given the number of mobile games sampled in this study, we could not ensure that all Chinese ICH elements represented in these games were identified in our analysis. Nevertheless, this research presents detailed available approaches to representing Chinese ICH in Chinese mobile games and illustrates a deeper cultural image that mobile games could have.

Acknowledgments

The PhD programme is supported by the Chinese Scholarship Council.

Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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Media and Communication
2025 • Volume 13 • Article 8689
https://doi.org/10.17645/mac.8689

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Open Access Journal

Contemporary Political Discourse in Digital Games: A Systematic Approach

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Submitted: 15 May 2024 **Accepted:** 25 July 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

This study reviews existing literature on how video games are being used to convey contemporary political discourse. Digital games, as meaningful cultural artifacts, have become a communication medium in their own right. They can serve as social mirrors, framing contemporary reality through metaphors that represent and recreate transcendent events or social facts through immersive experiences. Likewise, video games have played a significant role in shaping our current politics and culture. This article seeks to answer the research question: How has contemporary political discourse been explored through digital games in academic literature? To do so, we conducted a systematic literature review following the SALSA (search, appraisal, synthesis, and analysis) framework. We identified $N = 25$ journal articles written in English and Spanish, published between January 2013 and September 2023. We found that first-person shooter games were the most frequently discussed game genre in the academic literature, followed by newsgames. We propose a new method for categorizing political messages in digital games, which we have called the PRICE dimensions model (participation, representation, ideology, conflict, and education). The studied papers were classified into five main thematic groups: (a) video games as a tool for digital propaganda; (b) video games aiming to raise awareness of political issues; (c) games and gamification elements for radicalization; (d) game design that justifies, minimizes, or downplays violence; and (e) players' role in conveying political messages.

Keywords

digital games; first-person shooters; newsgames; political communication; political discourse; political games

1. Introduction

Play and games shape many aspects of people's daily lives, as well as contemporary societies. In game studies, this has been conceptualized as the "ludification of culture" (Raessens, 2006), which refers to the increasing influence of game elements in various aspects of culture, the economy, society, and politics in the context of the digital era. This phenomenon has also been referred to as "the cultivation of ludus" or "the gameful world" (Walz & Deterding, 2014). In this sense, Flanagan (2015, p. 249) states that ludic language involves "a game's cultural conventions, privileging agency with responsive feedback, and connoting meaning through the way in which players take actions and authenticate themselves through this action." Ultimately, game and play can be complex and multifaceted (Reer et al., 2024) and can serve as a guide on how to organize an experimental setting with players, roles, rules, and a scenario (Mayer, 2009).

Digital games as meaningful cultural artifacts (Salen & Zimmerman, 2004) have become a communication medium in their own right. A wide range of governance structures and ideologies are found in contemporary political systems, which can be broadly classified into two categories: democratic and non-democratic systems. To study their role in these systems, video games have been divided into two macro-dimensions (Torres-Toukoumidis et al., 2023, p. 6). First, serious games, aiming to offer players a learning experience, which were also subdivided into persuasive games and expressive games. Second, entertainment games, designed exclusively for fun. The rhetorical potential in-game rules design, the ethical component of discourse, and persuasive effects in games have been addressed by numerous authors (Bogost, 2006, 2007; de la Hera et al., 2021; Ferrara, 2013; Frasca, 2007; Grace, 2021; Jacobs et al., 2017; Pérez Latorre, 2015; Sicart, 2011, 2023; Siriaraya et al., 2018).

Likewise, de la Hera (2019) studied the persuasive dimensions that game designers can use to persuade players within immersive spaces. In this sense, game systems and mechanics can embody beliefs (Flanagan, 2009) and persuade players in particular situations (Bogost, 2007). For instance, as Chess and Consalvo (2022, p. 161) state: "Video games have had as much (or more) impact on our current politics and culture wars than many care to acknowledge." They argue that video games have emerged as a pivotal element in the convergence of media content, platforms, and audiences.

Pérez Latorre (2015, p. 415) has analyzed the relationships between game design in conveying ideological values and the construction of social reality through social discourse in video games. He proposes a model based on three elements: (a) the representation of the character/player, (b) the game world, and (c) the main actions carried out in it. Thus, digital games can serve as social mirrors, framing contemporary reality through metaphors that seek to represent and recreate transcendent events or social facts through immersive experiences. We adopted Gee's (2010) framework to refer to "political discourse," in which discourse involves more than just language; it also includes other social practices within a specific group. In this vein, political discourse consists of the language-in-use, behaviors, values, ways of thinking, and other social practices that are associated with politics. This includes the language used by politicians, the rhetoric of political campaigns, the language used in political news coverage, and the everyday conversations that people have about politics—in this specific context, within digital games and social platforms.

With respect to the political context, scholars have studied how play and games can facilitate civic engagement and encourage political participation (Bennett, 1979; Lerner, 2014; Mayer, 2009). Specifically,

Glas et al. (2019, p. 19) argue that "the simultaneous ludification and digitization of culture has given rise to new connections between citizenship and participatory media technologies that are shaping our culture." Moreover, the expressive dimension of video games allows the transmission of meaning essentially through the language of ludic design, which refers to game rules design and ludic interactive dynamics (Pérez Latorre, 2015, p. 416). Games (both analog and digital) have been used for diverse political purposes, such as political campaigns (Akbar & Kusumasari, 2022; Baltezarević et al., 2019; Leng et al., 2010; Miller, 2013; Tran et al., 2021), military recruitment (Nieborg, 2004; Schulzke, 2013), representation of democracy (Torres-Toukoumidis et al., 2023), or promoting civic learning experiences (Santos et al., 2018).

Regarding political discourse, Lerner (2014, p. 30) explains that "games serve as a symbol or rhetoric frame, to illustrate how politics works." Recent studies show how video games become part of an individual argumentative repertoire (Randour et al., 2020; Torres-Toukoumidis et al., 2023). Borges Lima (2017, p. 71) argues that they contribute to day-to-day political discussions when they become part of media narratives. In addition, games can empower players to take civic action by protesting in a playful and expressive manner (Stokes & Williams, 2018) and partaking in playful resistance to authoritarian governance and the capitalist logic of gaming (Huang & Liu, 2022). However, games can also be linked to propaganda dissemination, radicalization, and mobilization by extremist groups (Kowert et al., 2022; Lakomy, 2019; Schlegel & Kowert, 2024).

This study aims to review the existing literature in order to better understand how digital games are being used to convey contemporary political discourse. Given the increasing social polarization, the fragmentation of democracy, the radicalization of extremist groups, and the disinterest of younger generations in politics, it is necessary to study video games as a vehicle to promote political and ideological rhetoric. Specifically, this article seeks to address the following research question:

> RQ: How has contemporary political discourse been explored through digital games in academic literature?

To this end, we propose a new model to analyze political messages in digital games, which we have called the PRICE dimensions model, according to the following categories: participation, representation, ideology, conflict, and education.

2. Methodology

In order to answer the research question of this study, we conducted a qualitative literature review with a systematic approach. Booth et al. (2016) have established three main considerations: first, clarity—meaning a clear structure, focused question, and explicit search strategies; second, validity, referring to the review's relevance and rigor to prevent bias; and third, auditability to increase transparency.

We chose the SALSA (search, appraisal, synthesis, and analysis) framework (Grant & Booth, 2009) as a tool, since it is specifically designed for conducting systematic reviews and aims to streamline the process. This framework comprises four steps: search, appraisal, synthesis, and analysis, which we used to guide the review process and ensure that the data were conceptually rich to provide a better understanding of the phenomenon under study.

2.1. Search

This step comprises organizing the search process, which involves an initial exploration of the literature to obtain an overview of the existing academic work on the topic. This includes scoping search, conduct search, bibliography search, verification, and documentation.

We selected the following multidisciplinary and specialized databases to search for documents: Scopus (Elsevier), Science Direct (Elsevier), Web of Science (Clarivate), Research Library (ProQuest, part of Clarivate), Academic Search Premier (EBSCO), and Dialnet Plus (Fundación Dialnet).

In order to retrieve relevant studies conducted on "contemporary political discourse," we used the following keywords and Boolean operators to build the search equation in English: (("political discourse" OR "political communication" OR "political rhetoric" OR "political message" OR "propaganda") AND ("videogames" OR "video games" OR "computer games" OR "digital games" OR "propagames" OR "serious games")). And for papers in Spanish: (("discurso político" OR "comunicación política" OR "retórica política" OR "mensaje político" OR "propaganda") AND ("videojuegos" OR "juegos de ordenador" OR "juegos digitales" OR "propagames" OR "juegos serios")).

The entire process was recorded in a protocol document to register all the details of the decisions made. In addition, we used Zotero, a bibliographic reference manager, to organize the results into collections and subcollections. We also used tags and saved searches to classify, review, discriminate, and filter out the retrieved documents.

2.2. Appraisal

Appraisal consists of selecting the studies that are suitable for answering the research question. We employed a systematic selection process based on pre-defined inclusion and exclusion criteria to refine the initial set of documents into a collection of relevant studies. To do this, we started with a data corpus of 325 documents retrieved from the previous search. Subsequently, we evaluated each document by applying the following inclusion and exclusion criteria (see Figure 1): journal articles published from January 2013 to September

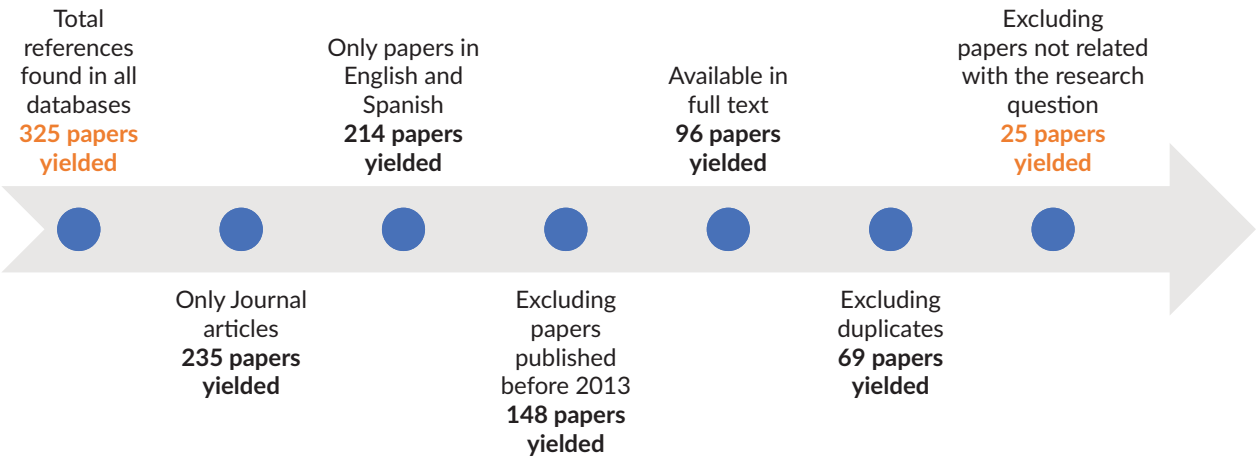

Figure 1. Appraisal process steps.

2023, covering the last 10 years, since we are analyzing literature on contemporary political discourse. Only papers written in English and Spanish were chosen. To ensure an in-depth analysis, only papers with the full text available were included. This allows for a complete evaluation of the methodology, results, and discussion sections, leading to a more accurate and well-rounded review. Then, we removed duplicates. Finally, only papers relevant to the research question were considered. This resulted in 25 papers to be analyzed.

To conduct a proper critical appraisal in qualitative research, it is important to consider whether the findings are applicable, transferable, or generalizable. To this end, Booth et al. (2016, p. 148) argue that "assessing the evidence base focuses on the practical application of research, and similar pragmatism is required when you are performing quality assessment."

2.3. Synthesis

Synthesis is an iterative process that seeks to identify any common threads, patterns, and themes that emerge from the data. In qualitative approaches, synthesis can be aggregative, configurative, or integrative (Booth et al., 2016). Also, it is important to pre-specify and examine the data extraction in order to determine which pieces of data can be identified in each individual study. To this end, we summarized the findings by creating a literature matrix that included the relevant information from each paper selected in the previous phase: ID, reference, aim of the study, theoretical/methodological approach, game genre, game element, political discourse, main observation, other observations, and future research.

In this study, we used interpretative data extraction to optimize the explanatory value of the results. We extracted data in the form of specific findings and illustrative text excerpts. Furthermore, we examined the papers to identify gaps that needed to be filled in future research (Petticrew & Roberts, 2006).

2.4. Analysis

This step involves identifying methods, interventions, and potential research gaps in the field. Booth et al. (2016, p. 274) state that the contribution of evidence synthesis to existing research could be: theory testing or validation, theory generation, problem solving, or fact finding. In this study, we used fact finding. Therefore, we focused on three aspects to explore how contemporary political discourse can be conveyed through digital games.

First, we examined the full text of the 25 final papers to identify the purpose and the theoretical and/or methodological approach—whether quantitative, qualitative, or mixed. We sought to understand the method used and the line of theory or empirical research established. We also classified the papers according to their scope and objective, as outlined by Dempsey et al. (1996): research, theory, review, discussion, and development papers (see Figure 2).

Second, we extracted all the individual game titles mentioned in the selected papers; we decided to only count each single title, independently of how many times it was cited. We then categorized each game according to genre (Sevin & DeCamp, 2020) and identified the most frequently discussed genres in relation to political discourse in the studied papers (see Figure 3).

Finally, we conducted a thematic analysis approach (Braun & Clarke, 2006) on the 25 selected papers. This method is used to identify patterns (themes) within the data that are consistent with the categories of analysis used in this study. We then analyzed the political messages by focusing on figurative meaning (Lempert & Silverstein, 2012; Silverstein, 2003). In addition, we devised the PRICE dimensions model (see Figure 4), an acronym formed by the first letter in each of the following five categories: participation, representation, ideology, conflict, and education. All of them aim to identify and classify the political rhetoric found in digital games, such as the language used by politicians and organizations, election campaign messages, and players' political conversations and behaviors.

2.4.1. Overview of Studies on Contemporary Political Discourse in Digital Games

2.4.1.1. Study Types

In this work, papers exploring political discourse within digital games were categorized (see Figure 2) primarily as research articles ($N = 16$), which seek to contribute new knowledge to the understanding of video games as political and/or ideological tools through systematic data gathering and analysis (e.g., Ashraf, 2013; Hopp et al., 2018). The second category was theory papers ($N = 5$), aiming to enhance understanding and interpretation of games and propaganda by proposing conceptual models or frameworks (e.g., Andrews, 2023; Bossetta, 2019). Less frequent were discussion articles ($N = 2$), which explore ideas, criticize existing perspectives, or examine implications of findings about the persuasive potential of games (e.g., Seiffert & Nothhaft, 2015). The development study ($N = 1$) focuses on practical innovations in video games as technopolitical devices (Carrubba, 2018). Finally, the review paper ($N = 1$) provides an overview and evaluation of research on war games, identifying gaps and suggesting future research directions (del Moral Pérez & Rodríguez González, 2021).

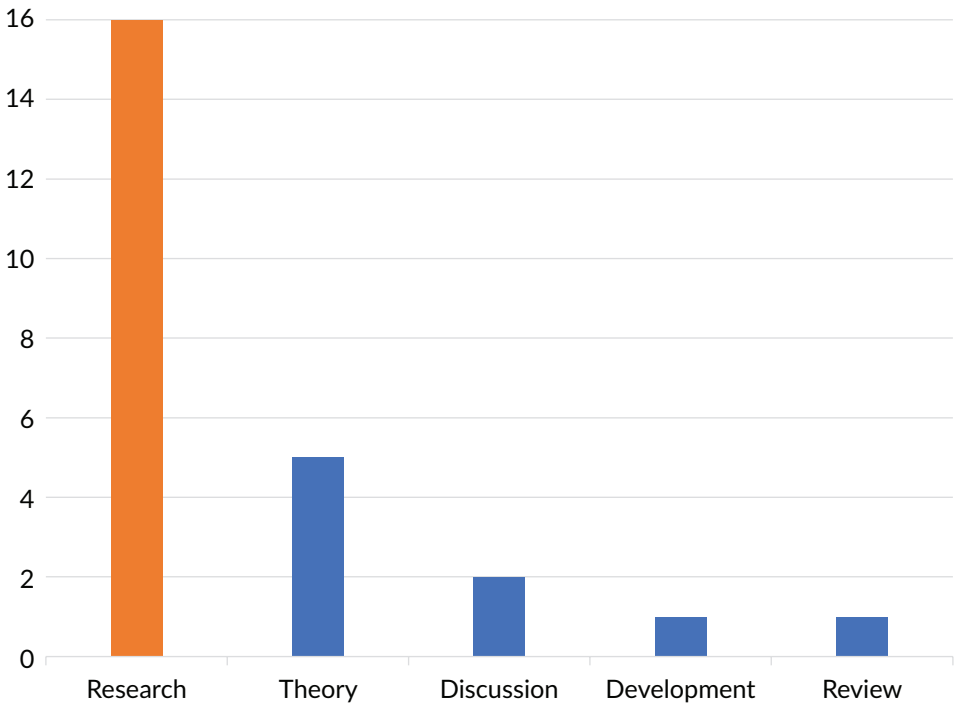

Figure 2. Number of papers classified by type of study. Source: Adapted from Dempsey et al. (1996).

2.4.1.2. Purpose of the Studies

The purpose of the papers can be classified into five thematic groups (see Table 1). First, video games as a tool for digital propaganda (N = 11 studies). Second, video games aiming to raise awareness of political issues (N = 5 studies). Third, games and gamification elements used for radicalization (N = 4 studies). Fourth, game design that justifies, minimizes, or downplays violence (N = 3 studies). Fifth, players' role in conveying political messages (N = 2 studies).

We identified that 23 of the examined papers follow a qualitative approach, 13 of which are case studies. Only two papers can be classified as mixed (qualitative and quantitative). It is plausible that the choice of keywords and the framing of the research question could have influenced the predominance of qualitative studies over mixed ones in the retrieved results.

Table 1. Purpose of the studies on contemporary political discourse in digital games.

Purpose of Study	Number of Studies	Examples in Literature
Group 1 Video games as a tool for digital propaganda	Total: 11 2 QUAL 7 QUAL CS 2 QUAL/QUAN	"The findings reveal that PCGs [political campaigning games] exemplify changing dynamics in digital campaigning, reify the enduring effectiveness of conflict framing, and codify how games can be designed to enact political rhetoric." (Bossetta, 2019)
		"Our previous analysis reveals some ways through which historical military propagames [propagandistic games] effectively integrate entertainment and propaganda. The developers of Kangzhan Online create a local imaginary world instead of a Western one." (Ming-Tak Chew & Wang, 2021)
Group 2 Video games aiming to raise awareness of political issues	Total: 5 3 QUAL 2 QUAL CS	"The 4 video games proposed as part of this study have been received as political communication tools around the theme of housing and tourism, proposing awareness-raising processes in the players, as well as links between the community of game creators and the community of activists who develop activities in urban spaces." (Carrubba, 2018)
		"Video games, as a mediated experience, are a unique format through which to denounce human rights violations and encourage critical judgment." (Moya Martínez, 2021)
Group 3 Games and gamification elements for radicalization	Total: 4 3 QUAL 1 QUAL CS	"Along with these modifications, titles directly linked to the terrorist world have also been developed, such as the Special Force saga, linked to Hezbollah. The West also has a high responsibility in relation to this propagandistic and video-ludic game, because for years and years, in its great war titles it has identified the enemy with Islam, enhancing a negative and demonized image of the same among the general public." (Moreno Cantano, 2022)
		"Both gamification and video games have the potential to influence radicalization processes. Top-down as well as bottom-up gamification have already been observed in relation to extremism, attesting to the increasing prominence gamified elements have for the development of tools by extremist organizations." (Schlegel, 2020)

Table 1. (Cont.) Purpose of the studies on contemporary political discourse in digital games.

Purpose of Study	Number of Studies	Examples in Literature
Group 4 Game design that justifies, minimizes, or downplays violence	Total: 3 1 QUAL 2 QUAL CS	"This article argues that the desire to minimise the impact of in-game deaths by rendering victims as 'monsters' enacts a type of cultural violence by dehumanising them. This aesthetic dehumanisation of in-game victims echoes propaganda strategies used to justify historical violence." (Kocurek, 2015)
		"The second conclusion is that Japanese video games promote a positive image of the military and warfare. This is not based on racial superiority, as in World War II, but on the defense and protection of the most defenseless individuals." (Galván Jerez, 2016)
Group 5 Players' role in conveying political messages	Total: 2 1 QUAL 1 QUAL CS	"It is found that many aspects of political activism in games tightly align with aspects of everyday life activism, but some aspects appear novel, different, and original." (Cermak-Sassenrath, 2018)
		"The results show the audience's active role in the construction of nationalist identities and demonstrate how authoritarian regimes promote them." (Moya Martínez & Moreno Cantano, 2022)

Notes: QUAL = qualitative; QUAN = quantitative; QUAL CS = qualitative case study.

The reason most papers take a qualitative approach to studying political discourse in video games could be due to the nature of the subject matter. Political discourse is often complex, nuanced, and context-dependent, making it well-suited to qualitative methods that allow for an in-depth exploration of themes and patterns.

As for the prevalence of case studies, these are popular in qualitative research because they allow for an intensive analysis of a specific instance or context. Examining a particular game can provide valuable insights into the dynamics of political discourse within that specific context.

2.4.1.3. Game Genres

We observed that first-person shooters (FPSs) are the most common genre in the studied sample (see Figure 3). They were mentioned on 79 occasions across the papers, representing 36% of the total. Some of the titles mentioned were America's Army, BioShock Infinite, Call of Duty, and Counter-Strike. Following them are newsgames, representing 14.61% of the total with 32 mentions. Games as The Waffler or The Federator are some examples of this genre.

The wide presence of FPS games (entertainment games) in the papers might respond to the fact that they are popular and effectively convey political discourse due to their immersive and emotional gameplay, as well as their wide audience reach, modifiability (the ability to implement mods), and narrative control. They also allow for impactful political messages, emotional resonance, audience engagement, and content alteration for specific political themes. For example:

> Usually, activists select game titles which offer gameplay and game content related to the political message (e.g., violent and militaristic FPS games). Other factors are popularity and availability in the target player community (for example Counter-Strike used as a platform by the activist mod Velvet-Strike). (Cermak-Sassenrath, 2018, p. 64)

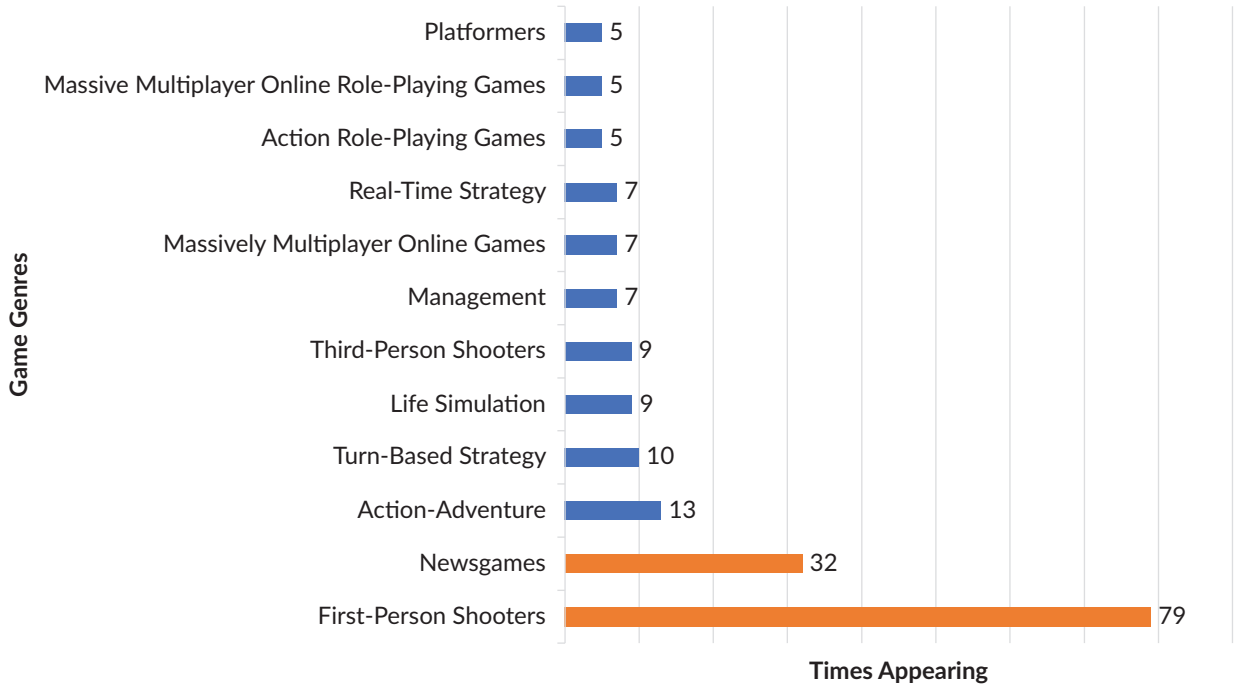

Figure 3. Most frequent game genres in the reviewed papers.

Newsgames (serious games), the second most prevalent game genre in the studies analyzed, can offer interactive engagement with real-world events and issues, providing an engaging and memorable experience. They serve as educational tools with real-world relevance, making complex issues accessible and understandable:

> Political newsgames that fulfill this function are both editorial and educational. In this sense, these games contribute to informed political discussions by presenting facts and data in a way that is accessible to the general public through a cartoonish style, caricatures, and satire similar to traditional political cartoons. (Gómez García & de la Hera, 2023, p. 282)

2.4.2. PRICE Dimensions Model: Identifying Political Discourse in Digital Games

Contemporary political discourse through digital games is portrayed in academic literature in five main ways (see Figure 4): (a) participation by protesting, voting, and producing in the game world; (b) representation of political figures, political parties, and political events; (c) ideology for promoting, criticizing, recruiting, raising awareness, and building identities; (d) conflict by presenting and gamifying; and (e) education by gamifying, motivating, interacting, and reflecting.

2.4.2.1. Participation

By participation, we refer to the way in which digital games encourage citizens to engage with political processes. We found that the most common forms of civic participation discussed in the papers are protesting, voting, and producing.

Figure 4. The PRICE dimensions model.

In regard to protesting, players dissent through symbolic actions and in-game political expressions, such as rallies, demonstrations, pacifist guilds, and gender-bending (Cermak-Sassenrath, 2018). Similarly, they defend causes, such as real-life political positions, lifestyle choices, and in-game practices. Through game mechanics like standing, sitting, walking, or sailing to occupy a location, players imitate aspects of real-life activism. They use signs with political slogans, images, and symbols, and reproduce typical behaviors, such as addressing and discussing with passers-by and counter-demonstrators. Moreover, players integrate original aspects like shouting or chanting (text, voice chat, or pre-recorded audio) into their performances. For example:

> Two areas of activism can be identified which exclusively refer to in-game practices. One is works which protest and aim to overcome game violence; the other is works which protest rules and policies (such as top-down corporate control without residents' participation in Second Life). Activists might also protest against the imminent shut down of a platform, such as Club Penguin. (Cermak-Sassenrath, 2018, p. 64)

Concerning voting, through in-game persuasive strategies, political marketers intend to attract young voters in an entertaining space (Soto de la Cruz et al., 2023). One example is provided by Bossetta (2019, p. 3434): "The game's final boss, Theresa May's battle bus with the slogan '#LIES,' primes players to make the connection between the Conservative Party and the highly controversial messaging used by the Vote Leave campaign in the 2016 Brexit referendum."

As for producing, players take on the role of game developers by producing mods of commercialized released games to enhance the gaming experience (Cermak-Sassenrath, 2018; Robinson & Whittaker, 2020). In this sense, sympathizers of extremist groups and terrorist organizations create mods to engage with and spread their ideology (Schulzke, 2014, 2016):

> To take an illustrative example, the modifications that have been made to the game ARMA3 to allow the player to play as a member of IS/AQ necessarily still rely on gameplay structured by the original game. While the changes serve to shift the positionality of the player, enabling them to embody a group that was absent from the original game—and in so doing, also allows the player to shoot and destroy those from "the West" that the original game frames as heroes—it still uses gameplay mechanics from the original. (Robinson & Whittaker, 2020)

2.4.2.2. Representation

Representation means characterizing, symbolizing, and giving a sense of authenticity to politicians and government institutions through political rhetoric in entertainment games and serious games. The papers studied mention the use of a pixelated or cartoonish aesthetic to convey political messages for parodic or humoristic purposes (Gómez García & de la Hera, 2023). In the analyzed studies, representation takes three forms: political figures, political parties, and political events.

In relation to political figures, with in-game political communication strategies, candidates seek authenticity by cultivating a youthful public image (Cerqueira Sobrino, 2020) and aim to foster players' emotional empathy (Soto de la Cruz et al., 2023). In this sense, some papers examined candidates' strategies to reach younger voters through new channels and formats, such as Twitch and games like Among Us.

> The case of Alexandria Ocasio-Cortez, who on October 20 livestreamed on Twitch a game, along with prominent content creators, of the video game Among Us, with a peak audience of more than 400,000 people connected at the same time, in which [sic] could be established as a new form of connecting with the people. (Cerqueira Sobrino, 2020)

Relative to political parties, these can promote their political position through communication strategies using metaphors, such as fights, races, and tropes, to frame politics (Bossetta, 2019). In electoral campaigns, advergames (branded games) can serve as vehicles to convey a political agenda. For example:

> Fiscal Kombat clearly characterizes the campaign as a battle, not only through its storyline but also through a "beat-'em-up" style of gameplay. Corbyn Run, meanwhile, conveys campaigning as a race, encoded through Corbyn's forward motion and his eventual surpassing of Theresa May's battle bus. (Bossetta, 2019, p. 3437)

Concerning political events, the persuasive potential of video games allows game developers to create and recreate real-life events and situations linked with politics, such as wars, terrorist attacks, and social revolutions, in a playful format. They often do so to maintain a certain image or to change the established perception of these events (Ming-Tak Chew & Wang, 2021; Moreno Cantano, 2022; Schulzke, 2014, 2016):

> Kangzhan Online encourages gamers to cultivate memories of the War of Resistance. It does this through both game design and game management. Like most historical military games found in Western markets, Kangzhan Online's design realistically reproduces war-related details in its imaginary world. (Ming-Tak Chew & Wang, 2021, p. 9)

2.4.2.3. Ideology

Ideology focuses on how political ideologies are addressed in video games. We have identified five ways in which this occurs throughout the articles: promoting, criticizing, recruiting, awareness, and identities.

In regard to promoting, political and ideological organizations seek to persuade players with pro-war messages (Galván Jerez, 2016), entertainment and authoritarian propaganda (Ming-Tak Chew & Wang, 2021), and radicalization by desensitizing individuals to violence (Schlegel, 2020). This includes extremist views:

> Video games with extremist content may play a part in facilitating susceptibility to radicalization by familiarizing individuals with narrative structures, such as a return to a glorified past, the importance of individual agency and the individual capability (if not duty) to fight evil, advocated by many contemporary extremist movements. (Schlegel, 2020, p. 26)

Concerning criticizing, games can take positions on social and political issues by condemning the dangers of nationalism and fanaticism in historical portrayals (Schubert, 2018), as well as endorsing war-making to the detriment of peacemaking (Hopp et al., 2018). One example is BioShock Infinite's visual manifestation:

> In terms of how the events at Wounded Knee are portrayed in this exhibition, the Native Americans appear as the sole aggressors, with no mention of a massacre committed by US soldiers, instead honoring their heroic battle. Again, this depiction is partly influenced by the actual history of Wounded Knee, which at times was also considered a "battle" in US history but is nowadays usually recognized as a massacre. (Schubert, 2018, p. 15)

As for recruiting, political, military, and terrorist organizations use video games to engage or recruit young people. Moreno Cantano (2022) explains this phenomenon:

> Video games have a strong emotional charge, significant psychological impact, and a vast field of dissemination thanks to the Internet. This interest has not gone unnoticed by the most dangerous terrorist organizations, especially those related to Islamic jihadism, which have used this medium to spread their messages and try to garner support for their cause among young people, those most familiar with this digital format. (pp. 399–400)

In relation to awareness, games can create new playful narratives to raise citizens' awareness of political issues. We found that the studied papers discuss urban phenomena like housing shortages or homelessness (Carrubba, 2018), denounce human rights violations, and encourage critical thinking (Moya Martínez, 2021). This example illustrates an effort to raise citizen awareness by playing as a homeless character:

> The game [The Last Hope] is a simulation of the day-to-day life of a homeless person. Its aim is to invite the player to put themselves in the shoes of this individual to experience the problems of this group first-hand, as well as to connect this experience with the available data on the homeless population in the city of Barcelona. (Carrubba, 2018, p. 229)

As for identities, video games use narratives to foster communities. These are often rooted in nationalistic values, cultivating a sense of belonging among players (Moya Martínez & Moreno Cantano, 2022):

> Individual users like Gu Wenlong, who has created within the video game H1Z1: King of the Kill (Daybreak Game, 2015) the group Red Army, which attacks in this virtual space any foreign player who goes against China, forcing them to shout "China No. 1" if they do not want their avatar to be eliminated. (p. 31)

2.4.2.4. Conflict

Conflict refers to how political conflicts are described, resolved, or promoted within digital games. In the studied papers, two modes are discussed: presenting and gamifying.

In regard to presenting, games can create a positive image of powerful countries or extremist organizations, as well as seek a moral justification for criminal interferences (Ashraf, 2013) by dehumanizing in-game enemies and masking the impact of in-game deaths by alternative blood and monstrousness (Kocurek, 2015). Also, through the cult of the insurgent (Schulzke, 2014), games can be used to rationalize the use of force (Schulzke, 2016), presenting countries like Russia, the Middle East, and Latin America as real-world threats (Valeriano & Habel, 2016). Here is an example of how conflict can be depicted:

> Games about the Israel–Gaza Conflict relied on many of the persuasive techniques that are ubiquitous in propaganda. Each game constructed the conflict in a way that supported a particular side by demonising the opponent, affirming the favoured side's justness, and excusing that side's actions. (Schulzke, 2016, p. 592)

Concerning gamifying, terrorist organizations can use game elements to manipulate reality. In attack footage, terrorists can imitate or resemble FPS games, increasing the affective appeal of propaganda (Andrews, 2023). For example:

> The obvious point is that Christchurch, and similar attacks, produced footage that looked like FPS games that strive to be realistic, and which place a heavy emphasis on modern warfare, accurate reproduction of weaponry, lifelike animations, and immersive game mechanics that mimic the tropes of popular war media. (Andrews, 2023, p. 62)

2.4.2.5. Education

Education consists of using video games to instruct players about certain political issues through soft news and historical content. In the studied papers, we observed four ways to accomplish this: gamifying, motivating, interacting, and reflecting.

In relation to gamifying, players and educators can benefit from game elements applied to educational contexts to explore and understand the historical context of war. In this regard, Díaz (2014, as cited in del Moral Pérez & Rodríguez González, 2021, p. 221) argues that the gamification of war scenarios and first-person gameplay help to understand and empathize with victims by making decisions in extreme situations. It prompts reflection and attitude change.

As for motivating, through games, students can immerse themselves in virtual worlds that encourage learning and reward players who adopt non-violent strategies.

> These video games can promote learning of historical content, although it is acknowledged that not all of them faithfully represent historical facts. Some merely present events in a trivial and decontextualized manner, omitting crucial elements, such as the causes that led to wars and their resulting consequences. (del Moral Pérez & Rodríguez González, 2021, p. 224)

Regarding interacting, games can be used for educational purposes to promote social connection among students in attractive scenarios. In this sense, Marcano (2014, as cited in del Moral Pérez & Rodríguez González, 2021, p. 216) explains that it enhances sensory perception and fine motor skills, social competence when playing in a team, and tolerance towards weaknesses and differences.

Finally, for reflecting, through games, players are encouraged to develop critical thinking, particularly on political issues (Gómez García & de la Hera, 2023) and moral dilemmas. This is illustrated in the following example:

> Spec Ops: The Line promotes reflection and provokes a feeling of guilt in the player for the decisions made; This War of Mine shows the emotional impact of war on victims, allowing for reflection on moral dilemmas, and the Metal Gear series offers a critical view of the Cold War from the perspective of the opposing sides. Meanwhile, the study focused on the Call of Duty series shows a biased view of various war conflicts by omitting the presence and suffering of civilians. (Verino, 2019, as cited in del Moral Pérez & Rodríguez González, 2021, p. 223)

In summary, political rhetoric in digital games can be studied using the PRICE dimensions model as a systematic model, which can be an effective tool for understanding current knowledge of this topic.

3. Future Research

After analyzing the selected articles, we identified research gaps that need more attention from the academic community. Following the same reasoning as in the Analysis section, the 25 papers were classified into the five established thematic groups, as we did when categorizing the studies according to their purpose (Section 2.4.1.2).

First, video games as a tool for digital propaganda: On this topic, future studies could investigate the effects on players' political interest and participation in propagames and compare it with the exposure to political advertisements (Bossetta, 2019; Soto de la Cruz et al., 2023). In addition, multidisciplinary studies could provide a better understanding through an in-depth analysis of the discourse within the games themselves

(Gómez García et al., 2022). It is also necessary to study the new contexts and new actors in video games generating propaganda (Schulzke, 2016). Similarly, how propagames integrate entertainment with authoritarian propaganda could be examined (Ming-Tak Chew & Wang, 2021). Finally, the use of live-streaming gaming platforms as advertising spaces for political purposes needs to be explored (Cerqueira Sobrino, 2020).

Second, video games aiming to raise awareness of political issues: In this category, further research could study the use of video games to explore citizens' reactions to different social issues in different urban contexts (Carrubba, 2018). Addressing the critical aspect of war games could also be necessary, particularly in how they present events, facilitate critical thinking (del Moral Pérez & Rodríguez González, 2021), and incorporate civilians in decision-making (Valeriano & Habel, 2016).

Third, games and gamification elements for radicalization: Future studies could examine the psychological harm online activity can have in the physical world, as well as how recruitment and radicalization might take place in the metaverse (Lakhani, 2023). In this vein, further research is needed on how extremists, terrorists, and their sympathizers engage in game spaces (Robinson & Whittaker, 2020).

Fourth, game design that justifies, minimizes, or downplays violence: Future research could explore whether the vilification of certain ethnic groups in video games has real-life consequences (Kocurek, 2015). Studies might also analyze whether masking violence in video games desensitizes players to violence in real life or, on the contrary, creates a clearer separation between the fantasy world and the real world (Galván Jerez, 2016).

Fifth, players' role in conveying political messages: An in-depth study on how players disseminate political views and organize rallies and demonstrations within video games would be necessary, as well as how they use other adjacent platforms, such as YouTube (Cermak-Sassenrath, 2018). Similarly, further research could address the analysis of gaming communities as opinion spaces for digital technonationalism (Moya Martínez & Moreno Cantano, 2022).

4. Conclusion

The aim of this study was to review existing literature on how digital games are used to convey contemporary political discourse. We used the SALSA framework, which is an effective tool for a systematic literature approach. A novel contribution of this study is the PRICE dimensions model, a systematic model providing categories and subcategories to identify and classify current political rhetoric in digital games.

The results show that most of the papers examined fell under the category of research, indicating a strong empirical approach to understanding this complex intersection of politics and gaming. Theory, discussion, development, and review studies were also present in the sample, in this order.

The methodologies employed in these papers predominantly involve qualitative approaches and case studies, underscoring the importance of theoretical analysis and empirical research in examining current political discourse within gaming spaces.

The papers analyzed primarily fell into five thematic groups according to how political discourse is integrated into video games, namely the use of games as digital propaganda tools, their ability to raise political awareness, the role of gamification in radicalization, game design that justifies, minimizes, or downplays violence, and the role of players in conveying political messages.

In our sample of studies related to political rhetoric, we observed that FPSs are the most frequently explored genre followed by newsgames. The prevalence of FPS games mentioned and discussed in the analyzed papers may be attributed to their ability to convey political messages effectively through immersive and emotionally engaging gameplay, their extensive audience reach, their modifiability, and narrative control.

Acknowledgments

The authors would like to thank the anonymous reviewers for their constructive feedback.

Conflict of Interests

The authors declare no conflict of interests.

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Media and Communication
2025 • Volume 13 • Article 8667
https://doi.org/10.17645/mac.8667

ARTICLE

Open Access Journal

Experiencing the Call of Duty: Exploring Emotions in Commercial War Games

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Submitted: 13 May 2024 **Accepted:** 29 July 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

This article explores how players interpret and reflect on themes in mainstream war videogames, specifically the Call of Duty franchise. Scholars have long focused on the ideological content of war games, which is marked by increased collusion of military institutions with the gaming industry and assumptions about the influential capabilities of war games, in which player agency is often downplayed. This study builds on Lenoir and Caldwell's (2018) observations that the interpretation of mainstream franchises should focus more on their attempts to create an "affective framework" that emphasises certain emotions in players. Through a thematic analysis of semi-structured interviews with 25 participants, this study found that participants outlined their discomfort in certain missions, to the point where they even altered their playstyle, suggesting that players often reflect critically on the aspects of war these games explore. This article concludes that mainstream franchises, like Call of Duty, should be considered complex cultural artefacts consisting of various layers of meaning. Rather than directly transmitting militaristic ideologies, these games craft an emotional aesthetic capable of exploring more controversial aspects of war. The key to understanding these franchises lies directly with the players themselves, which is why audiences should be treated as conscious agents who play an active role in drawing meaning from such an aesthetic.

Keywords

affect; audience research; Call of Duty; commercial war games; emotion; military; videogames

1. Introduction

Videogames have come a long way from the moral panics and associations with societal violence dating back to the 1990s. At the centre of this controversy was the first-person shooter (FPS), which continues to be one

of the most popular gaming genres. Over time, however, FPS games have come to be defined by their embrace of militaristic themes and narratives (Voorhees, 2012). According to Schulzke (2020, p. 141), military games celebrate simulated violence as necessary acts that aid national security interests and encourage players to identify with real armed forces. Most Western-made military-themed games allow players to experience a predominantly celebratory view of war. This has led to a growing concern amongst scholars over the potential of these games to reinforce certain attitudes surrounding war and the military (Nieborg, 2010; Power, 2007). However, Sicart (2016, p. 317) outlines that it is possible to view military games as devices for reflection, which create experiences that are open to more nuanced interpretations. Therefore, within these discussions, it is also essential to acknowledge the active role of the player in determining meaning from topics covered within the games they play.

This article seeks to understand how players, as active participants, determine meaning from their experiences playing war-themed games. The term "war-themed games" incorporates various genres, but this research looks at civilian-developed FPS games, namely Call of Duty. The article sets out to answer the question: How do players make meaning from their experiences playing commercial war games? Drawing from 25 semi-structured interviews conducted with active videogame players, the article demonstrates that players came to define their experiences through the emotions they felt during play. More specifically, participants outlined numerous missions that channelled more negative emotions, such as guilt and discomfort, in which certain moments made for an unsettling experience. This study highlights how commercial games create an affective experience of war and that certain mainstream games expand on this by confronting players with moral dilemmas which expose them to the harsh realities of war. Despite franchises like Call of Duty glorifying conflict, they also feature immoral moments that highlight more controversial aspects of war, including war crimes and the consequences of war on civilian populations. These controversial moments place the player in uncomfortable situations, which open opportunities for reflection on the game's content and their virtual actions. The key to understanding these war games lies with the players, who play a crucial role in determining meaning.

The article begins by exploring debates on military videogames and how they have come to be defined by their celebration of military themes and support for militarisation. Commercial videogames play a pivotal role in this process, and their popularity among gamers demonstrates how entrenched militaristic themes have become, especially within the FPS genre. The article proceeds to explore the unique way commercial war-themed games generate meaning by exploring Lenoir and Caldwell's (2018) "affective framework," which outlines the affect of emotions within these games, which immerse players into a personalised war experience. The article sets out the research methodology and how audience-based interviews with players can contribute to a better understanding of these affective experiences. The analysis explores how participants experienced more negative emotional reactions to two campaigns from the Call of Duty franchise: Modern Warfare 2 (Infinity Ward, 2009) and the reboot of Modern Warfare (Infinity Ward, 2019)—these moments confronted players with moral dilemmas, which left them feeling guilty and uncomfortable, providing opportunities for reflection on their virtual actions.

2. The Military and Gaming

Most of the existing literature characterises military videogames through their close affiliation with the military, with scholars from various disciplines documenting the extensive structural relationship between

game developers and the military dating back to some of the earliest videogames (Halter, 2006; Herz, 1997; Huntemann & Payne, 2010; Lenoir, 2000). This historic collaboration between the military and the gaming industry has come to be understood as the "military–entertainment complex" or what Der Derian refers to as the "military-industrial-media-entertainment-network" (Der Derian, 2009, p. 83). One of the most infamous products from this collaboration is America's Army (US Army, 2002), a game created by the US Army to encourage players to enlist in the military. However, these structural studies serve as primarily descriptive studies that reveal little about the content of these games. Schulzke (2013, p. 72) argues that demonstrating these military connections does not tell us what ideological messages the games promote or how military games are experienced. Other studies have focused more on the content of military games, like America's Army, and have accused them of promoting militaristic ideologies that contribute to the growing militarisation of society by glamorising war and promoting military service (Nichols, 2010; Robinson, 2012). Power (2007) notes that military games put a "friendly, hospitable face on the military, manufacturing consent and complicity among consumers for military programmes" (p. 278). Delwiche (2007) provides the most literal take on the military themes found in videogames by claiming that they "have the potential to shape attitudes and behaviour in ways that Goebbels could never have dreamed" (p. 92).

However, irrespective of the messages within games, the assumption that players will simply absorb these messages without critical reflection is problematic. The audience plays an active role in determining meaning, which should be taken into account when considering the effects of war games. Players demonstrate some degree of agency in how they play and experience videogames, which makes it challenging to make definitive assertions about a game's meaning (Schulzke, 2017, p. 615). Stuart Hall outlines the various ways audiences can read a text in his "encoding/decoding" model, where reading falls into three categories: it can be "dominant/hegemonic" in that it follows the encoded message inscribed into the text; it can be oppositional in that audiences reject the message; and it can be negotiated (S. Hall, 1980). Audience engagement with popular media is complex, and they often negotiate and struggle over the given meaning of a product (Glynn & Cupples, 2015, p. 272). Therefore, any analysis looking for "ideological reference in a given video game might yield astonishingly different results depending on the diversity of players' values" (Cassar, 2013, p. 341).

Audience-based research has previously emphasised the diverse ways players experience military games, with very few fully subscribing to their themes. Huntemann (2010) conducted interviews with 26 military videogame players and found that while these games create a sanitised fantasy that glamorises military action, she was unconvinced that they prevent players from critically engaging with the content. Festl et al. (2013) carried out a representative survey of 4,500 gamers and concluded that the "development of militaristic attitudes cannot be attributed to the use of military-themed computer games" (p. 403). Even games that are considered more critical in their messaging can reveal the diversity of player engagement. For example, Jørgensen (2020, pp. 84–85) conducted an ethnographic interview with players of This War of Mine (11 bit studios, 2014), a survival game that focuses on the civilian experience of war, and found that some players were opposed to the rhetorical messages of the game. Relating to Hall's "encoding/decoding" model, these reception studies demonstrate that the way audiences interpret messages is not as straightforward and underscores the idea that the meaning of a given piece of media is contested and subject to multiple interpretations. Players do not always accept the meaning of a videogame but offer a more active role in determining meaning from their gaming experiences, allowing for more significant insights into the militaristic themes in these games and how players come to make sense of them.

3. Affective Experiences in Commercial War Games

It is important to consider how audiences make meaning from military games, especially considering how popular the genre has become over the past 20 years. The turn of the 21st century saw the rise of popular commercial military-themed games, including FPSs, such as Call of Duty and Battlefield, which have become some of the most successful franchises in the gaming industry and have immense global outreach. Militarism remains integral to these games, which adopt an Anglo-Western political and ideological perspective on war through narrative themes and visual imagery (Godfrey, 2022). Commercial war games invite players to participate in a cinematic experience of past, present, and even futuristic wars. For example, Call of Duty (Infinity Ward, 2003) originally started as a World War 2 shooter, allowing players to participate in historical battles like D-Day. In 2007, Call of Duty leapt into a more contemporary setting with the release of Modern Warfare, which explored issues including terrorism and the threat of nuclear war. The content of these games has undeniably been shaped by real-world events, especially in the aftermath of 9/11 and the "War on Terror" (Robinson, 2019, pp. 14–15). The world in these games is depicted through a Western lens, and they "draw upon and are reflective of contemporary US geopolitical intrigues" (Bos, 2018, p. 57). According to Gagnon (2010), games like Call of Duty echo the militarist ideology that has been dominant in the post-9/11 US national security debate. These studies demonstrate how prevalent militarism is within commercial war games in which players are immersed in an entertaining war experience inspired by modern geopolitical developments.

Developers exert considerable effort to make an entertaining and pleasurable experience for consumers, and at the core of these franchises is their emotional appeal. Lenoir and Caldwell (2018) argue that the focus on commercial games as being grounded in communicating militaristic ideologies is unfruitful, and more attention should be paid to how they create an entertaining and stimulating experience that appeals to players. They suggest the key to understanding commercial military games is through:

> The construction of an aesthetic—an affective framework for experience—that targets and exploits embodiment more than cognition to immerse the player in the game world. Far from concerning themselves with communicating propagandistic values or skills that are unique to the military, wargame developers focus their most significant efforts on constructing the gaming experience—that is, how players feel when immersed in their game. (Lenoir & Caldwell, 2018, p. 84)

In their view, commercial games can be better understood through their attempts to translate war, an act that is not inherently pleasant, into a positive affective experience that is entertaining for the player. The priority for developers is to create an exhilarating experience that depicts war as a spectacular event with which consumers can connect. War itself is not fun on its own and requires significant rewriting in order to create an experience that players support, which works to both legitimise and normalise the act of warfare (Godfrey, 2022, p. 679). Franchises like Call of Duty emphasise certain emotions through their sensational and dramatic narratives, exhilarating set pieces, and well-written characters, which all combine to create a positive affective encounter of war that makes players feel excited and heroic. Call of Duty is infamous for its cinematic cutscenes and scripted set pieces that give the game meaning and "convey a stronger emotional punch" (Sicart, 2016, p. 311). Commercial war games utilise more pleasurable encounters to stimulate affect, which plays an influential role in shaping contemporary military imaginations. Dittmer and Bos (2019) note how commercial war games generate an affective experience of war, but one stripped

of danger and consequences. It is, therefore, not surprising that most commercial games present a more sanitised experience of war that fails to cover more controversial and negative aspects of conflict, such as the consequences of severe acts of violence. In this way, a flawed reality of war is presented (Pötzsch, 2017, p. 160). Creating a sanitised war experience makes playing the game less problematic and more enjoyable, encouraging broader demographics to buy the game.

In addition to the affective framework outlined by Lenoir and Caldwell, other scholars have emphasised that war-themed games utilise emotions to constitute specific meanings. Payne (2016) uses the concept of "ludic war" as a "pleasurable experience of playing military-themed videogames" (p. 11). Games like Call of Duty are described as "first-personal shooters" as they appeal directly to the player's emotions by making them empathise with narratives of military sacrifice. He also uses the term "sacrificial citizenship" to describe how avatars, and, by extension, the player, "participate in dramatic acts of virtual patriotism" in service of their virtual nation (Payne, 2016, p. 92). In the opening mission of Modern Warfare (Infinity Ward, 2007), the player experiences a segment in which their character is executed by a gunshot to the face by a terrorist called Al-Asad. This "face-to-face" confrontation sets up the plot and serves as a critical moment in which the imagery of Al-Asad pulling the trigger becomes "the face of enmity, and the fight is made personal" (Welsh, 2012, p. 403). Seeing their own avatar or another squadmate die is a very personal moment for the player and is likely to create a strong emotional response if the player has developed a close attachment to that character.

This affective framework primarily considers how videogames create powerful emotional moments that shape players' attitudes on specific issues and contribute to a more positive outlook on war and the military. However, it is important to consider that affect is not just used for militaristic means but is pliable and can be put to any end of any political persuasion (Dittmer & Bos, 2019, p. 139). When discussing emotions in videogames, it is important to look beyond the facilitation of positive affective experiences when, in actuality, videogames offer complex, paradoxical emotional experiences that can also be precarious and unpleasant (McSorley, 2020). In other words, it is just as possible for these games to explore more negative emotions and create a distressing experience for the player. Players should be considered an essential element when making sense of this emotional aesthetic. Through their interactions with games, they have the capacity to critically consume and reflect on their in-game actions (Bowman et al., 2022). Through considering the complexities of emotions in war games, it is important to understand how players make meaning from this aesthetic, especially when considering the possibility of videogames presenting players with more controversial aspects of war. When discussing the effects of videogames, scholars tend to downplay the agency of players in constructing meaning. It is crucial to acknowledge that audiences play an active role in how they make meaning from their experiences. Furthermore, given the success of commercial war game franchises like Call of Duty, it is important to consider the emotional impacts of these games, specifically the impact of more negative emotional experiences on how players determine meaning. This research will engage directly with gamers to understand how they experience commercial military games, specifically focusing on their emotional reactions during play. The following section outlines the methodology used to explore how players make meaning from their in-game experiences.

4. Methodology

This study is part of a larger project that delves into the ideological complexities of modern military videogames. A key aspect of this project is to consider the viewpoints of players, aiming to contribute to a

more comprehensive understanding of how average gamers make meaning from the games they play. In line with Jørgensen's (2011, 2020) call to include more player perspectives in serious videogame investigations and treat players as experts, this research examines how players interpret and determine meaning from playing commercial war games.

The study involved 25 FPS players who expressed an interest in military-themed games. A poster campaign across Newcastle upon Tyne, UK, was used to recruit participants. Gaming-related student societies were contacted across universities in the North-East region (Northumbria, Newcastle, Sunderland, and Teesside). Advertisements were also posted in online forums, including Reddit and Discord servers, which catered to FPS games, including Call of Duty. The online recruitment strategy proved to be a significant asset, attracting international players and providing a unique global perspective on how different audiences experience commercial military games. Participants hailed from the UK, the US, Ireland, Greece, Hungary, Brazil, and the Philippines. Twenty participants identified as male, three as female, and two as Other. They were invited to participate in an interview to share their experiences playing military-themed games. The interviews were conducted in person in private rooms and online via Microsoft Teams and one-on-one Discord calls and were audio recorded, manually transcribed, and analysed using NVivo. Pseudonyms were also assigned to ensure the confidentiality of participants.

The interview questions were intentionally open, inviting participants to discuss their experiences of any military-themed games they had played. This approach aimed to include more participants from across multiple games, fostering a sense of inclusivity in the study. Call of Duty was discussed by all 25 participants, a testament to the franchise's popularity, having sold more than 425 million copies over 20 years of annual releases (Park, 2023). The semi-structured interview questions followed an established list of open-ended questions that allowed more exploration of areas of interest. Cote and Raz (2015) outline a helpful question structure that involves a series of "warm-up questions" to build rapport before moving on to more "substantive questions" that attempt to collect deeper data (pp. 103–104). The interviews begin with more general questions about what motivations players had for playing FPS games and their gaming habits, which eased the participants into the interview process and gathered information about the participant's background as a gamer before moving on to questions that focused on the participant's engagement with the games, asking them to recall memorable moments. This led to questions about the emotions and reactions of participants at specific moments within the games, reflections on their actions, and prominent themes featured in the narrative. These questions were designed to explore how players interacted with key moments in commercial war games and how they drew meaning from their experiences.

Using a thematic analysis of the interviews, the study found that Call of Duty created an emotionally charged experience that resonated with participants. More specifically, players outlined that they remembered more uncomfortable and controversial moments from their time playing, which often made them critically reflect on the themes of the narrative and the consequences of their virtual actions.

5. Analysis

Call of Duty has several different modes of play in which players can immerse themselves. Almost every Call of Duty entry in the franchise (apart from Black Ops 4 in 2018) contains a single-player campaign, a story-driven experience spread across several missions. Call of Duty is also renowned for its online multiplayer, which allows

for social interaction with other players and a progression system that gives this mode a high replay value and heightens the appeal amongst players (Marcano Lárez, 2014, p. 35). While all the participants admitted to spending most of their time playing the multiplayer mode, this did not mean they neglected the single-player experience. Ethan (21) outlined how he approached each new Call of Duty release:

> With Call of Duty, the campaign is still essential to the experience. Once you finish the campaign, you go and play multiplayer with friends. But I will always make sure to play the campaign first before I touch any of the other modes.

Ethan described a ritual among Call of Duty players: They initially play through the single-player campaign before moving on to the online modes. Nevertheless, despite the more limited engagement with the single-player, at least compared to the multiplayer, it still formed an integral part of the player's overall experience. It was frequently mentioned within the interviews, except for two participants who claimed they stopped playing the campaigns as they grew older. Regardless, the participants could recall their time playing specific missions in the campaign mode and discussed key themes and events in great detail.

The analysis focuses on two Call of Duty games that routinely came up throughout the interview process. The first part examines the infamous mission "No Russian" from Modern Warfare 2. This mission is notable for the controversial decision to make the player participate in a terrorist attack, sparking intense discussion amongst players. The second part explores two missions from the 2019 Modern Warfare reboot: "Old Comrades," which allows the player to take part in an interrogation; and "Hometown," a mission that introduces a playable child for the first time in the franchise.

5.1. Analysis: "No Russian"

"No Russian" is the third mission in the Modern Warfare (2009) campaign. CIA agent Joseph Allen, the playable protagonist of the mission, is sent undercover to win the trust of Russian ultranationalist terrorist Vladimir Makarov, who is planning a false flag attack to trigger an international conflict between Russia and the West. The mission begins as the player and four gunmen exit an elevator into the terminal of a Russian airport, and suddenly, they begin firing into a crowd of civilians. There is no indication given in the mission briefing prior that the player would be expected to shoot unarmed civilians. Kyle (24) discussed his reactions to the opening moments of the mission: "It starts as a typical mission; the elevator doors open, and suddenly, hundreds of civilians are being mowed down in front of you."

The player is suddenly thrust into a position where they are now taking part in this mass shooting. The airport section of the mission is populated primarily by unarmed civilians who pose no threat to the player. All 18 participants who discussed "No Russian" in the interviews admitted to taking part in the shooting the first time they played it, and all described it as a different experience from the rest of the game. Oliver (22) claimed that when he aimed down the sights to see unarmed civilians, he felt awful about his actions, which was something he had never experienced in a game before. He reflected on his gaming habits and said:

> When playing these games, you're in a "shoot and kill mode." When those elevator doors opened, I started shooting. I willingly participated in that, and I don't know how to feel. It's just something you've been doing for the entire game, and now, suddenly, it feels bad.

Players like Oliver had become accustomed to the core mechanics of these FPS games, which involve shooting armed enemies. The core mechanics of "No Russian" are no different, with the only exception being that the area is populated with defenceless civilians. The civilians' behaviour reinforces their status as innocent people who pose no threat to the player. Some civilians attempt to surrender, whilst others drag the bodies of wounded people to safety. Players are constantly confronted with the brutal consequences of the shooting as they are forced to slowly walk through the terminal as the massacre unfolds. The combination of civilian behaviour and deliberate restrictions on the player's movement creates a distressing experience for the player. When asked about their emotional reaction when they were walking through the airport, Karter (25) admitted to feeling bad about their role in the shooting: "It wasn't really a good feeling. Going through it, you think, "What have I just done? What the hell was all that about?" And you talk to your friends about it, and they were all in the same boat."

Karter expressed feelings of remorse over the shooting of virtual civilians, leading to some critical reflection on their morals. This also included discussing the mission with friends, meaning that the emotions felt after playing "No Russian" spurred conversations among players about their actions during this mission. Feelings of guilt among players have been highlighted in previous studies involving virtual violence despite players understanding that no actual actions of aggression have occurred (Krcmar et al., 2018). The experience of "No Russian" instigates these adverse reactions from players, which are grounded in feelings of grief, guilt, and remorse (Bowman et al., 2022). Welsh (2012) believes that "No Russian" is purposefully staged to affect and re-sanitise players to the point where players will likely feel some degree of sympathy for these virtual victims and have genuine concerns about their own involvement in what happens to them (pp. 410–411). By analysing participant experiences, "No Russian" can evoke an affective response from certain players in which they assign some semblance of humanity to these virtual civilians.

There is very little direct agency granted to players during this mission, and it is impossible to prevent the attack from taking place as Makarov and the other terrorists are invulnerable. Sicart (2016) is critical of "No Russian" because of the lack of autonomy given to the player who is placed in an "uncomfortable middle ground that does not help develop a critical understanding of the game actions" (p. 317). However, this study found that certain players altered their playstyles when they played "No Russian." Marc (25) admitted to taking part in the shooting the first time he played, and he recalled that shooting the civilians made him feel uncomfortable. In subsequent replays, he discussed an alternative approach to the mission:

> The difference between then and now was that I figured out you could shoot your gun at the floor or the ceiling to avoid killing civilians. So, there was a way to complete the mission without taking part in the killing.

Marc demonstrated some degree of agency by actively choosing not to take part in the shooting and doing everything in their power to avoid killing civilians. Participants like Marc went against the established conventions of Call of Duty by refusing to kill. Mohammad Alavi, a designer at Infinity Ward, explains how "No Russian" uses player discomfort to create an emotionally charged experience that would remain anchored in people's minds. He explained that the big question of "No Russian" is "How far should America go in the pursuit of homeland security?" and refusing to take part in the shooting is a way for the player to voice their answer through their virtual actions (Purslow, 2023). This reveals that the developers attempted to create moments that confront the player with moral questions, and the player's response to these moments can be reflected through changes in their gameplay.

"No Russian" is an emotionally charged experience. However, instead of making the player feel excited and satisfied, participants recalled that it was an uncomfortable sequence that confronted them with the consequences of their virtual actions. Players had become accustomed to immersing themselves as the hero who defeats the enemy and protects civilians. "No Russian" rips the player out of that fantasy and thrusts them into a distressing position.

5.2. Analysis: Modern Warfare 2019

Participants hesitated to name alternatives when asked about other emotionally intense moments in the Call of Duty franchise; however, Modern Warfare (2019) came up multiple times. Participants discussed how specific missions in the campaign tackled controversial aspects of war, such as the role of non-combatants in conflict zones, which resonated with some participants. Matt (25), for instance, said:

> I rarely replay a Call of Duty campaign after going through it the first time. But I have replayed Modern Warfare 2019 multiple times, even recently. It felt much more realistic regarding the story and tried to take itself more seriously. It was nice to play something more serious and not have everything exploding every five minutes. I loved how grounded and real it felt.

In the interviews, players talked much more positively about Modern Warfare (2019). They praised its attempts to tell a more serious and grounded story rather than creating an exciting spectacle like in previous Call of Duty instalments. Overall, 13 participants discussed Modern Warfare (2019) and outlined how the campaign elicited more negative emotional responses by confronting players with uncomfortable moral choices and visceral imagery.

In the mission "Old Comrades," the player apprehends a terrorist known as "The Butcher" during a chase through the streets of St. Petersburg. The player is tasked with leading the interrogation to find the location of a hidden bomb somewhere in the city. A "package" is delivered to the room, and it is revealed it is the wife and son of "The Butcher" and the player is given a gun and ordered to shoot them as they beg for their lives. Shooting the gun reveals it is unloaded, yet this is not indicated to the player, who believes the gun contains bullets. Henry highlighted this moment in his interview and said:

> I had a trigger finger the first time I played. Aiming down the sights to see a woman and child cowering was a weird experience, but you needed that information. I did take that shot, and you find out it's not loaded. The guilt just flooded over me. I was just like, "Oh no, what have I done?"

Henry indicated feelings of remorse over his actions in the interrogation. The imagery of aiming a weapon towards an innocent child as he pleads for his life elicited an uncomfortable reaction. This moment served as a moment of reflection on just how far the player would be willing to go to get that information, and the act of shooting what they believed was a loaded gun at an innocent woman and child was too much. The revelation that the gun contains no bullets is taken as a moment of relief, but that does not change the fact that players pulled the trigger as if they were going to kill an innocent child. At the end of the interrogation, "The Butcher" finally reveals the location of the bomb after the player is given real bullets to load into the gun.

Given the linear nature of Call of Duty, the player is given limited agency on how to interact in this scene. It is worth noting that players can refuse to take part in the interrogation outright, having it be resolved

off-screen. This allows the player to draw a line on what they would be willing to do. However, all participants who discussed this mission chose to participate in the interrogation. Ryan (28) admitted to taking part in the interrogation but was uncomfortable harming a child and took steps to avoid shooting the hostages before realising the gun was unloaded. He said:

> You can refuse outright. There are many different ways to approach it. But on my first time playing, I went into the room, but I wasn't going to go as far as to shoot a kid, so I just aimed above their heads and fired, and the mission still progressed.

Players like Ryan managed to maintain a degree of agency by refusing to aim at the hostages, shooting at the wall instead. Whilst Ryan was willing to do what needed to be done to get the information, the idea of threatening a child was an act he was not comfortable with. Causing harm to children in a virtual space is still a controversial topic within videogame circles, and it is extremely rare for a game to feature killable child characters (Schulzke, 2020, p. 117). In general, the gaming community tend to view violence against children in games as ethically wrong (Cassar, 2013, p. 349). Developers tend to avoid such content over fear of generating controversy, but, in the case of "Old Comrades," no violence takes place against the child, only the expectation of harm. It serves as a moment for reflection on what the player would be willing to do in the interests of security. The player is given the means to stop a terrorist attack but takes unorthodox actions which involve harming a child. It was a difficult scenario for participants like Henry and Ryan to process.

Another part of the campaign that participants discussed was the mission "Hometown." This mission is a flashback that tells the backstory of Farah, a freedom fighter from the fictional country of Urzikstan, which has been under Russian occupation. The player assumes control of young Farah, who experiences the invasion of her village by Russian soldiers. The player is stripped of their advanced movement, moves significantly slower, and can be killed in one shot, making the mission a highly vulnerable experience. The mechanics attempt to emulate what being a child in a warzone would be like. Players like William (23) discussed how unique the mission was, which made it stand out from the rest of the game, but spoke of how eye-opening it was to experience an invasion through the position of a child: "It was really interesting to see war from a child's perspective. It made me think about how children are affected by war when they happen to be caught up in the middle of it."

Throughout the mission, the player witnesses horrific scenes as Farah flees through the village, including the use of chemical weapons. Farah also sees the deaths of both her parents. Kalim (22), an American-Egyptian gamer, said he had mixed feelings about the mission but praised how it included the experiences of civilians caught up in war:

> It does show the reality of what happens in these combat zones. People are just doing their normal lives; they go to school, hang out with friends, and do normal things. And then, when war comes, they have nowhere to go; they truly suffer, which you never see in videogames because it's unpleasant. It does make you think of the Arab people caught up in the conflict in the Middle East. I just wish they spoke Arabic instead of English. I feel like that was a missed opportunity.

Despite his criticisms of some aspects of the mission's presentation of Arab people, Kalim acknowledged the importance of representing the lived experiences of people currently experiencing conflict. It is rare for a

game like Call of Duty to feature any explicit attention to such issues of war; yet, "Hometown" is an entire mission dedicated to showcasing real people's struggles, which is a unique experience for the player. These reflections relate to the findings of Kessner and Cotes (2023), who believed that missions like "Hometown" created deeply visceral experiences that allow players to develop civic empathy with the lived experiences of their avatar's real-world counterparts. Missions like "Hometown" craft an unsettling emotional experience that raises awareness of the negative consequences of war, which is an aspect rarely featured in commercial military games.

Modern Warfare 2019 is another example of a Call of Duty campaign that creates an affective experience for the player. The campaign confronts players with uncomfortable truths of war and moral dilemmas that depend on the player's actions.

6. Discussion

Throughout the interviews, participants consistently emphasised how they interpreted their experiences based on the negative emotions they were confronted with in missions like "No Russian," "Old Comrades," and "Hometown." These emotions prompted them to reflect on their in-game actions and the problematic themes featured in the narrative. Despite the franchise's celebratory interpretation of war, participants came to define their experiences by recalling moments that made them feel uncomfortable and guilty.

Central to all of these missions is the focus on civilians; their presence raises questions about the conduct of war and forces players to consider the existence of non-combatants, especially when discussing a mission like "Hometown" in which the player embodies a civilian and the trauma they endure. It is rare for a war game to feature civilians. Instead, they often consist of battlefields populated by nothing but enemies and are "conspicuously void of civilians" to maintain a simple and unproblematic depiction of war (Keogh, 2013, p. 2). If civilian deaths are presented, they are usually disconnected from the player's actions. However, the negative emotions recalled by participants in the interviews were typically linked to the presence of civilians in some form.

A common theme was that participants actively contemplated their actions when confronted with civilians. In both "No Russian" and "Old Comrades," the player is positioned in a situation in which they are presented with the possibility of committing horrendous acts that involve harming innocents, whether civilians in the airport or the young child in the interrogation. These moments confronted players with significant moral dilemmas in which they often contemplated their own justifications for their actions. Reflecting on Payne's (2016) concept of "sacrificial citizenship" is particularly relevant here. The idea of giving up one's life for the sake of the nation is a reoccurring trope across many military games, including Call of Duty. However, in "No Russian" and "Old Comrades," players are forced to sacrifice their humanity by committing unspeakable things in the name of national security. For many participants, the game asked them to do something they knew was wrong, making them reflect on their own actions and morals.

Certain players demonstrated agency and interacted with the game space in an alternative way to avoid such negative emotions by refusing to harm civilians whom they regarded as innocent. Ian Bogost refers to exploring the game's space by testing the rules imposed onto the player as the "possibility space" (Bogost, 2007, pp. 42–43). This is important to consider, given the linear nature of the missions in action games like

Call of Duty, in which the game designer maintains authorial control over the player's experience, granting them little interactivity and agency (Schleiner, 2017, p. 79). This contrasts with games like Metal Gear Solid (Konami, 1998), which grants players agency by offering more choices in how the player approaches a mission through incentivising non-lethal stealth. Therefore, the "possibility space" of a game like Metal Gear Solid is much broader compared to linear military shooters like Call of Duty (Jarvis & Robinson, 2021, p. 204). The choice of players not to shoot is impactful, given how shooting at enemy NPCs (non-playable characters) is the primary way for the player to interact with the game world. Linear games like Call of Duty can address moral considerations in their narratives, which affect the overall feel of the game as well as how players' interactions with the games are framed (Schulzke, 2020, p. 131). Player agency is still possible in Call of Duty, as demonstrated when participants altered their gameplay habits when confronted with unsettling situations and moral dilemmas.

7. Conclusion

Commercial videogames, like Call of Duty, have come to be understood through their affective framework, immersing players in an entertaining virtual war experience. This research found that some players made meaning through the negative emotions they experienced playing Call of Duty. Specific missions stood out for these players, which confronted them with complex moral issues, primarily by including civilians within these moments. This led to players experiencing guilt and discomfort, resulting in opportunities to address and reflect on critical issues and their own actions.

However, it is important to reiterate that although the participant discussion in this research highlighted the critical potential of specific missions in Call Duty, the franchise continues to depict a predominantly celebratory view of war and the military. For example, whilst "No Russian" exposes players to moral questions about their role in causing suffering to innocents, the same cannot be said for the rest of the game. Likewise, with Modern Warfare (2019), even though the game attempts to tell a gritty story that emphasises the consequences of war, it still generated controversy for its narrative depictions of certain groups, including Russians. For example, the game replicates the infamous "Highway of Death" in which the US bombed retreating Iraqi military personnel in Kuwait during the 1991 Gulf War. "Highway of Death" is the title of one of the missions in Modern Warfare 2019, in which the Russian forces bombed a stretch of road as civilians attempted to escape (C. Hall, 2019). This study does not claim that these games are inherently critical products. However, they have the ability to explore more controversial aspects of war by facilitating negative emotional experiences that resonate with players and encourage reflection.

It is also important to point out that the experiences outlined by the participants in this research are not universal. Given the relatively small sample size of 25, this study only captures some potential ways players engage with these products. Not all players determine meaning in the same way, so the findings of this study should not be perceived as an assumption of how all players make meaning from Call of Duty but rather that certain players can reflect on their emotional experiences and draw alternative meanings. Audience-focused research provides valuable insight into how videogames are experienced and how their themes resonate with players, and further research should seek to study the ability of players to determine meaning actively. Looking beyond Call of Duty at other commercial war-themed franchises such as Battlefield could produce a more general insight into how these games utilise different emotions in their stories. Furthermore, looking beyond established gamers to analyse how people who are not self-described FPS players make sense of the

themes featured in games like Call of Duty could provide a more diverse understanding of how these games are experienced.

This research seeks to contribute to the conversation on how commercial war games generate meaning by expanding the emotional aesthetic and considering negative affective experiences. Whilst these games often create an entertaining depiction of war, they also explore more troubling themes that are emotionally challenging for the player. The player is the key to understanding this emotional aesthetic, which is why audiences need to be treated as active agents who can engage with their experiences within the game, reflect on contentious issues, and draw meaning from experiencing more challenging emotions.

Acknowledgments

I would like to thank the peer reviewers for their insight and constructive feedback and the support and advice from my supervisors during this process.

Funding

This article is part of a wider PhD project in international relations at Northumbria University, which is funded by a research studentship provided by the Department of Social Sciences at Northumbria University.

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About the Author

Joseph Pattison is a PhD student in International Relations at Northumbria University. His research examines ideology and political messaging in modern military videogames and how players experience them. His main areas of interest in videogame studies also include political activism in gaming, the use of videogames by political actors (including the military), videogames as pedagogical tools, and the relationship between gaming and extremism.

Media and Communication
2025 • Volume 13 • Article 8747
https://doi.org/10.17645/mac.8747

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Open Access Journal

The Case of Cities: Skylines Versions—Affordances in Urban Planning Education

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Submitted: 27 May 2024 **Accepted:** 3 October 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

Studies on city-building games as educational tools show positive results in addressing different learning objectives, but also identify a missing link to reality, as they are mostly computer-based. Given the differences between existing games and their capabilities, the exact function of these games in an urban planning curriculum is unclear. The city-building game Cities: Skylines currently has three different versions (Digital, Tabletop, VR). Through an affordance analysis of the game's three versions, this study analyses how the versions afford four primary knowledge dimensions, and in doing so identifies different educational applications for each version of Cities: Skylines in different planning disciplines. The results show that: (a) the board game is strong in fostering player participation and critical thinking more suited for the social and health studies, public policy, and citizen participation domains of urban planning; (b) the digital version functions as moddable simulator, ensuring familiarity with existing systems and monitoring their effects, useful in logistics and transportation planning; (c) the VR form viscerally involves players in the simulated processes, applicable in design-focused segments of urban planning, such as sustainable design theory, housing, and land-use management. The results of this study can help urban planning educators identify possible uses for different versions of Cities: Skylines.

Keywords

affordances; city-building games; knowledge dimensions; urban planning; urban planning education

1. Introduction

In 2023, the Dutch municipality of Sliedrecht used the commercial computer game Cities: Skylines (hereafter C:S; Colossal Order, 2015) to inform the urban planning department about the impacts of the redevelopment of an urban neighbourhood (see Figure 1). A local urban planner recreated the entire city in the game to comprehensively visualise choices and directly involve stakeholders in discussions about area development, regardless of their knowledge (Monster, 2023). This example illustrates that C:S is a relatively cheap and accessible simulation tool with a potential function in urban planning education. To help urban planning educators identify applications for different versions of C:S, this study aims to understand how different affordances of the C:S versions facilitate different dimensions of knowledge.

Figure 1. Sliedrecht neighbourhood built in C:S. Source: Monster (2023).

Games in urban planning have mostly been studied from an ontological perspective—how and when are these games effective (Ashtari & de Lange, 2019). As the number and diversity of city-building games (CBGs) continue to grow across different platforms, the process of city building in games can take different forms, reflect various systems, and contain diverse educational perspectives on how cities function, impacting said efficacy. When studying the application of CBGs in a classroom, Bereitschaft (2021, p. 21) urges to "consider carefully which CBG is the most appropriate given specific learning objectives," indicating a need for a deeper dive into the capabilities of the games themselves. C:S now has three different versions—a computer game version (abbreviated here as C:S-C), a board game version (C:S-BG; Håkansson, 2019), and a VR version (C:S-VR; Fast Travel Games, 2022). When a game has three different versions, its formal characteristics will vary, resulting in different uses and effects. These formal elements that differ per type of game and platform used *afford* different playstyles. Affordances, as defined by Norman (2013, p. 11), stand for "a relationship between the properties of an object and the capabilities of the agent that determine just how the object could possibly be used." The afforded playstyles result in different applications in urban planning, such as the visualisation and discussion applications in the Sliedrecht case. To provide insights into how different CBGs can afford different urban planning competencies and facilitate urban planning educators in the application of CBGs in their classes, this article draws on the four knowledge dimensions

framework of Anderson and Krathwohl (2001) as a lens for our analysis of C:S versions to provide an understanding of which disciplines of urban planning are best served by different CBGs. We do so by means of a case study on the game C:S, entailing an exploratory analysis—both comparatively and formally—of three existing versions of the game, and by answering the following research question: How do the formal characteristics of the computer, board game, and VR versions of C:S afford interaction with different dimensions of knowledge that can be used in urban planning education?

2. The Study of CBGs for Urban Planning Education

Games have been used as tools in urban planning since the 1940s. These games, mostly designed as board games, were initially used to educate players about existing systems (Light, 2008, p. 363), described by Shakeri (2022, p. 225) as "an educational or complete simulation of the future development or participation process, at times, at the expense of the player's experience and fun qualities." Over the years, games in planning have shifted attention from simulating a system to "communication and encouraging stakeholders' involvement" (Shakeri, 2022, p. 225). With increasing computing power, games in urban planning have developed along four trends, according to Shakeri (2022, p. 223): urban games initiated as entertainment focusing more on (participatory) play, serious games, simulation games, and full-on gamification relying on system simulation. Although all versions of C:S started out as playful entertainment, the three C:S versions have seen increasing use in urban planning as test grounds for urban systems. Shakeri's continuum of CBG trends gives an indication of possible uses, yet the versatility of CBGs like C:S complicates a clear positioning and consequently a straightforward idea of their use for game-based learning in an urban planning classroom.

Game-based learning is shown to have promising results both in academic and vocational education (Dahalan et al., 2024). Vlachopoulos and Makri (2017) and Sierra-Daza et al. (2024) found through a systematic literature review that cognitive outcomes help develop specific skills regarding deep learning, critical thinking, scientific reasoning, and perceptual abilities (especially with virtual experiences). Behavioural effects, such as teamwork, collaboration, and other soft skills such as leadership skills or project management, are facilitated through games. While these educational effects are positive, the importance of the context variables of the player as well as the game should not be underestimated, requiring special emphasis on the player's perceptions and the educator's attitudes (Khan & Zhao, 2021). It is therefore academically relevant to provide more knowledge on the specific application of CBGs and how this is connected to the concrete affordances of these games and the knowledge dimensions they can foster. While positive effects may be achieved with the game, the specific application in a curriculum and urban planning domain of each of these versions has not been studied in detail. In this study, we aim to fill this gap by providing a comparative formal analysis of the three different versions of C:S.

The majority of studies on game-based learning to date typically focus on a singular game. As such, a comparison of the various design dimensions across different games has yet to be addressed. When studying the application of the different versions of C:S, these design categories become particularly significant. Tsai et al. (2021), for instance, explain that a board game creates a space where students learn by trial and error, experiencing simulations of specific events that improve face-to-face participation by exploring the game mechanisms and worlds created, enhancing skills such as decision-making or cooperation. VR has been shown to boost student motivation (Shabalina et al., 2015), and it is deemed a more attractive learning tool by higher education students (Young et al., 2020), and students retain more

information by engaging in VR activities (Krokos et al., 2019). Despite the prevalence of board games throughout the history of urban planning, comprehensive comparisons of different media used are scarce. Sousa (2024) compared the board game and computer game versions of C:S as tools to teach urban planning concepts through collaborative decision-making processes. The author stresses the differences between the C:S versions, in that "they propose a similar progression but use different game mechanisms, progression, and feedback loops" (Sousa, 2024, p. 269). Therefore, this study extends beyond the current state of the art by exploring the differences in formal C:S characteristics across various platforms. This exploration yields insights that enhance our understanding of the different applications of C:S in particular, and CBGs in general.

3. Learning Competencies in Urban Planning

Translating the platform-specific variables into the pedagogical use of games in urban planning requires an understanding of learning competencies in urban planning. This was studied by Bereitschaft (2021) through an in-depth literature review focusing on the use of commercial CBGs as learning tools. He found that although most of the revised studies do not follow a specific learning framework, these games have the potential to communicate four primary types of knowledge levels: factual, conceptual, procedural, and metacognitive. These levels of knowledge were derived from a revision of Bloom's taxonomy of learning by Anderson and Krathwohl (2001). This framework acknowledged the varying applicability of games in urban planning, depending on their capabilities. In our analysis, we built on these four knowledge dimensions in CBGs to examine how each dimension is afforded in C:S versions, highlighting potential applications of the different game versions in different disciplines of urban planning.

The first dimension is factual knowledge, in which students interact with terminologies and specific details of objects or events. Cuccurullo et al. (2013) discussed, for instance, how a CBG focused on waste management familiarises students with the correct terminology, while Yildiz and Yildiz (2011) identified improved attention to architectural specifics through CBGs. However, Pinos et al. (2020) stressed that a key consideration in the didactic potential of CBGs is that modding commercial games is often required to go beyond a gamified abstraction and foster the transfer of knowledge to real life, placing a limitation on the achievability of factual knowledge. Affording this factual dimension in a game helps teach students to understand the basic elements of physical, social, and economic urban issues.

The second dimension is conceptual knowledge, requiring students to understand interrelationships between elements and theories or classifications. Czauderna and Budke (2022) used different CBGs to make students simulate different geographical theories, ensuring an experiential understanding of conceptual challenges. Later, Jolly and Budke (2023) specifically studied how a conceptual sustainable city could be constructed using games. The conceptual dimension allows for increasing the tangibility of theories and system interactions, but the extent to which games can convey this themselves can vary.

The third dimension is procedural knowledge. This dimension focuses more on subject-specific skills and methods, as well as criteria for evaluation. Fernández and Ceacero-Moreno (2021) used C:S to train students in necessary procedures should a natural disaster occur. Both subject-related skills and soft skills like problem solving were successfully facilitated through the game. Dhatsuwan and Precharattana (2016) specifically explored logical thinking and the application of urban planning simulations to real-life actions.

This dimension of knowledge enables students to experiment with simulated urban planning processes and consider their further application.

Finally, the dimension of metacognitive knowledge deals with the possibility of self-reflection and knowledge about learning. Droll and Söbke (2021), for instance, studied the use of C:S when teaching water management but reflected on the lack of realistic modelling. Therefore, they resorted to modding the original game, explicitly including the shortcomings of CBGs in the student assignment. This dimension deals more with perspectives on CBGs themselves, and often critically assesses the applicability.

While games have been used in urban planning for a long time, the concrete use of a game like C:S in urban planning education defies positioning due to its three different versions. Despite the proven value of using games in education, there is a lack of curriculum use cases that demonstrate their general benefits. Furthermore, the differences between platforms are considered important but have not yet been studied in formal detail, leaving the application of different forms of C:S confusing. This study fills this knowledge gap by exploring how CBGs can be used to convey four primary knowledge dimensions in urban planning education, which differ depending on the tool used and the educational setting, providing a fruitful avenue to study the areas of application of CBGs.

4. Methodology

4.1. Case Study

As C:S has held an average of 30 thousand players since its release (only sinking in 2024 due to the release of its sequel) it is likely to be known by many urban planning students (Steam Charts, n.d.). Since its release in 2015, C:S has been expanded with a variety of downloadable content packs that add new urban systems, such as public transport or sustainable design, and has enjoyed a strong modding community adding new assets to the game. In addition to these, a board game version and recently a VR version were released. All three versions place the player or players in the role of an omnipotent city official who must build a city by setting up a variety of urban systems and ensuring the population's happiness. The computer, board game, and VR versions of the game all require players to build a city and provide facilities on a geospatial grid. However, the different designs of each version afford different adaptations and uses in urban planning education.

The computer version of C:S is a single-player game on an externally visible screen where the player must build a city by setting up a variety of urban systems and making it run fluently. The VR version, also a single-player game, follows a similar playthrough as the computer version, only now seen through a private headset and the player can fly through the game area in a first-person perspective, rather than just hovering above it. The computer game (i.e., the template for the VR game) was designed to "feature deep micromanagement-based play that would also appeal to less experienced players, and [the designers] realised that the real-time, flow-y nature of traffic could be the key" (Wiltshire, 2017). Starting with a highway connection, players must build a road network along which housing, commercial zones, industry zones, or other facilities can be placed. More building and improvement options unlock with population milestones, attained when more inhabitants move into the city. The necessities of the population regarding health, waste, energy, water, education, transport, and leisure must be met to ensure growth. All these facilities can be selected from an access bar at the bottom of the screen in the computer version (see

Figure 2) or conjured from the handheld controllers in the VR version. Each facility building has an action radius and characteristics that define its properties. For a city to function, each facility has to be connected to its dependent systems through roads, as they are factored in the dynamic functioning and flow of the city, instead of being a static box being ticked (Wiltshire, 2017). The game comes with predefined buildings, facilities, and maps, although the computer version allows for modding and the addition of personalised downloadable content (the VR version has no such capabilities or expansions). The game ends when the city goes bankrupt, or if the player has built a functioning city and chooses not to build further.

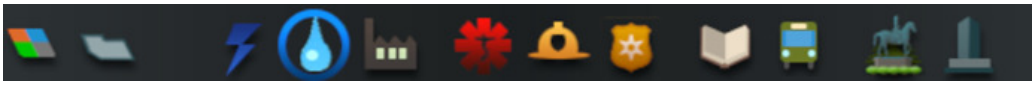

Figure 2. The possible building options the player can choose from in C:S. Note: While simulating different urban systems, such as water, healthcare, and public transport, the choices are predetermined.

The board game is different from the computer and VR versions. It can be played as a single-player game, but also as a cooperative game with multiple players. It consists of a set of base tiles with a road network on them that must be unlocked in specific manual-defined configurations with in-game currency. Each zone on the tiles bordered by roads is a district and can be built upon. At the start of a multiplayer game, each player picks a role, such as an architect or marketing expert, which grants that person special bonuses during their turn. During each player's turn, while deliberating with other players, they can play a construction card, swap cards, or end a milestone. Playing a card means processing its effect on the facility bar charts; an in- or decrease in money, energy, water, waste, pollution, traffic, crime, employment, or happiness. After this, an inefficiently shaped tile of the constructed building must be placed in a district (see Figure 3). While some service buildings have a proximity requirement, the constructions can be placed anywhere, if they do not overlap roads or each other. Policy cards or news cards impose new limitations on the gameplay, such as a rise in crime coinciding with a decrease in happiness. When districts have at least two buildings, players can end a milestone. This adds a happiness score to the milestone score bar based on the success of the city, after detracting happiness depending on the level of crime, traffic, and pollution, and costs money depending on the employment, energy, waste, and water bar. When the players run out of money or all tiles have been filled, the game ends. The final happiness score is read from the milestone score bar; the higher, the better the state of the city.

Figure 3. The building blocks of C:S-BG. Notes: Different resources are represented in randomly drawn cards and they have an impact on various other resources, such as population or pollution; they are subsequently placed on the board with inefficiently shaped tiles.

4.2. Method Outline

This study takes a qualitative approach to determine the differences between the three versions of C:S and identify the unique characteristics afforded by each, considering the game characteristics of each platform. Using observation, data collection, and data screening, this study formally analyses the use of C:S as a pedagogical tool by following two theoretical frameworks: Aslam and Brown's (2022) affordances framework and Anderson and Krathwohl's (2001) four knowledge dimensions framework.

Firstly, building on Aslam and Brown (2022), we conducted an affordance analysis, focused on exploring connections, lessons, rules, and interactions in the game without guidance. Unlike Aslam and Brown's fully associative playtest, we used the formal design characteristics of Fullerton (2014) as focal lenses to gauge affordances. An important caveat in this methodology is that the affordance analysis is delimited by a focus on using C:S versions as urban system simulators. This approach was used to keep the general use of the game clear, and thus we ignored alternative possible uses, such as building roads in the shape of letters. The use of C:S games to learn about urban systems and urban planning was opted for to limit the scope of this study.

The three games were played and analysed by two researchers—a game scholar and an urban planning educator with 60 hours of experience with the game—between April and November 2023. Following the distinction made by van Vught and Glas (2018, p. 214), the playthroughs sought to be instrumental—trying to identify all possible actions. Due to the complexity of C:S, this requires a shift from rational player—trying to optimise the achievement of milestones—to free play—pushing against the rules to identify possible alternative forms of play. Screenshots and pictures were taken in the three versions to collect relevant data and note version differences. During play, relevant information was collected in two tables—one for affordances per formal characteristic, and one for the knowledge dimension touched upon.

The digital version (base game without DLC) was played several times to explore different play styles. Each time, the game was played until every building option was unlocked and the city was profitable and happy. By discussing the choices, one researcher oversaw the data collection process while the other played the game. A total of eight hours were spent playing the game.

The board game version was played three times in single-player, cooperative mode with basic cards, and cooperative mode including roles and news cards. The main purpose was to play all the possible options from different perspectives until all the tiles were unlocked or the players ran out of money. A total of six hours were spent in gameplay.

For the VR version, one of the researchers experienced the immersive action through the Oculus Quest 2 VR headset, while the other researcher commented and coded the information by observing the gameplay on a television. The game was played until every building option was unlocked and the city was profitable and happy. A total of six hours were spent during the gameplay.

Secondly, the inventoried affordances of the formal characteristics were compared to the knowledge dimensions in urban planning education. This was done by comparing the playstyle and possible actions to the four knowledge dimensions of Anderson and Krathwohl (2001). The affordance of a knowledge

dimension does not indicate the probability that a particular interaction with the game version will occur. Rather, it provides an overview of *possible* interactions that can be turned into use cases in the classroom.

4.3. Analysing the Formal Characteristics

Given the different affordances of different platforms, the list of formal elements we analysed should allow for multiplatform designs. To this end, we followed the list of formal characteristics introduced by Fullerton (2014) due to its focus on forms of play—an action occurring in each platform—instead of types of games. The general categories were further detailed with an indication of possible variables through Fernández Vara's (2015) identifiers for game overview and formal elements, as shown in Table 1. Although repetition of indicators across different formal elements is possible, these characteristics serve as focal points for analysing affordances in C:S, exploring possible play actions with each category in each version.

Table 1. Formal elements in games according to Fullerton (2014) and Fernández-Vara (2015).

Formal Characteristics (Fullerton, 2014)	Description	Indicators (Fernández-Vara, 2015)
Players	The number and role of the players, as well as their position in the game	Single vs. multiplayer
		Player(s) vs. game
		Player vs. player
		Mediation: how the player is placed in the game
Objective	The results that the players are trying to achieve	Rule driven: rules created endless conditions
		Goal driven: an ultimate goal can be reached
		Game dynamics: freedom in goal-oriented actions
Procedures	The actions and methods players are and are not allowed to perform, including the framework set by the system/narrative	Rules of the world: frameworks to obey
		Procedural design vs. hard-coded content
		Controls and controllers
		Choice design
		Representation and identity
		Cheating and modding possibilities
Rules	Rules pose limits on actions but also define the characteristics of assets	Simulation rules: the stats of objects, etc.
		Diegetic vs. extradiegetic elements
		Rules of the fictional world (e.g., justice systems)
		Game state control: save games possibility
Resources	Assets to be used to attain goals and the systems governing the exchange	Space of the game: available objects, etc.
		Metagame support: communities or references
		In-game economies
Conflict	Rules, procedures, and situations that hamper players from reaching a goal	Rules of the world
		Player dynamics: how they play
		Values: dilemmas or wicked choices
		Game balance

Table 1. (Cont.) Formal elements in games according to Fullerton (2014) and Fernández-Vara (2015).

Formal Characteristics (Fullerton, 2014)	Description	Indicators (Fernández-Vara, 2015)
Boundaries	The rigidity of the difference between the game and the non-game setting	Game format and controller
		Diegetic vs. extradiegetic rules
		Spaces of the game and the magic circle
Outcomes	Possible end states of the game; this includes system end, but also possible serious use	Game communities: social engagement
		Procedural rhetoric and message
		Representation: how is it communicated
		Choice design: what is rewarded and unlocked

4.4. Assessing the Knowledge Dimensions

As shown in the literature review, CBGs have been shown to teach specific learning competencies that are pursued in urban planning education, organised in Anderson and Krathwohl's (2001) four knowledge dimensions: factual, conceptual, procedural, and metacognitive. In the current study, the affordances of each version of C:S are interpreted by asking which knowledge dimension is engaged with when playing accordingly. While not every affordance of a formal characteristic will translate into a knowledge dimension, seeing which C:S version makes more use of which knowledge dimension gives direction to possible areas of application in urban planning education.

5. Results

The results of the analysis were structured per knowledge dimension. In Sections 5.1 to 5.4, for each dimension, the formal characteristics that afford exploration of the dimension are discussed. After the knowledge dimension overview, in Section 5.5, possible use cases of the three C:S versions in different domains of urban planning education are provided.

5.1. Factual Knowledge Dimension

In this section, we discuss the results of our analysis that help us understand how the concrete affordances of the different versions of C:S facilitate the acquisition of factual knowledge. Factual knowledge is understood here as students' interactions with terminologies and specific details of objects or events. In our analysis, we established that factual knowledge is present when the players must engage with realistic planning terminologies or elements.

5.1.1. Objectives and Procedures

In both C:S-C and C:S-VR, players must make choices about what to build where. In this process, the player has a large degree of freedom, as apart from space and money constraints, buildings can be placed everywhere as long as they are connected to roads, sewage, and energy, simulating urban systems. As the focus is on building and integrating urban elements into a larger urban system, the games afford familiarisation with key interactable elements in cities. The player is ultimately limited by the coded

frameworks of the building requirements. As such, they are limited by the game systems more than the actual urban systems—like a toybox, players can choose out of semi-realistic toys. Key terminologies and elements of urban planning disciplines are highlighted in both the C:S-C and C:S-VR versions, as they are the main indicators of progress towards the objective. The importance of the resources and their interaction with procedures relies strongly on factual knowledge. However, the player is not bound by this, as multiple options are possible: it is possible to realistically place sewers under roads, but ultimately the game rewards realistic or unrealistic construction equally when the systems are connected.

Furthermore, C:S-C and C:S-VR are provided with stock-building representations that the player has no control over—what the city looks like is procedurally generated, limiting factual representations. However, C:S-VR affords the exploration of the city from a ground level in its procedures (see Figure 4), allowing for a more factual understanding of height and distance. However, the dependence on pre-made models reduces the aesthetic or realistic affordances of the computer version, leaving the representation often wanting. In contrast, C:S-C allows for modding, resulting in the possibility of adding realistic assets—such as copies of real buildings. As such, C:S-C affords the factual recreation of a city, allowing students to consider key buildings or elements of a city, albeit with a high technical requirement, while C:S-VR allows for the factual representation of realistic heights and distances.

Figure 4. First-person perspective in C:S-VR. Note: The ground-level view can familiarise the player with the scale of buildings and size of open space.

C:S-BG instead relies largely on interactions between elements, such as housing and urban management, based on predetermined costs as dictated on cards. Subjected to a gamified logic, C:S-BG does not familiarise players with the factual functioning of different elements through their choices, but instead subjects the procedures to an abstracted logic. Additionally, C:S-BG is more goal oriented, aiming for an arbitrary high score in the form of a happiness score bar. Here the objective is detached from factual terminologies or urban elements, instead opting for a gamified alternative wherein the terminology is explained in game terms instead of planning terms.

5.1.2. Rules and Resources

The formal characteristics of rules and resources are shared amongst all three versions. The resources of space, buildings, energy, water, waste, crime, pollution, traffic, health, education, happiness, and money—as important elements of urban systems—are present in all three versions, familiarising students with key terminologies. The rules surrounding these resources furthermore indicate the interrelationships between them, such as the resources needed for each building to function (e.g., schools need residential zones, and educated citizens need to go to office zones). While C:S-C and C:S-VR use semi-realistic rules to simulate and visualise the interrelationships due to the processing power of the digital devices, C:S-BG abstracts the relationships into relatively arbitrary rules (e.g., a dog park costs three money tokens and is only effective right next to a residential area). Instead, the rules of C:S-BG deal with permanent choices, as opposed to free experimentation in the other versions. The permanent choices confront players more with the factual dimension of city building—once the choice is made, it is set in motion—while free experimentation affords students to become more familiar with factual terminologies.

5.2. Conceptual Knowledge Dimension

In this section, we discuss the results of our analysis that help us understand how the concrete affordances of the different versions of C:S facilitate the acquisition of conceptual knowledge. The conceptual knowledge dimension deals with a more abstract interpretation of the factual elements—classifications, generalisations, and theories (Anderson & Krathwohl, 2001). In our analysis, we established that CBGs can foster conceptual knowledge acquisition through the semi-realistic selection of factual elements and their interactions. However, the theoretical possibilities of CBGs are dependent on the focus on either the city building or the game itself.

5.2.1. Procedures, Rules, and Resources

Both C:S-C and C:S-VR simulate a semi-realistic urban system. In doing so, the relationships between different classifications of buildings are an essential part of the game. To make office zones work, for instance, the rules dictate that a higher-educated population is needed. For higher education to function, several procedures to establish housing, lower education, amenities, and transport must be followed. Some theories, such as the decaying catchment area of public transport stops (Andersen & Landex, 2009), are simulated in these games as well. In that sense, both C:S-C and C:S-VR, due to their simulation and processing power, encourage players to experience theories and classifications through mechanical action, albeit subjected to the limits of the system; theories can be experienced by understanding the coded logic, or visually in C:S-VR, but new theoretical logic cannot be easily added to be tested.

5.2.2. Boundaries and Outcomes

C:S-BG has a strict boundary with reality. While using the same elements as the other two versions, C:S-BG instead subjects these to a game logic within a structured game. The player is considerably limited in terms of available space (e.g., roads and board shapes cannot be moved) and building options, due to the random availability of facilities in the card decks and the shapes of the buildable elements. The game pursues a puzzle outcome, finding the best possible fit for your role-dictated turn with the resources available and the framework set by the news items and building cards (see Figure 5), rather than simulating city building.

Figure 5. Game board of C:S-BG. Notes: The building tiles must be placed next to a road; as such, getting all the amenities in place becomes a puzzle.

Instead of engaging with planning theories or classifications, players are focused on the game logic instead of urban planning theories. The outcome of the game is wholly determined in abstracted game terms (e.g., 18 happiness points or five money tokens), making even a conceptual understanding of a city difficult.

5.3. Procedural Knowledge Dimension

In this section, we discuss the results of our analysis that help us understand how the concrete affordances of the different versions of C:S facilitate the acquisition of procedural knowledge. The procedural knowledge dimension revolves around understanding and optimising the planning of a city using subject-specific skills or methods (Bereitschaft, 2021). Through our analysis, we established that this dimension is mostly present when players can use the game to dive into specific aspects of urban planning, such as sustainability, participation, and traffic flow, to reflect on best practices.

5.3.1. Procedures, Rules, and Resources

C:S-C and C:S-VR afford conceptual knowledge dimensions in the simulation of the interrelationships between urban system elements. However, building a city for maximum profit and happiness does not directly constitute optimisation through subject-specific skills. Procedural knowledge is afforded by these two versions due to the transient nature of the simulation; players can undo their actions, pause the game to build different scenarios, and even freely experiment with no monetary costs in sandbox mode, while still receiving quality metrics of each specific resource. The interactable procedures, non-binding rules, and

resources focused on the urban system allow students to optimise traffic, access to education, healthcare, etc., in an experimental setting, using the in-game feedback procedures. The experimental frameworks—the rules—within which the procedures must be optimised can be set during the lesson.

C:S-C can increase the complexity of procedural knowledge through its affordance of modification. Although they require programming or modelling skills, modifications can be made to the mechanics of C:S-C to correspond more closely to realistic options. By downloading or adding digital alterations to the game, players can add building textures, allowing for personal representations, or add new system management tools, such as advanced traffic light management operators in the Traffic Manager: Presidential Edition Mod (see Figure 6), or incorporate more comprehensive monitoring tools within the game, allowing for optimised traffic management. Apart from affording more experimental capabilities, this modification-based affordance also forces players to reflect on the differences between the simplistic systems contained in C:S-C and optimal functioning in different fields of urban planning. C:S-C can therefore afford even more procedural knowledge if a technical requirement can be overcome.

Figure 6. The Traffic Manager: Presidential Edition Mod. Notes: Traffic management in C:S is limited to the presence or absence of traffic lights; mods allow players to install more realistic traffic management systems. Source: YUMBL (2021).

5.3.2. Players, Conflicts, and Boundaries

In C:S-BG, the interpersonal conflict allows for the testing of the game's boundaries, specifically through the optional game elements of player roles and news items. These allow players to influence transactions based on their role or impose limiting conditions, such as a crime wave that increases the crime metric twice as fast. These options allow for playing with role-specific skills and methods in specific urban dynamics, albeit translated to game-focused mechanics. However, the analogue nature allows for the easy adaptation of these roles and their function in collaborative debate. The boundary between local planning roles and conventions and in-game rules can be broken to use C:S-BG to simulate a planning session. Furthermore, procedures and physical assets can be added due to the paper-based gameplay, possibly tailoring the game to local contexts. In this way, the game functions as a direct experiment with subject-specific skills.

C:S-C and C:S-VR are hard-coded and largely single-player games, so they cannot easily introduce local rules or interactions into a play session. C:S-C affords multiplayer discussion of the gameplay due to a visible screen. However, only the coded or modded procedures can be discussed as the digital programming remains dominant; reflection is possible, but optimisation is challenging. C:S-VR is characterised by a solitary screen. Discussing urban planning concepts in this version is possible through casting but has more technical obstacles than the other two versions. They do afford the pursuit of a specific outcome in the shape of a city built according to predetermined principles. Building a fully sustainable city, an underwater city, or a city reliant only on public transport can be set as goals by the players or the instructor. This poses conflicts in the available choices and limits certain resources, but ultimately allows players to reflect on required resources, payoffs, and shortcomings in their design to attain an ideal city. Even without these goals, the general outcome of C:S-C and C:S-VR games relies on a functioning, happy, and profitable city, which furthermore relies on optimising city dynamics. These two versions therefore afford a deep dive into planning optimisation.

5.4. Metacognitive Knowledge Dimensions

In this section, we discuss the results of our analysis that help us understand how the concrete affordances of the different versions of C:S facilitate the acquisition of metacognitive knowledge. The metacognitive knowledge requires self-reflection and identifying strengths and weaknesses in the learning process (Anderson & Krathwohl, 2001). When the formal characteristics of the game draw attention to the design of the game, metacognitive knowledge can be fostered in CBGs by facilitating confrontation with the discipline of urban planning in the game that can be identified as abstracted, or a reflection on one's own role in urban planning.

5.4.1. Players, Objectives, Procedures, Rules, Conflicts, Boundaries, and Outcomes

Although C:S-BG is subjected to game logic, it is its main procedure—discussion with other players—that affords reflection on player positions in a planning team. As an analogue discussion-led game, C:S-BG affords engagement with and discussion of planning practices within a planning team as fellow players. By selecting who the fellow players are—the rest of a planning team, residents, politicians, etc.—a play session can become a conversation starter or a reflective contrast to the complexity of urban planning. This can be conveyed even more strongly if the game completely breaks the magic circle boundary and is played according to local planning rules, thus limiting the available procedures—for instance, by not allowing industrial zone tiles, which represent factories, to be placed next to residential zones, regardless of the money and space available. In this sense, the objective of the game shifts from being goal-oriented to being a planning simulation or discussion, with conflict arising from differences of opinion. This changes the outcome to a team-building exercise for a planning team, requiring metacognitive knowledge to position oneself.

C:S-C and C:S-VR can evoke metacognitive knowledge by bending the boundaries of reality. The experimental and trial-and-error simulation allows players to design absurd creations that conflict with urban planning staples. It is precisely this contrast that allows further reflection on proper techniques, especially in C:S-C, if the built cities, as attempted recreations of real cities, are scrutinised by other players. The outcome of C:S then also affords a more reflective discussion in a team, or even identifies the need for missing elements that require a modding community to be added. The outcome of C:S-VR affords reflection on a built environment from a ground perspective, with adequate distances and sight lines. In C:S-VR, both absurdist building and planning-informed building afford metacognitive knowledge.

5.5. Learning Competencies and Possible Application Domains

Given the different afforded interactions with urban planning topics through the formal characteristics, CBGs can have varying applications in education. Table 2 provides an overview of the relationships between different knowledge dimensions and concrete affordances of CBGs. Following our comparative analysis of the three versions of C:S, Table 2 also includes an indication of the version required for these applications as indicated with C:S-C, C:S-BG, or C:S-VR. Additionally, reflecting on the most prevalent knowledge dimension per version and ease of use, it illustrates probable uses within urban planning education.

C:S-C relies largely on the conceptual and procedural knowledge domain due to its semi-realistic simulation of relevant urban planning elements, and the added realism through modding. To build an urban design and to consider the interrelationships of specific systems, the computer version is well suited, for instance, within the domains of transportation and logistics in urban planning. However, due to modding being a specialist activity, and the rules and procedures being largely hard-coded, adaptability is hindered. Therefore, the most accessible application will use C:S-C as a simulator of planning procedures, relying on the computing capacity and feedback more so than realism.

C:S-VR overlaps with the computer version in required competencies, yet the lack of addable mods or DLC make it less suited for realistic urban system simulations or monitoring realistic designs. Alternatively, the affordance of experiential imagery touches on factual and conceptual knowledge in that it makes concepts

Table 2. Applications of C:S versions in urban planning education based on afforded knowledge dimensions in each game.

Knowledge Dimension	C:S Application
Factual	— Procedures and objectives for players to freely experiment with urban elements to remember relevant systems and facilities (C:S-C & C:S-VR)
	— Procedures to experience the size and spread of a planned design (C:S-VR)
	— Rebuild existing cities (C:S-C)
Conceptual	— Engagement with a simplified version of urban systems (all)
	— Becoming familiar with interactions between urban elements (all)
	— Reflecting on spatial planning and zoning theories put into visible practice (C:S-VR)
Procedural	— Interacting and optimising realistic simulations of urban interactions (C:S-C & C:S-VR)
	— Designing an urban simulation according to specific objectives, rules and resources set by players (e.g., green city; C:S-C & C:S-VR)
	— Trying out realistic urban management systems (after modding; C:S-C)
	— Altering the rules, resources, and procedures to match local planning frameworks (C:S-BG)
Metacognitive	— Taking place in a team of urban planners to build a city (C:S-BG)
	— Adapting existing procedures to approach a more realistic simulation (C:S-BG)
	— Compiling a team of diverse city builders to reflect on the city built (C:S-C & C:S-BG)
	— Experiencing the appeal of a city built (C:S-VR)

and theories more empirical, and on metacognitive knowledge in that it allows for the personal exploration of agreeable designs. This C:S-VR is then suited to be used in the more design-focused domains of urban planning, such as sustainable design theory, housing, land-use management, and urbanisation, according to the overview of Sanchez and Afzalan (2018).

In C:S-BG, due to its abstracted and goal-oriented nature, conceptual and procedural knowledge is recontextualised in the strictly rule-bound nature of the game. While factual knowledge is still touched upon by using the same elements as in the other versions, the functioning of the elements is subjected to the logic of the game. However, metacognitive knowledge is the greatest strength of C:S-BG. Through collaboration, reflections on the actual functioning of urban planning can be discussed. Inspired by resources of the game, such as the roles and news cards, the metacognitive knowledge dimension is called upon specifically because of the abstraction. The physical form subsequently affords easy adaptation, and involving actual urban planning stakeholders can tailor C:S-BG to a local situation. This reliance on reflection and group discussion makes this version more suited for social and health studies, public policy, and citizen participation domains of urban planning—domains which do not focus on testing and optimising existing systems, but on agreements and compromise.

6. Conclusions

This study focuses on providing an understanding of how the concrete affordances of CBGs can be used to foster different knowledge dimensions in urban planning education. For this purpose, we conducted a comparative formal analysis of the computer, board game, and VR versions of the CBG game C:S. The results showed that the computer version relies on detailed and interrelated procedures and rules, leading to open outcomes. This results in a detailed and semi-realistic system simulation that thrives on conceptual and procedural knowledge dimensions that afford free-form experimentation. The board game is best suited as a discussion facilitator and adaptable simulator of urban planning teams due to its multiplayer nature and agreement-based conflicts. Despite its abstract approach, the appeal to metacognitive knowledge through interpersonal additions and role-play makes this game a team discussion facilitator. Finally, the VR version thrives on factual and metacognitive knowledge because of its procedures that allow players to take a first-person perspective on a city, and consequently its blurred boundaries with actual planned cities.

This study can facilitate urban planning instructors in applying C:S as an accessible ludic tool for their classes. Furthermore, it has provided deeper insight into the affordances of different platforms when judged as ludic tools for urban planning. This study is limited to C:S versions, however, and despite formal characteristics being comparable in other CBGs, future research should explore other commercial games and serious games focused on urban planning education, or other subjects, such as geography. Furthermore, the results outlined here require further empirical testing with urban planning students in didactic environments, to embrace playtesting affordances, as well as interviews with urban planning educators to understand the embedding in the curriculum, possibly involving even the designers themselves. Apart from the affordances of the games, contextual variables, such as demographics, digital literacy levels of students and instructors, and technological limitations in the classroom can facilitate or limit knowledge dimensions. Nevertheless, this case study of the formal differences of C:S has shown that teaching the design of skylines of cities can be done in different ways.

Funding

This study was funded by the European Union—NextGenerationEU through the Programa para la Recualificación del Sistema Universitario Español, Modalidad "Margarita Salas".

Conflict of Interests

In this article, editorial decisions were undertaken by Felix Reer (University of Muenster) and Salvador Gómez-García (Complutense University of Madrid).

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Media and Communication
2025 • Volume 13 • Review 8647
https://doi.org/10.17645/mac.8647

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REVIEW

Open Access Journal

FABLE: A New Horizon in Digital Learning and Serious Game Design

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Submitted: 9 May 2024 **Accepted:** 29 July 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

Serious games have stood out as a new pedagogical format capable of motivating students through interactive learning. The lack of standards in the conception of these video games has led to the creation of different models, where the ludic aspects often prevail over the educational ones. This research analyzes the models present in the literature to identify those key elements in the design of serious games and to determine the presence of ludic-pedagogical elements. A systematic review is carried out following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement to identify the existing models for creating serious games. A qualitative analysis of the selected models is carried out to extract the key elements that should be present when creating a guide for designing serious games and to evaluate a ludic-pedagogical approach. Finally, a directed content analysis is performed to evaluate the presence of ludic-pedagogical elements in the selected models. The results show a lack of attention paid to the elements of the pedagogical dimension of the game in the studies reviewed. Other elements, such as the format or the audience, are not specified, and most models prove incomplete. From this study emerges FABLE (Fun And Balanced Learning Experience), a model that incorporates both the playful and pedagogical dimensions of the serious game.

Keywords

educational technology; game-based learning; ICT; interactive learning; serious games; video games

1. Introduction

The last decade has witnessed the transformation of learning through new tools and methods that have revolutionized traditional education. According to recent studies, the adoption of educational technologies

has improved not only access to information but also the motivation and engagement of students in their learning process (Bedenlier et al., 2020; Kowitlawakul et al., 2022; Wei, 2022). This scenario has opened the door to new ways of teaching that go beyond conventional methods, employing innovative tools inside and outside the classroom. Consequently, digital resources in education have become prominent tools, bridging emerging pedagogical needs with the expectations of current generations. This transformation has prompted educators and researchers to explore new teaching strategies (Chung & Pan, 2023), such as gamification, escape rooms, or video games, framed in the educational paradigm 4.0, that emphasizes personalized and flexible learning, utilizing adaptive systems powered by advanced technologies such as artificial intelligence, big data, and cloud computing to meet the specific needs of each student in interactive and immersive virtual learning environments (Almeida & Simoes, 2019). In this context, educational games have begun to gain ground in education, understood as a tool capable of offering a combination of entertainment and learning that appeals to today's generations (Min et al., 2022). The success and recognition are such that teachers are starting to integrate them into classrooms (Egea-Vivancos & Arias-Ferrer, 2021), while, in parallel, this expansion has led the scientific community to investigate the educational potential of this format (Ashinoff, 2014; Coroller & Flinois, 2023; Sousa & Costa, 2018; Toh & Kirschner, 2020).

Known as serious games, these games are designed with specific pedagogical objectives combining entertainment and educational aspects (Juan et al., 2017). To achieve their teaching purpose, they take advantage of the very nature of the format to expose students to different simulated scenarios and involve them in learning (Amzalag, 2021; Gao et al., 2020), placing them at the center of the process (Konopka et al., 2015). Recent studies have shown that educational video games can effectively improve students' academic performance and motivation (Manzano-León et al., 2021; Obodo et al., 2020). Thanks to their potential, serious games offer an innovative approach to enhancing traditional learning methods. From the earliest educational levels (Chang & Yen, 2023) to higher education (Artal-Sevil, 2020), integrating these narratives yields various benefits (Pérez-Colado et al., 2019). Firstly, video games positively impact players' emotional states, fostering interest and motivating them to persist in the game. Furthermore, some studies indicate that serious games promote the cognitive processes associated with the emergence of intrinsic motivation (Leitão et al., 2022), encouraging learning for its own sake rather than solely for grades. Secondly, as virtual tools, video games provide immersive training, allowing safe skill acquisition through simulated real-world scenarios (Chanchí-Golondrino et al., 2022), such as problem-solving (Pacheco-Velázquez et al., 2023), critical thinking (Elvsaas et al., 2023), and teamwork (Wong et al., 2022). Moreover, by immersing students in interactive environments, serious games present challenges that enhance educational engagement, effectively countering the burnout phenomenon in contemporary education (Reyes-de-Cózar et al., 2023).

However, these advantages are accompanied by some uncertainties. Several studies have concluded that learning outcomes from serious games are not consistently met, and engagement doesn't always increase (Imlig-Iten & Petko, 2018). Additionally, designing educational video games presents a complex challenge: ensuring knowledge transfer while maintaining entertainment and enjoyment for players (Andreoli et al., 2018). Striking the right balance between the "game" and "serious" dimensions is crucial (Gros, 2017). If educational content dominates, motivation may decline; if entertainment dominates, learning opportunities may be limited (Ravyse et al., 2017). Therefore, efforts to overcome these challenges and to compensate ludic and pedagogical elements in serious games are crucial for their effectiveness in education. Achieving this is complex and demands attention to pedagogical theories, learning mechanisms, game

elements, player experience, and various outcomes (Natucci & Borges, 2021). An educational video game with ludic and pedagogical elements present in its design can enhance learning (Lamrani et al., 2019) and student motivation (Westera, 2019). Also, categorizing those game design elements into fundamental educational game design principles can provide a more precise overview for application (Ahmad, 2019). Overall, integrating educational elements in serious game design is essential for creating effective and engaging learning experiences.

From this standpoint, theorists propose models for video game creation from two angles: ludic and educational. Within the ludic approach, a prominent model is Mechanics Dynamics Aesthetics by Hunicke et al. (2004), comprising an iterative framework based on three components: mechanics, which involves the rules of the video game; dynamics, related to the responses provided by the system; and aesthetics, addressing the visual and emotional aspects of the game. Other models, such as Nitsche's (2008), construct the video game around five conceptual planes: the rule-based space, the mediated space (the technological medium), the fictional space, the play space, and the social space. Authors like Green (2017) emphasize narrative, arguing that video games should integrate gameplay and narrative, supported by immersion, world-building, and agency.

From an educational perspective, Gee (2007) introduces elements such as interactivity, adapting the game to the student's learning style, game identity (personalization of characters), ordering problems/challenges by complexity, providing challenges according to difficulty, incorporating repetition for learning reinforcement, and ensuring depth and fairness to achieve objectives. These concepts form the basis for subsequent models, such as Klopfer et al.'s (2018), who propose design principles for educational games focused on creating meaningful learning experiences aligned with educational contexts. Their principles cover both preliminary and evaluative aspects, including the necessity of focus groups and game testing to ensure effective learning in the target audience and the importance of collecting relevant data to assess educational intervention effectiveness.

In this scenario of booming gamified learning environments, and amid theoretical advancements in the field, there's a rising community demand for a unified guide on serious game creation to establish a standardized approach (All et al., 2016; Ávila-Pesántez et al., 2017). Many of the shortcomings of video game-based learning may stem from the absence of consensus regarding creating high-quality serious games (De-Lope et al., 2017). To address this, researchers are endeavoring to find solutions by developing models, guidelines, or methodologies that guide the future of serious games.

On one side, some theoretical frameworks aim to guide designers in creating educational video games (Barianos et al., 2022), while others focus on the game's actual creation or implementation (Tsekleves et al., 2016). Additionally, some authors present methodologies focusing on technical aspects (Silva, 2020). Given these divergent approaches, it becomes crucial to unify models for designing educational video games (Mestadi et al., 2018). This emphasis should encompass educational elements and communicative and game components for a more cohesive approach. For the stated purpose, this study addresses the following research questions:

RQ1: Is it feasible to identify common characteristics in models for serious game design?

RQ2: What are the main elements in the models studied for developing serious games?

RQ3: How are the ludic and pedagogical dimensions represented in the models reviewed?

2. Method

2.1. Research Design

The methodology followed for this research, which follows a qualitative design, is carried out in three stages. Initially, a systematic literature review on serious game design models is conducted, adhering to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement criteria for validity and accuracy (Hutton et al., 2016). Eligibility, inclusion, and exclusion criteria, as well as search strategies, are defined through the structure of the PICO (Participants, Intervention, Comparator, Outcomes) model. In the second phase, a qualitative analysis of the selected studies is performed to identify the key elements in the design and development of serious games. Finally, a directed content analysis (Hsieh & Shannon, 2005) is carried out to check whether the created model improves those selected in the review.

2.1.1. Phase 1: Systematic Review

The initial search began in February 2023 using the combination of the terms "serious games" and "educational video games" in the Web of Science and Scopus databases, as the most representative in the field of social sciences since the object of study of this research is framed in education and communication. Subsequently, the search was broadened using the Boolean operators AND and OR with descriptors like "model", "education," "pedagogical," and "framework," among others. These searches yielded a substantial number of scientific publications, providing an overview of the research object and existing models in serious games literature, and highlighting the importance of conducting a systematic review.

The final systematic search was concluded in March 2023, covering a 10-year period from 2014 to 2023. The final combination of terms was:

> (Model OR guidelines OR principles OR dimensions) AND (Development OR design OR evaluation) AND ((educational AND games) OR (serious AND games) OR (applied AND games) OR (learning AND games) OR (pedagogical AND games))

This search yielded 13,692 results, with 3,985 from Scopus and 9,707 from Web of Science. The inclusion and exclusion criteria utilized are shown in Table 1.

Table 1. Inclusion and exclusion criteria according to the PICO model.

	Inclusion criteria	Exclusion criteria
Participants	Any	None
Intervention	Any	None
Context	Published 2014–2023 Articles Published	Published in another year Other than articles Not published
Outcomes	Focused on models or frameworks for designing and developing serious games Educational video games	Others Commercial video games

Note: The Comparator section of the usual PICO format was changed to Context, following Reyes-de-Cózar et al. (2022).

After identifying the 13,692 results, duplicate articles across the two databases (n = 2,957) were discarded, leaving 10,735 results. After reading the title, n = 10,626 were discarded because they were not considered relevant to the object of study. Many of these articles focused on isolated game attributes or commercial video games, while others centered on designing classroom interventions rather than providing a framework for serious game design. Upon abstract review, n = 4 articles inaccessible for full-text reading and n = 40 articles not meeting inclusion criteria were excluded, leaving a sample of n = 61. After reading the full text of the selected articles, n = 40 were discarded because they did not meet some of the above criteria not detected in the previous screening phases. Therefore, n = 21 articles were included in the systematic review (see Figure 1).

To ensure the level of consensus in the screening phase, the reviewers (the authors of this article) were trained. Initially, 20 randomly selected articles were analyzed to assess agreement levels. Disagreements were resolved through discussion until consensus was achieved. This process was repeated until an adequate agreement level was reached (Cohen's Kappa > 0.8). Once reviewer training concluded, all articles were screened. Consensus articles were included in the final selection, while those without consensus were discussed for potential inclusion.

The same procedure was followed for the second phase of the study. Reviewer training involved randomly selecting five articles, assessing consensus, and discussing disagreements. The level of consensus was adequate (Cohen's Kappa > 0.8), so the process was not repeated. Finally, reviewers independently categorized the articles, and the final categorization included articles where both reviewers agreed.

2.1.2. Phase 2: Qualitative Analysis

First, an analysis of the formal elements of the models (such as target audience, methodology, approach, or format) has been carried out in order to identify the main characteristics.

Secondly, following the conventional content analysis technique proposed by Hsieh and Shannon (2005), the main elements of the models studied have been extracted. The procedure begins with observation by reading the different articles and the models proposed by the authors. After having a global overview, we carefully

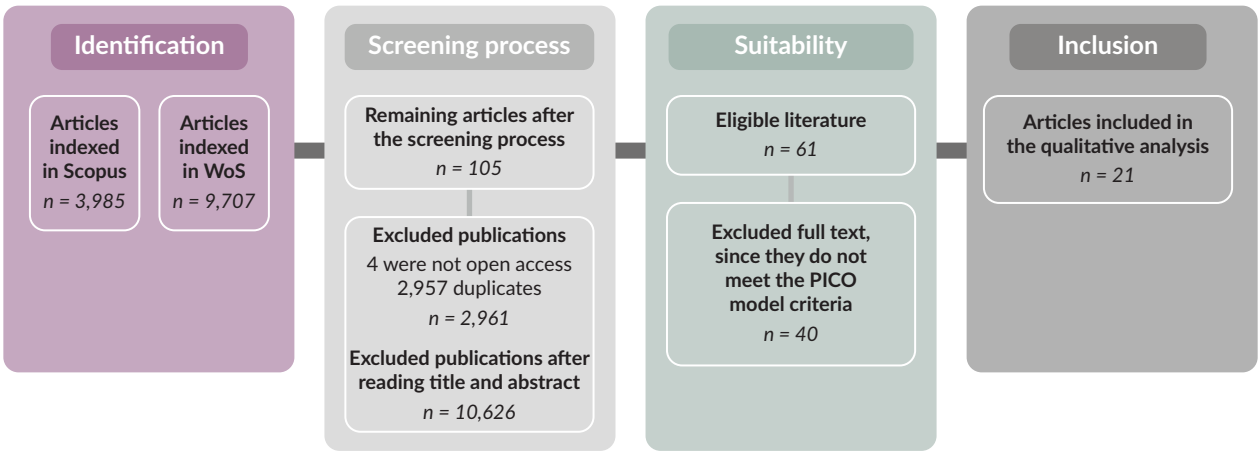

Figure 1. Planning, identification, and eligibility process workflow. Note: WoS means Web of Science.

read each model, extracting the categories and elements described and tabulating them in a spreadsheet. After finishing the tabulation of the elements, they are grouped by similarity, and preliminary coding is performed. Subsequently, some codes are merged, while others are divided into subcategories. Finally, the final codes are examined to organize the information into a hierarchical structure. The explanation is accompanied below with an example of coding during the data analysis phase:

- After preliminary coding, we proceed to unify the elements found, grouping them by similarity (for example, synonyms such as storytelling, plot, dialogues, storyline, etc.), giving rise to a specific subcategory ("history");
- These subcategories, together with others of the same hierarchy but with different subject matter (e.g., "scenes" or "characters"), are grouped into a higher-order category ("narrative");
- Finally, these categories are grouped into higher-level layers according to the nature of their elements (playful, educational, or mixed).

As a result of the analysis and classification of the identified elements emerges FABLE (Fun And Balanced Learning Experience), a model structured in layers, categories, and subcategories that proposes an approach that includes both ludic and pedagogical aspects.

2.1.3. Phase 3: Directed Content Analysis

After the emergence of FABLE as a result of conventional content analysis, and following Hsieh and Shannon (2005), the methodological technique of directed content analysis is used in the last phase. This method involves categorizing the selected studies based on a previous model or approach, provided they are justified. Therefore, FABLE is compared with the selected models to determine whether the creation improves on the models studied.

3. Analysis and Results

3.1. General Characteristics of the Selected Models

To answer RQ1, the selected models were analyzed in order to extract common characteristics from them. The scientific production of models to create serious games in recent years has been constant over time (see Table 2), with a decrease observed in 2017 and 2018, where no selectable research was found. The years 2015 and 2021 represent the peak in production, accounting for 38% of studies conducted in the last decade. Methodologically, all articles employ a qualitative research design.

Regarding the format, 95.2% of models are not oriented towards specific serious game typologies (see Figure 2). Additionally, 61.9% of models do not specify a target audience, though those that do mainly target young people such as children, adolescents, and students.

Table 2. Selected models after systematic review.

Article	Authors	Year	Methodology
A01	Padilla-Zea et al. (2014)	2014	Qualitative
A02	Starks (2014)		
A03	Kim and Lee (2015)	2015	
A04	Plass et al. (2015)		
A05	Shi and Shih (2015)		
A06	Zarraonandia et al. (2015)		
A07	Daylamani-Zad et al. (2016)	2016	
A08	Roungas (2016)		
A09	Weitze (2016)		
A10	McGann et al. (2019)	2019	
A11	Mokhtar et al. (2019)		
A12	Khowaja and Salim (2020)	2020	
A13	Tahir and Wang (2020)		
A14	Tsikinas and Xinogalos (2020)		
A15	Abidin et al. (2021)	2021	
A16	Beristain-Colorado et al. (2021)		
A17	Jaccard et al. (2021)		
A18	Ledezma and Simini (2021)		
A19	Ishaq et al. (2022)	2022	
A20	Jiang and Shangguan (2022)		
A21	Razali et al. (2022)		

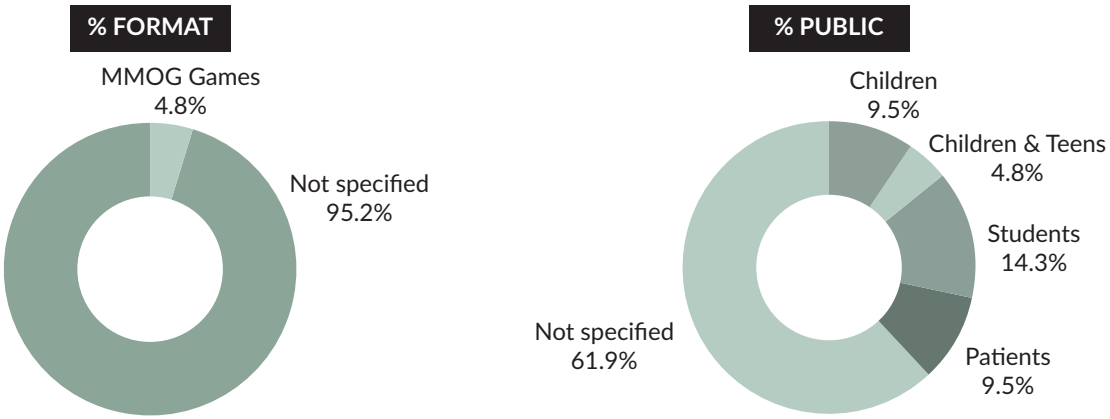

Figure 2. Main characteristics of the models.

3.2. Key Elements for the Creation of Serious Games Models From the Literature

To answer RQ2, a qualitative analysis of the selected articles was carried out. The main elements were extracted to identify the key elements that should be present when creating a guide for the design of serious games. For their understanding, they have been classified together with their corresponding references to the articles that mention them into four layers: prerequisites, ludic experience, pedagogical experience, and evaluation.

3.2.1. "Prerequisites" Layer

The "prerequisites" layer is the initial one and comprises the "ludic-pedagogical requirements" and "specific educational considerations" categories.

The "ludic-pedagogical requirements" category (see Figure 3) includes the initial criteria to consider when designing an educational video game. This category involves both game-related aspects like the genre (A12, A21), objectives (A15), game outline (A17), and debriefing (A06), which should detail the game's format to adapt other components effectively. It also covers educational aspects such as the learners' profile (A17), their age (A08), the context or environment in which they will play (A08, A17), learning prerequisites (A09) or requirements (A19), the users' prior knowledge (A08), and the intended learning outcomes (A12).

The category "specific educational considerations" refers to particular details that influence the design of an educational game because they affect the achievement of educational goals. Some models in the literature include specific guidelines for developing games for children with autism (A12, A14), using the multiple intelligences approach (A02), or for students with reading (A15) or language learning difficulties (A19).

3.2.2. "Ludic Experience" Layer

The "ludic experience" layer defines the game components related to user experience and gameplay. This layer is composed of four categories: "game structure," "narrative," "aesthetic," and "interaction."

The category "game structure" includes all elements related to actions within the serious game. It is divided into three subcategories: "mechanics," "dynamics," and "gameplay." "Mechanics" refers to the rules that define the game, such as interaction patterns, skills, and instructions that control the game state. These are also known as game mechanics (A03, A04, A06, A12, A13, A17), core mechanics (A20), or game mechanisms (A05). "Dynamics" are the technical aspects like technology and software, including fidelity and simulation models (A17), accessibility and adaptability (A16), interface (A06, A08, A13, A14, A17), and game media (A20). "Gameplay" covers the game's identity and user experience (A17), including goals and objectives (A03, A08, A20), challenges (A10, A11, A14), rewards (A06, A10, A11, A20), badges (A03), points (A03, A19), rank (A19, A21), and levels (A03, A07, A08, A19, A21), among others.

The "narrative" category (see Figure 4) includes all elements related to the game's plot, divided into three subcategories: "history," "scenes," and "characters." The "history" subcategory encompasses storytelling (A06, A12), the plot (A08), dialogues (A08), the storyline (A15), narrative cinematics (A01), and emotional narratives (A20). The "scenes" subcategory (A01, A06, A12) includes all the scenarios (A01, A06, A11, A18) where the story unfolds, which are further divided into sequences (A01) and chapters (A01).

LAYERS	CATEGORIES	ARTICLES
Prerequisites	*Ludic-pedagogical requirements*	**A05, A06, A08, A09, A12, A13, A14, A15, A17, A19, A21**
	Specific educational considerations	**A02, A07, A10, A12, A14, A15, A19, A20**

Figure 3. Prerequisites layer, its categories, and sources.

LAYERS	CATEGORIES	SUBCATEGORIES	ARTICLES
Ludic experience	*Game structure*	Mechanics	A03, A04, A05, A06, A12, A13, A17, A20
		Dynamics	A03, A06, A08, A12, A13, A14, A16, A17, A20
		Gameplay	A01, A03, A04, A05, A06, A07, A08, A09, A10, A11, A13, A14, A15, A16, A17, A18, A19, A20, A21
	Narrative	History	A01, A04, A05, A06, A08, A09, A12, A13, A15, A17, A20, A21
		Scenes	A01, A06, A11, A12, A18, A20
		Characters	A01, A06, A07, A08, A12, A15, A18, A21
	Aesthetic	Audiovisual	A03, A04, A08, A13, A15, A17, A18, A21
		Sensation	A02, A03, A05, A06, A08, A09, A13, A14, A15, A16, A19, A20
		Sensory stimulation	A02, A09, A11, A13, A14, A15, A16, A20
	Interaction	Interactivity	A05, A06, A07, A09, A10, A15, A17, A20
		Socialization	A06, A07, A08, A09, A18, A20
		Feedback	A03, A04, A06, A08, A09, A10, A11, A14, A15, A16, A20

Figure 4. Ludic experience layer, its categories, its subcategories, and sources.

The "characters" subcategory (A01, A07, A08, A18) covers everything from avatars (A15) to NPCs (non-playable characters; A12).

The "aesthetic" category refers to the abstract reasons that attract users to continue playing, influenced by the artistic and visual presence of the game. It is subdivided into three subcategories: "audiovisual," "sensation," and "sensory stimulation." The "audiovisual" subcategory (A03, A04, A13, A21) pertains to the virtual elements (A03) of the game universe (A17), including visual aspects like color (A15), and auditory elements such as sounds (A08, A18) and music (A08). The "sensation" subcategory (A05) shapes the emotions conveyed during the game, such as control (A03, A20), curiosity (A03, A08, A09, A20), freedom (A05), flow (A02, A13, A16), confidence (A03, A13), or mastery (A02). Lastly, "sensory stimulation" focuses on the consequences these sensations generate, like immersion (A13, A14, A16), concentration (A13, A16), or engagement (A02, A13).

The "interaction" category encompasses all reciprocal actions within the game, ranging from narrative interactivity to social engagement with other players. This category is divided into three subcategories: "interactivity," "socialization," and "feedback." The "interactivity" subcategory includes aspects such as decision execution (A07), choices (A09, A10), interaction with the game (A17), and player decisions (A07). The "socialization" subcategory involves elements like teams (A07), communication (A18), social relations (A09), and collective consciousness (A08). Finally, the "feedback" subcategory refers to the system's responses to the player's actions during the game (A03, A04, A06, A10, A11, A14, A15, A20).

3.2.3. "Pedagogical Experience" Layer

The "pedagogical experience" layer focuses on aspects related to learning and is divided into three categories: "pedagogical content," "educational objectives," and "learning process" (see Figure 5). The "pedagogical content" encompasses all elements related to the instructional material (A12) and educational resources (A13), including their design, structure (A15), and implementation. The "educational

LAYERS	CATEGORIES	ARTICLES
Pedagogical experience	*Pedagogical content*	**A09, A12, A13, A15**
	Educational objectives	**A09, A13, A14, A15, A17**
	Learning process	**A04, A09, A10, A12, A13, A14, A17**

Figure 5. Pedagogical experience layer, its categories, and sources.

objectives" (A13, A14, A15, A17) are defined as the learning goals (A09, A17) that shape the game's design. The "learning process" (A09) outlines the strategies (A13) and mechanics (A04, A17) to be used, the learning activities (A12), the functions (A17), the pedagogical scenario (A17) in which the game will be integrated, and whether any personalization for the learner is considered (A14).

3.2.4. "Evaluation" Layer

The purpose of the "evaluation" layer (see Figure 6) is to determine if the objectives of the serious game, both educational and ludic, have been achieved. This layer consists of two categories: "learning" and "game." The "learning" evaluation (A09, A17) assesses not only the learning outcomes achieved (A15) but also the expected outcomes (A12), along with game analytics (A14) that measure educational aspects. The "game" category (A04, A15, A17) focuses on evaluating the purely ludic elements and the adjustments (A16) made to the video game.

3.2.5. Ludic-Pedagogical Approach

To respond to RQ3, the elements present in the selected models are analyzed to determine the presence of ludic and pedagogical dimensions. According to the percentages obtained (see Figure 7), the "prerequisites" layer is present in 71.4% of the studies. This, in turn, contains two categories: "ludic-pedagogical requirements" (52.4%) and "specific educational considerations" (38.1%).

The "ludic experience" layer is included in 100% of the models. Regarding the categories that make it up, "game structure" is the most used category (95.2%). "Narrative" and "interaction" account for 71.4%, and "aesthetic" for 80.9%. These four categories are further divided into subcategories. "Gameplay" is the most common subcategory (90.4%). Far behind are "history" or "sensations" (57.1%), "feedback" (52.4%), and "dynamics" (42.8%). Meanwhile, 38.1% of the models include "mechanics," "characters," "audiovisual," "aesthetic," "sensory stimulation," or "interactivity." "Scenes" and "socialization" are the least represented subcategories in the literature (28.5%).

LAYERS	CATEGORIES	ARTICLES
Evaluation	*Learning*	**A09, A12, A13, A14, A15, A17**
	Game	**A04, A15, A16, A17**

Figure 6. Evaluation layer, its categories, and sources.

LAYERS	%	CATEGORIES	%	SUBCATEGORIES	%	ARTICLES
Prerequisites	71.4	*Ludic-pedagogical requirements*	52.4			A05, A06, A08, A09, A12, A13, A14, A15, A17, A19, A21
		Specific educational considerations	38.1			A02, A07, A10, A12, A14, A15, A19, A20
Ludic experience	100	*Game structure*	95.2	Mechanics	38.1	A03, A04, A05, A06, A12, A13, A17, A20
				Dynamics	42.8	A03, A06, A08, A12, A13, A14, A16, A17, A20
				Gameplay	90.4	A01, A03, A04, A05, A06, A07, A08, A09, A10, A11, A13, A14, A15, A16, A17, A18, A19, A20, A21
		Narrative	71.4	History	57.1	A01, A04, A05, A06, A08, A09, A12, A13, A15, A17, A20, A21
				Scenes	28.5	A01, A06, A11, A12, A18, A20
				Characters	38.1	A01, A06, A07, A08, A12, A15, A18, A21
		Aesthetic	80.9	Audiovisual	38.1	A03, A04, A08, A13, A15, A17, A18, A21
				Sensation	57.1	A02, A03, A05, A06, A08, A09, A13, A14, A15, A16, A,19, A20
				Sensory stimulation	38.1	A02, A09, A11, A13, A14, A15, A16, A20
		Interaction	71.4	Interactivity	38.1	A05, A06, A07, A09, A10, A15, A17, A20
				Socialization	28.5	A06, A07, A08, A09, A18, A20
				Feedback	52.4	A03, A04, A06, A08, A09, A10, A11, A14, A15, A16, A20
Pedagogical experience	38.1	*Pedagogical content*	19			A09, A12, A13, A15
		Educational objectives	23.8			A09, A13, A14, A15, A17
		Learning process	33.3			A04, A09, A10, A12, A13, A14, A17
Evaluation	38.1	*Learning*	28.5			A09, A12, A13, A14, A15, A17
		Game	19			A04, A15, A16, A17

Figure 7. Key elements from revised models.

The "pedagogical experience" layer has a considerably lower presence than the previous layers (38.1%). Likewise, the three categories that comprise it have slightly lower percentages: 33.3% for "learning process," 19% for "pedagogical content," and 23.8% for "educational objectives."

Something similar occurs with the "evaluation" layer (38.1%). At the category level, the evaluation of "learning" is included in 28.5% of the models, compared to 19% that incorporate an evaluation of "game."

After analyzing the percentages of the elements present in the literature, it is observed that the presence of ludic elements, both at the layer and category level, is greater than that of educational elements, so there is no equal representation between the ludic and educational components of the models.

3.3. FABLE: A Model With a Ludic-Pedagogical Approach for the Design of Serious Games

This study proposes FABLE, an integrative model that emerged from the systematic review, combining elements of both ludic and educational approaches. FABLE aims to provide a framework for designing serious games but does not attempt to be a reference with a 50/50 balance between the ludic and pedagogic dimensions. However, it highlights the importance of incorporating educational elements in the design, which is a lack detected in most models in the literature. In addition, FABLE emphasizes the early determination of format, audience, and typology to lay the foundations for game development. Furthermore, this model can serve a dual role: assisting developers in designing effective educational video games and serving as an evaluation tool for teachers to assess serious game usage.

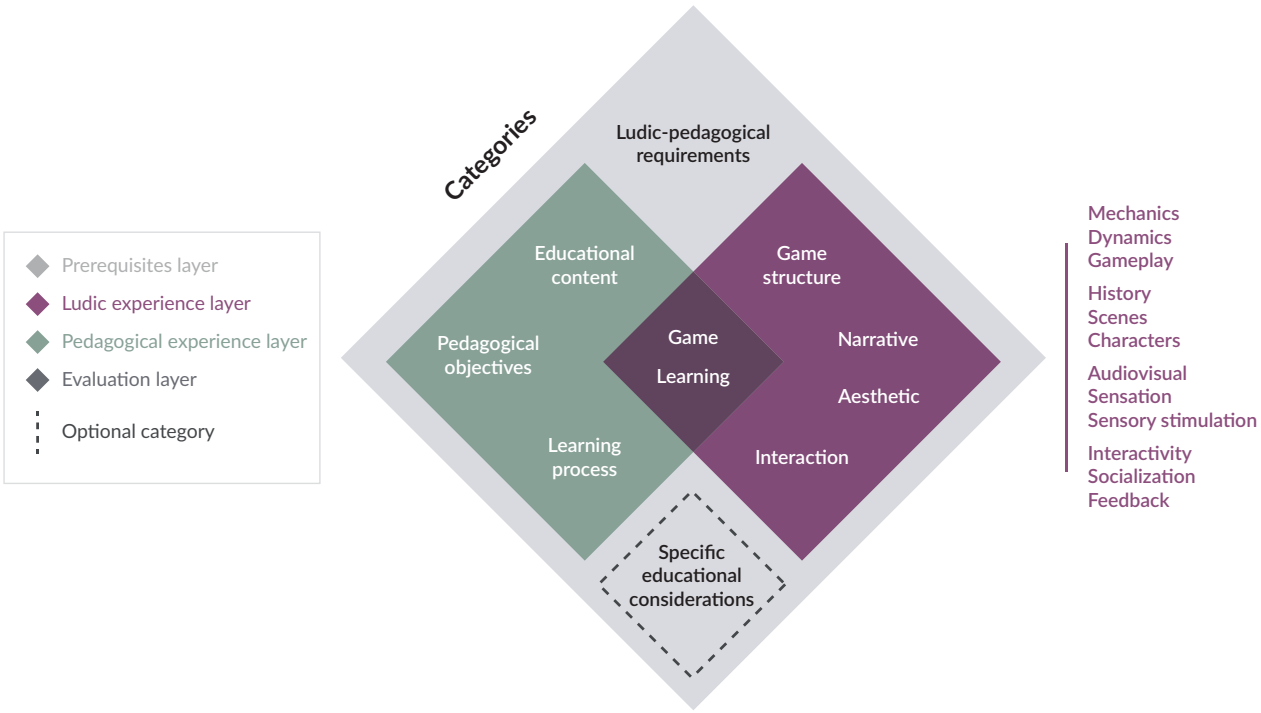

Figure 8. FABLE model.

FABLE is conceived to design both general serious games and video games with specific needs. Therefore, it includes the category of "specific educational considerations" as an optional element, detailed only when necessary, depending on the serious game's nature and objectives. The model (see Figure 8) is structured into four layers: a ludic layer (ludic experience), an educational layer (pedagogical experience), and two mixed layers that integrate both educational and ludic elements (prerequisites and evaluation).

3.4. Comparison of FABLE With Models in the Literature

The methodological strategy of directed content analysis (Hsieh & Shannon, 2005) was carried out, using FABLE as a reference framework, to find out whether the created model improves the models for the design of serious games analyzed. To this end, an analysis of each model has been carried out, checking the presence or absence of the elements included in FABLE. The analysis was conducted at the category level, awarding one point to each category (11 points total). Each "ludic experience" category is divided into three subcategories, each scored on 1/3 to ensure that all categories have the same weight in the analysis (see Figure 9).

After analysis, only 28.6% of the models scored half of the points (5.5), which means that the remaining 71.4% have shortcomings in the proposed framework. On the one hand, there are models with only 1.33/11 (A01, A11) or 1.66/11 (A02, A18), while the majority range between a score of 2 and 4 (A03, A04, A05, A06, A07, A08, A10, A16, A19, A20, A21). On closer inspection, the lowest scoring items have their points accumulated mainly in the layer "ludic experience" (except for A02, which covers "specific educational considerations"). Layers such as "pedagogical experience" or "evaluation" are not very present in the selected models. These data reiterate the results of previous sections and show a lack of presence of educational elements in most of the models reviewed. At the other extreme are the highest-scoring models. The highest scoring model

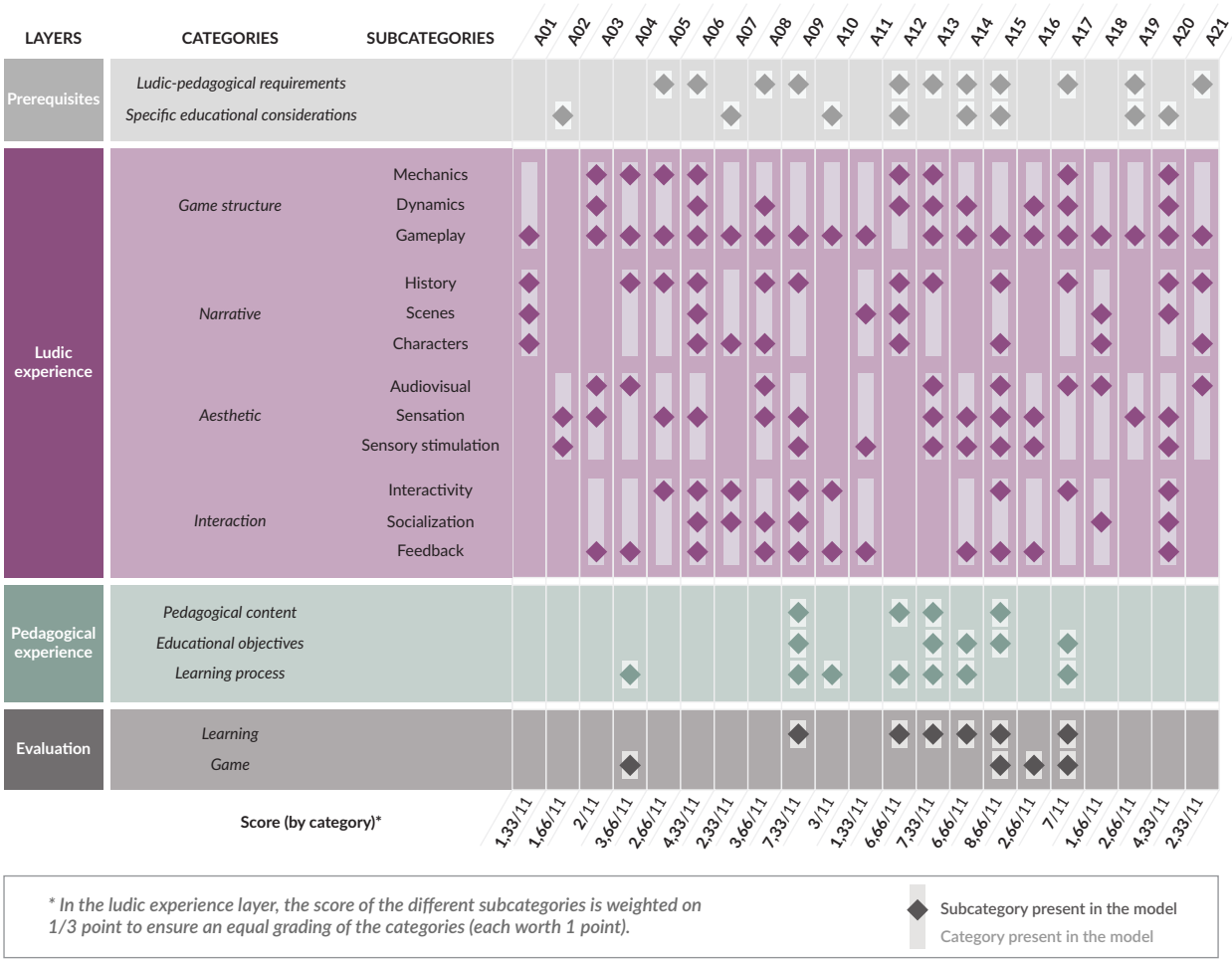

Figure 9. Articles evaluation.

scores are 8.66/11 (A15), followed by 7.33/11 (A09, A13), although they are still incomplete compared to the emerged model.

4. Discussion and Conclusions

Research suggests that serious games serve as effective educational tools (Egea-Vivancos & Arias-Ferrer, 2021), motivating students and providing interactive and practical learning opportunities (Felicia, 2020), making them suitable for 21st-century learners. However, to ensure their efficacy in knowledge transfer, standardized approaches are needed to enhance serious game quality (Gentry et al., 2019). To this end, this study analyses models in search of guidelines and creates FABLE, a model for creating serious games with a focus on both playful and pedagogical aspects.

Regarding RQ1, the study investigated common characteristics in the design of serious games. Results indicate that audience and format are key identifiers of model characteristics. Interestingly, 61.9% of models do not specify an audience, while those that do mainly target young demographics such as students, children, or teenagers. This finding contrasts with other research emphasizing the benefits of serious games for older audiences and beyond academic settings, such as skill enhancement in older individuals (Abd-alrazaq et al.,

2022) and symptom reduction in depression (Saragih et al., 2022). Hence, proposing models targeting older audiences is beneficial to leverage the format's advantages and its contribution to fields beyond education. Despite format's crucial role in determining user experience (Caroux et al., 2023), it's largely overlooked in almost all studied models (95.2%), with only one detailing format considerations.

In response to RQ2, the study identifies key elements essential for creating a guide in serious game design by examining existing literature. Identification, categorization, and synthesis of these elements makes it possible to establish a framework incorporating the main elements from both ludic and pedagogical approaches. This represents a step towards creating holistic models that focus on both components, addressing some shortcomings observed in the studied models.

Regarding RQ3 and the determination of the presence of ludic and pedagogical elements in the selected models, the results are not encouraging. At the layer level, ludic components are present in all models (100%), while pedagogical elements (38.1%) and evaluation (38.1%) are scarce. At the category level, these percentages remain a decompensation. Categories with the highest presence in models in the literature align with the ludic layer ("game structure," "narrative," "aesthetic," and "interaction"), contrasting with low percentages (<25%) of elements related to the "pedagogical experience," including "pedagogical content," "educational objectives," and "learning process." These results invite us to reflect on the nature of the models themselves and show the relevance of proposing models that present a playful-pedagogical approach and do not lose sight of the main objective of any didactic tool: to promote learning (Gros, 2017). Developing a model serving as a guide for serious game creation necessitates finding an appropriate approach, considering both ludic and pedagogical elements (Egert & Phelps, 2020; Martínez et al., 2022), ensuring that the video game format promotes immersion and interactivity in learning while meeting educational objectives (Sasupilli et al., 2019).

Based on these findings, FABLE emerges as a ludic-pedagogical model consisting of four layers: one ludic, one pedagogical, and two mixed. This framework aims to take a first step in understanding serious game design, aligning with advocated approaches by authors such as Ávila-Pesántez et al. (2017). FABLE intends to overcome the shortcomings of game-based learning due to a lack of consensus, laying the foundations for digital learning (De-Lope et al., 2017). Moreover, FABLE underlines the importance of early determination of format, game typology, and target audience to establish the design and development of serious games on a coherent basis and tries to provide teachers and developers with a valuable instrument for designing educational video games. This model aims to provide a framework for designing serious games but does not attempt to be a reference with a 50/50 balance between the ludic and pedagogic dimensions. However, it highlights the importance of incorporating educational elements in the design, a lack that has been detected in most of the models reviewed despite being a demand for some authors (Ahmad, 2019; Lamrani et al., 2019; Natucci & Borges, 2021; Westera, 2019). The approach of FABLE is aligned with other studies that advocate the importance of the pedagogical component. Serious games should be designed with the objective of gamifying the educational process (Martin et al., 2021), always taking as a premise that guaranteeing learning is their primary objective. For this reason, the models and frameworks that serve as a guide for their creation should include the pedagogical dimension in order to be an effective reference when creating quality educational video games (Smith & Bowers, 2019). To achieve this, authors such as Linderoth and Sjöblom (2019) propose a solution to incorporate in the design process people with knowledge of pedagogical content, such as teachers themselves, so that the instructional goals are taken as a starting

point to guide the development process of serious games and fulfill the educational purpose for which they are created.

Furthermore, comparing FABLE with existing models reveals that 71.4% of articles do not incorporate the educational dimension into their models. The most incomplete frameworks often prioritize the "ludic experience" layer while neglecting essential elements like "pedagogical experience" and "evaluation," resulting in educational incompleteness. Authors such as Natucci and Borges (2021) emphasize the need for a holistic approach in serious game conception, recognizing them as digital games with objectives beyond mere entertainment. While entertainment should be ensured, it is not the primary goal. In summary, as noted by Merino-Cajaraville et al. (2023), these findings highlight the importance of guiding models and achieving a ludic-pedagogical approach, crucial for ensuring learning and knowledge transfer (Gentry et al., 2019) within an immersive and interactive gaming experience.

In conclusion, over the last decade, researchers and theorists have tried to contribute to the growth of serious games as tools for digital learning, providing theoretical foundations with different approaches. However, this study reveals a lack of consensus on what constitutes an adequate guide for creating serious games, despite the availability of various models. Moreover, the results show a decompensation between the ludic and pedagogical elements of the selected models, lending themselves as incomplete references to support the design of educational video games. In response to these findings, FABLE is created as a framework addressing the detected shortcomings. FABLE strives to achieve a ludic-pedagogical approach, ensuring learning while leveraging the immersive format's benefits. It also underlines the importance of determining aspects such as format and audience at an early stage. Therefore, FABLE emerges as a more comprehensive model than those evaluated, to take a first step in understanding serious game design.

Acknowledgments

This research is carried out under the Programme Erasmus+, with application number 626155-EPP-1–2020-2-LT-EPPKA3-PI-POLICY, titled Teaching to Be: Supporting Teachers' Professional Growth and Well-Being in the Field of Social and Emotional Learning.

Conflict of Interests

The authors declare no conflict of interests.

Data Availability

The data presented in this study are available on request from the corresponding author.

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Media and Communication
2025 • Volume 13 • Article 8637
https://doi.org/10.17645/mac.8637

ARTICLE

Open Access Journal

Amplifying Player Experience to Facilitate Prosocial Outcomes in a Narrative-Based Serious Game

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Submitted: 7 May 2024 **Accepted:** 6 August 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

The rise and development of serious games have shown promise in addressing critical social issues, including school bullying. However, prior work often compares game-based interventions with the conventional non-game approach, failing to generate insights about which game features should be emphasized to create more effective games. To bridge this research gap, in light of video games' advantages for creating immersive experiences that benefit persuasion, we created a narrative-based serious game addressing school bullying and conducted two studies (Study 1, $N = 130$; Study 2, $N = 250$) to explore the persuasive effects of two game features, respectively player–avatar similarity and in-game control, on player experience (including player–avatar identification, narrative engagement, and empathy) and prosocial intention. We found mixed results subject to player perspective such that only when players took the bully's perspective did one of the game features—in-game control—successfully create the intended empathy via amplified narrative engagement toward the desirable prosocial intention.

Keywords

empathy; in-game control; narrative engagement; player–avatar identification; player–avatar similarity; prosocial intention; serious game

1. Introduction

Bullying as a major form of school toxicity causes tremendous long-lasting physical and psychological damage to both victims and bullies (Copeland et al., 2013). Through two studies, we add to an emerging body of research considering the potential for narrative-based serious games to create empathy and potentially reduce bullying behavior or tolerance (Q. Chen et al., 2023). In doing so, we add to theory on the mechanisms by which serious games specifically and immersive narratives in general can generate prosocial outcomes. In particular, we test whether specific game design features are ways to increase the effectiveness of a serious game, moving beyond general tests of games versus other non-game formats to consider specific common features that can be integrated into game-based bullying interventions.

2. Literature Review

2.1. Serious Games for Bullying Interventions

Capitalizing on the entertaining aspect of gameplay, serious games are mainly developed to educate, inform, and persuade players, helping them gain positive personal growth and internalize and act upon prosocial values (Michael & Chen, 2006; Peng et al., 2010). Serious games have been shown to be effective educational tools with positive outcomes across multiple contexts (Canet & Sánchez-Castillo, 2024), including improvements in mental health behaviors and attitudes (David et al., 2020). Research has indicated a link between playing prosocial games and subsequent attitudinal or behavioral outcomes that align with the game's message, based on the interactivity of the game (E. Lee et al., 2022) or simply individuals' general empathy (Davis, 2006) or awareness of the particular problem (e.g., bullying) within the game (Calvo-Morata et al., 2021).

Several serious games have been developed to address the issue of school bullying (e.g., Bradley & Kendall, 2019; Calvo-Morata et al., 2021; Garaigordobil & Martínez-Valderrey, 2015) and reviews and meta-analyses both support the use and effectiveness of such game-based tools (Calvo-Morata et al., 2020; Q. Chen et al., 2023). Yet, most relevant research focuses on comparing digital interventions to other approaches, and the outcome variables considered vary widely (Q. Chen et al., 2023). In this respect, despite growing literature on the topic, some notable gaps remain. It is unclear which features game developers should emphasize in creating serious games on the topic of bullying, and how the outcomes of such games can relate to a broader theoretical literature on persuasion through narrative and the creation of empathy through immersive experiences.

2.2. Engaging Experience With Narrative-Based Serious Gameplay

In order to realize and understand the potential of serious or persuasive games, scholars must identify specific features and mechanisms that contribute to their success. In this article, we focus on the specific outcome of game-induced empathy. Moreover, we propose that *narrative engagement* with a narrative-based serious game, including identification with characters, is key to the generation of empathy.

Several studies have used either a general approach to engagement or specific dimensions of engagement in predicting positive outcomes, including persuasion and enjoyment (Sherrick, 2018). Research in this area includes studies showing the importance of narrative engagement to eudaimonic enjoyment (Daneels et al.,

2021; Possler et al., 2020), games for health (Green & Jenkins, 2020; Zhou et al., 2020), and serious games (E. Lee et al., 2022; Naul & Liu, 2020; van't Riet et al., 2018). We follow the approach of Busselle and Bilandzic (2009), who proposed a measure that combined aspects of transportation, presence, emotional engagement, and attentional focus to offer a generalized measure of narrative engagement—"A state of intense cognitive and emotional focus on the story" (Bilandzic & Busselle, 2013, p. 208). Such a general approach may miss subtle variations in the experience of stories but has the benefit of both capturing the main mechanisms by which stories are thought to influence audiences and reflecting the broad mental models that people build. Narrower conceptualizations and measures risk imposing distinctions on user experiences that may not actually exist in their own understanding of a game or story.

There are several reasons to emphasize narrative engagement in the context of serious games. First, existing meta-analyses of the effectiveness of such games almost exclusively focus on titles with narrative elements (e.g., Girard et al., 2013). Despite Bogost's idea of persuasion through the mechanics of games (2007), most serious games use story to help persuade. Second, a significant body of literature shows the effectiveness of narrative persuasion (Braddock & Dillard, 2016; Ratcliff & Sun, 2020; F. Shen et al., 2015). Third, the specific goal of creating empathy encourages the use of narrative and identifiable characters. When players encounter an in-game character outside their immediate control, they have the opportunity to reflect on the motivations of that character and develop an understanding of the experiences and reasoning of others. Removing narrative elements and using an avatar who is totally interchangeable with the player minimizes the opportunity for engagement and empathy.

The literature on narrative persuasion in general offers multiple explanations for how serious games can persuade through the creation of engagement. The extended elaboration likelihood model suggests that narratives help to make complex information more digestible and comprehensible to a general audience (Slater & Rouner, 2002); the transportation imagery model posits that the immersive nature of narratives can take someone out of their own personal world and instead into the story world (Green & Brock, 2000). To synthesize these earlier theoretical advancements, Moyer-Gusé (2008) proposed an entertainment overcoming resistance model that exhaustively outlined experiential antecedents to reducing resistance, arguing that people's vicarious experience of in-story characters' cognitions, emotions, and behaviors would make it difficult for people to allocate their cognitive and affective resources to initiating counterarguing against persuasion (Slater & Rouner, 2002).

Taken further, when comparing interactive and traditional narrative-based messages, Green and Jenkins (2014) note that interactive narratives offer an individual multiple branch points inside the narrative to determine the direction and possible consequences of the plotline. This actively enlists the individual as a co-creator of the plotline, theoretically encouraging higher levels of transportation. In addition, interactive storytelling also encourages higher levels of enjoyment, and research has found that an enjoyable narrative experience is conducive to producing desirable persuasion outcomes (T. K. Lee & Kim, 2022). Serious gameplay has the natural advantage of facilitating such interactive storytelling.

2.3. Persuasive Game Features

To increase the persuasiveness of narrative-based serious games, it is promising to leverage game features that can effectively enhance players' narrative engagement. In accordance with the characteristics of narratives,

that is, character and plot (see Bilandzic & Busselle, 2013), we consider two game features as direct enablers of narrative engagement: player–avatar similarity and in-game control.

2.3.1. Player–Avatar Similarity

When processing narrative information, there exists an internal process where the message recipient resonates with and takes in the experience of a character (i.e., identification; Cohen, 2001), which can have further persuasive power by motivating behavioral mimicry or fostering favorable attitudes toward the character. Hence, the key to enhancing narrative engagement lies in designing the right avatar that the player controls. A recent meta-analysis related to narrative persuasion and character attributes concluded that the strongest persuasive impact occurred when the similarity between character and message recipients was made salient on prominent demographic and biographic characteristics (M. Chen et al., 2024). Hence, we focus on player–avatar similarity based on demographics and predict that increasing the similarity between a player and their controlling avatar will enhance their perception of player–avatar similarity. The perceived similarity then blurs the boundary between one's identity in real life and that in the game world, helping the player internalize the thoughts and feelings of their controlling avatar (Cohen, 2001), which facilitates the development of player–avatar identification (Li et al., 2013). With identification heightening one's emotional and cognitive connections with their controlling avatar (Fernández Galeote & Hamari, 2021), a player who identifies with their avatar is further likely to experience higher engagement with the narrative-based serious gameplay. Based on this rationale, we propose the following hypotheses:

> H1: A high level of player–avatar similarity will increase one's perceived similarity with their avatar.
>
> H2: One's perceived player–avatar similarity is positively associated with their player–avatar identification.
>
> H3: One's player–avatar identification is positively associated with their narrative engagement.

2.3.2. In-Game Control

As a highly interactive medium, video games enable player control in many different ways, including customizing their representation (via the player avatar), the pace and general direction of gameplay (via gameplay decisions and navigation within game space), and even the content presented in a game's narrative (Toh, 2023). All these methods have been found to be linked with an elevated sense of in-game mastery agency over the presentation and flow of a video game experience in empirical research (e.g., Kim et al., 2015). Specifically, research suggests that it is the player's control over the flow and mechanics of the narrative experience that fosters deep engagement with video game narratives (Tanenbaum & Tanenbaum, 2010). The greater the level of control over gameplay, the greater a player's perception of their in-game autonomy should be. The degree of control over the content and flow of the experience influences players' perception of autonomy within the gameplay experience. Additionally, the degree of player identification with in-game avatars has been found to predict both immersion and autonomy (Birk et al., 2016), suggesting that players' perceptions of autonomy should be positively associated with how strongly they identify with their avatars. By affording players a high level of control (and, by extension, autonomy) in the context of an

interactive anti-bullying story for school students, stronger connections between players and both their in-game avatars as well as in-game actions can be established and problematized. We then predict:

H4: A high level of in-game control will increase one's perceived autonomy during gameplay.

H5: One's perceived autonomy is positively associated with their player–avatar identification.

H6: One's perceived autonomy is positively associated with their narrative engagement.

That said, although we expect the increased narrative engagement will attenuate resistance to persuasion, there are usually no *explicit* persuasive messages in serious games for players to counterargue with. That is, unlike designing campaign messages that usually include explicit persuasive arguments (e.g., "stop doing this"), serious game development tends not to carry out outright persuasion, but instead focuses more on amplifying player experience. In this respect, narrative-based serious gameplay might function better to foster prosocial cognitive and affective abilities.

Kors et al. (2018) pointed out that a common characteristic of prosocial persuasive games was their focus on building *empathy* among players to "feel and understand the struggles of another" (p. 493). On top of that, narratives have been found effective in initiating empathic processes (Oliver et al., 2012). Hence, there is great potential for narrative in serious games to create empathy as a result of increasing narrative engagement.

2.4. Creating Empathy in Persuasive Games

Although sometimes conceptualized as multidimensional, empathy is broadly defined as a process of sharing and understanding others' internal states (e.g., other's emotions and perspectives; Zaki & Ochsner, 2012). Under some circumstances, empathy seems to be automatic. However, past research has found empathy as effortful (e.g., Epley et al., 2004). That is, to empathize requires cognitive effort, and people avoid empathy when they perceive it to be more effortful and feel less efficacious in sharing others' perspectives and experiences (Cameron et al., 2019). According to this perspective, factors that enhance one's cognitive capacity to take another's perspective or share their experience and factors that reduce the needed effort for empathy should facilitate empathy.

A recent review suggests that high narrative engagement could enable the activation of social cognitive processes, including perspective-taking and empathy (Eekhof et al., 2022). In mediated environments (e.g., digital games, virtual reality, interactive narratives), individuals' cognitive resources may be allocated to both processing the information in the narratives and responding to the stimuli in their physical environments. The more narrative engagement, the more attention will be paid to the narratives, thereby preserving more cognitive resources available for individuals to empathize with the characters in the narratives. Specifically, in digital games, as players become more immersed in the game narrative, they pay greater attention to the in-game activities such as their interaction with the non-player characters (NPCs) and less attention to the world outside the game (Busselle & Bilandzic, 2009). Hence, greater cognitive resources will be allocated to processing the information related to the NPCs, which will further enable the players to take the NPCs' perspectives more easily, i.e., to empathize with the NPCs (Morelli & Lieberman, 2013).

Empirical research findings are generally congruent with the expectation that more engagement with the game narrative leads to greater empathy toward characters in the stories. For example, Wulansari et al. (2020) found that, in video games, morally engaging narratives increased players' perspective-taking, and perceived immersion was positively associated with empathy. Similarly, Shliakhovchuk (2024) found that in an immersive game (Papers, Please), by playing as an immigration inspector who decided whether a refugee should be admitted or turned away, participants experienced greater empathy for refugees, which led to more positive attitudes toward refugees. Therefore, we predict:

H7: One's narrative engagement is positively associated with their empathy toward the target NPCs.

2.5. Effect on Prosocial Intention

Taken further, the game-induced experience could affect prosocial intention, that is, one's voluntary actions that intend to benefit others (Batson & Powell, 2003). Specific to school bullying, DeSmet et al. (2018) found their 30-minute serious game effectively increased students' intention to act as a positive bystander to a bullying victim. Willems et al. (2024) found their four-week intervention program, encompassing a serious game, increased students' intention to help a victim in bias-based bullying situations (e.g., bullying based on race).

What could account for such game-induced influence? First, following what the entertainment overcoming resistance model postulates (Moyer-Gusé, 2008), players who become engaged with the game narrative may be more likely to act consistently with what is depicted in narrative outside of the gaming environment. For example, H. M. Lee and Li (2023) corroborated that higher immersion into immersive media was related to a higher intention to volunteer and donate to humanitarian causes. Second, decades of research using varied methods has shown a robust link between empathy and prosocial outcomes. As players develop empathy toward video game characters, they may be more likely to take the perspectives of those characters, understand their situations, and even experience the same emotions as those characters, resulting in prosocial intentions (Davis, 2006). For instance, Prot et al. (2014) found that children's prosocial gameplay in the first year predicted their level of empathy in the subsequent year, which in turn predicted their later prosocial behaviors. Hence, we predict:

H8: One's narrative engagement is positively associated with their prosocial intention after gameplay.

H9: One's empathy toward the target NPCs is positively associated with their prosocial intention after gameplay.

Figure 1 presents the conceptual model of our study.

3. Study 1

3.1. Method

We conducted a 2 (player–avatar similarity: low vs. high) × 2 (in-game control: low vs. high) online between-subjects experiment with the experimental protocol approved by the pertinent institutional review

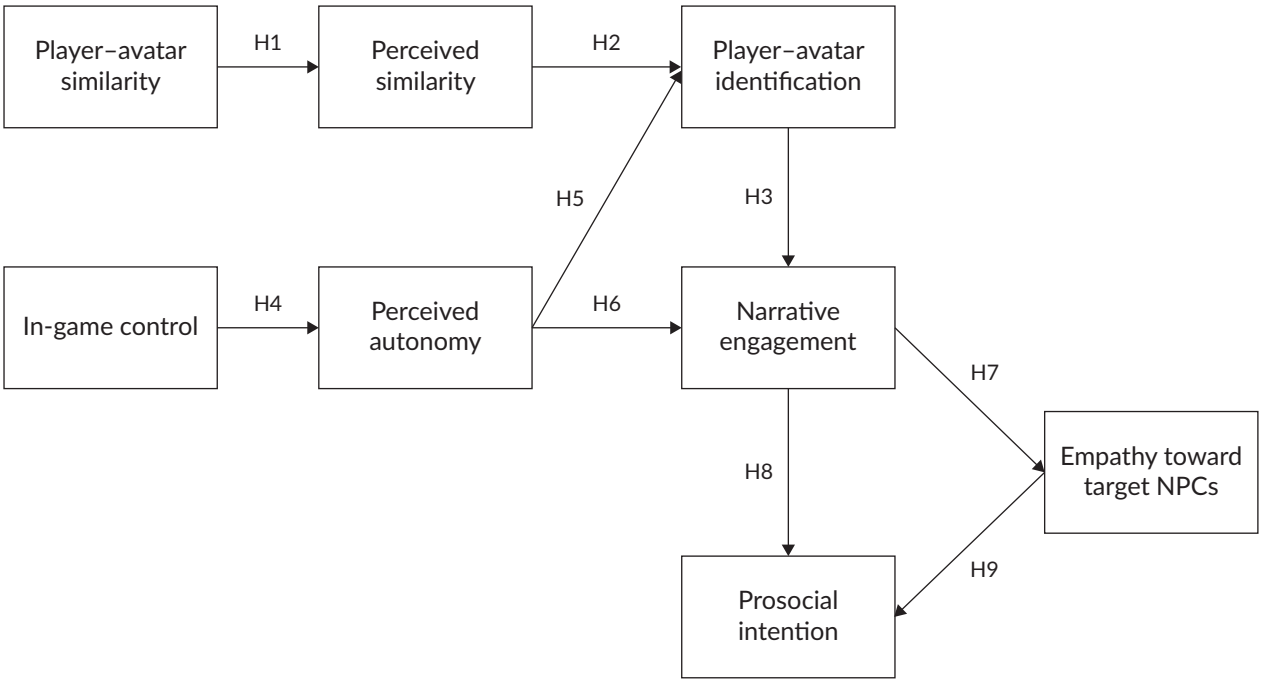

Figure 1. Conceptual model.

board. The data collection lasted from October 2019 until May 2021, with the extended time frame due to recruitment challenges and then the Covid-19 pandemic. The study proceeded as follows: After providing their informed consent, participants first self-reported their gender and race; then, they were randomly assigned to play a version of the game with features specific to their experimental condition; after that, they completed a questionnaire asking about their perception of and experience with the gameplay; finally, they were thanked and credited for their participation.

3.1.1. Game Design

We designed a role-playing serious game using the software RPG Maker MV (https://www.rpgmakerweb.com/products/rpg-maker-mv), in which participants played the game as the central character, who went through a typical school day and interacted with students, staff, and faculty in four designated scenes. During those interactions, participants acted as a bully or victim in an alternating manner (i.e., twice as a bully, twice as a victim) for a richer experience; they interacted with four designated NPCs who were victims (Characters 1 and 3) or bullies (Characters 2 and 4) accordingly. More details of the game design can be found via the link in the Data Availability section.

Altogether, there are a total of 16 versions of the game depending on the experimental manipulation. Player–avatar similarity was manipulated by assigning participants an avatar that matched their self-report demographic attributes (i.e., gender and race) in real life or not, for which we created eight avatars by gender (female and male) and race (Asian, Black, Latino/a, and White). For participants assigned to the high similarity condition, the avatar exactly matched their self-reported gender and race; for participants assigned to the low similarity condition, an avatar matching neither their gender nor race was randomly assigned; for participants who self-reported to identify with non-binary gender and/or more than one racial category, they were randomly assigned to an avatar. In addition to the visual representation of race and gender, these

traits were reinforced by an early moment in the game where players were compelled to look in a mirror and given a description of their racial/ethnic and gender identity.

Regardless of experimental condition, participants could exercise the same level of basic control over their avatar by navigating freely around each small stage and interacting with a small number of items. The experimental manipulation of in-game control (i.e., the other critical persuasive game feature for the study) involved whether participants were able to make choices (among three options in a given dialogue when interacting with a target NPC) in the gameplay. Such choices occurred in both bully-related interactions (e.g., which kind of insults to use when acting as a bully) and unrelated ones (e.g., deciding on what outfit to wear for the day to get started). For participants assigned to the conditions where such critical control was absent, in those designated dialogues, one of the same three options was programmed to be randomly presented.

3.1.2. Sample

We recruited 130 participants from undergraduate classes at a large public university in the United States. They signed up for the study in exchange for extra course credits. There were 38 males, 91 females, and 1 indicating "other" (M_{age} = 20.77 years, SD_{age} = 3.68). Among all, 88 self-identified as White, 24 as Asian, 8 as Hispanic/Latino, 8 as Black, and 2 as "other."

We ran a post hoc power analysis to examine if our sample was sufficient for hypothesis testing. A recent meta-analytic review revealed a medium effect size (based on Cohen, 1992) for the positive influence of immersive media on individual prosociality (Canet & Sánchez-Castillo, 2024). Although there is a lack of generalized effect size of serious games in the context of school bullying, given the immersive nature of gameplays, we decided to adopt the medium effect size as the benchmark. With the analysis of variance as the target statistical analysis, effect size f = .25 (i.e., the medium effect size based on Cohen, 1992), α = .05, and sample size N = 130, we used the G*Power software (Faul et al., 2007) and calculated that our study could achieve a statistical power of .81.

3.1.3. Measurement

Unless indicated otherwise, all variables were measured on a 7-point Likert scale where 1 = *strongly disagree* and 7 = *strongly agree*. Bivariate correlations among measured variables are presented in Table 1. Details about the measurement and descriptive statistics by experimental conditions can be found via the link in the Data Availability section.

Perceived similarity with the central game character was measured with three items such as "the character and I have similar physical attributes," *Cronbach's* α = .94, M = 2.24, SD = 1.59.

Perceived autonomy while playing the game was measured with three items such as "The game provided me with interesting options and choices" (Neys et al., 2014), *Cronbach's* α = .73, M = 2.69, SD = 1.28.

Player–avatar identification was measured with three items adapted from Li et al. (2013) such as "the character and I were one and the same," *Cronbach's* α = .71, M = 2.20, SD = 1.16.

Table 1. Bivariate correlations in Study 1.

	Perceived similarity	Perceived autonomy	Player–avatar identification	Narrative engagement	Empathy toward victim NPCs	Empathy toward bully NPCs	Prosocial intention
Perceived similarity	—						
Perceived autonomy	.23**	—					
Player–avatar identification	.42***	.56***	—				
Narrative engagement	.18*	.28**	.30***	—			
Empathy toward victim NPCS	.10	.18*	.15†	.55***	—		
Empathy toward bully NPCs	.31***	.29***	.48***	.22*	.33***	—	
Prosocial intention	–.03	.15†	.07	.16†	.10	–.02	—

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$; † $p < .10$; all 2-tailed.

Narrative engagement was measured using 12 items such as "at times during the gameplay, the story world was closer to me than the real world" (Busselle & Bilandzic, 2009), *Cronbach's* $\alpha = .77$, $M = 4.00$, $SD = .89$.

Empathy toward the target NPCs was measured respectively using 12 items, such as "I can feel the character's emotions" (L. Shen, 2010). We averaged the scores of empathy toward the two victim NPCs and those toward the two bully NPCs separately to create a respective index measuring participants' empathy toward the victim (*Cronbach's* $\alpha = .95$, $M = 4.32$, $SD = 1.31$) and empathy toward the bully (*Cronbach's* $\alpha = .93$, $M = 2.58$, $SD = 1.41$).

Prosocial intention was measured by asking participants "after playing the game, how likely are you," to which they responded to four prompts such as "to give help to bullied students?" (Paek et al., 2012), *Cronbach's* $\alpha = .90$, $M = 4.91$, $SD = 1.54$.

3.2. Results

Prior to hypothesis testing, we performed a set of analyses of variance to explore the total causal effects of persuasive game features on players' experience with the gameplay and prosocial intention. The statistics can be found in our supplementary materials via the link in the Data Availability section.

3.2.1. Original Model

To test our hypotheses, we conducted a path analysis using SPSS Amos 26 (IBM, 2022). The model fit is not ideal, χ^2 (DF = 23) = 67.41, $p < .001$, CFI = .812, TLI = .705, RMSEA = .122 (90%CI [.089, .157],

PCLOSE < .001). However, we decided to proceed with interpreting the path coefficients, which are still informative, and consider implications of the model fit afterward.

As shown in Figure 2, in support of H1, H2, and H3, playing an avatar similar to oneself increased perceived player–avatar similarity, which was further positively associated with player–avatar identification, and then narrative engagement.

For the other persuasive game feature, in support of H4 and H5, a higher level of in-game control increased one's perceived autonomy during the gameplay, which was further positively associated with player–avatar identification. Yet, rejecting H6, increased perceived autonomy was not significantly associated with more narrative engagement.

Furthermore, supporting H7, we found a significant positive association between narrative engagement and empathy; the association was stronger for empathy toward victim NPCs than empathy toward bully NPCs. However, neither narrative engagement nor empathy were associated with one's prosocial intention after gameplay in a significant manner, thus rejecting H8 and H9.

3.2.2. Modified Model

Recognizing the somewhat poor model fit, we followed prior work (e.g., Meier et al., 2020; Rieger et al., 2014) and added three paths to improve the model fit as shown in Figure 3, respectively (a) perceived similarity → empathy toward bully NPCs, (b) perceived autonomy → empathy toward bully NPCs, and (c) player–avatar identification → empathy toward bully NPCs. When checking the modification indices to

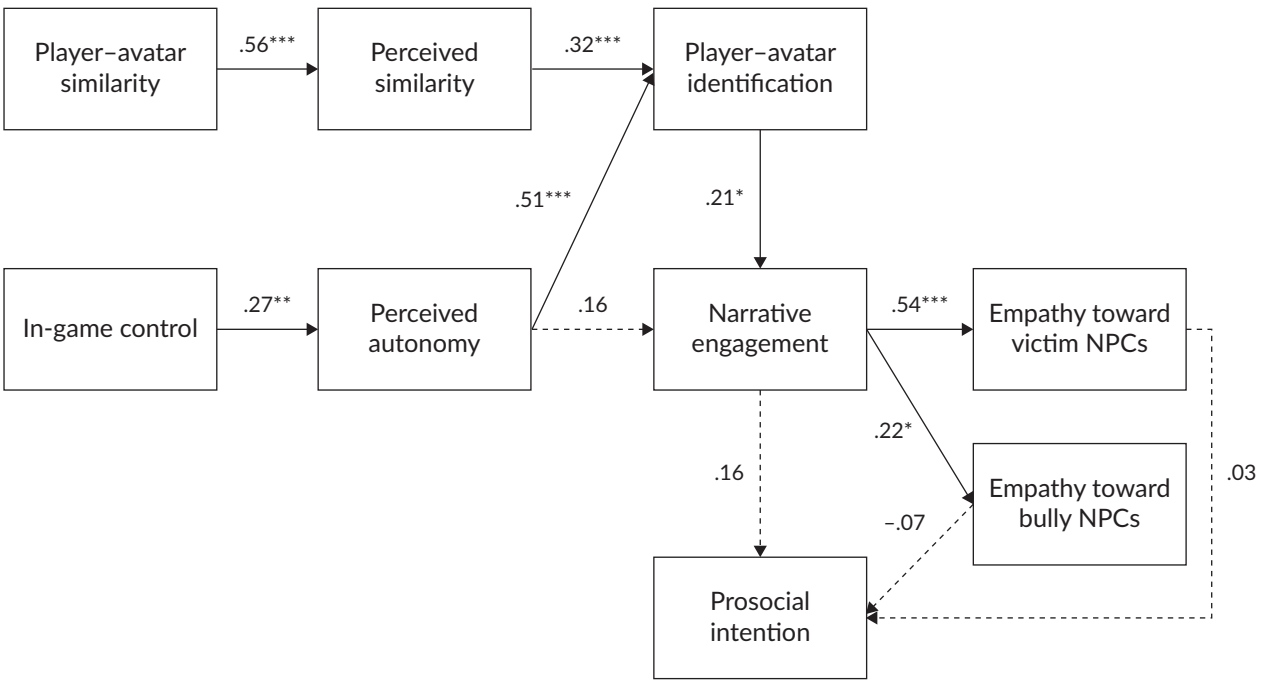

Figure 2. Path analysis model with standardized coefficients (*β*) in Study 1. Note: *** $p < .001$, ** $p < .01$, * $p < .05$.

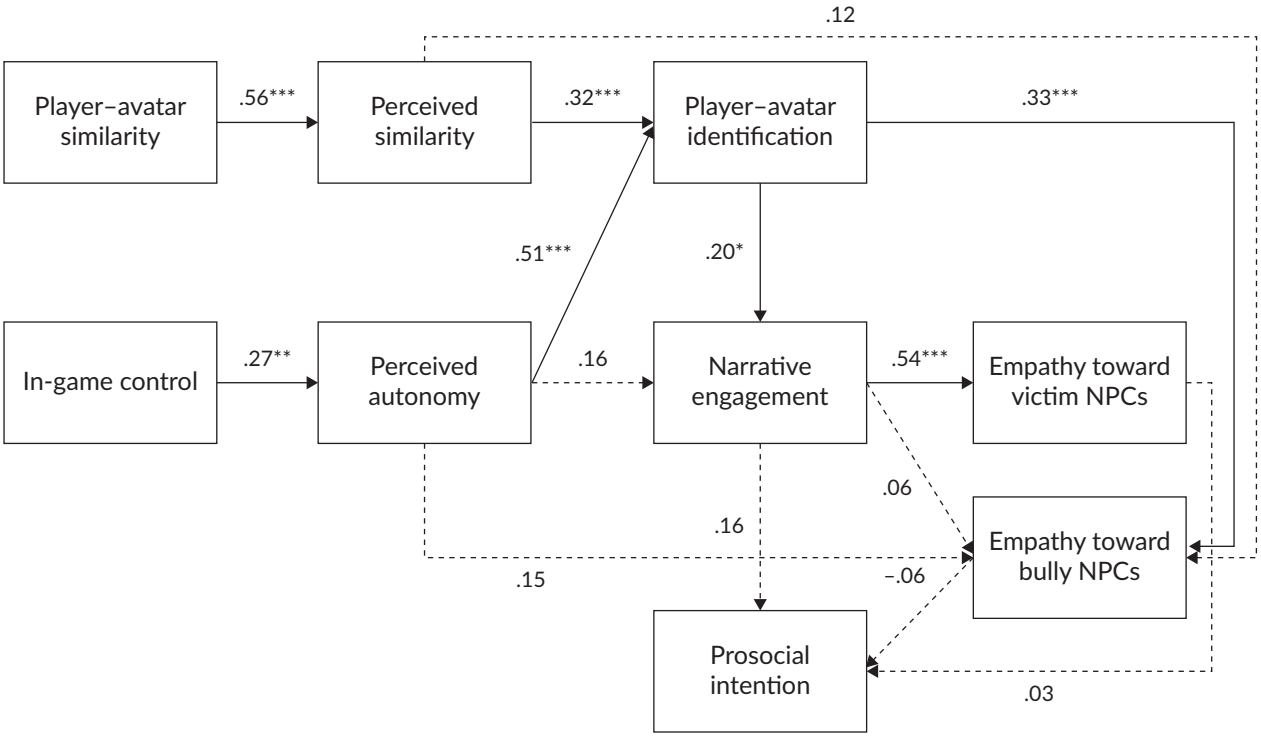

Figure 3. Modified path analysis model with standardized coefficients (*β*) in Study 1. Note: *** $p < .001$, ** $p < .01$, * $p < .05$.

improve model fit, SPSS Amos suggested co-varying the error terms of those variables. Yet, due to the lack of theoretical reasoning and concerns that this might subject our results to chance and sample-specific idiosyncrasies (Landis et al., 2010; MacCallum et al., 1992), we decided to add the directional paths instead considering their high correlations as shown in Table 1.

The fit for the modified model improved, χ^2 (DF = 20) = 30.65, $p = .06$, CFI = .955, TLI = .919, RMSEA = .064 (90%CI [.000, .107], PCLOSE = .28). With the modified model, we still found support for H1, H2, H3, H4, and H5. There was partial support of H7 such that narrative engagement was positively associated with empathy toward victim NPCs, but not with empathy toward bully NPCs. For the three newly added paths, we found a significantly positive association between player–avatar identification and empathy toward bully NPCs.

3.3. Discussion

In Study 1, we found some indication of specific game features amplifying player experience and generating empathy in a narrative-based serious game. However, neither narrative engagement nor empathy significantly predicted prosocial intention. Reflecting on the study procedure and results, especially the significant positive associations between empathy toward bully NPCs and other perceptual variables (as shown in Table 1), we speculate that our game design, which had participants act as both bullies and victims, might have interfered with their empathic processes that should have led to desired prosocial outcomes. Another possibility is that, although we proposed a conceptual model (Figure 1) derived from the gaming and persuasion literature, the poor fit of the tested model could indicate the presence of alternative mechanisms and/or the misalignment between theory and empirical data.

Without further evidence, it was difficult to conclude whether some of our null findings resulted from study-specific idiosyncrasies, the mis-specified conceptual model, or a combination of both. We therefore decided to conduct Study 2 to better address the role of the player perspective, exploring whether we could replicate findings from Study 1 with the same model. We propose an overarching research question as follows:

> RQ1: How does player perspective (as victim vs. as bully) influence the effects of persuasive game features on player experience and prosocial intention?

4. Study 2

4.1. Method

We conducted a 2 (player–avatar demographic similarity: low vs. high) × 2 (in-game control: low vs. high) × 2 (player perspective: as victim vs. as bully) online between-subjects experiment lasting from October 2023 until March 2024 at two universities in the United States. The study procedure was consistent with that in Study 1.

4.1.1. Game Design

Building on the game design in Study 1, we further varied the perspective that participants would take during the gameplay and revised other parts of the game accordingly, resulting in a total number of 32 versions of the game. For participants assigned to the as-victim condition, in the four designated dialogues, they received insults from the respective bullying NPCs. For participants in the as-bully condition, in those scenarios, they acted as the bully to insult the respective victim NPCs.

4.1.2. Sample

A total of 426 undergraduate students signed up for the study. After filtering out incomplete responses, the final dataset consisted of 250 participants. There were 53 males, 196 females, and one indicating "other" (M_{age} = 20.63 years, SD_{age} = 3.81). Among all, 189 self-identified as White, 26 as Asian, 14 as Hispanic/Latino, 12 as Black, and 9 as "other." We ran another post hoc power analysis as done in Study 1 and found that our study could achieve a statistical power of .98.

4.1.3. Measurement

We adopted the same measurements as used in Study 1, including perceived similarity (*Cronbach's* α = .91, M = 2.24, SD = 1.56), perceived autonomy (*Cronbach's* α = .81, M = 2.87, SD = 1.45), player–avatar identification (*Cronbach's* α = .76, M = 2.36, SD = 1.38), narrative engagement (*Cronbach's* α = .75, M = 4.02, SD = .91), empathy (*Cronbach's* α = .98, M = 3.46, SD = 1.52), and prosocial intention (*Cronbach's* α = .89, M = 4.92, SD = 1.41). Notably, for participants assigned to the as-bully condition, they reported their empathy toward the four victim NPCs (which were then averaged); for participants assigned to the as-victim condition, their empathy was reported toward the four bully NPCs (which were then averaged). Table 2 presents the bivariate correlations. Descriptive statistics by experimental conditions can be found via the link in the Data Availability section.

Table 2. Bivariate correlations in Study 2.

	Perceived similarity	Perceived autonomy	Player–avatar identification	Narrative engagement	Empathy	Prosocial intention
Perceived similarity	—					
Perceived autonomy	.29**	—				
Player–avatar identification	.51***	.48***	—			
Narrative engagement	.19**	.35**	.41***	—		
Empathy	.06	.00	–.01	.07	—	
Prosocial intention	–.05	.10	.22***	.15*	.10	—

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$; all 2-tailed.

4.2. Results

4.2.1. Original Model

We specified the same original path analysis model as that in Study 1 using SPSS Amos 26 (IBM, 2022). The overall model fit improved as compared to the original model in Study 1, χ^2 (DF = 36) = 94.80, $p < .001$, CFI = .844, TLI = .757, RMSEA = .081 (90%CI [.061, .101], PCLOSE = .006).

Figure 4 and Figure 5 present path coefficients for each version of the player perspective manipulation. To answer RQ1, we further performed multi-group analysis to compare models based on player perspective, as shown in Table 3. Overall, the findings supported H1, H2, H4, and H5, and rejected H8 across the two player perspective conditions.

There are two hypothesized associations that are significantly different between the as-victim and the as-bully conditions, based on the multi-group analysis. First, in partial support of H3, when playing the game as the victim, participants' player–avatar identification was positively associated with their narrative engagement, which was not observed in the as-bully condition. Second, we found a significant positive association between empathy and prosocial intention when participants played the game as a bully (rather than as a victim), offering partial support to H9.

Furthermore, as shown in Figure 5, in the as-bully conditions only, we observed a significant positive association between perceived autonomy and narrative engagement, and between narrative engagement and empathy. These findings provided partial support to H6 and H7.

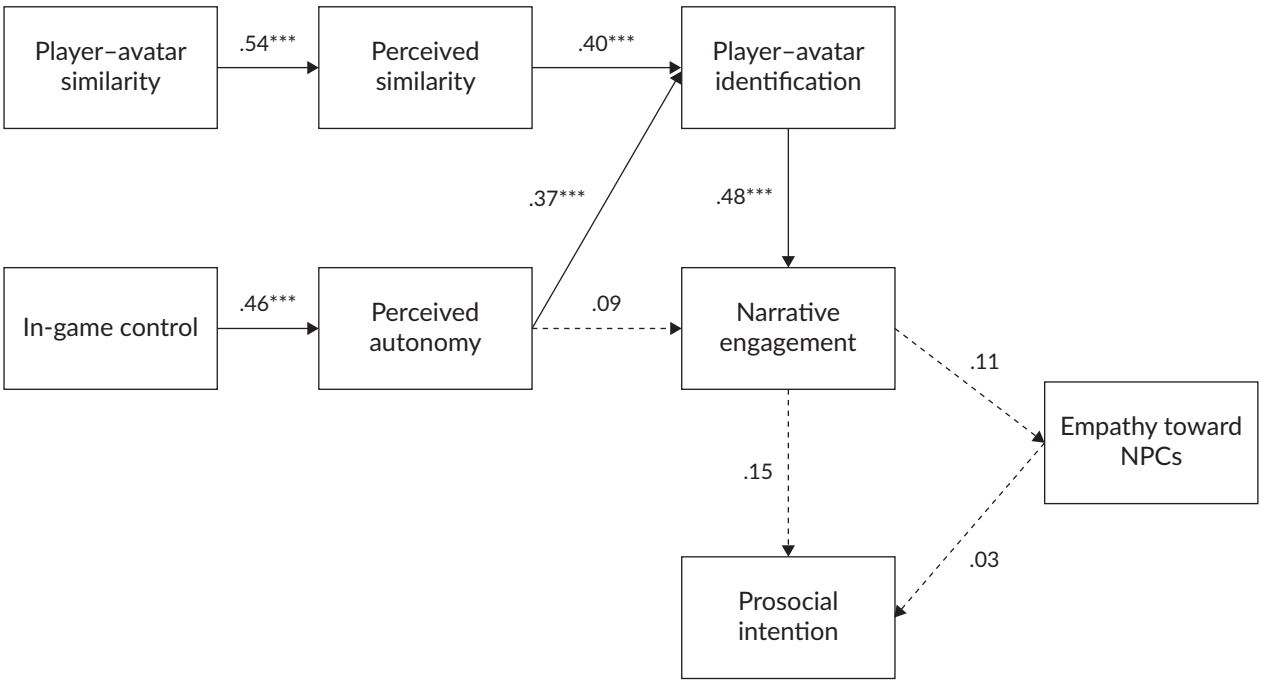

Figure 4. Path analysis model with standardized coefficients (*β*) in Study 2 (player perspective = as victim). Note: *** $p < .001$.

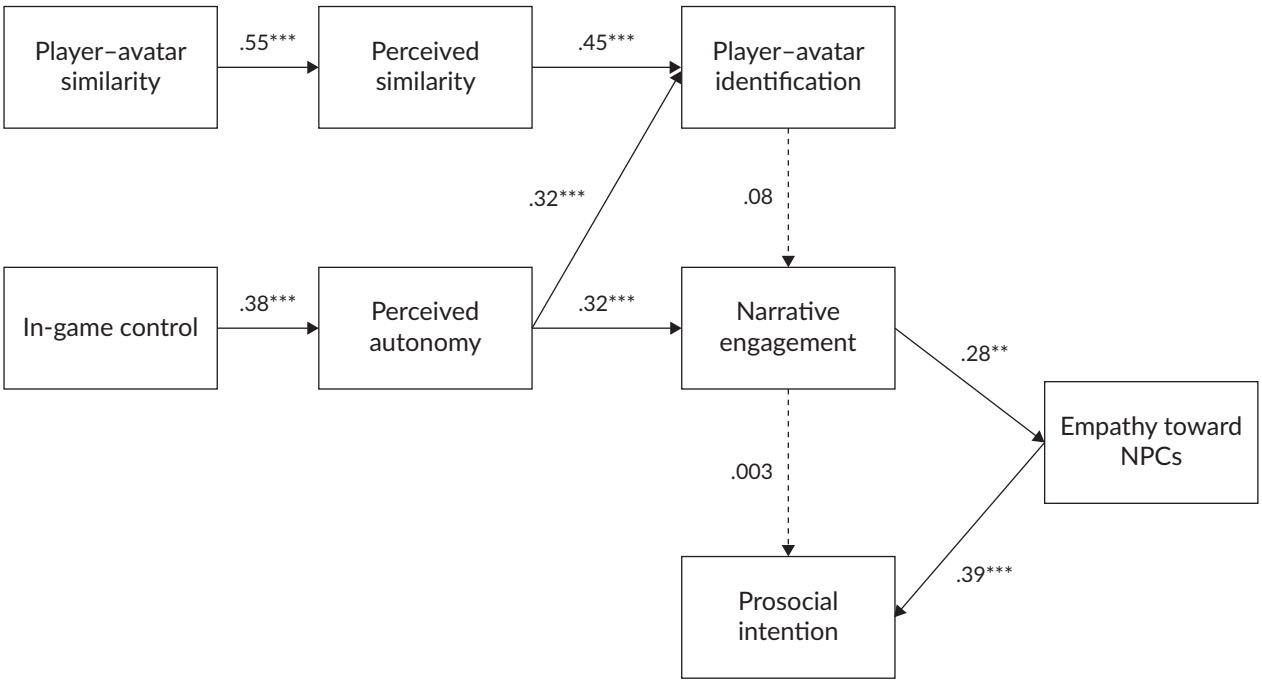

Figure 5. Path analysis model with standardized coefficients (*β*) in Study 2 (player perspective = as bully). Note: *** $p < .001$, ** $p < .01$.

Table 3. Invariance tests between play-as-victim and play-as-bully perspectives in the original model.

	χ^2	df	$\Delta\chi^2$	Δdf	*p*	RMSEA	ΔRMSEA
Base model	94.80	36				.081	
Equal loadings	115.73	45	20.93	9	.013	.080	–.001
Constraining player–avatar similarity → perceived similarity	95.32	37	.29	1	.591	.080	–.001
Constraining in-game control → perceived autonomy	95.09	37	.51	1	.472	.080	–.001
Constraining perceived similarity → player–avatar identification	94.86	37	.06	1	.806	.079	–.002
Constraining perceived autonomy → player–avatar identification	96.05	37	1.25	1	.263	.080	–.001
Constraining player–avatar identification → narrative engagement	103.38	37	8.58	1	.003	.085	.004
Constraining perceived autonomy → narrative engagement	97.63	37	2.83	1	.093	.081	0
Constraining narrative engagement → prosocial intention	96.08	37	1.28	1	.258	.080	–.001
Constraining narrative engagement → empathy	97.99	37	3.19	1	.074	.082	.001
Constraining empathy → prosocial intention	101.25	37	6.45	1	.011	.084	.003

4.2.2. Modified Model

We specified the same modified model to remain consistent with that in Study 1. The model fit improved when compared with the original model in Study 2, χ^2 (DF = 30) = 62.16, p = .001, CFI = .914, TLI = .840, RMSEA = .066 (90%CI [.042, .089], PCLOSE = .125). Figure 6 and Figure 7 present the path coefficients, while Table 4 presents the model comparisons.

The findings were mostly consistent with those in the original model. For the newly added paths, the association between perceived similarity and empathy significantly differed between the as-victim and the as-bully conditions based on the multi-group analysis. That is, when playing the game as the victim, participants' perceived similarity was positively associated with their empathy toward the NPCs, which was not observed in the as-bully condition.

5. General Discussion

Through two studies, we explored serious games as a means to tackle an important social issue—school toxicity—based on the unique engaging experience that video games can leverage for persuasion. First, our results extend prior work on player–avatar similarity (M. Chen et al., 2024) to the context of game-based bullying intervention, by confirming the effectiveness of matching a player with their controlling avatar based on demographic attributes to enhance their identification with the avatar. Study 2 further suggests that when people assumed the role of bully (rather than victim), the association between identification and narrative engagement weakened and became statistically non-significant.

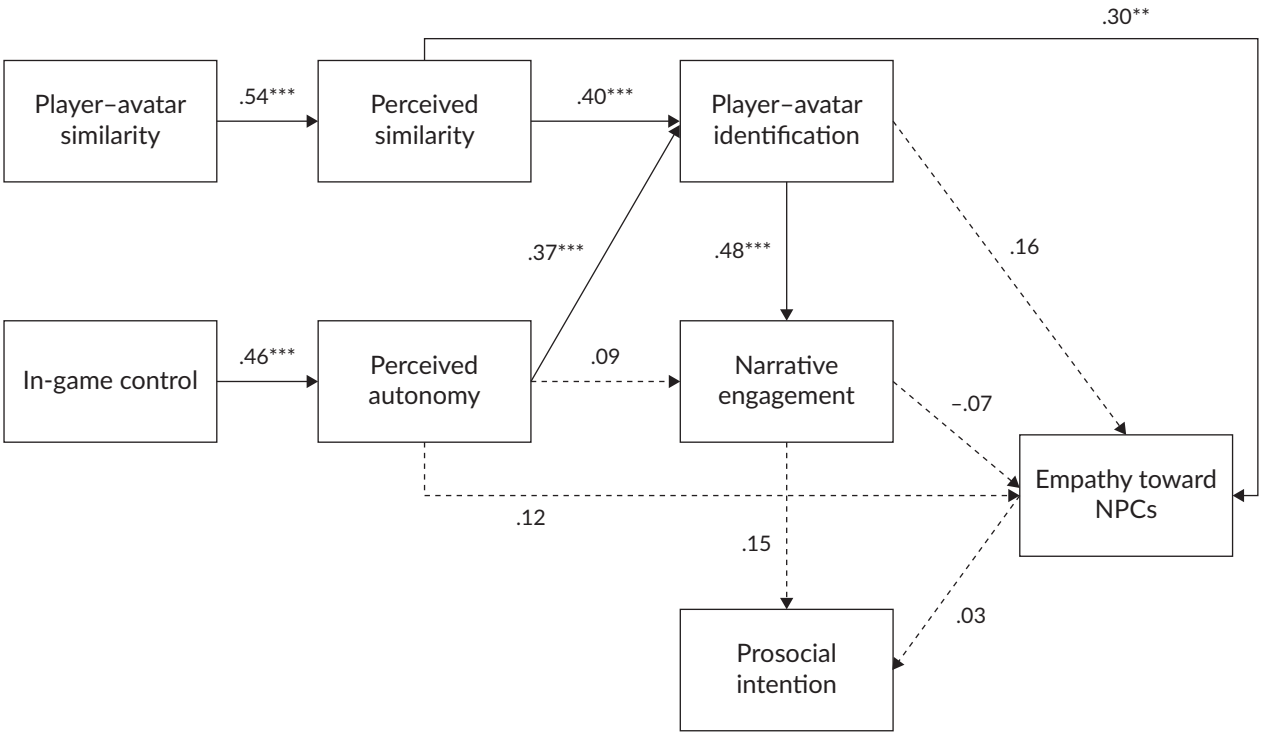

Figure 6. Modified path analysis model with standardized coefficients (*β*) in Study 2 (player perspective = as victim). Note: *** $p < .001$, ** $p < .01$.

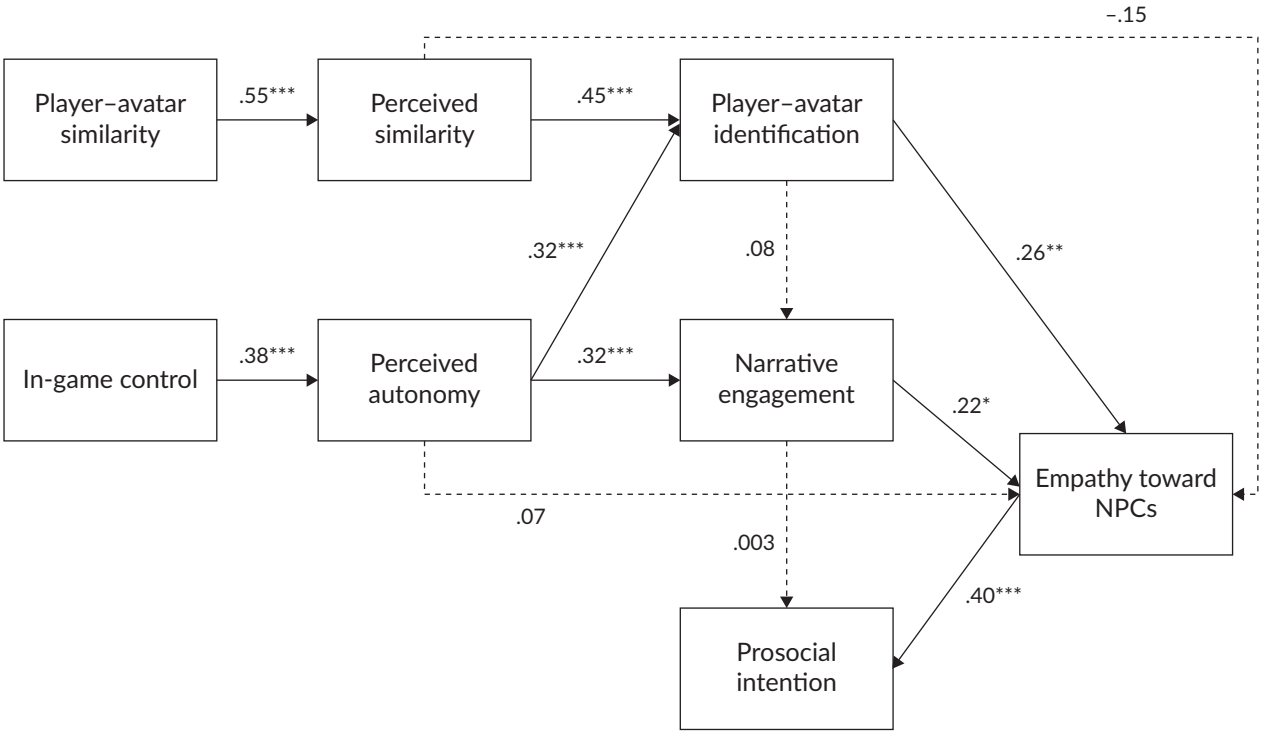

Figure 7. Modified path analysis model with standardized coefficients (*β*) in Study 2 (player perspective = as bully). Note: *** $p < .001$, ** $p < .01$, * $p < .05$.

Table 4. Invariance tests between play-as-victim and play-as-bully perspectives in the modified model.

	χ^2	df	$\Delta\chi^2$	Δdf	*p*	RMSEA	ΔRMSEA
Base model	62.16	30				.066	
Equal loadings	94.63	42	32.48	12	.001	.071	.005
Constraining player–avatar similarity → perceived similarity	62.44	31	.29	1	.591	.064	–.002
Constraining in-game control → perceived autonomy	62.67	31	.52	1	.472	.064	–.002
Constraining perceived similarity → player–avatar identification	62.22	31	.06	1	.806	.064	–.002
Constraining perceived similarity → empathy	71.32	31	9.16	1	.002	.072	.006
Constraining perceived autonomy → player–avatar identification	63.41	31	1.25	1	.263	.065	–.001
Constraining perceived autonomy → empathy	62.20	31	.05	1	.824	.064	–.002
Constraining player–avatar identification → narrative engagement	70.73	31	8.58	1	.003	.072	.006
Constraining player–avatar identification → empathy	63.75	31	1.59	1	.207	.065	–.001
Constraining perceived autonomy → narrative engagement	64.98	31	2.83	1	.093	.066	0
Constraining narrative engagement → prosocial intention	63.44	31	1.28	1	.258	.065	–.001
Constraining narrative engagement → empathy	67.51	31	5.35	1	.021	.069	.003
Constraining empathy → prosocial intention	68.61	31	6.45	1	.011	.070	.004

Second, when it comes to in-game control, our findings corroborated the link between (sense of) autonomy and identification in existing research (Birk et al., 2016). Yet, as shown in Study 2, the association between (sense of) autonomy and engagement observed in prior work (e.g., Kim et al., 2015) was further subject to player perspective such that only acting as the bully was able to engage players with the storytelling.

Third, adding to both conceptual and empirical work (e.g., Eekhof et al., 2022; Wulansari et al., 2020), our findings substantiated the link between narrative engagement and empathy, especially when players were instructed to take the bully's perspective. With the imposed bully perspective, we further found the association between empathy and prosocial intention, thereby extending relevant prior research (Davis, 2006; Prot et al., 2014) by illuminating the boundary conditions.

Notably, in both studies, we also reported modified models with a better model fit to offer insights for future research. However, we do want to note the risks associated with this data-driven approach. While our original model did not fit the data well, it was developed based on relevant theoretical work. Therefore, our findings need to be carefully interpreted through the lens of both types of models, and the modified models are in greater need of replication.

In the next sections, we discuss the implications of these results, followed by suggestions for future directions.

5.1. Implications

The theoretical implications of our study are two-fold. First, we demonstrated the potential of serious games as one important genre of entertainment media for facilitating prosocial outcomes. Rather than exerting direct persuasive influences, serious games can induce social influence through persuasive game features as the enabler of engaging experience with the gameplay, in line with previous research on narrative persuasion (Moyer-Gusé, 2008).

Second, informed by research on narrative effects and empathy (Oliver et al., 2012; L. Shen, 2010), we explored empathy as an additional mechanism that might potentially help to overcome resistance to persuasion in role-playing serious games. Echoing and extending the perspective that generating empathy requires one's cognitive capacity (Cameron et al., 2019), we further found that whose cognitive capacity was used also matters. That is, only when people took the perspective of a bully did being engaged with the story increase their empathy toward the target NPCs with desirable behavioral implications. These findings provided critical preliminary insights into the boundary conditions with respect to creating empathy in persuasive games.

Practically, our studies encourage pertinent stakeholders (e.g., game designers, educators, and administrators) to closely examine the intended and unintended consequences resulting from persuasive game features that influence player experience when compared to static educational programs (Annetta, 2008). Across the two studies, we found relatively consistent effects of in-game control on enhancing player experience, making it a critical game feature to consider when designing relevant narrative-based serious games for prosocial outcomes. That said, the different model performances subject to player perspective (as shown in Figures 3–6) would caution relevant stakeholders when considering from which perspective a story should be told in serious games.

5.2. Limitations and Directions

In both studies, we observed relatively low mean scores for perceived similarity, perceived autonomy, and player–avatar identification, which might result from the limitations of our game designs. Despite our efforts to achieve player–avatar matching based on gender and race, participants in the high similarity conditions might still perceive their controlling avatar as not looking like themselves or a real person in their life, thereby finding it challenging to internalize the identity and experience of the avatar. Perhaps a game in which users could select avatars with whom they identify or a game design with more realistic graphics could help address this. Another factor limiting perceived similarity could be the stylized graphics used for avatars. While in-game texts reinforcing the identity (e.g., "I think I identify most with Asian" said by the player's controlling avatar in the introductory scene) were included as part of our game design, more could be done to signal identity both textually and visually.

Related to this, the serious game that we designed for the two studies is relatively simple and straightforward, and did not grant players many opportunities to explore the game world outside the programmed interaction scenes. This could help explain the lower sense of autonomy than expected. A game with more flexibility in the order of play could be advantageous. At the same time, however, too much freedom for players might distract them from the intended message or reduce the likelihood of exposure to key elements.

In both studies, the original model fit was shy of traditional cutoffs. This suggests that the underlying theory supporting that model may have been inadequate or incorrect. Some key mechanisms not included in our measures could require consideration, such as reactance, social norms, or social presence. Alternatively, with the modified models, we found some significant direct associations between one's perception of/experience with their in-game avatar and their empathy toward NPCs, without narrative engagement serving as a mediator. This might suggest that existing models of persuasion through narrative-based entertainment are insufficient to explain the potential effects of serious games.

Another consideration for future research could be expanding the persuasive message beyond simple narrative elements. Perhaps developers could integrate the consequences of bullying into the procedural rhetoric of the game, reinforcing the consequences for self-esteem or social connections through gameplay mechanics or rewards. Additionally, the game could more explicitly discourage bullying rather than relying on empathy to discourage the behavior, although this might risk triggering reactance.

6. Conclusion

In conclusion, narrative-based serious games can persuade for prosocial purposes without engaging explicit persuasive messaging. Instead, certain game features have shown promise in promoting prosocial action tendencies through deepening players' engagement with storyline and creating empathy toward the interactant NPCs. Scholars and practitioners in the broad field of entertainment education could consider incorporating narrative-based serious game development with persuasive game features to facilitate prosocial communication and behaviors.

Acknowledgments

We would like to thank the participants in our two studies for their time and effort. We also extend our thanks to the academic editors and the three anonymous reviewers for their constructive feedback.

Conflict of Interests

The authors declare no conflict of interests.

Data Availability

Details of the game design and the measurement and descriptive statistics can be found at https://osf.io/wvsyj/?view_only=31434489d87246e9ab926c35983cab6d. Other data underlying this article are available upon reasonable request.

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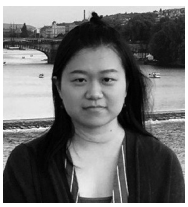

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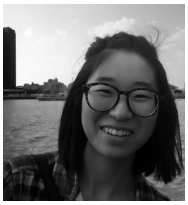

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Media and Communication
2025 • Volume 13 • Article 8662
https://doi.org/10.17645/mac.8662

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Open Access Journal

Parasocial Interactions in Otome Games: Emotional Engagement and Parasocial Intimacy Among Chinese Female Players

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Submitted: 11 May 2024 **Accepted:** 29 July 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

This study conducts qualitative research on female players of otome games, exploring the mechanisms of romantic relationship formation within these games and their impact on perceptions of real-life intimate relationships. The findings reveal that the parasocial romantic relationships formed in otome games are not entirely detached from reality; instead, they are embedded in daily life through game interaction mechanisms and the players' internalized imagination, thereby influencing the reconstruction of real-life intimate relationships. Female players show a high degree of acceptance and immersion in these romantic relationships, focusing on the emotional support provided by male characters. These relationships play a positive role in fulfilling emotional needs, regulating negative emotions, constructing self-identity, and redefining perceptions of intimacy. The intangibility of physical contact remains the only significant shortcoming, as perceived by a minority of players, pointing to a primary direction for the future development of otome games.

Keywords

emotional feedback; otome games; parasocial relationships; parasocial romantic relationships; video games; self-perception

1. Introduction

Video games are rapidly growing in the digital culture industries, especially among female users. Research shows that mobile games with over 50% female players contribute nearly 30% to total revenue (Sensor Tower, 2023), and these players spend more time and money than males (Newsijie, 2019). As the largest consumer

market, Asia has seen female gamer growth nearly double that of males (Niko Partners, 2023), yet research on this demographic outside the West remains limited (Song & Fox, 2016).

Otome games, designed for women, allow players to engage in romantic scenarios with male characters, providing a secure environment for emotional exploration (Andlauer, 2018). Mr. Love: Queen's Choice, launched in 2017, quickly gained popularity with seven million installs and 2.02 million daily active users within a month (Jiguang Data, 2018). Subsequent titles like Light and Night and Tears of Themis have continued to captivate this audience. Studies have shown that female players can develop profound emotional bonds with game characters, evolving into parasocial romantic relationships (Ganzon, 2019; Gong & Huang, 2023). Moreover, emotional relationships in otome games may positively alleviate loneliness, satisfy the need for social companionship, and enhance social well-being (Stein et al., 2022). Thus, the emotional construction of female players within games and its shaping influence on their real-world perceptions and behaviors warrant further investigation. Despite significant research into parasocial relationships within otome games, there remains a lack of thorough investigation into the psychological processes and their impact on interpersonal relationships in the real world.

Based on this, the article explores the parasocial relationships that female players develop with male virtual characters, analyzing how these relationships are constructed and maintained over time. It investigates how female players perceive their identities and relationships within these virtual interactions and how these perceptions influence their understanding of real-world intimate relationships. This study aims to broaden parasocial relationship theory's application in digital media and video gaming. It enhances our comprehension of emotional connections in human–computer interactions, especially examining the complex dynamics in intimate relationships between genders. The research underscores the role of digital media in shaping and understanding gender identities, social behavior, and emotional bonds, particularly in contexts where cultural and social structures may limit women's expression and agency. These insights offer valuable implications for video game development, urging developers to create games that cater to women's emotional needs and societal expectations.

2. Literature Review

2.1. The Otome Game

Otome games are romantic electronic games aimed at female consumers and featuring heterosexual relationships (Song & Fox, 2016). These games primarily revolve around romance and simulated dating themes, intending to establish and develop romantic relationships between male and female characters (Song & Fox, 2016). In the games, players assume the role of the female protagonist, who must cultivate the affection of male characters by selecting specific actions or dialogues at critical moments, thereby advancing romantic relationships toward an ideal narrative outcome (Andlauer, 2018).

In China, otome games gained popularity following the 2017 release of Mr. Love: Queen's Choice by Chinese company Paper Games, which quickly topped the App Store charts and fueled the growth of the female gaming market (Han & Wang, 2020; Huan, 2022). Chinese otome games typically center around rich storylines, with players advancing the plot through interactions with multiple characters (Wang, 2023). The gameplay often focuses on card collection, where players gather character cards through tasks and

activities and upgrade these cards to unlock text messages, phone calls, and date scenarios with the male protagonists. As in other countries, otome games in China are primarily designed for female players. Wang (2023) notes that the choices of dialogue and outcomes in these games directly foster players' emotional expression, allowing them to share and explore personal feelings freely, thus providing a new space for female players to express themselves. The games are often designed from a female-centric perspective, creating female characters oriented towards self-appreciation and self-pleasure. The characters play active roles in advancing the storyline and possess the freedom to make choices, further normalizing sexual autonomy and independence among Chinese female players (Wang, 2023). Research also focuses on social support among players, noting that otome games provide a platform for female players to express and support each other, especially as they often face gender inequalities (Lei et al., 2024). However, some studies point out that the narratives in otome games still revolve around traditional, commercialized romantic and gender norms (Liu & Lai, 2022). In these narratives, the female protagonists are often portrayed as damsels in distress, reliant on male characters for rescue, with players frequently unaware of the gender dynamics within the game (Liu & Lai, 2022). Other research focuses on the romantic relationships between players and characters (Wang, 2023; Wu et al., 2023). Some scholars suggest that players may form parasocial relationships with game characters (Hua & Xiao, 2023) and believe that the romantic relationships in the games may indirectly influence players' idealized romantic beliefs (Song & Fox, 2016). However, Lei et al. (2024) counter the notion that games influence players' idealized romantic beliefs, arguing that this perspective incorrectly confines female players to contexts of marriage and reproduction. The research on how otome games affect female players requires deeper investigation.

2.2. Parasocial Phenomenon in Otome Games

The parasocial interaction concept, introduced by Horton and Wohl in 1956, explains how audiences form one-sided relationships with media figures, perceiving a semblance of face-to-face communication through media's visual and auditory details (Horton & Wohl, 1956). While initially considered transient during media consumption, Rubin et al. (1985) expanded this concept to parasocial relationships, which form lasting emotional bonds beyond brief media encounters, involving deeper emotional traits such as friendship and psychological attachment (Levy, 1979). Tukachinsky (2010) further categorized parasocial relationships into parasocial romances and friendships, with parasocial romantic relationships characterized by love, sexual attraction, and emotional intensity (Liebers, 2022).

Research on parasocial relationships initially focused on traditional media characters, such as those in television dramas (Vorderer & Knobloch, 1996), talk show hosts (Rubin & Step, 2000), and TV shopping hosts (Park & Lennon, 2004). The advent of social media shifted this focus, as it became a significant platform for fostering parasocial relationships, changing the previous pattern of obtaining celebrity information through magazines and entertainment news programs (Chung & Cho, 2017). Studies have shown that parasocial relationships are strengthened when fans interact briefly with media characters via social media (Hoffner & Bond, 2022). For example, individuals maintain a friend-like parasocial relationship with media figures by following and liking posts on Instagram, further blurring the boundaries between social and parasocial interactions (Bond, 2016). With technological advancements, video games have emerged as a new field for parasocial relationship research. Hartmann (2008) argued that the interactivity brought by digital media makes parasocial phenomena in digital games more complex than in traditional mass media, as it is no longer a unidirectional interaction. However, Kavli (2012) noted that despite the

seemingly complex interactions in digital games, the interactions between players and non-player characters are minimal, often following predetermined dialogue trees. Yet, Kavli also pointed out that even such limited interactions could form profound parasocial relationships to the extent that players may wish to take these relationships beyond the game setting into the real world.

Otome games, with their interactive and immersive nature, provide fertile ground for forming deep emotional connections due to their romantic themes (Wu et al., 2023). These games allow female players to engage deeply with idealized male characters, offering a safer alternative to real-life dating by reducing emotional risks, such as rejection (Karniol, 2001). Isbister (2016) also mentioned that players can feel "loved" through interactions with non-player characters, forming a sense of intimacy. These interactions satisfy romantic fantasies and unmet social and emotional needs (Greenwood & Long, 2011), potentially evolving from transient parasocial interactions to long-term parasocial relationships. Furthermore, these games promote identity formation, as players often identify with their virtual avatars, adopting the character's perspective to enhance immersion, affecting their self-perception and emotions (Kartsanis & Murzyn, 2016; Micallef, 2016; Song & Fox, 2016; Wu et al., 2023). Players may better understand their inner needs and emotional motivations by interacting with specific character archetypes.

2.3. Mediated Intimacy

Intimacy, essential to lasting romantic relationships, involves mutual commitment, emotional positivity, cognitive closeness, and physical proximity (Moss & Schwebel, 1993). Research has underscored the role of communication and self-disclosure in building intimacy (Emmers-Sommer, 2004; Ruppel, 2015; Sprecher & Hendrick, 2004).

Technological advancements have reshaped how intimacy is expressed and experienced. Media technologies facilitate intimate connections, even over long distances, and are particularly useful for those with attachment anxieties (Attwood et al., 2017; Luo & Tuney, 2015). As platforms like social media and online dating apps evolve, they become integral in forming intimate relationships, with their relative anonymity reducing the risks associated with self-disclosure (Goldberg et al., 2022; Walsh et al., 2020). Furthermore, advances in AI and robotics are creating possibilities for emotional dependencies on media entities, potentially supplanting traditional human interactions (Skjuve et al., 2021). Thus, modern romantic relationships have evolved into "mixed-media relationships," characterized by a dynamic unfolding of online and offline communications across various media. This transformation alters social patterns and offers new possibilities for experiencing intimate relationships (Taylor & Bazarova, 2018).

Despite their popularity, the impact of romance-driven video games like otome games on intimacy dynamics remains underexplored. These games offer interactive, immersive romantic experiences, enhancing players' romantic self-efficacy through relationships with virtual characters (Gong & Huang, 2023). While these relationships can influence real-life relationship perspectives (Wu et al., 2023), the disparity between virtual and actual relationship satisfaction highlights the need for deeper investigation into how virtual intimacies affect real-world relationship dynamics (Song & Fox, 2016).

Otome games introduce a new form of mediated intimacy, providing a distinctive platform for players to develop romantic relationships with virtual characters. Through compelling storylines and interactive

dialogues, these games enable female players to form deep emotional bonds with idealized male characters, potentially leading to quasi-social romantic relationships. Although some scholars have explored parasocial relationships within otome games, there remains a gap in thoroughly analyzing the psychological mechanisms of these relationships and their impact on interpersonal relationships in the real world. The following research questions are proposed to explore these dynamics further:

> RQ1: How are parasocial relationships between female players and male virtual characters constructed and maintained over time?
>
> RQ2: How do players perceive their identities and relationships during these interactions?
>
> RQ3: How do in-game romantic relationships affect female players' perceptions of real-world intimate relationships?

3. Method

3.1. Data Collection

This study utilized in-depth interviews for two main reasons: First, the diverse backgrounds of female otome game players—varying in geography, living environments, and social contexts—make semi-structured interviews with tailored follow-up questions more effective for reaching theoretical saturation than surveys. Second, the deeply personal nature of intimate relationships means that interviews can provide deeper insights into how players perceive their gender roles and navigate the development and maintenance of romantic relationships.

From March to July 2023, we employed purposive sampling to select 25 female players of mainstream otome games on the Xiaohongshu platform within mainland China. The games included Mr. Love: Queen's Choice, Light and Night, Tears of Themis, and Lovebrush Chronicles, among others. These participants were primarily chosen because they had previously posted popular graphics or videos with otome game hashtags. Many female players expressed strong approval and deep resonance with the emotional experiences described in the comments sections of these posts. Thus, these respondents are representative and can clearly articulate their emotional experiences. Additionally, while searching for interview subjects, we considered that although otome games are primarily designed for female players, there is a potential male player base. However, due to the small number of male players, the difficulty in conducting effective interviews with them, and the potential limited generalizability of their results, we decided to limit the participants in this study to female players.

The semi-structured interviews focused on female players' game usage and emotional experiences. The interview questions covered aspects such as game usage, the process of emotional formation and maintenance, descriptions of emotional states, emotional cycles, and real-world impacts. In the first part of the interview (concerning game usage), respondents recalled and compared emotional experiences across different otome games, eventually selecting the most memorable male character to discuss. Questions were then tailored around the romantic relationship with this character, which was the most emotionally impactful and longest-lasting. This study required participants to have actively played for at least six months to ensure they had deeply immersive romantic experiences. Each interview lasted between 45 and

90 minutes, with participants aged 18 to 35. Each interview was recorded, transcribed, and documented in writing. In terms of interview format, this study employed a combination of traditional face-to-face and online interviews to accommodate the needs of participants with different personalities, thereby enhancing the likelihood of self-disclosure by the interviewees.

3.2. Sampling

The demographic statistics of the valid sample are detailed in Table 1 of the Supplementary File. The sample collection adhered to the principle of information saturation, which was achieved after conducting interviews with 25 participants. It indicated that gathering experiential material from the interviewees was essentially complete. The participants ranged from 18 to 35 years old and had been playing games for six months to five years. All participants had at least a high school education and were adept at articulating their gaming experiences. Regarding romantic status in real life, the vast majority of participants (23) were single at the time of the interviews, and most (16) had prior experiences in real-life romantic relationships, which enabled them to express their perceptions of intimate relationships accurately.

3.3. Thematic and Textual Analysis

This study adopted Braun and Clarke's (2021) thematic analysis approach, which involves simultaneous data collection and processing according to the requirements of theoretical sampling (Birks & Mills, 2015). Ten female players were initially interviewed, and three researchers repeatedly read through the interview texts, applying the constant comparison technique (Charmaz, 2014) for preliminary coding of the textual content. The initial coding phase categorized the data into three themes: Establishment of Romantic Relationships Within the Game, Relationship Maintenance, and Emotional Feedback, which were linked to the stages of romantic relationships. Subsequent interviews, guided by these sensitizing concepts, involved adding five new participants for one-on-one interviews each time. The overall data saturation was assessed with each round of interviews until no new data emerged, indicating saturation had been reached. The study employed line-by-line coding to tag meaningful original statements within the interview texts, ensuring the integrity of the semantics; a single sentence could correspond to multiple codes. Throughout this process, researchers refined each interview text. They continually compared and refined new concepts against existing ones until no new codes appeared, indicating that the data collection for this study had reached saturation.

4. Results

4.1. Mechanisms of Romantic Relationship Formation in Otome Games

Otome games provide female players with a virtual space to engage in romantic relationships with male characters. However, most players do not engage in these games due to real-world romantic needs but rather out of curiosity (n = 8, 32%), recommendations from acquaintances (n = 6, 24%), and attractive art styles (n = 9, 36%). The average gameplay duration for respondents is over two and a half years. Regarding the selection of romantic partners in the games, respondents indicated that they would comprehensively compare their experiences in the same or different games to ultimately choose to establish a long-term romantic relationship with a particular male character.

4.1.1. Establishment of Romantic Relationships in Otome Games (Characteristics of Different Stages)

In otome games, players engage in romantic narratives that typically feature rich and immersive plot settings, captivating character interactions, and visually appealing character designs. These elements provide players with an environment conducive to forming romantic relationships.

Initially, the visual design and character archetypes—such as the domineering CEO (A01; participants, hereafter, will be indicated by A01–A25, see full details in Table 1 of the Supplementary File), the admirable police officer (A05), and the visually appealing character cards (A08)—capture players' interest, resonating with their emotional needs, often heightened by real-life experiences like confusion, heartbreak, and work stress.

As romantic partners are established within the game, the game settings and plot interactions facilitate the development and maintenance of deep emotional connections. Immersive plot sequences and daily interactive tasks such as texts and calls help maintain and enhance the romance, with players expressing their anticipation for these interactions: "I'm curious about the storyline's development and eagerly await his calls or messages" (A14). Another notes the importance of consistent engagement: "Daily log-ins are crucial for keeping our communication alive" (A03).

The complexity of male characters grows increasingly significant as the game progresses. Players value these characters' depth and evolving nature, whose worldviews, values, and perspectives on love become central to the narrative. For example, a character's transition from a cold exterior to showing gentle and respectful love illustrates this depth: "As he opens up, his initial coldness gives way to a gentle and restrained love, reflecting his respect for me" (A02). Similarly, another character's emotional conflict enhances his appeal: "His evolving mindset adds layers to his character, making him more than just a superficial facade" (A08). These elements contribute to the rich, dynamic experience that players cherish in otome games.

4.1.2. Purity and Spirituality of Romantic Relationships (Cognition and Description)

In otome games, female players often describe their virtual relationships with emotional partners in terms that convey purity and spirituality, typically categorized into three distinct types.

The first type of player perceives their virtual relationship as a genuine, timeless love affair akin to real-life romances. One player expresses this sentiment: "I feel it's genuine love. The emotions, time, and even money I invest are all real" (A04). Another shares, "It feels like a real relationship to me, even though I've never dated in reality. After observing others in real-life romantic relationships, I see no significant difference" (A06).

The second type of player recognizes the separation between the virtual and real worlds yet values the emotional connection over the physical reality of the male character. A reflective comment from this category notes, "I'm fully aware that he and I are in different times and spaces, and he is virtual. Nonetheless, the emotional bond and the feelings of love are authentic. His actual existence is of little concern to me" (A10).

The third type's perception evolves with increased game exposure and changes in real-life emotional states, gradually viewing the male character as more than just a romantic partner but a source of spiritual support.

One player elaborates:

> Initially, it was all about romantic love, but with the changes in my life and the constant companionship in the game, my relationship with Victor transitioned to spiritual support, similar to a family member or friend who shares my struggles. (A14)

4.2. Deep Emotional Connection and Long-Term Maintenance

4.2.1. Emotional Immersion and Self-Identification

In exploring how female players perceive intimacy within otome games, most (n = 22, 88%) narrate their experiences from a first-person perspective, illustrating a deep immersion in the game's I-Thou relationship dynamics. This perspective emphasizes a seamless emotional connection bridging the real and virtual worlds, exemplified by a player who recalls:

> I remember watching the moon and chatting casually with him one evening. I truly fell for the character then, as such moments are deeply personal and hard to share in real life, yet the game recreated that connection, moving me profoundly. (A13)

Conversely, the remaining 12% of respondents describe their experiences from a third-person viewpoint, focusing more on the interactions between their avatar and the male characters, as seen in the recount of a dramatic rescue: "The main character is trapped, and Jesse jumps down from the ceiling to rescue her, giving off a heroic vibe. It was at that moment I became completely devoted to him" (A15).

Respondents also exhibit a deep identification with the male characters, viewing them as embodying ideal romantic traits and representing qualities they aspire to in themselves. One player views her virtual partner as a "benchmark for romance" (A05), while another appreciates the dynamics of "powerful alliances, collaborating rather than just growing under his protection" (A21). Another player notes, "He's a symbol. His presence symbolizes love filling my world, teaching me confidence, charm, facing the truth, and courage" (A22).

4.2.2. Romantic Relationship Fatigue and Adjustment

When discussing the sustainability of emotional relationships within otome games, 80% of respondents (n = 20) reported experiencing game-switching or taking short-term breaks due to gameplay stagnation, slow updates of the main storyline, and official maintenance. Some players noted that switching games did not impact their feelings toward their virtual partners, explaining that these decisions are controlled by game operators, not the characters themselves, hence not affecting their emotional attachment (A14). However, others felt that infrequent updates and changes in character dynamics led to relationship fatigue, with comments like, "I don't like getting stuck; it makes the storyline feel boring" (A03) and "the character changes, and reduced appearances after updates made me feel a sudden onset of fatigue" (A09).

Additionally, some players expressed frustration over outdated content, with one stating, "I haven't played Love is Justice anymore because it hasn't been updated for two years, making it feel stale despite my deep immersion initially" (A06).

Players also described how their perceptions of relationships with different characters evolved during the game-switching process, categorizing them in various ways such as past and current relationships (A01), varying levels of intimacy like lover versus brother (A19), or contrasting themes like business trip versus coming home (A02).

Ultimately, overcoming romantic relationship fatigue in these games depends on receiving positive emotional feedback that meets their deeper needs for security, love, companionship, attachment, and belonging. One player captured the unique emotional value of these games, stating, "The emotional value from the game is irreplaceable by real life" (A15). Another highlighted the constant presence and security these relationships provide: "When I get home, the first thing I do is check my phone. Knowing he's there makes me feel warm and secure, which is most important—he will never betray or leave me" (A17).

4.2.3. Self-Imagination as a Key to Sustaining Emotions

Respondents in the study utilize their imagination as a crucial tool for maintaining and deepening emotional connections with their virtual romantic partners beyond the game setting. They engage in activities like creating or consuming fanfiction, purchasing character merchandise, and making video edits, enhancing their personalized, first-person perspective of intimacy with the characters.

One player desires a more tangible relationship, stating, "I want to bring him to life, feel tangible love, and truly integrate him into my life" (A02). Another illustrates how merchandise helps make the character's presence more real: "I buy dolls modeled after him and perfumes he endorses, which makes his presence overwhelm my life as if he truly exists and I'm actively maintaining our relationship" (A09).

Video editing also plays a significant role in deepening emotional ties, as one respondent describes: "When editing videos, I relive the storyline and repeatedly play the clips, which helps me discover forgotten or unnoticed details that touch me deeply" (A25).

These imaginative activities allow players to endow their romantic relationships with uniqueness and distinctiveness, sustaining them over time. Respondents believe each interaction with a male character is unique, as articulated by one: "The love he gives me is different from what he gives to others" (A12), and yet another adds, "Each player's story with him is forever unique" (A14).

4.3. Emotional Attribution and Real-World Impact

Responses from female players of otome games reveal how these virtual experiences significantly influence their real-life interactions and perspectives on partner selection. The narratives highlight the players' internal challenges, emotional needs, personal growth, and shifts in perception regarding social norms and intimate relationships. The games serve as a romantic escape and platform for critical reflection and self-discovery, prompting players to introspect about their authentic selves and reconsider their roles and identities.

4.3.1. Scrutinizing Dilemmas and Self-Reconstruction

Otome games provide a space for female players to reflect on and escape from real-life constraints imposed by their families, societal pressures, and personal adversities. These virtual relationships offer a reprieve

from negative emotions and an opportunity to reimagine their identities and desires. For instance, one player described how the game allowed her to express repressed feelings and anxieties, finding comfort in the virtual companionship of a character named Sariel: "Ever since I was young, I was expected to conform to traditional roles. Meeting Sariel allowed me to freely express my anxieties and emotions, providing incredible comfort" (A13).

Another player found emotional healing and self-love through her interaction with a character named Charlie: "Charlie's overwhelming love made me feel valued and taught me to trust and love myself" (A22).

Many respondents reported personal transformations, gaining confidence, and experiencing reduced negative emotions. One noted the supportive nature of her virtual relationship: "His constant reassurance helped me see my worth and feel loved, strengthening my self-esteem" (A05). Another highlighted the therapeutic impact: "I suffer from severe depression, and his presence in the game significantly alleviated my condition" (A04).

These virtual relationships also extend into real-life decisions and daily interactions, helping players to compensate for emotional deficits from their upbringing and guiding them toward personal betterment. One player mentioned using her virtual partner as a moral and emotional guide: "I often imagine how he would handle situations in real life, which provides guidance and positive reinforcement. He's like a virtual mentor living in my heart" (A07).

4.3.2. Female Narratives and Reconstructing Perceptions of Real-Life Intimacy

In exploring how otome games influence female players' perceptions of real-life intimacy, respondents reflect on their autonomy and creative engagement within these virtual relationships. They view their investment in the games as a validation of the male characters' worth and as a means to drive regular updates and improved game mechanics (A10). Actions taken outside the game, such as spending and participating in fan activities, are seen as expressions of female desires and expectations (A22).

Game scripts often mirror social expectations of men, reinforcing positive traits and addressing real-world issues like gender norms and expectations. Many respondents noted that the motivational and values-driven content of the scripts subtly influences their daily lives and shapes their perceptions of men, addressing issues such as menstrual shame and autonomy in marriage decisions.

Regarding the impact on real-life partner choices, 76% of respondents (n = 19) believe that romantic relationships in games have a positive but limited influence on their dating experiences. They acknowledge the potential psychological gaps when transitioning to real-life relationships but avoid projecting game-character traits onto real partners. Conversely, 24% (n = 6) reported no significant impact from these games on their romantic lives.

Female players use these virtual relationships to reflect on past relationships, learn about intimacy, and renew their hopes for real-life love. One player expressed gratitude towards a game character for helping her realize that her doubts in a previous relationship were misplaced (A17). Another learned about romantic traits from the game's male leads, changing her outlook on love: "After seeing how love is portrayed in the game, I now see it as a source of happiness and am no longer afraid to confront it directly" (A22).

Through these experiences, respondents have redefined their understanding of intimacy, prioritizing emotional worth and experiences in relationships while emphasizing equality, respect, trust, and loyalty as fundamental elements. It has made them value mutual growth and supportive interdependence in real-life relationships.

5. Discussion

5.1. Reconceptualizing Intimacy: From Parasocial Romantic Relationships to Real-Life Intimacy Perceptions

This study examines how female players of otome games form parasocial romantic relationships that significantly influence their perceptions of real-life intimacy, shaped by daily experiences, game mechanics, and personal imaginations. These virtual relationships provide emotional satisfaction and reshape concepts of intimacy.

In otome games, players control the development of romantic relationships, selecting partners and directing interactions, mirroring real-world dating where physical attractiveness is often vital (Walster et al., 1966). The game dynamics encourage rapid relationship progression, requiring deep narrative engagement. Players connect in-game dialogues and character development with real life, using the games for personal growth and understanding social roles (Lea & Spears, 1995). The sustainability of these relationships depends on players' imaginations, with virtual experiences influencing real emotions and behaviors. Players see otome game relationships as reflections of real-life intimacy, viewing virtual male characters as significant emotional supports. It aligns with Anthony Giddens's theory of intimacy, distinguishing emotional exchanges into passion, romantic, and confluent love, with the latter representing an ideal relationship characterized by equality, care, and respect (Giddens, 1992).

Female players interpret their experiences in otome games as a blend of romantic and confluent love, paralleling real-life relationships. They recognize the influence of virtual characters on their self-identity and the spiritual dimensions of these relationships while noting limitations like the unidirectional nature of interactions. This understanding highlights their idealized expectations of intimacy.

5.2. Relationship Feedback: Emotional Functions of Parasocial Romantic Relationships in Otome Games

This study highlights that female players gain significant emotional benefits from parasocial romantic relationships in otome games, which often surpass those from traditional immersive experiences. These virtual relationships support identity affirmation, help navigate life challenges, alleviate negative emotions, relieve stress, and fulfill emotional needs. Influenced by evolving gender ideologies and the remnants of patriarchal values, otome games provide a safe space for young female players to explore and express desires, challenge gender constraints, and heal from societal pressures (Wang & Qiu, 2020), offering companionship, security, and a sense of belonging.

Interactive elements like self-disclosure in otome games are essential for fostering intimacy, enhancing player interactions, deepening relationships, and reducing anxiety (Martins et al., 2013; Tam et al., 2006; Zhou &

Hao, 2021). These games also play a social role by enabling players to expand their social networks through community interactions and discussions of life and events, which enriches their social lives. However, it's important to note that not all feedback from these games is positive. On the one hand, the task mechanism in otome games requires players to collect cards through daily tasks, weekly tasks, and particular feature tasks to gain a richer emotional experience. However, when long-term repetitive tasks become routine, the sense of intimacy perceived by female players begins to diminish. Additionally, some gameplay mechanics in otome games involve virtual consumption, such as purchasing items in a virtual environment. Excessive in-game purchasing behaviors lead players to recognize the commodified nature of their romantic interests, creating a conflict with the notion of a purely emotional relationship.

5.3. Relationship Limitations: The Untouchable Lovers

Intimacy, encompassing both emotional and physical closeness, is partially fulfilled in otome games, where parasocial romantic relationships provide emotional intimacy but lack physical interaction. Although players use imagination to bridge temporal and spatial gaps, the inability to physically touch or embrace game characters is a notable shortfall compared to real-life relationships. Despite this, many players find the emotional support from these games nearly equivalent to real-life interactions. However, the absence of physical touch—a vital expression of affection that triggers more profound emotional responses (Ditzen et al., 2007; Goff et al., 2007; Grewen et al., 2003)—is keenly felt as players become more emotionally invested, often resulting in a poignant contrast between their virtual engagements and reality.

In China, advancements in media technology have significantly enhanced the realism and immersion of otome games, shifting from two-dimensional portrayals to sophisticated 3D environments with the 2024 launch of Love and Deepspace. This game quickly became a sensation, suggesting a growing desire among players for more tangible virtual interactions. Essential questions emerge as games like VR evolve, allowing players to craft new virtual bodies and delve into deeper romantic relationships. Concerns include how these virtual relationships could reshape perceptions of real-life intimacy and the potential long-term effects on understanding true intimacy.

6. Conclusions

This study highlights how otome games significantly shape Chinese female players' emotional and relational dynamics by fostering parasocial romantic relationships. These digital relationships provide emotional support, aid in self-identity formation, and enhance social interactions, enabling players to engage with complex narratives that fulfill their romantic fantasies. The findings emphasize the importance of personalization and socialization within these games, advocating for game developers to cater more closely to female preferences by offering immersive narratives, meaningful interactions, and extensive customization options to increase engagement and satisfaction. While the study provides insights, it focuses exclusively on female players in China. Although otome games primarily target female audiences, there are also male participants. However, in this research, we could not find suitable male interviewees. Future research could consider players of different genders. It should also focus on more diverse participants, including sexual minorities, to explore how cultural and demographic factors influence gaming behavior and the formation of parasocial relationships. Additionally, studies should assess the long-term impacts of these virtual relationships on social and emotional well-being in the real world.

Acknowledgments

The authors would like to express their gratitude to Raquel Silva, the Academic Editors Felix Reer, Teresa de la Hera, and Salvador Gómez-García, as well as the reviewers for their invaluable support.

Conflict of Interests

The authors declare no conflict of interest.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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Media and Communication
2025 • Volume 13 • Article 8733
https://doi.org/10.17645/mac.8733

ARTICLE

Open Access Journal

Empowered by the Experience: Playing as Female Characters in Video Games

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Submitted: 22 May 2024 **Accepted:** 28 August 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

Research on female video game characters often investigates negative outcomes of playing as stereotyped characters. Yet, video games increasingly offer people opportunities to play as capable, prominent female characters that may be meaningful and promote positive outcomes (e.g., feelings of empowerment). This manuscript shares the results of a mixed methods survey of individuals ($N = 751$) recruited via online forums who recalled their experiences playing as female game characters. We analyzed qualitative response data using a traditional, top-down approach to identify themes. We focus our analysis and discussion on the results of a human-derived analysis, which indicated both positive and negative dimensions of experiences that participants found meaningful. Participants reported that taking on the role of a female character was often very important to them, but the reason for this significance varied across players. Often, these reasons involved their own gender identities and the context in which the gameplay occurred (e.g., online multiplayer). We consider findings as evidence of eudaimonic media effects.

Keywords

avatar; entertainment media; eudaimonia; gender; media psychology; video games

1. Introduction

Scholars commonly investigate female video game characters by examining pejorative content (e.g., sexualization; Downs & Smith, 2010) and its effects (e.g., increased self-objectification; Skowronski et al., 2021). Notably, researchers have observed the effects of female character portrayals in both women and

men (e.g., Hollett et al., 2020). However, it is critical to explore meaning-making from interactions with characters as they can influence players' thoughts, feelings, and behaviors in idiosyncratic ways (Banks & Bowman, 2016). We define meaning-making as the process through which people come to understand character portrayals and imbue them with significance. Playable characters are focal points of meaning-making as they translate player agency into digital environments, facilitating players' connections to a game's ongoing events (Lynch et al., 2022). Focusing on meaning-making, rather than adverse effects, provides researchers a nuanced perspective of how users interpret these characters. This is important for two primary reasons. First, players' social identities (e.g., gender) likely serve as touchstones informing meaning-making processes such as gaining insight (Oliver et al., 2016) about how one's social group relates to others. Second, content dimensions (e.g., narrative roles) may contextualize players' interpretations of characters in ways that are difficult to detect when aiming primarily to measure adverse outcomes rather than the processes and factors that contribute to them (e.g., Lynch et al., 2024). Here, we share results of a mixed-methods survey that asked participants about their experiences with female game characters. This approach allowed us to answer two overarching research questions: (a) What kinds of meaning have players derived from interactions with female game characters? And (b) do players' own gender identities differentiate experiences of interacting with female game characters? Several themes emerged from participants' reflections. Some align with existing research and some support new theoretical directions. Accordingly, our work indicates that although some problems still exist with female game characters, people find interacting with them meaningful.

2. Video Game Characters as Sources of Meaning

Characters are among the most salient aspects of video games, often centrally driving forward narratives and events (Williams et al., 2009). Scholars have long considered the relevance of video game characters in shaping player experiences and inspiring changes in their thoughts, attitudes, or behaviors (e.g., Behm-Morawitz & Mastro, 2009). Further, people can find connections with game characters deeply meaningful (Daneels et al., 2021). Meaning-making undergirds people's experiences with narrative entertainment such as video games. Meaningful entertainment experiences, sometimes called eudaimonic experiences, are often characterized by mixed affective states and thoughtful, deliberative periods of reflection (Oliver & Bartsch, 2010); such experiences may have profound and lasting effects on players (Oliver & Bartsch, 2010). Although many types of media can elicit such experiences (see Raney et al., 2020), the relevance of the video game character may enhance eudaimonia. We contend that among types of characters, meaning-making would most prominently involve players' interactions with playable characters (i.e., avatars).

Video games uniquely situate players as participants within content, often offering narrative choice, socializing with other players, and presenting compelling characters that encourage identification (Oliver et al., 2016). Such features facilitate meaning-making within and beyond gameplay sessions. For instance, when interacting with an avatar, players may interpret narrative events as personally significant (Daneels et al., 2021). Personal relevance can encourage biographic resonance or "the emotionally loaded experience that a received entertainment content has something important to do with one's self" (Klimmt & Rieger, 2021, p. 384).

Avatars serve as translations of players' agency in video games, resulting in feelings of being spatially and socially present within the digital space (Lynch et al., 2022). Through avatar interactions, players may feel

that they *become* the avatar and take on its characteristics. Such interactions can foster players' psychological merger with avatars (Klimmt et al., 2009) and shifts in self-concept that correspond with avatar depictions (Yee & Bailenson, 2007). These psychological shifts can influence player cognitions and behaviors. For instance, Yee and Bailenson (2007) designed a set of studies using virtual reality in which they hypothesized that characteristics of the avatar would influence participants' behavioral interactions with confederates of the studies. In one of these studies, the authors assigned participants to use an avatar of varied height, as this characteristic positively predicts self-esteem and competence. Specifically, the assigned avatar was taller, shorter, or the same height as a confederate with whom participants interacted in a money-sharing task. The money-sharing task served as a measure of participant confidence. The authors hypothesized that participants with taller avatars would exude more confidence as an artifact of their avatar's design. Consistent with their hypotheses, participants with taller avatars demonstrated greater confidence, making more self-serving money splits and being less willing to accept unfair splits than those assigned shorter avatars. The authors argued that their observations supported the idea that shifts in the participants' self-concepts produced the behavioral outcomes.

Embodying socially distinct avatars can also offer experiential lenses into digital worlds (Banks & Bowman, 2016). For example, Chen et al. (2021) designed an experiment to test their hypothesis that using an avatar representing a social group different than the participants' own (i.e., an outgroup avatar) would produce more positive attitudes and closeness toward the outgroup compared to those who used an avatar representing their own group (i.e., an ingroup avatar). Specifically, they had participants play as avatars portrayed either as an ingroup member (i.e., Singaporean Chinese citizens) or an outgroup member (i.e., People's Republic of China [PRC] Chinese immigrants). The authors explained that the participants in their study existed in a context where PRC Chinese experience significant prejudice from the Singaporean Chinese majority. While interacting with the avatar, the participants using the PRC Chinese experienced an instance of realistic discrimination. Confirming their hypothesis, the authors reported that participants who embodied the outgroup avatar reported more positive attitudes and closeness to PRC Chinese immigrants. The researchers explained that the effect of experiencing discrimination through the avatar offered insight to those participants compared to those who used an ingroup avatar.

Together, the results of these two studies suggest that the nature of people's interactions with avatars is not predicated on the avatar being like them. In fact, it seems that avatars may be particularly influential sources of insight when they are dissimilar to their players. The characteristics of the avatar can temporarily feel as if they are characteristics of the self (Klimmt et al., 2009), influencing behaviors of the player (Yee & Bailenson, 2007), and giving rise to perspective-taking experiences conveyed through the content (Chen et al., 2021). Self-reflective and perspective-taking states encouraged by avatar interactions likely serve as sources of information around which players form meaning.

2.1. Focusing on Female Video Game Characters

Playing as a female character may provide insight to players who do not identify as women (or girls) and potentiate self-reflective experiences for players who do. These make female characters sources for potential meaning-making. Male characters still vastly outnumber female characters in games (see sampling comparisons across Lynch et al., 2016, and Gilbert et al., 2023). Thus, for some, simply having the opportunity to play as a female character might be meaningful. As noted, games featuring female characters

do not always portray them positively (e.g., Downs & Smith, 2010). Scholars have argued that women and girls remain marginalized as game consumers because of frequent pejorative depictions (e.g., sexually objectifying appearances) of their social group in games (e.g., Lynch et al., 2016). The meaning some women make from such depictions seems to be that certain games or even gaming entirely is not intended for them (Hartmann & Klimmt, 2006). However, female game characters often possess inspiring qualities (e.g., powerful leads; Jansz & Martis, 2007) around which players may make meaning. Jansz and Martis (2007) identified the "Lara Phenomenon," which articulated characteristics of Tomb Raider's Lara Croft as poised to inspire players, especially those who identified as women. Croft's depiction in the narrative of the Tomb Raider series presents her as a powerful hero, capable of impressive physical feats and leveraging elements of her environment to augment her abilities. These qualities are prominent in depictions of female game characters (Lynch et al., 2016) and seem likely to encourage understandings of women as powerful and agentic. Yet, some scholars have argued that physically strong depictions of female characters tend to privilege masculinized interpretations of power (Pennell & Behm-Morawitz, 2015). Further, physically strong characters are often depicted in ways that emphasize an idealized physical appearance (Lynch et al., 2016), which may promote dehumanizing understandings of the characters (Heldman & Cahill, 2007). Indeed, Lara Croft—especially in her earliest portrayals—is infamously sexualized despite her dominant characterization (Jansz & Martis, 2007).

Historically, scholars have emphasized female characters' appearance as pressing portrayal dimensions for study. Recent evidence has emerged, however, identifying other dimensions of female characters that should contextualize the nature of their portrayals. Specifically, in a recent content analysis, Lynch et al. (2024) discovered that games often portray female characters with gender-normative characteristics. For example, they observed that female characters were often depicted as warm in personality. We contend that the current emphasis in the literature on female characters' physical appearance obscures the relevance of their other characteristics (e.g., personality, occupation, etc.) in shaping the understandings that players develop of these characters and the way that they imbue them with significance. Players may indeed construe a female video game character depicted as a nurturing leader as powerful; this may be especially likely for women who are often socialized to be nurturing.

Given these potentials, our first aim is to understand what meaning people make from their experiences playing as female game characters. Accordingly, we ask what meaning people have made from their experiences playing as female video game characters (RQ1).

2.2. Linking Female Character Depictions to Empowerment

Portrayals of female video game characters have generated much research addressing their harmful effects on players (e.g., Hollett et al., 2020; Skowronski et al., 2021). Less research has investigated the potential that these characters have as sources of positive outcomes, although some researchers acknowledge this possibility. People generally prefer positive media depictions of their ingroups as these messages contribute to positive self-concepts and wellness outcomes (Trepte & Loy, 2017). Yet, understanding preference only partially informs theorizing about meaning-making from character portrayals.

When Jansz and Martis (2007) described the "Lara Phenomenon," they argued that players might focus on the ostensibly empowering aspects of her portrayal (e.g., her dominance) rather than other, less empowering

dimensions (i.e., her sex appeal). This argument connects to meaning-making processes, such that players would attend to the dimensions of the character that inspired positive affect, feelings of inspiration, or other desired feelings and mindsets. Importantly, however, taking the meaning-making perspective allows us to recognize that players may understand characters as having *both* positive and negative attributes and imbue those attributes with meaning independently or with consideration of the attributes as interconnected or juxtaposed.

Feminist-themed advertising is one area where the juxtaposition of positive and negative portrayals is evident in portrayals of women (Hainneville et al., 2023). Scholars have begun exploring psychological empowerment in audiences as an outcome of viewing ostensibly powerful portrayals of women in media (e.g., Couture Bue & Harrison, 2019). Empowerment is a multidimensional concept that an individual experiences when they can act with situationally specific mastery over tasks and achieve their goals (Zimmerman, 2000). We, thus, see the possibility that psychologically merging with an avatar to achieve inspiring in-game goals may cause players to feel more empowered than they do in typical day-to-day experiences. Here we focus on empowerment's affective dimension, which is positively valenced (e.g., feeling capable) and functions to support wellbeing by eliciting positive feeling states, inspiring confidence, and fostering self-esteem (Diener & Biswas-Diener, 2005).

Media intended to inspire empowerment are common in contemporary media (Couture Bue & Harrison, 2019). However, experiments indicate that including such themes in messages does not necessarily yield empowerment (Couture Bue & Harrison, 2019). The motivating notion behind this line of work is that content developers are increasingly portraying women as powerful, strong, and capable; these portrayals sometimes do and sometimes do not continue to incorporate images of idealized appearance. We contend that the meaning-making processes audience members engage in would shape the significance of these depictions. That is, do people understand these characters with more emphasis on their power or appearance? Further, whether players ultimately experience empowerment through these interactions seems dependent on the nature of the meaning made through their interactions. Scholars have argued that some female game character depictions could encourage affective empowerment, especially in women (Jansz & Martis, 2007). Thus, we ask whether experiences playing as female video game characters inspired feelings of empowerment and whether women are especially likely to experience this outcome (RQ2).

2.3. Current Study

In the current study, we evaluated how people recalled their experiences having played as female game characters in the past. We used a top-down, inductive analysis to extract qualitative themes surrounding the experiences of playing as a female game character using human coders. We also used a bottom-up approach via the meaning extraction method (Markowitz, 2021), which is provided in an online supplement available at the following URL: https://osf.io/8z4na. Many of the points we identified in the qualitative analysis are supported by the computational analysis, but we have shared the results of the computational analyses in a supplemental file to maintain a clear focus on the results of the qualitative analysis.

3. Method

3.1. Participants

We recruited participants from online gaming forums (i.e., subreddits) for a study on people's experiences playing as female video game characters. Of 978 individuals who initiated the study, 751 had played as a female character, provided sufficient data for analysis, and were at least 18 years of age (M_{age} = 27.67, SD_{age} = 6.72). Participants self-identified as male (n = 637), female (n = 88), other (n = 11), or declined responding (n = 15). We also invited participants to self-describe their gender identity. Participants generated 132 unique responses to this open-ended question. We reviewed these open-ended self-descriptions and categorized them as unambiguously describing themselves as men (e.g., "cisgender male"; n = 588), unambiguously describing themselves as women (e.g., "she/her"; n = 95), describing themselves in a way outside of a binary gender (e.g., "agender," "transfemme"; n = 46), providing responses that did not elaborate gender identity (e.g., "attack helicopter," "asked my mom"; n = 19), and descriptions only elaborating sexual orientation (e.g., "straight"; n = 3). Seven participants declined to elaborate on their gender identity. Participants identified as White (n = 590), East Asian (n = 50), Hispanic/Latine (n = 34), other (n = 30), South Asian (n = 21), Black (n = 12), Arab Middle Eastern (n = 6), non-Arab Middle Eastern (n = 6), or declined to answer (n = 2).

3.2. Procedure

Forum users encountered our post inviting them to participate in a research study about their experiences playing as female video game characters. The invitation included a link that directed interested individuals to a Qualtrics form where they encountered a consent statement with details of the study. After providing consent, participants indicated if they had ever played a game as a female character. Individuals who had such experience continued to the next section, which contained open-ended questions. Next, participants completed quantitative and demographic items. Finally, we invited comments and offered participants the opportunity to enter an electronic gift card drawing ($50 US; odds approximately 1/100).

3.3. Measures

3.3.1. Open-Ended Prompts

We asked participants to identify a specific game and female character to reference throughout the study. We then asked questions that encouraged participants to think about those game experiences (e.g., whether they completed the game). Next, participants responded to five questions. First, we aimed to have participants begin thinking reflectively on their experience playing the game before posing more specific questions related to the character. Accordingly, we first asked participants to describe things they (a) liked and (b) disliked about the game. Next, participants (c) described the character as they remembered her. We intentionally left this question vague to facilitate spontaneous rather than prompted recollections. Finally, participants shared anything that they (d) liked and (e) disliked about the character.

3.3.2. Affective Empowerment

We assessed empowerment feelings using the affective empowerment checklist (Couture Bue & Harrison, 2019). This checklist includes 15 empowerment words (e.g., mighty) and 15 disempowerment words (e.g., defeated). Participants reported how much each word reflected their feelings when playing as the selected character using Likert scales (1 = *not at all* to 7 = *a great deal*). We summed the values for empowerment words and for disempowerment words separately. Each subscale, thus, has a range of 15–60. We then subtracted the average disempowerment value (M = 26.68, SD = 10.05, McDonald's ω = .83) from the average empowerment value (M = 82.77, SD = 10.05, McDonald's ω = .91) to produce the affective empowerment index (M = 56.26, SD = 21.18; Couture Bue & Harrison, 2019). The midpoint of the summed index is zero.

3.4. Qualitative Data Analysis Procedures

The first author and two assistants inductively analyzed responses to the five open-ended prompts by compiling response texts into a spreadsheet and examining them using a constant comparison method (Glaser, 1965). They read through texts arranged in vertical (i.e., within question) and horizontal (i.e., within subject) arrangements. They identified texts that clustered around emergent themes, establishing boundaries of thematic categories based on inclusion and exclusion criteria and documenting illustrative cases. Details for the computational techniques are described in the online supplementary file.

4. Results

4.1. Identifying Themes (RQ1)

RQ1 asked what meaning people have made from their experiences playing as female video game characters. Below, we report and emphasize the findings of the human coding. We consider their resonance and distinctions as relevant to the computational themes in the discussion.

4.1.1. Humanized and Affirmed

This theme centered on the personal affirmation that players shared when embodying a humanized female character. These descriptions emphasized agency, realism, unique personalities, and connections with other characters as important evidence of a fully realized person, not simply a digital object. Many participants noted the scarcity of compelling female characters, even in games that provided the option to create custom characters, and lauded richly designed, lead female characters. As one participant shared:

> I've been a fan of the Elder Scrolls series since Morrowind. It was the first game I played where there was the option to play as a female character, and as a female gamer, it was awesome to see that representation.

Many remarked on female characters' imperfections as compelling. For instance, participants appreciated that their character was "a disaster of a person" or "flawed/emotional…she acted like a real person, not a superhero." Others emphasized characters' humor, describing them as "snarky and hilarious," having "a dry wit," or as a

"mysterious, intriguing person with a funny side." Another liked that "[the character] is a partially mute girl, with blue hair tied in a ponytail. Despite only being able to say a few words, she is full of sass." For many, the opportunity to play as a female character who was not only a central person in the game, but one with humanizing characteristics that made her feel believable and complex, contrasted the limited roles available when they first developed their love for gaming.

Notably, this theme had distinct emphases for cisgender and transgender women. For cisgender women, the experience of embodying a central, capable female character inspired positive, group-relevant feelings. One woman wrote about playing as Samus Aran of the Metroid series saying that she experienced "a sense of pride that [she] could play as a character of [her] own gender who was brave, strong, and competent." For transgender women, the experience of playing as female characters affirmed a valued part of their personal identity in a safe context. The opportunity to embody a character whose physical appearance offered congruence with their self-concept was deeply affirming. One participant shared that "playing [the female character] was [her] first real experience with gender euphoria." Another participant shared about her experience in Phantasy Star Online 2:

> At the start, life was too dangerous for me to come out as transgender. A place where I could be myself, without fear, was immensely freeing and validating. I made friends, I climbed to the top, I fell in love for the first time in my life. I got to experience a world that felt so much more brilliant than the one outside the screen.

Another participant detailed a similar interaction with an avatar through VR Chat, in which she "could look in a mirror in game and see a more accurate representation of myself than I can in real life." These reflections underscore how playing as a female character served as an affirmation of their gender identity that they were struggling to share outside the game world.

4.1.2. Powerful Nurturer

A second theme emerged in which participants described female characters as powerful, but simultaneously emphasized character qualities that aligned with traditional conceptions of femininity. In some cases, participants explicitly differentiated characters' strength from associations with masculinity (e.g., overemphasized self-reliance). For instance, one person shared about Aloy, the lead character of Horizon Zero Dawn, stating, "I liked that [she] was very independent and opinionated but at the same time wasn't the over top 'I don't need help or men' stereotype that sometimes seems to plague games with female leads." Many participants described the characters' motivations to lead, save others, or even engage in violence as evidence of their kindness or care for others. Sometimes these descriptions oscillated between emphasizing traditionally masculine and feminine qualities. For instance, one participant described that the character "supported her friends and helped people overcome their insecurities. She also wasn't afraid to look foolish, but took charge when duty required her. She was strong, but also compassionate." In some cases, players remarked on the characters' narrative trajectories, such as one participant who shared they appreciated the character's "development over the course of the game from selfless-but-naive do-gooder to inspiring leader." Players also imposed these tensions on their characters even when they lacked an established persona. For instance, one participant detailed their experience in Fallout 3 saying they "roleplayed [their character] as an altruistic cybernetics specialist, wishing to help the desperate people of the wasteland with her

knowledge of technology and implants to improve their everyday life, and in [sic] the same time making it safer."

4.1.3. Obviously, She's a Woman

This category emerged as women (primarily) focused on what they saw as more and less preferred ways to represent femininity visually. That is, many descriptions went into detail about the character's hair, makeup, clothing, armor, and accessories to create idealized versions of themselves. However, this tendency had boundaries. Women critiqued visual gender-marking. That is, they noted designs that emphasized bodies in sexualized ways as bothersome signals of characters' gender expression. For example, a participant shared that "the female character model has an annoying hip sway and while most outfits are situationally appropriate some of them are weirdly revealing."

This quote alludes to another element of this theme—that is, many participants reflected on the prevalence of sexually objectifying character portrayals. It was important to many that the characterizations were not pejorative. For instance, one participant shared the following:

> [I did not like] some of the female armor designs. Monster Hunter in general is better about it than most games, but there were still too many instances where I was looking forward to seeing cool armor only to be met with panties and butt windows.

4.1.4. Problematizing Men

This theme centered on participants' reflections on men as players, characters, and men's involvement with developing female characters. Many participants reflected on well-established patterns of female character designs that appeal to the male gaze and the prevalence of men's harassment of women in online gaming. For example, one participant shared that she "was frequently harassed by male players, female dwarf characters are rare and I guess that made them feel like they could be rude." However, other, nuanced reflections emerged. Some men's comments indicated their awareness that they were "part of a broader problem." Specifically, some men stated their shame that developers pandered to them as an audience by subordinating female characters through sexual objectification. For instance, one man shared that his character's "infamously revealing outfit made me feel self-conscious about playing an otherwise masterpiece of a game." Others seemed to recognize their own problematic tendencies to objectify female characters, labeling themselves unambiguously as sexist. One participant acknowledged that the "misogynist in me liked watching a woman butt over a man butt, seeing as it's a 3rd person game and that's a large part of your visual window." These comments suggested that players were thinking about the implications of their interactions and, as with the last comment, identified when the development of the character seemed to encourage such interactions.

Women participants described frustrations with inauthentically designed female characters. For instance, one woman elaborated the following:

> Most games that "write" a female character are still written by men so it can be cringy (see; way too many of the "otome" games that are ostensibly for a female audience to play as women). I like well

> written stories that let me play as a woman but even in the best of them there ends up being thorny bits that can ruin entire sections of the game….Monster Hunter doesn't really give you a lot of personality and story and that's a good thing. Didn't have to deal with men trying to write me a woman.

4.1.5. New Gendered Perspectives

This final theme emerged primarily among men in the sample and comments in this theme were reflective of how the opportunity to play as a female character gave them insight into women's experiences. Some men described that embodying a female character provided a lens to lived experiences outside of their own possibilities. One participant wrote about playing Life is Strange:

> You play as a high school girl and get to experience daily life from that point of view, which, as a man, is not an experience I am very familiar with, and I really appreciate being able to expand my perspective.

Another participant carried the experience with him, recognizing the following:

> [Playing as a female character] really let me experience how a woman might feel talking to strangers or even second guessing intentions of friends talking to you. I felt put off by some of the male character's [sic] conversations….It sparked some interesting conversations with women in my life.

Finally, some participants alluded to the possibility that women have distinct perspectives from men, and that shaped their experience. For instance, one participant elaborated that he "liked [the female character] because [he] thought she had the potential to have a better story than the male counterpart you could choose. [He] thought the perspective that she would have would be more genuine."

4.2. Empowerment Outcomes (RQ2)

RQ2 asked whether playing as female video game characters inspired feelings of empowerment and whether women might be especially likely to experience empowerment from those interactions. We analyzed the empowerment data in two ways to answer this question. First, we conducted a one-sample t-test to determine if affective empowerment departed from the midpoint of the empowerment index (i.e., a value of 0). The empowerment index (M = 56.26, SD = 21.18) was significantly different from the midpoint of zero ($t(716) = 71.11$, $p < .001$, Cohen's $d = 2.66$), with a difference of 56.26 from the midpoint.

The second part of this question asked whether women would be especially likely to experience empowerment from interactions with female characters. To answer this question, we conducted a one-way ANOVA on the empowerment index using participants' self-identified gender as a predictor and comparing only participants who identified as women (M = 58.4, SD = 18.10), men (M = 56.4, SD = 21.2), or outside of the binary in some way (M = 53.2, SD = 22.2). We removed participants who did not elaborate their gender identity from this analysis. The results indicated no significant differences in empowerment existed between these three groups ($F(2, 693) = .90$, $p = .408$).

5. Discussion

Scholars continue to consider female video game characters with an emphasis on the potential harms of their portrayals. Although we share concerns that women and girls' characterizations in games can potentiate negative outcomes, our evidence demonstrates that interacting with female characters can support positive outcomes such as empowerment. The language people use to describe interactions with avatars reveals meanings of these experiences (Banks & Bowman, 2016). We analyzed the rich data produced by our participants to extract themes using complementary approaches (i.e., in the main text, we used a primary approach of human coding techniques; in the supplementary file, we report secondary computational theme extraction). We identified several themes from our primary qualitative analysis that the computational analysis supported. In short, we observed that many participants found playing as female game characters meaningful.

5.1. Imbuing Female Video Game Character Interactions With Meaning

The themes we detected from our participants' writings warrant further consideration and point to fruitful new directions for researchers in this area. In the Humanized and Affirmed theme, women detailed feeling inspired by and appreciative of the opportunity to play as realistic female characters with complex personas, compelling stories, and connections to other characters. If an audience member relates to a character's identity, they may be more likely to resonate with the experiences that character has (Klimmt & Rieger, 2021). Using the character's identity and events that may befall her as touchstones, the player may engage in elaborative thinking around the depiction and their own lived experience. The computational themes extracted also demonstrated some resonance here as some participants evoked characters' *voice*. After discovering this theme computationally, we returned to the data and recognized that some participants discussed how the character's voice actor made the character compelling or inspiring. This aligns with our Humanized and Affirmed theme as some descriptions strongly evoked a feminist understanding of voice. Rakow and Wackwitz (2004) define voice as "the means and ability to speak and to have one's speech heard and be taken into account in social and political life." Voice is similar to the humor and the faults participants described in this theme, ascribing complexity, agency, and aliveness to the characters. These humanizing themes presented tensions with Problematizing Men. Specifically, participants shared their dislike of inauthentic or shallow attempts to portray womanhood or women's experiences through narrative. When games portrayed female characters in authentic, deeply explored personas, women found the experience of playing with them meaningful. Notably, one of the themes that emerged from the computational theme extraction identified poor dialogue as a specific area of dislike for participants.

For transgender women, using an avatar whose gender expression is closely aligned with their self-concept could be profound. This finding supports recent evidence that using avatars congruent with one's gender identity is an affirming and gratifying experience, especially for transgender people who may experience stigma or violence because of their identity (McKenna et al., 2024). Games' interactive affordances may have heightened the experience of identity affirmation for transgender women; indeed, playing as a character can encourage a sense that one *is* the character (Klimmt et al., 2009; Lynch et al., 2022). Further, some transgender participants in the sample noted the relative safety of having their gender identity expressed and accepted by others in the game. In turn, through the avatars, they had the opportunity to relax into and fully embrace their identity.

The identification of the Powerful Nurturer theme deepens the conversation around a tension in female game character depictions—that is, the juxtaposition of stereotypically masculine (e.g., savior) and feminine roles (e.g., nurturer). The intersection of strength and sexualized appearance is arguably the best-documented example of this phenomenon (see Lynch et al., 2016). Scholars suggest that incorporating stereotypically feminine cues in otherwise powerful designs subordinates women in a patriarchal hierarchy (Pennell & Behm-Morawitz, 2015). Video games can subtly signal the values of patriarchal societies, ascribing less prominence and value to traditionally feminine identities, roles, and qualities as compared to those that are traditionally masculine (see Lynch et al., 2024). Subjectively positive evaluations of women and their roles tend to involve benevolent characterizations that undermine women's agency and power. However, participants did not ground their comments under Powerful Nurturer in a benevolent perspective. Nor did they seem to make their statements around this point with lamentations of gender stereotypes. Instead, many participants recast feminine qualities as sources of power. That is, participants saw characters' strength as partly or primarily due to their feminine attributes (e.g., care for others). Although participants enjoyed strong characterizations, they emphasized the importance and inherent power of their feminine qualities as meaningful.

Although participants seemed to largely ascribe positive meaning to their interactions with female game characters, there were some notably critical meanings that emerged. With respect to both the Obviously, She's a Woman and Problematizing Men themes, participants seemed quite aware of the gendered nature of gaming content and development. Researchers have found that female characters designed with a more sexualized appearance elicit a sexually objectifying gaze more so than those with a less sexualized appearance or that elicited by male characters (Hollett et al., 2020). These findings suggest that people may have a bias toward physical appearance, especially as it relates to the body, when evaluating women. Although we agree this bias may emerge when directly viewing a woman, our findings here hint at the possibility that people challenge this biased perception over time, which is typical of a eudaimonic media experience. Future research should continue to examine how people manage their own awareness of implicit biases such as the body-biased attentional processes reported by Hollett et al. (2020).

Despite some negative reflections on their interactions with female characters, participants reported being empowered by their interactions with characters. In the New Gendered Perspectives theme, men engaged in self-reflection as they shared their sentiments around experiences using female characters in games as insightful and helpful opportunities. Importantly, we did not observe significant differences in affective empowerment based on participants' self-identified gender. Players of all identities may, thus, find the experience of interacting with a female character as a video game avatar empowering. Future research might explore this to determine whether these interactions are similar in stimulating feelings of empowerment compared to male characters.

Empowerment is an important factor to assess when it comes to interactions with female characters as feeling empowered can support a person's wellbeing. For instance, the opportunity to engage in capable narrative action through an avatar can satisfy intrinsic needs for agency (Daneels et al., 2021; Oliver et al., 2016). Determining how the meaning that players make from interactions with specific types of characters and under what circumstances that meaning potentiates empowered states is a charge for future research in the broader area of eudaimonic media experiences.

5.2. Theoretical Implications

We see two primary implications of our findings for existing media psychology theories. First, the relevance of character portrayals is often tied to social identity theory (see Trepte & Loy, 2017). Applied to characters, social identity theory explains that people want to see their ingroups portrayed positively because this facilitates positive group distinctiveness. However, consistently positive portrayals of female characters may reinforce benevolent ideals or limit their roles and qualities (Lynch et al., 2024). Accordingly, rather than desiring that media always portray their group positively, women seem to want their group portrayed as fully realized characters, even if that involves faults. Scholars applying social identity theory may benefit from considering humanizing or authentic portrayals of subordinated groups as positive given the groups' societal position, rather than defining positive portrayals from the position of superordinate groups (see Hatfield et al., 2022, for a recent review on this topic).

A second implication of our findings relates to Sanders' (2010) character impression formation theory. This theory explains how people incorporate or reconcile narrative information depending on its alignment with existing character schema. Given our observations of how participants described strong female characters (i.e., Powerful Nurturer), we suggest character impression formation theory as a fruitful framework for future research. Do people use schema about women or about leaders to guide processing of strong female characters? Whether and how people reconcile or incorporate this information to form gestalt impressions could inform theorizing around characters in meaning-making processes.

5.3. Limitations

We aimed to explore the nature of players' meaning-making related to female game characters through interpreting their descriptions of those experiences. This work is constrained by the fact that we only asked participants about experiences playing as female characters. Thus, we cannot make comparisons to the qualities of interactions and meaning-making that players may engage in with male characters. Future research would certainly clarify our understanding by examining meaning-making processes with female and male characters. We cannot assert causal arguments from these data. Future research, however, could leverage our themes in experimental investigations. We also asked participants to share about playing as characters, and, thus, reflections emerged from prompting. We intentionally used broadly phrased prompts to avoid influencing responses. Still, our positionality as academic researchers extracting meaning from participants approached through online gaming forums is noteworthy.

6. Conclusions

The important and historic focus on stereotypical female video game characters has given rise to new questions about how players make meaning from interactions with these figures. Our findings reveal new and compelling directions for empirical research regarding how individual characteristics of players and characters shape meaning-making processes to inspire and empower. We are encouraged by the findings produced by our methodological approaches, which we hope future research teams can use as motivation to demonstrate how mixed-methods studies add theoretical and empirical depth to meaning-making processes.

Acknowledgments

The authors would like to thank Sage Burridge and Alexis Burgett for their support in the development of this work.

Funding

This work was supported by funds from the Sarah Evans Mattox Faculty Research award to the lead author.

Conflict of Interests

The authors declare no conflicts of interest.

Supplementary Material

Supplementary material for this article is available online here: https://osf.io/8z4na

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Media and Communication
2025 • Volume 13 • Article 8802
https://doi.org/10.17645/mac.8802

ARTICLE

Open Access Journal

"I bet she's 'not like other girls'": Discursive Construction of the Ideal Gaming Woman on r/GirlGamers

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Submitted: 5 June 2024 **Accepted:** 8 August 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

Research on women and hostile behaviour in video games has largely focused on women as victims rather than perpetuators of hostile behaviour. In this study, by utilizing discourse analysis, we examine how women's hostile behaviour is discussed in the subreddit r/GirlGamers, and how the ideal gaming woman is discursively constructed in these discussions.

Keywords

female gamers; gender; hostile behaviour; online games; Reddit

1. Introduction

Women are active game players and participants in digital gaming cultures, yet their position is often challenged. Although women are steadily becoming more visible in gaming, they often encounter not only direct gendered harassment (Fox & Tang, 2017), but also belittling, gatekeeping, and erasure (Salter & Blodgett, 2012), especially in masculinised gaming cultures such as those around competitive gaming (Friman & Ruotsalainen, 2022). They are constantly positioned as the other in game cultures, with very little room to navigate their presence, gender, and gaming expertise (Ruotsalainen & Friman, 2018; Witkowski, 2018). Women employ a variety of strategies to navigate these contested spaces, such as forming their own communities, honing their gaming skills to claim space for themselves through gaming expertise, and altogether hiding their gender (Fox & Tang, 2017).

Because of the commonly shared difficulties, there is often solidarity between gaming women, seen in both everyday informal exchanges (Dye & Williams, 2018; Ruotsalainen & Meriläinen, 2023) and communities for women in gaming (Zhang et al., 2023), such as the not-for-profit organisation Women in Games and the popular subreddit r/GirlGamers, the latter examined in this study. However, women are obviously not a homogenous group, with individuals differing in their personal histories, their relationship with gaming, gameplay preferences and motives, and many other variables (e.g., Friman, 2022). Some embrace a strong "gamer" identity (Howe et al., 2019), others reject it altogether (Shaw, 2012), and most presumably fall somewhere in between or do not consider it a relevant positioning.

There are several prominent discourses on women's gaming, such as that on women's contested role in gaming cultures, that influence gaming women's experiences of gaming either directly or through more indirect mechanisms. Whether through personal experience, friends and family, or the media, gaming women often encounter these discourses and either willingly consider or are forced to consider their game culture experiences in relation to them. They also often become participants, reinforcing or contesting notions that are put forward.

In this study, we explore several interlinked discourses as they appear in discussions in the subreddit r/GirlGamers on the discussion platform Reddit, and how the normative ideal gaming woman is constructed—and challenged—in and through these. Focusing on discussion threads, mainly between self-identifying women, around women's negative conduct in digital gaming, we utilise critical discourse analysis (Fairclough, 1995; van Dijk, 2001) to discern how gender and gender-appropriate behaviours are discursively constructed in these discussions.

2. Background

Previous research and public discussion have comprehensively documented the many difficulties encountered by gaming women because of their gender. Digital gaming has historically been seen and constructed as a masculine space: something for boys and men (Bryce & Rutter, 2003; Schott & Horrell, 2000) with women relegated to the sidelines (e.g., Taylor et al., 2009). Scholars have extensively documented (see Vergel et al., 2023) the sexist and misogynist behaviour, such as sexual and general harassment, belittling, and exclusion, women encounter in both in-game situations and broader game culture interactions (Braithwaite, 2014; Cote, 2017; Fox & Tang, 2017; Gray et al., 2017; Salter & Blodgett, 2012; Taylor et al., 2009). This negative behaviour is typically carried out by men (Friman & Ruotsalainen, 2022), reflecting the deep-set—although challenged (e.g., Fisher & Jenson, 2017)—gendered structures of digital game cultures (Darvin et al., 2021; Salter & Blodgett, 2012), where women are still often positioned and perceived as outsiders to gaming by some gaming men (see Cote, 2017).

Despite their presence being challenged, women actively play games and participate in broader gaming culture in diverse ways. Unlike men, however, they are often made acutely aware of their gender in gaming spaces, as for example a feminine voice may provoke an unwanted response from other players (Kuznekoff & Rose, 2013; Ruotsalainen & Meriläinen, 2023) and women's gaming continues being limited for example via pressure to take on certain roles while playing (Ruotsalainen & Friman, 2018).

Especially since the 2010s (Consalvo, 2012), game academia has paid increasing attention to unwanted behaviours in-game cultures. Often discussed as "toxicity" or "toxic behaviour" (e.g., Cote et al., 2023;

Kordyaka et al., 2020; Liu & Agur, 2023), the phenomenon contains a wide range of activities from minor transgressions in gameplay to discriminatory verbal abuse, general and sexual harassment, and threats of violence. While much of this behaviour takes place in gaming situations, it also reaches beyond them, and occurs for example on gaming platforms and gaming-related social media. There is no clear-cut definition of what is considered toxic; although there is agreement on for example threats and verbal aggression, phenomena such as trolling and trash-talking often occupy a grey area, depending on individual instances and the social contract between players (e.g., Ruotsalainen & Meriläinen, 2023).

Research on the phenomenon has mainly followed one of three lines of inquiry: the experiences of individuals encountering negative behaviour (e.g., Fox & Tang, 2017; Ortiz, 2019), the causes and dynamics of negative behaviour (e.g., Liu & Agur, 2023; Meriläinen & Ruotsalainen, 2024), and the gendered nature of hostile behaviour, with women typically the victims (Vergel et al., 2023). While existing research offers a rich understanding of hostile and discriminatory behaviour in game cultures, it has usually not addressed women's own transgressive behaviour.

The focus on women as victims is warranted based on considerable evidence (e.g., Kuznekoff & Rose, 2013; McLean & Griffiths, 2019; Salter & Blodgett, 2012; Vergel et al., 2023), yet we nevertheless find this approach problematic, as it may unintentionally narrow women's acceptable position in game cultures to primarily that of a victim, reducing their agency and reinforcing normative expectations of women's submissive behaviour (Fox & Tang, 2014; Salter & Blodgett, 2012). It can furthermore hide intersectional differences (see Crenshaw, 1991), flattening the complicated and multifaceted structural, cultural, and personal positions players occupy, and consequently result in ignoring power differences which are not solely determined by gender nor the same for every one of the same gender (Ortiz, 2019). Considering the norms of negative conduct present in many gaming environments (Hilvert-Bruce & Neill, 2020; Meriläinen & Ruotsalainen, 2024), it is unsurprising that gaming women can also behave in a negative manner, which we turn to next.

2.1. Women's Negative Conduct in Gaming

The much greater volume of men's hostile online gaming behaviour can obscure women's behaviour, and indeed this seems to have happened in research on the topic. Although researchers have occasionally brought up women's hostile responses while addressing women's reactions to harassment (Cote, 2017; Gray, 2018; Ruotsalainen & Meriläinen, 2023), the focus has usually been on coping strategies (see also Fox & Tang, 2017) instead of women's reactive or proactive negative gaming conduct.

In their interviews of gaming women, Cote (2017), Gray (2018), and Ruotsalainen and Meriläinen (2023) have all identified in-game conduct that can be described as negative, aggressive, or hostile. While all studies noted that this was typically a reaction to encountering harassment from men, the women interviewed by Ruotsalainen and Meriläinen also discussed their proactive negative conduct in reaction to neutral in-game events, such as players on their team performing poorly, in line with common, non-gendered negative gaming conduct (Kordyaka et al., 2020).

As Cote (2017, p. 148) puts it, aggressive online gaming conduct can be a double-edged sword for women. When reacting to harassment, it can be a way to defend oneself and shut down harassers, especially when combined with gaming skills superior to theirs (see also Gray, 2018), thus potentially becoming an empowering

experience (Ruotsalainen & Meriläinen, 2023). However, it may also cause the aggressively behaving woman to be accused of being overly emotional, drawing on historical negative stereotypes of women (Cote, 2017). Aggressive conduct can also escalate an already charged situation, reinforce norms of negative conduct in games, and be a source of regret and guilt once the emotionally intense moment has passed (Ruotsalainen & Meriläinen, 2023).

Despite the solidarity between gaming women mentioned previously, hostile encounters between women, sometimes containing misogyny, also happen in games (Dye & Williams, 2018; Ruotsalainen & Meriläinen, 2023). Previous research (Dye & Williams, 2018; McCullough et al., 2020) has suggested that internalised misogyny or internalised sexism, the phenomenon of women enacting learned sexist or misogynist behaviours upon themselves or other women (Bearman et al., 2009), is an important component of these negative interactions. Indeed, in Dye and Williams' (2018) data there were many examples of women holding sexist and misogynist views of other gaming women or interpreting their actions through the lens of such views.

3. Data and Method

The data of this study consists of 57 discussion threads on the subreddit r/GirlGamers on the discussion platform Reddit. This English language subreddit is an established one, created in 2010 and with over 250,000 members at the time of writing (233,000 during data collection). The description of the subreddit at the time of writing this article was as follows:

> A place for gamers who also happen to be women, probably. A delightfully polarizing term for women who game. This is a community space for ladies to hang out, talk about gaming, and game together. We also discuss topics around women in geek culture and debrief about experiences that occur as a result of their gender. Or you know, just post some bad ass makeup tutorials inspired by video games. We like that stuff here! Folks of all genders and identities welcome to join discussions here!

The original selection was conducted by manually searching for threads with the search terms "aggressive women," "angry women," "hostile women," and "toxic women," and including those in which the initial poster discussed women's conduct in gaming, either their own or others'. We searched threads without any limitation on when the threads were published, amounting to the oldest threads being 10 years old and the newest from 2023. Data was collected starting from October 2023 and continued until the authors estimated that saturation in terms of insight had been reached.

In total, 81 discussion threads were initially collected. During the analysis, 24 discussion threads were removed, as there was no discussion on women's hostile behaviour in in-game situations or gaming contexts in these. After collection, a critical discourse analysis was conducted on the data. Critical discourse analysis is a method to examine how social structures are manifested in language, with particular focus on identifying relationships of power and control (e.g., van Dijk, 2001). According to Wodak (2002), "[critical discourse analysis] takes a particular interest in the ways in which language mediates ideology in a variety of social institutions" (p. 9). Analysing discourses is done by taking into account linguistic patterns and choices (such as words used) present in the text, tracing how text is linked to a larger context, and by recognizing the ideological processes and hegemonic structures in which the discourse is embedded in, as

well the way these are resisted via struggles over power and normativity (Blommaert & Bulcaen, 2000; Fairclough, 1995).

In our analysis, we focused on how hostility, toxicity, and aggression were defined and how gender and gender-appropriate behaviours were discursively constructed in relation to these. For the analysis, all the collected discussion threads were read through by the first author multiple times. Atlas.ti was then utilised in coding the data for identifying re-occurrent themes and linguistic devices present. The first author then worked on identifying the number of prominent interdiscursive discourses and counterdiscourses in the data. As part of these, she traced down different discursive positionings of others and self-positionings in the data (see Harré & Van Langenhove, 2010). Also, the discursive construction of in-groups and out-groups in the data was analysed, paying particular attention to who can be considered as part of the in-group in r/GirlGamers and who, in particular what kind of women, become positioned as out-group. Furthermore, the use of stereotypes and terms such as "pick me girls" and gendered discourses surrounding them was analysed. The initial analysis was shared with author two and was further advanced via mutual discussion and in reflection with research literature.

Using social media postings as data requires care and consideration from the researcher (see Zimmer, 2020). As Reddit is a public platform, requiring for instance no signing-in to read the posts, it can be reasonably assumed that the posters were aware that their posts were public. As such, we did not obtain consent from posters. As our data consists of public posts addressing a relatively non-sensitive everyday topic (gaming experiences) in a large subreddit, we estimated there was very little risk of harm for participants. We have, however, in the interest of participants' privacy, omitted user handles and direct quotes which could be seen as containing sensitive information. Such quotes include for example mentions of posters' private life or mental health.

4. Analysis

In our analysis, we traced the way women in r/GirlGamers discuss their own and other women's hostile behaviour in video games. We examined how "gaming woman" is a gendered discursive construct and how displays of women's aggressive behaviour were discussed within the discourses identified. We identified a total of four interconnected discourses in which women's aggressive behaviour and expectations of how to perform gender were constructed in different, albeit often overlapping ways:

1. Women's behaviour interpreted through a gendered lens;
2. Women should support each other;
3. Games before gender;
4. Women can and should be aggressive.

Throughout our analysis, we have analysed parts of texts that have been taken unedited from the posts. While many of the posters use the word "girl" to refer to women players, we have elected to use the word "woman" for clarity, unless referring to a particular text where the term "girl" is used.

The prominent use of the term "girl" as well as the name of the subreddit, r/GirlGamers, is in itself an interesting gendered construct worth of analysis. Especially when discussing adult women, the term girl can

be problematic: It comes off with a sexist connotation and can be used to diminish and infantilise women (Kleinman, 2002). In our material, many discussants used the term "girl" freely (even when discussing adults), but some discussants expressed a dislike for the terms "girl," "girl gamer," and "gamer girl," as they perceived them potentially belittling towards women. The ambiguous position the term "girl gamer" occupies appears to be recognised and played with in the description of the subreddit. As displayed in the earlier section, the subreddit is described as follows:

> A place for gamers who also happen to be women, probably. A delightfully polarizing term for women who game.

Here the term "girl gamer" is recognised as polarizing. Indeed, in the description of the subreddit the term "girl" is not used, but rather the terms "women" and "ladies." The use of the terms "girl" and "girl gamers" can, however, also be seen as an attempt to claim back the term, in a similar manner that has been done with terms like "queer" (Rand, 2014). As it is largely agreed that this kind of claiming can be made only by the group that is originally targeted by the term, we as researchers (of which one is a cisgender man) are not in a position to use the terms "girl" and "girl gamer" in this manner in this context.

Next, we will give an overview of the discussions and then focus on the following prevailing discourses: "Women's behaviour interpreted through a gendered lens" and "women should support each other." After this, we examine contesting discourses or counterdiscourses ("games before gender" and "women can and should be aggressive") to these prominent discursive positions.

4.1. "This Happens to Me All the Time": An Overview of the Discussions

Most of the discussion threads we analysed were started by women-identifying posters discussing their experiences of hostile women they had encountered while playing games. In these threads, discussants would often share their own experiences and talk about actions they understood to be hostile and speculate on reasons for other women's hostile behaviour. What were seen as hostile actions varied from outright verbal slurs and sexist comments to what was experienced as being purposefully ignored:

> This happens to me all the time (I play *Fortnite*). Every time I join a random fill game and there's a girl, she will ignore me when I try to converse with her or will speak over me to other boys in our party.

Ignoring, refusing to help, and refusing to play with were some of the most common ways other women were perceived as being toxic, mentioned up to 24 times in different accounts of other women's toxicity. Ignoring was also one of the common ways women said they themselves dealt with other toxic women.

Discussants also pointed out more subtle ways hostile behaviour was part of their encounter with other women, such as talking behind one's back and refusing to help in-game. Occasionally, hostile actions would take place in social settings around the games, such as Discord servers, or develop over a longer period, in settings such as MMO (massively multiplayer online) games' guilds.

Participants in these discussions would at times also discuss their own negative conduct. This conduct was usually, albeit not always, discussed as a way to react to hostility targeted at them. Women would also share tips and strategies on how to cope with hostile women playing games. The actions described varied from

muting, blocking, and reporting to forms of mockery and sarcasm as well as calling out toxic behaviour. This tracks with how previous research has described how women players cope with hostile players in general (Cote, 2017; Ruotsalainen & Meriläinen, 2023). Next, we will discuss more in detail how normative and non-normative femininity is constructed in the material through two prevalent discourses.

4.2. "It's Internalized Misogyny at Its Best": Women's Conduct Interpreted Through a Gendered Lens

The most prominent discourse present in our data was interpreting other women's conduct through a gendered lens. Commonly, this drew from a shared understanding among discussants of games as spaces dominated by men, where women have to, consciously or unconsciously, navigate their existence:

> The sad truth is—until society stops perceiving women as incapable, stupid, weak etc. there are always going to be "not like other girls" women who are trying to avoid negative stigma by distancing themselves from women. Rather than male-seeking, most of those women assume the best way not to be harassed/associated with negative things women are portrayed as is through showing others that they are not like those weak, incapable women. It's internalized misogyny at its best.

It was often seen that, because women were navigating patriarchal spaces which are also known to be toxic towards women, they would sometimes start internalising misogyny by accepting sexist attitudes and values towards women and acting accordingly (Bearman et al., 2009). As the above quote demonstrates, this was seen as a way for some women to protect themselves. This was considered especially typical for young women, and age was considered a factor in this type of behaviour.

A closely related and often overlapping discourse was interpreting women's hostile behaviour directly in relation to men. As above, a key to understanding women's behaviour is understanding it as gendered behaviour, but here the focus slightly shifts to women's negative behaviour being directly seen as, or implied to be, a way of seeking validation and attention from men. This echoes the policing and questioning of the legitimacy of "titty streamers" (women game streamers whose self-presentation is seen as too sexualised; Ruberg et al., 2019), the construction of the shallow "fangirl" (Gerrard, 2022; Yodovich, 2021), and even the idea of the "groupie," the music fan more interested in sex with male musicians than the music itself (see Gerrard, 2022):

> Thank you! I actually posted something similar a while back, about how to deal with girls online, especially in gaming settings. My experiences have been quite negative, where the girls are just so obviously thirsting over male validation and wouldn't shut up about sexual things. I'm ok with sex jokes, I'm ok with a lot of jokes. But sometimes you can just tell it's for attention.

In a similar vein, many discussants argued that women experienced other women as a threat as they were used to being the only woman around. Other women, it was argued, might take away male validation and attention and this accounted for their hostile behaviour. Simultaneously, women who were assumed to be seeking male validation online were often described as insecure. Part of this was also policing other women's sexuality:

> My main identifier when it comes to sex jokes is whether they do it in a way that they think will get the guy back off. Like with some of my friends I go along with sexual jokes they make about me because

> within 2 seconds of me doing so they get super grossed out and give up. If they just do it to flirt with the guys…it is definitely a red flag.

Here sex jokes are only seen as appropriate as a defensive measure, to have the men back off. While this is understandable given the harassment gaming women are subjected to, reading flirtatious behaviour as a "red flag" (i.e., a warning sign) further enforces the idea that the wrong kinds of women utilise their femininity, and in this case sexuality, to garner attention from men, and potentially benefit through that. Positioned in this way, flirtatious behaviour for any other reason (similar to hostile behaviour) becomes impossible. Seeking male validation and distancing oneself from outward markers and behaviours traditionally seen as feminine (e.g., wearing makeup) was seen as especially typical for young women and connected to the insecurity of being a young woman in a patriarchal society. Because of this, it was also believed that women and girls could grow out of being a "pick me girl," a woman seeking male validation by putting other women down, and that this was a preferred outcome.

In the first quote below, the discussant distances herself from these young women and her own younger self, implying that she has matured and left these unwanted behaviours, as well as the associated insecurity and need for male validation. The second quote, another poster both reinforces the narrative of insecurity as the main reason for women's toxicity, and uses "not like other girls" to posit these women as an out-group in relation to women in the r/GirlGamers subreddit:

> Internalized misogyny is real. I also love cute things and I am very girly, even if I really dislike heels and make up. I was also, in my teenage years, a "not like other girls" kind of girl, so I really understand both sides. It has a lot to do with insecurity and the need for male validation, specially in a male-dominated group, where another woman can be viewed as "competition." Sadly, there isn't much you can do, because it's not on you to educate these women. Sometimes people grow out of that. Sometimes they don't.

> It often is down to the "not like other girls" complex with those particular type of female players, which stems from serious insecurity on their part; they lash at other female players because they perceive them as some sort of threat.

"Not like other girls" functions both as a stereotype and meme and is often used in social media and popular culture to refer to women who insist that they are not like other women, are not interested in traditionally feminine things, and seek to distance themselves from other women (Means, 2021). In the material analysed, terms such as "pick me girls," "not like other girls," "queen bees," "highlanders," and "termite queens" were used rather interchangeably and as shorthands to refer to women who seek male attention and validation and were mean to other women (see Procope Bell, 2023). At times, these terms were explained, and, for instance, internalised misogyny was explicitly posited as part of them, but often they were used as a way to quickly make a point or categorise a person, relaying to others an implicit understanding of them. These essentialising and othering labels often sufficed in terms of analysing the negative behaviour, leading to a lack of consideration of alternative explanations. These terms and the discourses surrounding them were used to construct the wrong kind of gaming woman, and discussants expressed outrage if these terms were utilised towards them to question their own gaming motives.

Many discussants also brought up the sentiment that the wrong kind of gaming women made gaming more difficult for other women by reinforcing sexist stereotypes. Despite calls for women's solidarity, "pick me girl" and the other othering terms were commonly utilised to construct the antithesis of the ideal gaming woman, allowing discussants to distance themselves from this negative stereotype and reinforce a feeling of community through a shared Other, the out-group of "pick me girls." This, however, shifts the focus of criticism from sexist structures to individuals.

The term "girl gamer" was more ambiguous in our data, but it was present: Below we can see the use of the term "girl gamer" in a negative manner, where being a woman is associated with being bad at the game and excluded from the act of play. As this is said by another woman, it suggests that "girl gamer" is not just any woman playing games, but a particular kind of woman, in this case someone who is perceived as lacking skill. As such, the woman using "girl gamer" as a slur can be seen distancing herself from a particular construction of femininity in gaming:

> When I played *Halo 3* competitively I was on vc [voice chat] w[ith] some of my friends. Randomly one girl started shit talking me like "Oh we have a gIrL gAmER, you're so bad go somewhere else!" and just calling me names.

The tension between solidarity and distancing oneself from the wrong kind of gaming woman is also illustrated by the following quote: 5

> I honestly am so conflicted about this a lot. I want to change the minds of my guildies [gaming group members] that girls aren't "token girls" but humans with traits and likes and dislikes, and they are doing everything they can to perpetuate it. The feminist in me wants to support other girl gamers and work together, but how can I do this when they don't seem to get it themselves?

Here again, the ideal gaming woman is constructed in relation to other kinds of women, who perpetuate stereotypes and are not cooperative. Discursive construction of the ideal gaming woman as someone who is supportive was very visible in our data and we turn to that next.

4.3. Normative Stances: Women Should Support Other Women

Many of those sharing experiences with hostile women would describe their sense of excitement when realising they are playing with another woman, followed by a sense of disappointment or betrayal after the unfolding of hostile events. In the quote below, where the poster responds to another discussant's negative experience, there is a strong normative stance on how women ought to support other women. Should a woman fail to do that, there must be something wrong with them; they are constructed as the "failed woman" and positioned as belonging to the out-group:

> Women are meant to uplift other women. Not put them down or feel less than. That's why I don't have many girlfriends tbh. Lots of them end up being two faced. Don't let people like that get under your skin! Clearly something is not right in her head where she feels like she has to lord over people. Her problem. I'm sure youre a great person. Don't waste your feelings on people like that! <3

Discussants (over 20 in our data) often talk about the particular moment of hearing another woman's voice. In the quote below it becomes evident that it is not so much the hostile conduct, or not only the hostile conduct, that the discussants found upsetting, but in particular hostile behaviour coming from another woman:

> I think it hurts so much more because when I hear a woman I immediately feel like I have an ally and I'll be safe to speak on voice this game. The disappointment is definitely I think rooted in that aspect of thinking you've found that ally and then to be treated the way misogynistic male gamers treat you.

As mentioned above, there was a shared normative understanding among many discussants about how gaming women should support each other. This was also evident in how often the discussants offered to play with and otherwise support those women who shared their negative experiences:

> Hmu [hit me up] if you want me to drop the discord I play a variety of things!

> All I have to say is never let anyone toxic weigh you down! It's all about just finding a community that respects you for who you are! Not people who will put you down while battling their own insecurities!

These offers of support and help were often accompanied by negative remarks about the women whose hostile behaviour was under discussion, reinforcing a separation between in-group and out-group. In this way, offering help becomes a way of signalling belonging to the in-group. Women's hostile behaviour in games continues to be asserted as a personality flaw ("people who will put you down while battling their own insecurities") and the ideal gaming woman is constructed as helpful and not hostile. These appear to be related to expressions of aggression and emotion. It was common to share experiences and advice on how to deal with toxic players, and most commonly these included muting, reporting, and blocking, alongside suggestions of mocking the hostile players and commenting sarcastically on their actions. Contrary to these, outright aggression was often advised against, as it was seen both contributing to the hostile gaming cultures as well as giving the hostile players the reaction they were looking for (see Cote, 2017).

4.4. Dissenting Voices: De-Centring Gender, Games as Hostile Environments, and Allowing Women to Be Aggressive

Alongside the most dominant discourse described above, there were also a number of counterdiscourses. Counterdiscourses challenge the hegemonic discourses and create opportunities for different discursive practices (Schröter, 2018). The first dissenting discourse we identified was about de-centring gender as the lens through which women's hostility was understood; rather, a number of different reasons were suggested for hostile behaviour, such as the overall hostility of gaming environments and individual differences:

> Gamer things. People get online and just become the worst versions of themselves, and them blame every and any one else for them dying. Dont over think it, just be glad you'll never see her again—hopefully!!

> Sounds like a lot of women haters in this thread too, who are trying to claim that women are obligated to make friends with other women and are saying that anybody that for some reason does not is behaving that way to get popular with men. Women are allowed to be assholes just like men are allowed to be.

> Women are allowed to have feelings and dislike other women and even end up in conflict with other women, that does not mean that they're doing it to get popular with men.

In our data, de-centring gender allowed women to be discussed beyond their gender, granting them the right to act on emotion, to have a bad day or bad game, and also to just not be such a nice person. By widening the motives for aggression, also the way femininity can be performed is widened. This is evident in the empowering effect of being aggressive afforded to some women:

> Good on you! So many women spend so much time retreating from aggression or ensuring we're not in a situation of conflict, but sometimes it escapes from where we're bottling it all up in an explosion. Now that you've found your voice in a big big way and articulated your anger, you might actually find it easier to call out the little things on a more regular basis, in a less supercharged way.

However, while de-centring gender as a discursive practice can create opportunities to widen how femininity can be performed and help to re-situate women as not only victims but having an active agency, it also runs a very real risk of ignoring the effect of gender and discriminatory structures altogether and aligning itself with the hegemonic discourse of toxic meritocracy, a false idea that in games everyone has the same chances to succeed and matters like gender are inconsequential (Paul, 2018). This aptly highlights the current limits in discursive positions women can take while discussing women's toxicity in gaming.

5. Discussion

Discourses of negative conduct in our data reveal that an inflexible and constraining discourse moulds women's ideal or even acceptable gamerhood and self-expression. In the masculinised space of digital gaming, women need to navigate conflicting expectations: They should be aggressive enough to push back against discrimination, yet not too aggressive—especially towards other women—to avoid contributing to a "toxic gamer culture" or being labelled a "pick me girl" seeking validation from gaming men with their hostile conduct.

When directed at other women, aggressive conduct was very commonly seen as an expression of internalised misogyny (Dye & Williams, 2018; McCullough et al., 2020) and stemming from a need for validation from gaming men. There was also an element of shock and exceptionality in many of the posts discussing being the target of another woman's negative conduct, as it was seen as a breach of expected solidarity between gaming women (see Ruotsalainen & Meriläinen, 2023) and women in general, even if the poster then went on to respond to the aggression in kind or even going beyond the initial transgression.

Internalised misogyny indeed appears to play a prominent part in women's negative gaming conduct and responses to it, but it is difficult—if not impossible—to disentangle it from the complexities of individuals' negative conduct and the struggles in fan communities and subcultures related to legitimacy and gatekeeping (e.g., Yodovich, 2021). Many gaming environments are both gendered and affectively charged, and discussants were quick to label and interpret any negative conduct through the lens of gender, often harshly, as hostile women were commonly othered through the use of "pick me girl" and other similar sexist discourses. Women rarely discussed their own hostile actions as internalised misogyny—unless the hostile behaviour was in the past—but as justified, affective reaction.

Discussing internalised misogyny as something one can grow out of situates it within one's own power and distances it from the complicated networks and structures of power within which gaming women negotiate their identity and belonging. In this sense, the ideal woman constructed in the discussions is also subject to neoliberal governmentality via discourses of self-development (see Türken et al., 2015) as she needs to challenge her own internalised misogyny and become a better woman. Focusing on other women's (assumed) personal insecurities and their need for male validation and attention risks obscuring part of the discourse of internalised misogyny, namely the structural conditions in which women's negative conduct happens. This approach to framing women's hostile behaviour mostly continues to assert men's hegemonic position in relation to women while gaming but does so with little nuance. Furthermore, it starts shifting the pressure of appropriate and normatively accepted behaviour on women and has elements of policing appropriate ways to perform femininity. An especially poignant example of this is how certain, arguably sexist, discourses about women become part of framing women who act in a negative manner in video games.

Based on the discussions we studied, many instances that would likely see a gaming man labelled as a toxic gamer see a gaming woman labelled as a toxic woman, her conduct primarily explained by her gender. Ironically, this approach repeats the same sexist argument of the wrong kind of woman playing games for the wrong motives that has traditionally been used by men to gatekeep gaming culture. Whether because of being a "fake gamer" or because of internalised misogyny, the alleged "pick me girl" is a convenient target and has no place in gaming. We find this approach problematic, especially when its' often blatant misogyny is delivered wrapped in feminist rhetoric and sentiment. On a subreddit that pushes back against hegemonic, gendered constructs of the gamer and emphasises women's solidarity, a wrong kind of gaming woman is nevertheless identified.

There are a host of reasons for negative gaming conduct not dependent on gender, from having a bad day to misunderstandings between players to frustration over other players' performance (e.g., Meriläinen & Ruotsalainen, 2024; Ruotsalainen & Meriläinen, 2023). While we do not suggest that negative gaming conduct should be endorsed, our analysis raises the question of whether it is possible for women to engage in such conduct without it being seen as a distinctly gendered act, and what the implications of this are for women's agency in online gaming. The aggressively behaving woman is caught in a double bind as she risks being labelled "hysterical" by men (Cote, 2017) or a "pick me girl" by other women. As argued above, this also runs the risk of hiding the structural conditions in which gaming happens. Gendered inequalities are often deeply embedded in the technologies themselves and infrastructures surrounding them (Ford & Wajcman, 2017).

A final point of consideration is the tricky position of game scholars addressing women's gaming. How do we continue to explore women's gaming, including the gendered issues women encounter, without contributing to the exceptionalising and othering of gaming women by framing gender as the core—or even sole—defining feature of their game culture participation? The sentiment has been voiced in the context of the game industry (Myöhänen, 2023), and a similar phenomenon has been observed in other masculinised cultures in which women occupy a marginalised position, such as the rap music scene (Rantakallio, 2021) and skateboarding (see Atencio et al., 2009). We consider there to be a very real risk of scholarly narratives inadvertently reducing gaming women to simply representatives of their gender, regardless of the volume or diversity of women's participation, and call for scholarly reflection on the topic.

Our study paints a complex picture of women's negative gaming conduct, discussion on the subject, and their connection to constructions of the ideal gaming woman. There are, however, some limitations that have to be taken into account. While a large community, r/GirlGamers captures only a tiny sliver of the population of gaming women, and the discussions we analysed in this study form a small subset of discussions by this community. Furthermore, our searches targeted only those discussions that explicitly addressed women's negative conduct, which likely resulted in data where more dramatic cases are emphasised. In many of the initial posts, the poster expressed their frustration about something that had only recently happened and which had sparked a need to share the experience with a large peer community, whether for venting, support, or both.

6. Conclusion

Our analysis captures the contradictory discourses of women's negative conduct in online gaming spaces. The discussions about women's hostile behaviour function as a site of negotiation of community norms and exclusionary criteria by suggesting appropriate ways of performing femininity and gendered gamer identity. Women's aggression and hostility are commonly framed by other women as gendered acts and seen as expressions of internalised misogyny and seeking male validation. This leads to the construction of an ideal gaming woman who regulates their conduct and is careful to maintain solidarity with other gaming women to avoid being labelled a "pick me girl" or "queen bee." Despite being grounded in feminist ideals, the construction potentially adds a further layer of gendered expectations on gaming women, constraining their agency.

Acknowledgments

We wish to thank Thomas Apperley for his help in preparing our manuscript, and our anonymous reviewers for their valuable comments.

Funding

This study was funded by the Research Council of Finland project Centre of Excellence in Game Culture Studies (CoE-GameCult, grants 353265 and 353267).

Conflict of Interests

The authors declare no conflict of interests.

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Media and Communication
2025 • Volume 13 • Article 8676
https://doi.org/10.17645/mac.8676

ARTICLE

Open Access Journal

Sympathy for the Devil: Serial Mediation Models for Toxicity, Community, and Retention

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Submitted: 14 May 2024 **Accepted:** 24 July 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

Disruptive behaviors in online gaming communities are a growing concern, affecting player experience, retention, and well-being. While previous research has primarily focused on the victims' experiences, this study examines the psychological mechanisms underlying the attitudinal and behavioral responses to both encountering disruptive behaviors and being flagged for such behaviors, as well as the effects on retention. The study retrieved longitudinal telemetry records of player reporting and gameplay data from the North American server of a popular competitive player vs. player multiplayer online game, coupled with a psychometric survey of a randomly selected sample of 1,217 players. Based on the rejection-disidentification model, this research identifies a shared pathway for both reporting and being reported for disruptive behavior. Our findings support a serial mediation model where both experiences are linked to decreased player engagement. This reduced engagement, reflected in diminished participation in game battles over time, is mediated by perceived discrimination and a reduced sense of community. Moreover, drawing on the concept of procedural justice from the group engagement model, the study delineates unique pathways for the disengagement process for reporters and those reported. Being flagged for disruptive behavior leads to a significant drop in sustained engagement through a decreased sense of community, which is not the case for reporting disruptive behavior. The article concludes with a discussion of the theoretical and practical implications of these findings.

Keywords

disruptive gaming behavior; gaming toxicity; online gaming community; online video games; player engagement; procedural justice; sense of community

1. Introduction

There is no winner in gaming toxicity. Toxic behavior occurs when players break co-existence rules and act in antisocial ways (Neto et al., 2017). This behavior may not always be intentional (Kordyaka et al., 2020). Players might engage in toxic behavior because they perceive it as the norm of the game based on their own experiences, or they might use toxic behavior as a coping mechanism for stress induced by gameplay (Neto et al., 2017). Regardless of their intentions, gaming toxicity is disruptive. It undermines a positive gaming experience not only for those directly encountering it but also for everyone involved—victims, bystanders, the gaming industry, and, rarely considered, the perpetrators themselves (Anti-Defamation League, 2023). Recent statistics indicate that approximately 75% of online multiplayer gamers in the US have encountered hate and harassment in the past six months, among whom 9% reported depressive or suicidal thoughts (Anti-Defamation League, 2023).

Research on gaming toxicity has identified a recurring theme: social identity. Networked games, such as online multiplayer games, serve as a nexus where technology, identity, society, and various forms of inequality, power, and discrimination intersect (Gray, 2012). Individuals develop their social identity and sense of identification and belonging to the mainstream group from the identity information they receive from their interactions within the group. This social identity approach, comprising social identity theory (SIT; Tajfel et al., 1979) and self-categorization theory (SCT; Turner et al., 1987), underpins the rejection-disidentification model (RDIM; Jasinskaja-Lahti et al., 2009) and the group engagement model (GEM; Tyler & Blader, 2003).

RDIM was developed to understand the racial and ethnic discrimination experienced by immigrants during their acculturation process, and studies have confirmed a mediation mechanism wherein decreased national identification mediates the impact of discrimination on various outcomes (e.g., Jasinskaja-Lahti et al., 2009, 2018). This study extends RDIM to virtual environments, exploring the acculturation experiences of video game players, particularly the influence of discrimination on their sense of community and ongoing engagement. Online games, albeit digital, parallel the acculturation experiences described in RDIM, as they mirror its foundational mechanism. Initially engaging with a video game is akin to immigrants entering a new country, where veteran players often represent the local majority, and each game, like a country, possesses distinct norms and cultural frameworks. Similar to the acculturative stress faced by immigrants, players encounter a cultural adaptation process and may experience stress upon integrating into an online multiplayer gaming environment. Immigrants are subjected to discrimination based on attributes such as race and ethnicity. Similarly, in the digital realm, where diverse social roles and identities converge (Gray, 2012), players may face discrimination based on racial and gender cues, as well as skill cues and gameplay styles (Nguyen et al., 2022). Identifying this similarity of individuals' acculturation experiences, this study tests whether the mediation mechanism identified in RDIM applies in the digital world, wherein a decreased sense of community mediates the impact of discrimination on player engagement.

GEM posits that the experience of unfair treatment within groups imparts critical identity information, potentially influencing individuals' motivation to maintain a positive group identity. This, in turn, mediates the relationship between perceived fairness and group engagement. RDIM enhances GEM's framework by interpreting perceived discrimination as a manifestation of unfair treatment. This study leverages RDIM and GEM to identify two serial mediation mechanisms in understanding whether and how involvement in gaming toxicity leads to perceived discrimination, which then diminishes players' sense of belonging to the

gaming community and their sustained engagement with the game. Moreover, drawing insights from GEM, this study posits that the inclusion of an in-game reporting tool can transform the power dynamics between perpetrators and victims (Reid et al., 2022). Leveraging GEM allows this study to outline potentially unique psychological paths for both victims and perpetrators (see Figure 1 for the conceptual framework).

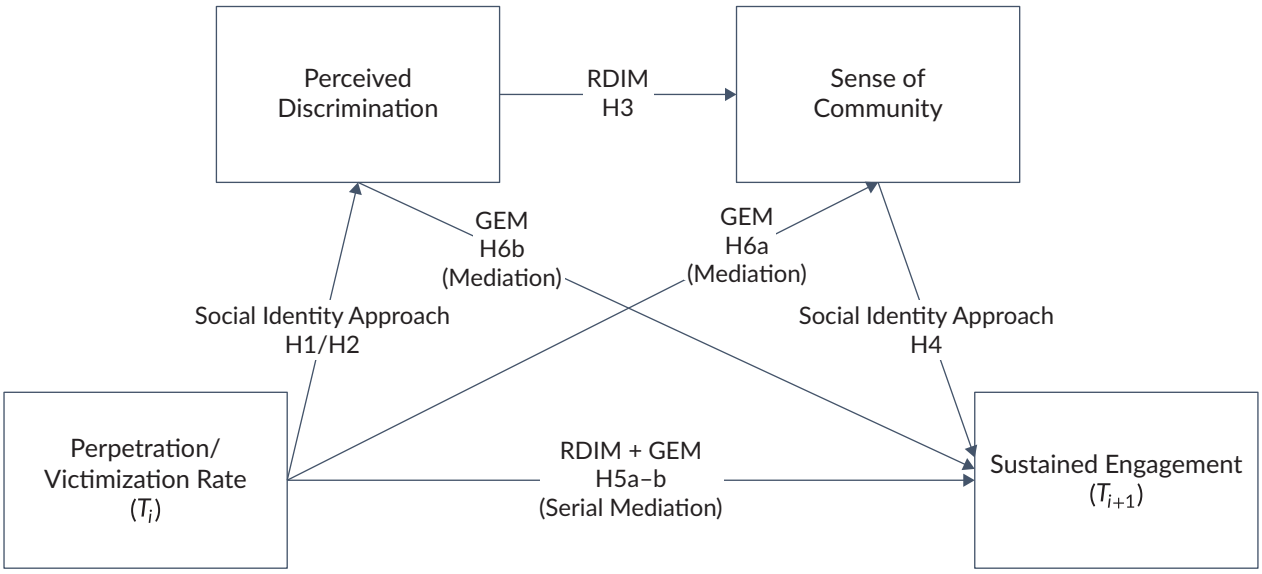

Figure 1. Conceptual framework.

2. Disruptive Gaming Behavior and Perceived Discrimination

Discrimination, as defined by Passmore and Mandryk (2020), represents a threat to an individual's inherent legitimacy and agency across various social identity categories. Understanding the emergence of discrimination is critical for effectively addressing it. The social identity approach has been extensively applied in understanding discrimination within and between groups, both online and offline (e.g., Adachi et al., 2015; Trepte & Loy, 2017). The two theories under the social identity approach, SIT and SCT, are intrinsically connected in their foundational premises and processes related to understanding intergroup relations and group dynamics. This study primarily examines the group processes associated with discrimination and its effects. According to SIT, social identity constitutes part of the self-concept derived from membership in social categories. It can be positive or negative, and individuals typically strive to enhance their social identity by affiliating with certain groups and valuing these associations (Trepte & Loy, 2017). Beyond self-categorization, individuals undergo ongoing social comparison with a reference group, often resulting in perceptions of the outgroup as inferior. This can fuel intergroup competition and conflict, even in the absence of direct rivalry, but for symbolic resources such as ranking, prestige, and positive group identity. For instance, in online games where players from different social groups form teams and compete, they strive to positively differentiate their social group from others by winning or strategically leveraging favorable statistics to maintain a positive social identity (Adachi et al., 2015).

SCT shares many ideas with SIT but also introduces uniquely formulated processes and predictions that offer distinct insights into discrimination. For example, SCT posits that the rich situational cues in media can make certain social categories more salient than others, thus influencing media users' perceptions and behaviors

(Trepte & Loy, 2017). When certain social identities become salient, especially in computer-mediated settings devoid of verbal cues, individuals' self-perception can be dominated by their social identity, leading to a phenomenon termed depersonalization. Depending on the level of depersonalization, individuals may conform to group norms, good or bad. Previous research has argued that game affordances, such as diverse in-game communication channels, can make players' social groups salient to others (Nguyen et al., 2022). For instance, in games like Call of Duty, players can display their national flags beside their names, making their national identity salient to others. Voice channels also reveal gender cues, potentially leading to gender harassment in online gaming. In addition to gender, race, and ethnicity-based discrimination, people can also possess disadvantages based on skills and age. In the realm of online video games, while some players view all others as part of their ingroup, others differentiate based on factors such as team affiliations and demographic indicators. This blending of online and offline identities can catalyze disruptive behaviors rooted in underlying prejudices and discrimination. Consequently, discrimination in online games is conveyed through various disruptive behaviors and perceived by those impacted. As such, it is hypothesized that:

H1: Incidents of reporting disruptive gaming behavior positively relate to perceived discrimination.

While reports of disruptive behavior are often submitted due to experienced discrimination, the impact extends beyond the feelings of the victims. Paradies (2006) highlights the importance of distinguishing between objective encounters of discrimination and its subjective interpretation—or perceived discrimination. Such perceived discrimination, which can also be experienced by those being reported, suggests rejection or exclusion from social groups that individuals aspire to be a part of, thus undermining group members' fundamental needs for social inclusion and acceptance.

In-game tools, like a complaint system, empower players facing toxicity to take immediate action. Recent research indicates that players who utilize these tools experience enhanced feelings of control, along with increased social and emotional support (Reid et al., 2022). However, reporting other players is a low-cost exercise and so is not infallible and can be a form of toxicity in itself. Those who are reported—whether justified or not—may experience a loss of control upon receiving an in-game warning. This notification can serve as a marker of potential or real social exclusion from the gaming community and signals that their behavior is viewed as disruptive by community norms. Given these dynamics, it is hypothesized that:

H2: Incidents of being reported for disruptive behavior positively relate to perceived discrimination.

3. Perceived Discrimination and Sense of Community

Perceived discrimination can obstruct the development of a sense of belonging to a superordinate in-group among certain members, as outlined by RDIM. The sense of belonging and identification with a group is fundamentally influenced by the identity cues provided by the group itself (Tyler & Blader, 2003). RDIM-based studies have shown that experiences of injustice and discrimination lead to a decline in identification with a larger group identity. This process, known as disidentification, occurs when individuals withdraw their loyalty and commitment from a group they previously identified with, driven by perceived barriers to developing a sense of community belonging (Jasinskaja-Lahti et al., 2018). In the context of the gaming community, the way individuals evaluate their experiences within the group can either motivate or deter them from maintaining a favorable group identity. Discriminatory experiences specifically convey to

individuals that they are not valued within the group, thereby discouraging identification with the broader gaming community. These processes suggest that perceived discrimination conveys negative identity information, which can lead to disidentification. Thus, it is predicted that:

H3: Perceived discrimination will be negatively associated with players' sense of community.

4. Sense of Community and Sustained Engagement

Sense of community is the perception of being part of a mutually supportive network of relationships (Sarason, 1974). Group membership is a fundamental aspect of social life, as it fulfills the basic human need to belong (Lind & Tyler, 1988). A supportive community not only meets this basic need but also fosters an ecosystem that enables members to lead fulfilling lives. Such a community provides a supportive network that members can rely on for psychological significance and identification, thus fostering a sense of community. Low identification with the community may lead to disengagement behaviors, such as reduced time investment, socialization, or cooperation (Zagenczyk et al., 2013).

This process is also evident in online gaming environments. Socialization is consistently identified as a major motivation for individuals to engage in online games (Ryan et al., 2006). Players enjoy participating in social activities within these computer-mediated environments to experience a sense of community and build social capital (Tseng et al., 2015). Indeed, previous research indicates that a player's sense of community mediates the relationship between their in-game social network and their intention to continue playing (Tseng et al., 2015). This is because the development of a sense of community often results from repeated social interactions. Functionally, in multiplayer games, players frequently form teams to complete missions or achieve common goals. Affectively, players unite over shared interests and often depend on each other for feedback and support, illustrating the mutual interdependence among players (Rovai, 2002). This interdependence can deter players from leaving the game, as doing so would mean losing contact with community members to whom they feel connected (Tseng & Teng, 2014). Therefore, it is hypothesized that:

H4: Players' sense of community will be positively associated with their sustained engagement.

5. Common and Distinct Routes to Disengagement for Reporters and Reported

In the context of online gaming, both reporting and being reported for disruptive behavior may lead to perceived discrimination, subsequently decreasing players' sense of community and dampening engagement. Although previous research supports each step of this mediated path, a comprehensive evaluation of the entire pathway has been limited, likely due to challenges in accessing matched in-game report data and players' psychometric self-reports. Utilizing data from the competitive multiplayer online video game World of Tanks (WoT), this study tests a serial mediation model:

H5a: Increased incidents of being reported will be negatively associated with sustained engagement, serially mediated by increased perceived discrimination and decreased sense of community.

H5b: Increased incidents of reporting will be negatively associated with sustained engagement, serially mediated by increased perceived discrimination and decreased sense of community.

In addition to the common routes through which both perpetrators and victims of disruptive behavior may perceive discrimination, different pathways to disengagement arise due to their unique experiences. GEM suggests that procedural justice in social settings plays a crucial role in motivating individuals to engage with groups. Perceived fairness of group procedures transmits vital identity-related information, providing a sense of identity security. When group decisions are perceived as being made through fair procedures, individuals are more likely to feel that their identities are securely associated with the group, encouraging comfortable psychological and behavioral engagement. In addition, research on procedural justice has demonstrated that individuals greatly value having a voice in the decision-making process. This opportunity has both interpersonal and value-expressive significance. The presence of a voice tends to make a procedure seem fairer, even if it does not directly influence the decision outcome. This perception stems from the belief that having a voice indicates that the group's authority respects individual members, acknowledging their values and arguments. During decision-making, group members focus on whether their concerns and needs are respected, independently of the actual influence their voice has on the final decision. The ability to exercise one's voice acts as a visible marker of group membership, reinforcing one's place within the group. Therefore, procedural justice is a foundational antecedent of group members' identities and their engagement with the group.

In addition to GEM, the exit, voice, and loyalty model (Hirschman, 1970) further elucidates the dynamics of group participation. This model suggests that users faced with dissatisfaction typically react in one of two ways: they may choose to exit or use their voice. While exit represents a withdrawal from the current situation, voice signifies an attempt to change it. If the product or service does not improve despite voiced concerns, users may exit and choose an alternative. Conversely, if their voices are acknowledged and lead to changes, users are likely to remain loyal.

This framework is particularly relevant in the setting of online video games, where both reporters and reported players encounter unique challenges related to discrimination and group dynamics. RDIM suggests that experiencing discrimination can be devastating to players' sense of social self, potentially leading to psychological and behavioral distancing from group membership. However, for reporters, there exists an alternative pathway. Although reporters are likely motivated by experiences of discrimination, their access to in-game reporting systems ensures that their grievances are heard and addressed, preventing damage to their identification with the gaming community. Conversely, being reported for disruptive behavior may directly impact the reported players' sense of community, leading to decreased engagement. This loss is tied to the punitive repercussions and social isolation that reported players often face, eroding their connection to the community. Based on these dynamics and drawing on the principles of procedural justice and the exit, voice, and loyalty model, we predict:

> H6a: Being reported for disruptive behavior is negatively associated with sustained engagement, mediated by a decreased sense of community.

> H6b: Being reported for disruptive behavior is negatively associated with sustained engagement, mediated by a decreased sense of community, which is not the case for reporting disruptive behavior.

6. Method

6.1. Data

The study site was WoT, a popular team-based vehicle simulator that has attracted over 160 million users worldwide. WoT features tank combat between two teams of up to 15 players. It differs from most other team-based shooters in that the teams are not matched by player skill ratings, but by tank types and tiers. Thus, players in WoT have a higher than usual chance to be in teams with disparate skill levels, which can cause lopsided results and potentially more emotional swings. WoT players can make complaints up to 10 times per day. Being reported five times can lead to permanent restriction from the game. The reporting system comprises four categories: inappropriate behavior in chat, unsportsmanlike conduct, offensive nicknames or clan names, and inaction/bot behavior. A player may be reported for multiple offenses simultaneously, with these categories not being mutually exclusive. Observations suggest that reports made during battles are often hastened, with players possibly selecting a category arbitrarily due to time constraints. This potential for overlap and inconsistency in category selection has led us to analyze the totality of complaint incidents to collectively assess different types of toxic behavior.

In collaboration with Wargaming, the operator of the game, we unobtrusively collected player-level report data and gameplay from the North American server, spanning February 2019 to June 2019. The data were anonymized before reaching the research team. To further understand the psychometric profiles of players, an online survey was randomly distributed to active WoT players in April 2019, achieving a response rate of 20.6% with 2,011 participants. We then matched the behavioral data with the survey responses using a unique, one-way hashed key. After excluding invalid responses, the dataset comprised 1,217 unique participants with 6,085 repeated observations.

6.2. Measures

The Perpetration rate was computed by dividing the number of reports a player received in a given month by the total number of battles that player participated in during the same month ($M = 0.011$, $SD = 0.025$). This calculation allowed us to distinguish between players who were frequently reported due to high levels of activity from those who were seldom active but disproportionately reported. The Victimization rate was calculated by dividing the number of times a player reports others for disruptive behavior in a given month by the total number of battles they participated in during that month ($M = 0.026$, $SD = 0.062$).

Perceived discrimination was assessed using the nine-item everyday discrimination scale (Williams et al., 1997), adapted for the WoT context. Players were prompted with the question, "In your day-to-day WoT gameplay, how often do any of the following things happen to you?" Responses were scored on a scale from one to six, where higher scores indicate a greater perception of discrimination. The items included experiences such as being treated with less courtesy than others, being insulted or called names, and being threatened or harassed. The responses were averaged to create an index representing the level of perceived discrimination during gameplay (*Cronbach's alpha* = 0.88, $M = 2.10$, $SD = 0.84$).

The sense of community among players was evaluated using a four-item scale developed by Kim (2011) and adapted for the WoT context. Sample questions included: "Even though we were physically in different

locations, I still felt I was part of a group of friends in the game." Responses were given on a scale from one to five, with higher scores indicating a stronger sense of community. The average of these responses was used to create an index reflecting the community feeling among players (*Cronbach's alpha* = 0.79, $M = 3.10$, $SD = 0.96$). Sustained engagement measured the number of battles a player engaged in each month following an occurrence of perpetration or victimization ($M = 262.87$, $SD = 277.49$).

We incorporated several covariates into our model to account for potential confounding variables. These included age ($M = 43.17$, $SD = 16.29$), education level (median: associate degree), and income level (median range: \$50,000 to \$74,999). Given the unbalanced demographics in terms of gender ($N_{male} = 1{,}184$, $N_{other} = 33$) and race ($N_{white} = 1{,}007$, $N_{other} = 210$), both variables were coded categorically. The majority group was assigned a value of one, and all other groups a value of zero. Additionally, in-game rating ($M = 4{,}302$, $SD = 1{,}718.32$) was used as a covariate, which is an indicator of performance within WoT. This rating, retrieved from the WoT North American server, is a composite score developed by a specific WoT algorithm that considers the number of battles played, win rate, and average tank level.

To further refine our analysis, players' motivations, which might influence their in-game behavior and sense of community, were controlled. These motivations were assessed using the trojan player typology (Kahn et al., 2015), a validated five-point Likert scale adapted to reflect the current game context. The socialization motivation was measured by items such as "it's important to me to play with a tightly knit group" ($\alpha = 0.81$, $M = 3.20$, $SD = 1.20$). The competence motivation was measured by items such as "winning is a big reason for me to play World of Tanks" ($\alpha = 0.77$, $M = 3.60$, $SD = 0.92$).

In modeling sustained engagement, we included the number of battles each player participated in during the previous month as a lagged variable. This approach not only captures the temporal dynamics of players' activity levels but also helps adjust for autocorrelation, thereby providing more accurate and reliable estimates of players' activity trends and enhancing the predictive validity of the findings.

6.3. Analyses

This study employed a longitudinal design, using lagged independent variables from February to May 2019 to predict sustained engagement in the subsequent months from March to June 2019. Mediators were assessed through a survey conducted in April 2019. Due to the skewness of the variables and for ease of interpretation, all variables except for categorical ones were natural log-transformed. Consequently, a one percent change in the predictors translates to a one percent change in the dependent variables. Analyses were conducted using the Lavaan package in R version 4.1.3.

7. Results

Two serial mediation models were fitted using maximum likelihood estimators. Bootstrap procedures with 5,000 bootstrap subsamples were conducted for statistical inferences. Figures 2 and 3 visually summarize the results of the serial mediation models. Detailed results of the parameter estimates are presented in Tables 1 and 2.

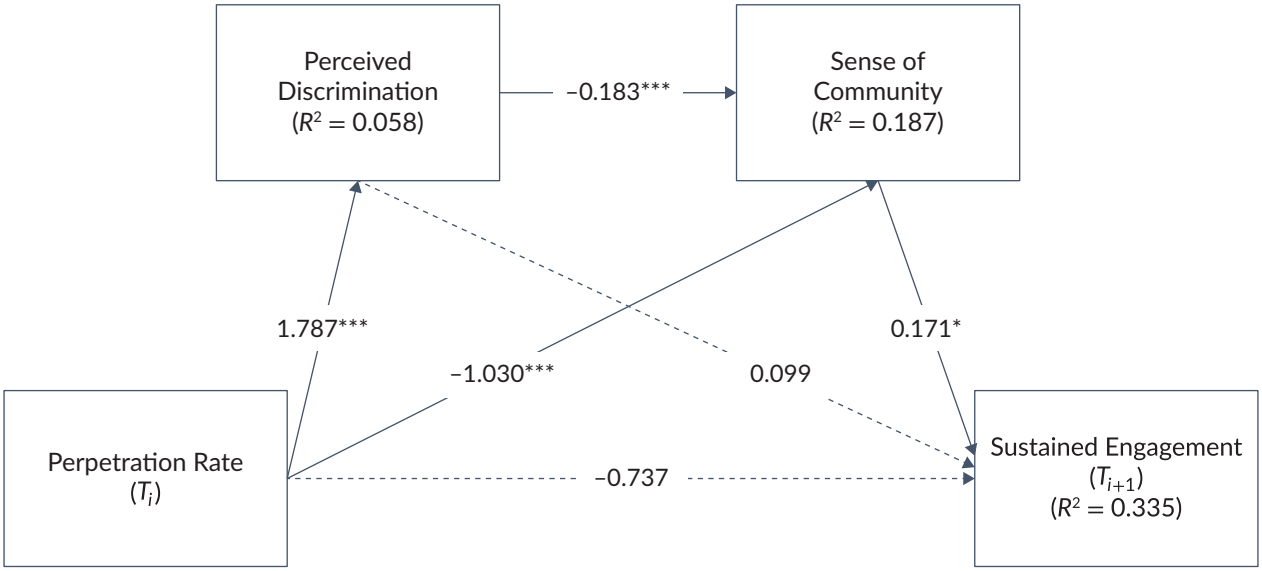

Figure 2. Serial mediation model for perpetration rate on sustained engagement. Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; → significant path; → non-significant path.

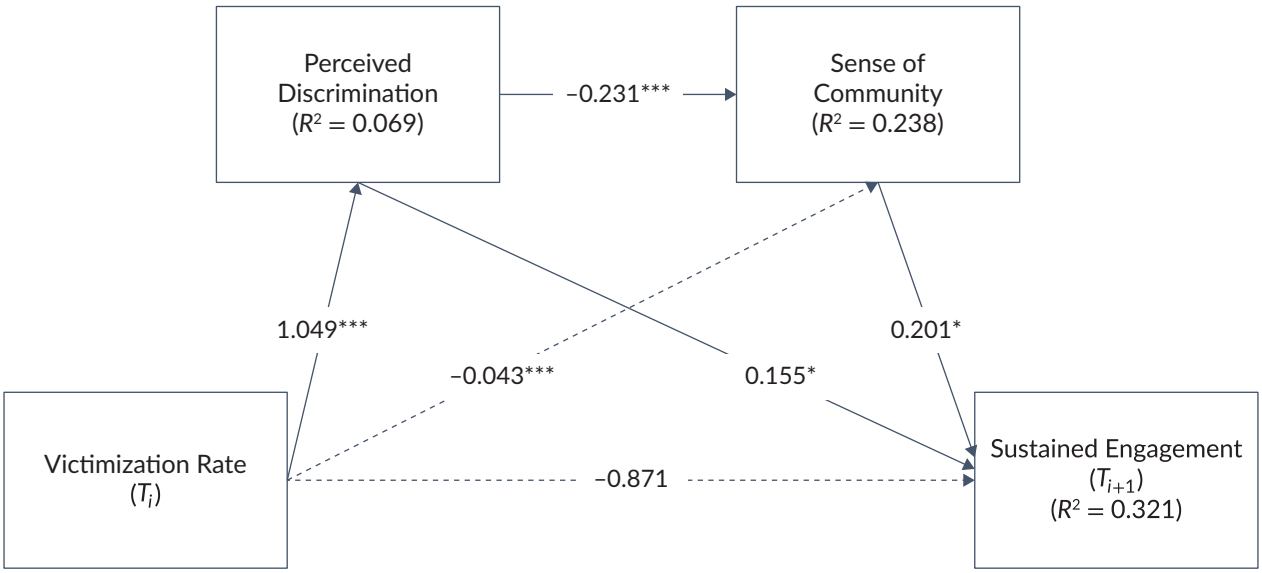

Figure 3. Serial mediation model for victimization rate on sustained engagement. Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; → significance path; → non-significant path.

Table 1. Serial mediation analysis results for perpetration rate on sustained engagement.

Outcome Variable	Predictor Variable	*b*	*SE*	*β*	*p*
Sustained Engagement	Perpetration rate	−0.737	1.257	−0.012	0.557
	Perceived discrimination	0.099	0.060	0.027	0.099
	Sense of community	0.171	0.072	0.044	0.017
	Age	0.325	0.078	0.096	0.000
	Gender	−0.167	0.240	−0.013	0.488
	Race	−0.115	0.061	−0.028	0.060
	Education	0.021	0.058	0.007	0.716
	Income	0.016	0.047	0.007	0.725
	Player rating	0.174	0.065	0.052	0.007
	Socialization motivation	0.057	0.053	0.017	0.276
	Competition motivation	0.036	0.076	0.008	0.631
	Lagged engagement	0.665	0.027	0.550	0.000
Sense of Community	Perpetration rate	−1.030	0.242	−0.063	0.000
	Perceived discrimination	−0.183	0.017	−0.193	0.000
	Age	0.037	0.017	0.042	0.029
	Gender	0.140	0.046	0.042	0.002
	Race	0.000	0.017	0.000	0.988
	Education	−0.088	0.015	−0.110	0.000
	Income	0.008	0.012	0.013	0.505
	Player rating	−0.061	0.014	−0.071	0.000
	Socialization motivation	0.298	0.016	0.351	0.000
	Competition motivation	0.113	0.019	0.098	0.000
Perceived Discrimination	Perpetration rate	1.787	0.382	0.103	0.000
	Age	−0.146	0.019	−0.160	0.000
	Gender	0.041	0.054	0.012	0.455
	Race	0.007	0.019	0.007	0.696
	Education	0.012	0.016	0.014	0.457
	Income	−0.048	0.014	−0.078	0.000
	Player rating	−0.022	0.017	−0.024	0.208
	Socialization motivation	0.063	0.015	0.070	0.000
	Competition motivation	−0.012	0.022	−0.010	0.592
Indirect Effect Parameters					
Perpetration rate → perceived discrimination → sustained engagement		−0.056	0.027	−0.001	0.041
Perpetration rate → perceived discrimination → sense of community → sustained engagement		−0.031	0.013	−0.008	0.021
Perpetration rate → sense of community → sustained engagement		0.177	0.118	0.003	0.134
Perceived discrimination → sense of community → sustained engagement		−0.176	0.084	−0.003	0.035
Total Effect Parameter	Perpetration rate	−0.792	1.255	−0.012	0.528

Table 2. Serial mediation analysis results for victimization rate on sustained engagement.

Outcome Variable	Predictor Variable	*b*	*SE*	*β*	*p*
Sustained Engagement	Victimization rate	−0.871	0.532	−0.034	0.102
	Perceived discrimination	0.155	0.077	0.042	0.045
	Sense of community	0.201	0.088	0.054	0.022
	Age	0.311	0.090	0.096	0.001
	Gender	0.245	0.283	0.021	0.386
	Race	−0.033	0.071	−0.009	0.648
	Education	−0.067	0.069	−0.022	0.334
	Income	0.032	0.055	0.015	0.561
	Player rating	0.146	0.089	0.037	0.102
	Socialization motivation	−0.031	0.069	−0.009	0.654
	Competition motivation	−0.006	0.109	−0.001	0.956
Victimization rate → perceived discrimination → sense of community → sustained engagement	Lagged Engagement	0.649	0.034	0.535	0.000
Sense of Community	Victimization rate	−0.043	0.132	−0.006	0.746
	Perceived discrimination	−0.231	0.021	−0.235	0.000
	Age	0.002	0.018	0.002	0.924
	Gender	0.117	0.055	0.037	0.033
	Race	−0.035	0.017	−0.035	0.041
	Education	−0.051	0.018	−0.063	0.004
	Income	−0.031	0.014	−0.054	0.025
	Player rating	−0.060	0.020	−0.058	0.003
	Socialization motivation	0.361	0.018	0.407	0.000
	Competition motivation	0.102	0.024	0.078	0.000
Perceived Discrimination	Victimization rate	1.049	0.163	0.151	0.000
	Age	−0.113	0.023	−0.128	0.000
	Gender	−0.068	0.055	−0.021	0.212
	Race	0.000	0.020	0.000	0.982
	Education	0.003	0.020	0.004	0.868
	Income	−0.052	0.015	−0.089	0.001
	Player rating	−0.057	0.022	−0.053	0.009
	Socialization motivation	0.055	0.018	0.061	0.002
	Competition motivation	−0.010	0.027	−0.008	0.717
Indirect Effect Parameters					
		−0.049	0.024	−0.002	0.038
		−0.046	0.021	−0.013	0.026
		0.162	0.086	0.006	0.059
		−0.009	0.029	0.000	0.767
Total Effect Parameter	Victimization rate	−0.766	0.525	−0.030	0.145

7.1. Perpetration Rate and Sustained Engagement

The analysis revealed that the perpetration rate had a direct effect on one's perceived discrimination ($b = 1.787$, $p < 0.001$, supporting H2) and sense of community ($b = -1.030$, $p < 0.001$), but not on sustained engagement after accounting for its lagged term ($b = -0.737$, $p = 0.557$). Perceived discrimination had a direct effect on sense of community ($b = -0.183$, $p < 0.001$, supporting H3), but not on sustained engagement ($b = 0.099$, $p = 0.099$). Sense of community had a direct effect on sustained engagement ($b = 0.171$, $p = 0.017$, supporting H4). The indirect mediation analysis indicated that the effect of the perpetration rate on sustained engagement was mediated by sense of community ($b = -0.176$, $p = 0.035$), whereas no significant mediation effect was observed through perceived discrimination ($b = 0.177$, $p = 0.134$), supporting H6a. A significant serial mediation was supported whereby perpetration led to increased perceived discrimination, which subsequently decreased the sense of community and, in turn, reduced sustained engagement ($b = -0.056$, $p = 0.041$), supporting H5a. Taken together, the fitted serial mediation model explained approximately 33.5% of the variance in sustained engagement, 18.7% of the variance in sense of community, and 5.8% of the variance in perceived discrimination. A 1% increase in perpetration rate led to a 0.792% decrease in sustained engagement overall. Of this decrease, 0.176% was mediated through a decreased sense of community, and 0.056% was serially mediated through increased perceived discrimination followed by a decreased sense of community.

7.2. Victimization Rate and Sustained Engagement

The results indicated that the victimization rate had a direct effect on one's perceived discrimination ($b = 1.049$, $p < 0.001$, supporting H1), but not on players' sense of community ($b = -0.043$, $p = 0.746$) nor on sustained engagement when controlling for its lagged term ($b = -0.871$, $p = 0.102$). Perceived discrimination exhibited a direct effect on sense of community ($b = -0.231$, $p < 0.001$, supporting H3) and sustained engagement ($b = 0.155$, $p = 0.045$). Sense of community showed a direct effect on sustained engagement ($b = 0.201$, $p = 0.022$), supporting H4. The mediation analysis revealed that the sense of community did not mediate the relationship between victimization rate and sustained engagement ($b = -0.009$, $p = 0.767$), supporting H6b. A significant serial mediation was identified where victimization led to an increase in perceived discrimination, which then led to a decrease in sense of community, culminating in reduced sustained engagement ($b = -0.049$, $p = 0.038$), supporting H5b. Taken together, the fitted serial mediation model explained approximately 32.1% of the variance in sustained engagement, 23.8% of the variance in sense of community, and 6.9% of the variance in perceived discrimination. A 1% increase in victimization rate led to a 0.766% decrease in sustained engagement overall, among which a 0.049% decrease in sustained engagement was serially mediated through increased perceived discrimination and decreased sense of community.

8. Discussion

Theoretically, this study extends the application of RDIM and GEM to online gaming communities, underscoring that perceptions of inclusivity and fairness are central to sustaining active and engaged gaming communities. Incorporating the concept of procedural justice from social psychology offers valuable insights, indicating that individuals value social processes more than game designers and developers might typically recognize. This perspective advocates for a shift in focus from the outcomes of complaint resolution to the dynamics of social interaction. It emphasizes the need for fair procedures, active participation in

decision-making, and the quality of treatment for both reporters and those reported. Practically, this analysis lays out the costs of gaming toxicity in terms of players' sustained engagement in games, thus quantifying the impacts of perpetration and victimization. Highlighting these costs is crucial as it demonstrates the tangible effects of disruptive behaviors on both player engagement and company revenue. For instance, even a decrease of one battle count can lead to a reduction of approximately five to 20 minutes of a player's time in games. This not only represents a significant opportunity cost in potential revenue lost for gaming companies but also lessens the quality of time players spend engaging in meaningful gameplay. In addition, the results suggest that sense of community is the key to keeping players engaged. In response, gaming platforms and community managers are encouraged to develop strategies that minimize players' perceptions of discrimination and provide effective mechanisms for voicing concerns or disputing reports, thus maintaining players' sense of community and fostering a safer and more inclusive gaming environment.

In addition to the serial mediation model—the common pathway—this study also identified unique mechanisms for perpetrators and victims. For perpetrators, the pathway to disengagement is mediated by a decreased sense of community, rather than directly by feelings of discrimination. This highlights a nuanced aspect of the perpetrator's experience; although they might feel discriminated against after being reported, it is primarily the erosion of their sense of belonging that drives their disengagement. This observation provides a practical insight for gaming community management: Maintaining an inclusive community that offers support and integration opportunities for all players, including those who have been reported, might reduce disengagement rates. Furthermore, reported players should be respectfully given a voice, such as the opportunity to dispute or explain themselves, demonstrating that they are valued members of the community unless proven disruptive.

As predicted by the GEM (Tyler & Blader, 2003), the sense of community among victims remains intact, likely due to the reporting system that allows them to voice concerns rather than disengage directly. This underscores the importance of procedural justice in gaming environments, suggesting that the manner in which toxicity issues are handled is as crucial as the outcome itself. For victims, time in-game is only reduced if their perceived discrimination leads to a decreased sense of community. Otherwise, even if they feel discriminated against, it does not translate into decreased play. This finding highlights an interesting observation: While reporting and being reported has a cost in terms of players' time spent in games, not having the reporting system may incur a greater cost, as it provides everyone with an alternative pathway to voice their experiences before deciding to withdraw from the game. In addition, according to the GEM, procedures that promote group participation are perceived as fairer, regardless of which party receives support from the gaming community. In some games, involving community members in making crowdsourced judgments about whether a reported toxic player should be punished can enhance fairness (Blackburn & Kwak, 2014). Although we cannot verify this with the data here, GEM suggests that both parties involved are likely to view this participatory process as fair and just, even if the final outcome does not favor them. Additionally, games might consider implementing features that unite players by recognizing their commonalities rather than highlighting features that divide players, especially in competitive games.

Underpinning RDIM and GEM is the SIT, which emphasizes the importance of social identity and the processes of social categorization, identification, and comparison in online video games (Trepte & Loy, 2017). The fundamental reason for individuals' engagement or disengagement from the gaming community hinges on their self-perception and their connection with the community. Consequently, games should aim to enhance players' self-esteem, not through traditional social comparison processes but through the benefits

that the gaming community provides, such as a sense of competence from collaboration and a sense of relatedness from socialization and cooperation (Ryan et al., 2006). Efforts should be made to minimize cues that divide players, such as overt attention to differences in player skills or other indicators of offline demographic identities.

While this study primarily addresses the repercussions of toxic behavior rather than its origins, it acknowledges the potential for a reciprocal relationship and role fluidity within the toxicity cycle (Kordyaka et al., 2023). SIT suggests that within computer-mediated environments, individuals' self-identity may be dominated by their social identity and align their behavior with prevailing group norms. Experiencing victimization or exposure to gaming toxicity can alter an individual's perception of these norms (Shen et al., 2020) and provoke frustrations that necessitate coping with further toxic behavior (Neto et al., 2017), potentially perpetuating a cycle of toxicity. Moreover, the subjective nature of toxic experiences, particularly in ambiguous situations, may lead to inconsistencies between the punishments developers impose and the players' perceptions of toxicity, as well as disparities between what is universally recognized as toxic and what is considered acceptable by perpetrators. The reporting system may exacerbate feelings of unfairness among those penalized, which is also a loss for gaming communities and companies. A thorough understanding of toxicity's consequences is incomplete without an exploration of its developmental dynamics. Future research may compare self-reported and behaviorally reported data on toxicity to enhance understanding of the fluid dynamics among players within the cycle of toxicity, the subjectivity of these experiences, and the interplay between the causes and consequences of gaming toxicity.

The study is not without its limitations, which future research could help address. Firstly, while the study employs a longitudinal design, it does not establish robust causal links between involvement in gaming toxicity, discrimination, sense of community, and engagement. Future research could employ laboratory or field experiments to clarify these causal relationships. Field experiments might be preferable, as previous research on procedural justice suggests that effects are generally stronger in field settings than in laboratory settings (Lind & Tyler, 1988). Secondly, the study's focus on WoT—a competitive-cooperative online multiplayer game with unique demographics—limits its empirical generalizability to similar games. Further research is needed across different genres and types of games with diverse player demographics.

Acknowledgments

We thank Wargaming for providing access to their anonymized data, and Eugene Kislyi and Jeremy Ballenger for their valuable feedback.

Conflict of Interests

The third author was engaged as a consultant for the company that provided the study's data. Work on this research project was not compensated.

Data Availability

Data will be made available on request with permission of Wargaming.

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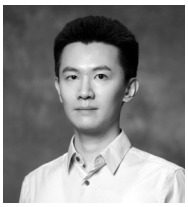

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Media and Communication
2025 • Volume 13 • Article 8738
https://doi.org/10.17645/mac.8738

ARTICLE

Open Access Journal

Introduction of the Digital Gaming Relationship

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Submitted: 27 May 2024 **Accepted:** 29 September 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

In recent decades, there has been a growing interest in studying the appeal of digital games. However, there is still a call for further research, especially on the theoretical and methodological advancements. Hence, a novel approach and a concept of the Digital Gaming Relationship (DGR) is presented. The DGR model is adapted from earlier work on physical activity and with the central concept as "meaning," it provides an alternative perspective to motivation-oriented literature for the field of game studies. With this approach, the fundamental view is that each person has a varying relationship with digital games and gaming over their life span. The relationship builds on the individual's encounters with the social world of digital gaming and its cultural meanings. In the long term, accruing digital gaming-related knowledge, experiences, and emotional connections contributes to a rich tapestry of meaning, thus creating a deep and meaningful relationship capable of shaping one's actions, behaviors, and even identity. The framework theorizes the mechanisms of an individual's socialization process to the digital gaming world and illustrates that the relationship with digital games includes much more than just playing them. In this article, the theoretical roots and key concepts of the DGR are introduced, and the practical applicability of the approach is discussed.

Keywords

digital game studies; digital gaming; digital gaming relationship; video games; social world; socialization; meaning; significance

1. Introduction

Digital gaming is a popular leisure activity forecasted to continue to grow in the coming years (Clement, 2024a). Digital games are played by people of many ages from all over the world (Clement, 2024b), but their popularity is greatest among younger people, for whom digital gaming has become an essential form of media and a routine part of childhood and adolescence (Olson, 2010). Over the last two decades, the rapid growth of the digital gaming phenomenon has increased scholars' interest in the reasons behind their attractiveness. In addition to the structural characteristics of digital games (e.g., D. King et al., 2010), the appeal of digital gaming is influenced by the individual's motivation to play. To investigate the reasons behind digital gaming, scholars have relied on, for example, the self-determination theory (Przybylski et al., 2010), as well as developed scales to measure digital gaming motivations (e.g., Demetrovics et al., 2011; Kahn et al., 2015; Yee et al., 2012). Despite these efforts, according to Cheah et al. (2022), there is a call for further research, especially on theoretical and methodological advancements. Therefore, this article proposes an alternative approach and theoretical framework to understanding the appeal of digital gaming beyond the use of motivation.

Traditionally, hedonistic gratifications like fun and enjoyment have been characterized as the core experience and essential motives of playing digital games (Mekler et al., 2014). With the evolution of digital games, media scholars have recently drawn attention to "meaningful gaming experiences" that allow players also to experience deeper, thought-provoking, and more emotionally complex moments (Daneels et al., 2023), contrasting with hedonic experiences. Drawing on philosophical and psychological well-being research, these meaningful experiences are often termed "eudaimonic." Eudaimonia refers to "orienting toward or experiencing meaning, virtue, personal growth, and other worthwhile aspects of life" (Daneels et al., 2023, p. 1). In addition, meaning and meaningful experiences have been used by scholars when referred to as "experiences where players make connections between in-game aspects and 'out-of-game' personally relevant elements from their own lives" (Daneels et al., 2023, p. 2). Nevertheless, there is no consensual definition of eudaimonic or meaningful digital gaming experiences (Possler, 2024).

The formation of these eudaimonic or meaningful digital gaming experiences has mostly been attributed to the interactivity of digital games and their core characteristics such as digital game mechanics, narratives, multiplayer features, and game aesthetics (Possler, 2024). However, much less emphasis has been put on how player characteristics influence the formation process, although Vahlo (2018) has shown that individual players' digital gameplay preferences play an essential role in determining how much and what kinds of meaningful experiences arise from digital gaming. Additionally, other types of engagement with digital games and their culture besides active playing are rarely considered in the literature. According to Possler et al. (2023), this narrow focus on game characteristics and active play are the main limitations of current theory development around meaningful digital gaming experiences.

To extend the current line of research and address its limitations, the Digital Gaming Relationship (DGR) is introduced in this article. With the central concept of "meaning," this article provides an alternative perspective to motivation-oriented literature and a novel theoretical framework for the field of digital game studies. The DGR framework is used to theorize the formation of a meaningful relationship with digital games by emphasizing the subjective nature of digital gaming experiences. Although the significance of the characteristics of modern digital games in the meaning-making process is recognized (e.g., Possler, 2024), it

is suggested that meaningful digital gaming experiences are primarily conditioned by prior digital gaming-related interactions, underlining the subjectivity of the process. Furthermore, the DGR model takes into account interaction with digital games beyond just playing them, which is often overlooked in the literature. Although the focus is mainly on digital gaming individuals, the framework also extends its scope to external factors such as cultural norms and social influences by illustrating their potential impact on DGRs.

Ultimately, the DGR framework is a theorization of the mechanisms of an individual's socialization process to the digital gaming world and its culture. It describes how socially constructed meanings, norms, and values of the digital gaming world are internalized through interaction, and how individuals may develop "a gamer" identity by adopting behaviors, language, and attitudes that influence actions within the digital gaming world and beyond it. This article begins with an introduction to the theoretical roots and key concepts of the DGR. Finally, the practical applicability of the approach is discussed.

2. The DGR Framework

2.1. The Social World of Digital Gaming

The DGR framework is an adaptation of a sports sociological theory of physical activity relationship (PAR; Koski, 2008, 2015, 2017; Koski et al., 2022) to the world of digital games. Although the PAR focuses on the world of physical activity and sports, the DGR approach is based on the idea that digital gaming and the issues closely related to it form the *social world* of digital gaming, with which each individual has a different relationship that varies over the lifespan.

Human life is surrounded by numerous different social worlds and individuals are always to some extent within social worlds—participating deeper in some than in others. Unruh (1979, p. 115) defined a social world as "an internally recognizable constellation of actors, organizations, events, and practices which have coalesced into a perceived sphere of interest and involvement for participants." Social worlds can be described as social organizations that cannot be accurately delineated by spatial, territorial, formal, or membership boundaries (Unruh, 1980). In other words, a social world is a set of actors and practices around a particular issue that can have various characteristics:

> Some worlds are small, others huge; some are international, others are local. Some are inseparable from given spaces; others are linked with sites but are much less spatially identifiable. Some are highly public and publicized; others are barely visible. Some are so emergent as to be barely graspable; others are well established, even well organized. Some are very hierarchical; some are less so or scarcely at all. Some are clearly class-linked, and some run across class. (Strauss, 1978, p. 121)

In the PAR framework, Koski (2008) described how our life consists of different sectors (A, B, C, etc.), which we value with various degrees of significance (a, b, c, etc.) in everyday life, thus resulting to the Equation of Life (aA + bB + cC + etc.). In the equation, the lowercase letters are coefficients that correspond to how meaningful the individual perceives these things to be in his or her life. The capital letters refer to different areas of life, such as work, school, family, or different competing leisure activities such as digital gaming. The Equation of Life demonstrates how different social worlds and their self-defined weight are present in everyday life. The inherent limits of human energy and time keep the equation in balance and therefore it is not possible

to put a very high coefficient on several areas of life at the same time. The idea reflects individuals' lives in today's mediatized and marketized attention economy (e.g., Webster, 2014), where humans are constantly surrounded by meaning-transmitting signals attempting to influence our thinking and actions (Koski, 2008).

Due to people's everyday decision-making in the different areas of life, the relationships to social worlds are constantly varying consciously or unconsciously over the lifespan. To illustrate this in the gaming context, in adolescence gaming can be one of the most attractive and socially popular activities in life. Yet, later on, if other things such as education, career, or family get more attention, its perceived significance is likely to be changed. This underlines the dynamic nature of the coefficients in the Equation of Life in different life stages and situations. For example, the reformatting of one's Equation of Life can be witnessed in the PAR context, as major life events such as childbirth or retirement tend to impact an individual's physical activity levels (Engberg et al., 2012).

2.2. Concept of Meaning

According to Koski (2008, 2015, 2017), as a foundation for his PAR framework, it is useful to consider both anthropologist Claude Lévi-Strauss's views about culture as a language and Max Weber's idea that culture is a web of meanings created by human beings. Common to both of the classical views is the idea that culture is formed of meanings. The founding ideas of the approach can be further examined with Herbert Blumer's (1986, p. 2) sociological theory of symbolic interaction and its three core assumptions:

> First, human beings act toward things based on the meanings that the things have for them. Second, the meaning of such things is derived from, or arises out of, the social interaction that one has with one's fellows. Third, these meanings are handled in, and modified through, an interpretative process used by the person in dealing with the things he encounters.

Therefore, within the DGR framework, it can be suggested that the widespread popularity of digital gaming indicates that it holds meaning for many, with these meanings being socially constructed. Understanding these meanings necessitates interaction, which is the act of participation in the social world of digital gaming. For a deeper look, Ogden and Richards (1989, pp. 186–187) presented how the ambiguous concept of meaning can have up to 16 different interpretations depending on the context. Additionally, eight different senses and kinds of meaning can be distinguished as explained by Nozick (1981, pp. 574–575). In the DGR approach, meaning refers to a concept that has two interconnected dimensions: One it refers to what something means, and two, it refers to the degree of importance of something—significance.

2.2.1. Semantic Dimension

The first dimension of the concept of meaning in the framework is semantic, where meaning refers to language and symbolism, i.e., what something means. Semantics is an integral part of all social worlds, and the knowledge of language can serve as an indicator of an individual's level of participation in a given social world. As described by Evans and Llano (2023, p. 1), the world of digital gaming has its language:

> Aside from the technical discourse that players, game streamers, and fans share about character builds, preferred move sets, and glitches, there is a set of slang that develops and grows alongside

game streamers, their play, and communities. Typically, game players tend to see these slang terms as ubiquitous, common, and nearly compulsory for participation in gaming communities.

In the symbolic interactionism theory, words and language are the most essential symbols, as language is the most important factor that enables people to function in a group and share different meanings (Lal, 1995). Symbols enable people to name, classify, and remember objects, thoughts, and images. The exchange of ideas between people would not be possible without symbols, which are interpreted in roughly the same way. Thus, the premise is also that symbols must necessarily have shared meanings, otherwise they cannot be meaningful in the first place. For example, in the digital gaming context, understanding words or phrases used to refer to specific areas of a map in a game can be a prerequisite for effective communication with other players.

Within the PAR and DGR approaches, cultural objects are also regarded as a form of language that conveys meanings and symbolism. According to McDonnell (2023), cultural objects include everything perceptible, such as artifacts in the world (books, tables, or cars), but also bodily expressions (e.g., a whispered phrase, a hand gesture, or a wink). The meaning of cultural objects for a person arises fundamentally out of the way they are defined to them by others with whom they interact, as shared interactions give rise to common objects/items with consistent meaning for a specific group (Blumer, 1986). Thus, culture objects function as a multifaceted language, and our interpretations of them are influenced by our interactions, roles, and perspectives within society. For instance, a tree has different meanings for a botanist, a logger, a poet, and a home gardener (Blumer, 1986), whereas a keen golfer and rural farmer are likely to interpret a golf club in very different ways (Koski, 2008).

In the digital gaming world, the analogy of cultural objects can be extended to the digital dimension as well. Numerous digital games feature purchasable virtual in-game items, such as character or weapon appearance features, known as skins, which exist solely within the game's digital environment. These items can hold a real-world monetary value, often determined by their popularity or rarity. Although the items typically serve cosmetic purposes and do not enhance player performance or provide an advantage, owning a particular item can signal social status associated with a certain level of experience or skill within the game (R. King & de la Hera, 2020). Thus, it can be concluded that in a given game, a given object holds meanings socially constructed on it by the community based on interactions, trends, and player experiences.

2.2.2. Meaning as Significance

The other dimension of meaning is *significance*, which is more fundamental in this approach. It refers to an order of priority, or a hierarchy of importance, where certain things are perceived as more important than others, i.e., more significant. In other words, it is the importance or value of something within a particular context, encompassing the emotional or cultural weight that meanings can carry. In the DGR framework, meanings are seen as the drivers of behavior and choices, determinants of the Equation of Life, and it is thus considered that meanings hold some kind of value-loading. The meanings that guide our behavior can range from superficial associations with commodities to deeper connections with our fundamental values, and they are formed by culture to a great extent (Koski, 2008). For example, owning luxury clothing pieces may have a superficial meaning related to status and wealth. In contrast, participating in community service might have a deeper meaning connected to one's values of altruism and social responsibility. The prioritization may also stem from personal memories or emotional attachments to specific objects or activities, or it can involve social signaling,

where ownership of certain items or adherence to particular behavior signals belonging to a specific group. This underscores the social nature of the intricate interplay among personal, social, and cultural factors that influence everyday decision-making. Choices are shaped by societal norms, peer influence, family values, and broader cultural contexts. Moreover, Koski (2017) described how meaning is characterized by the fact that it usually appeals to both reason and emotion at the same time, which is familiar to advertising professionals. For example, in car marketing, the different characteristics of a product are shaped into meanings and mental imagery that guide the buyers' choices. As a result, it is typical that the decision to buy a car is not based on reason alone.

Both dimensions of the concept of meaning in the DGR framework were reflected in the previous explanation of the Equation of Life, where the perceived significance of a particular social world is considered one of the primary determinants that influence individuals' decisions on how to allocate their time and energy among various social worlds. This view interconnects the two distinct dimensions of the concept of meaning together in the framework, suggesting that the resources individuals invest (such as time and energy) yield not only an enhanced understanding of meanings but also an increased perceived significance for the given issue. Conversely, if meanings remain unrecognized initially, their significance cannot be perceived. Years of dedicating resources to a specific activity and accruing knowledge, experiences, and emotional connections contribute to a rich tapestry of meaning. Consequently, this fosters a profound and meaningful relationship that shapes one's actions, behaviors, and identity.

Meanings are encountered in interaction with a social world, where the context in which the individual encounters the meaning stimulus is essential. For example, *an ace* has significant value in both Poker and Counter-Strike, although it refers to different things depending on the context. In both situations, the meaning of an ace needs to be first encountered and recognized to be able to understand it. An ace in Poker refers to a special card that has dual value, in Counter-Strike, an ace refers to a situation where one player defeats all five players of the opposing team. Hence, an ace has semantic meaning as well as significance within the two games. In Poker, the ace's flexibility and high value make it a cornerstone of strategy and gameplay, whereas in Counter-Strike it typically guarantees the team a round win and economic advantages to the following round, as well as personal glory. By playing amongst themselves or by watching others, a person could also learn some other details regarding an ace. In Poker, receiving an ace is a matter of chance. In contrast, getting an ace in Counter-Strike usually requires a substantial amount of personal skill highlighting the meaning of technical-tactical details in the performance, such as timing and crosshair placement. The understanding and recognition of these technical-tactical details' significance may then influence behavior, such that if the person tries to learn and incorporate them into their repertoire through practice. Thus, the cycle of interaction continues, and new meanings are again encountered and perceived, further strengthening the web of meanings in the social world of Counter-Strike.

To summarize, it is important to emphasize that within this framework, individual meanings alone may not be sufficient to shape behavior, but usually require a robust web of many meanings around the same issue. A single meaning may have a central role, but ultimately, the sum of the meanings around a matter or phenomenon is decisive. Moreover, both the recognition of meanings and their perceived value often depend on how they are related to the meaning structures already adopted earlier in life (Koski, 2017). In other words, people with backgrounds in team sports would enjoy playing digital games that include similar kinds of meaning characteristics (competitiveness, sociality, and tacticity). Whereas individuals

with artistic backgrounds could primarily find resonation with digital games including creativity and aesthetic expression.

2.3. Formation of a Meaningful DGR

Today, digital gaming is a globally established pastime, with the first digital gaming experiences typically occurring already during childhood. This is when the first peeks at the social world of digital gaming occur, through playing, watching, and engaging in digital gaming-related discussions. These early interactions initiate the socialization process, exposing individuals to the meanings, symbols, beliefs, norms, expectations, and values associated with digital games and digital gaming. Like acquiring a new language, cultural meanings of digital gaming can also be learned and internalized.

Koski (2017) divided the meaning-making process into seven stages: (a) Encountering meaning, (b) perceiving meaning, (c) recognizing meaning, (d) reflection in relation to a set of meanings already adopted, (e) linking new meaning to already adopted ones, (f) possible emergence of meaningfulness, and (g) possible reinforcement of meaningfulness. An example of digital gaming could be a person who tries to play a football digital game for the first time (encounter). After becoming familiar with the digital game's features (perceiving meaning), the person realizes it is possible to play with their hometown club and control its players (recognizing meaning). Controlling the hometown club resonates with the person, due to the earlier experiences with the club in the sports context (reflection to meaning). By playing the digital game, the person becomes part of their favorite team, makes key decisions to guide the club to success, and gets to know more details of the players and the opposing teams as well (linking new meaning). The person soon becomes aware of how this has enriched their past experiences (emergence of meaningfulness) resulting in increased perceived significance of the digital game and the hometown club (reinforcement of meaningfulness).

The meaning-making example underlined how the new internalized meanings resonated with the individual's interests, identity, and already adopted meaning structures—and thus formed as significant. Due to the perceived significance, the football digital game isn't just a game among many others; it represents the connection with the hometown football club. This can influence behavior as the individual is likely to spend more time playing, invest in digital gaming equipment, or participate in digital gaming communities. Increased investments of resources (time, energy, money) provide additional encounters with numerous meanings of the activity, such as learning the meaning of tactical decisions to be successful, the thrill of competition, the joy of achievement, and the sense of community with other digital gamers. The cycle continues as the individual engages in more interactions. Years of playing and mastering digital games might develop a deep understanding of their mechanics, strategies, and the social dynamics within the digital gaming community. This accumulated knowledge and experience enhances the perceived significance of digital gaming in their life. The initial encounter may even have been coincidental, but it has since evolved into a meaningful activity that provides a sense of accomplishment and belonging (see Przybylski et al., 2010).

The meaning-making example also illustrates how the DGR framework differs from the general motivation ideas. It is known that motivation can vary in short periods (Recours et al., 2004), but the meaning approach is particularly focused on the long-term formation process rather than on short-term decision-making that can be highly situational and rapidly changing by nature. As experiences and knowledge of meanings

accumulate, the relationship with the social world of digital gaming gradually deepens. The depth of the relationship impacts both the prominence of digital gaming in an individual's life and the intensity and longevity of the relationship (Koski, 2017). Furthermore, deeper immersion in a particular social world enhances one's recognition and understanding of its meanings (Koski, 2008). These ideas are supported by studies indicating that the perceived significance of physical activity correlates with both the quantity and intensity of physical activity (Koski et al., 2022; Koski & Tähtinen, 2005; Koski & Zacheus, 2012).

To delineate the extent of involvement in a particular social world, Unruh (1979) devised a classification system that comprised four levels: strangers, tourists, regulars, and insiders (Figure 1). Strangers represent the most superficial level of participation, approaching the social world with suspicion or prejudice and unable to discern its meanings. Tourists, displaying curiosity and a short-term interest, engage more actively than strangers but typically maintain a fleeting relationship with the social world. Regulars are fully immersed participants who engage actively and are familiar with the cultural meanings of the social world. Insiders, the most dedicated participants, not only engage deeply but also contribute to the creation and maintenance of the social world with its meanings. At the latter level, the social world significantly influences various aspects of life, including identity formation.

The deeper levels of engagement in this approach share parallels with the concept of being a fan, defined as a loyal, enthusiastic, and passionate admirer of an interest who shows devotion and appreciation for it (Reysen & Lloyd, 2012). Additionally, other parallels include the importance of identification on a personal level (fanship) and on a collective level (fandom) in the socialization process. Furthermore, fans and insiders alike are not just passive consumers; they actively participate in activities and discussions related to their interests, thereby building and shaping their respective cultures socially from within.

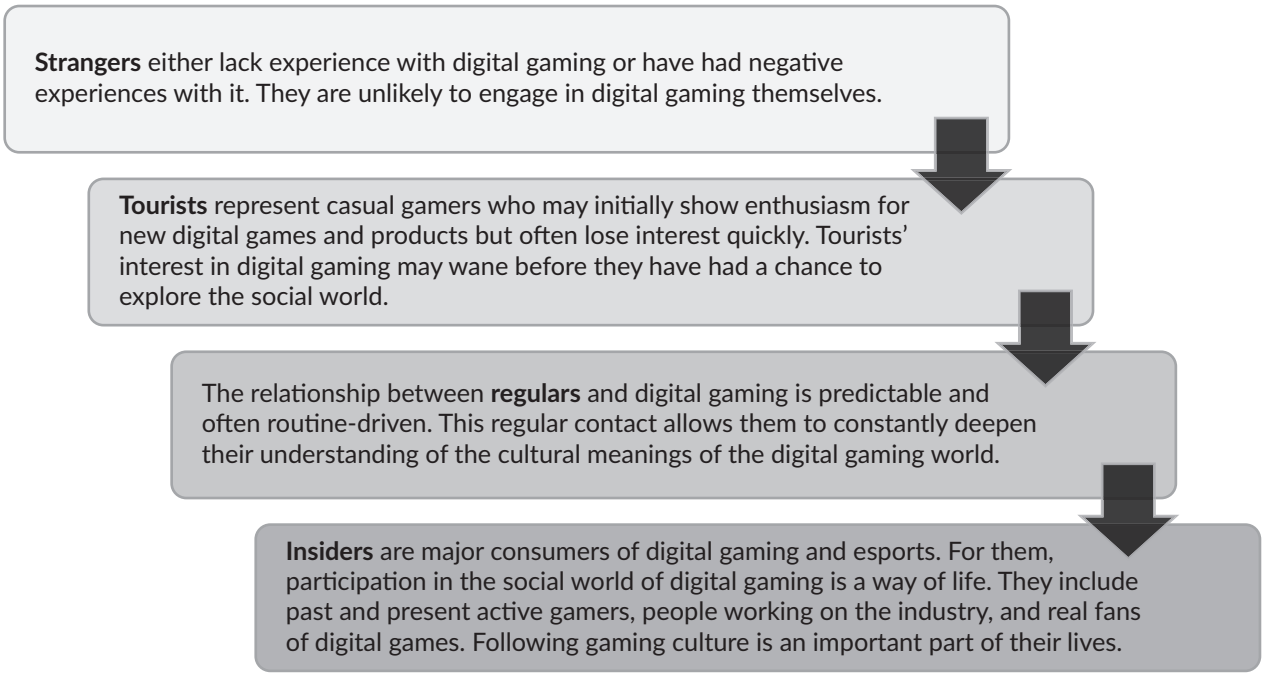

Figure 1. Depth of participation and knowledge of the social world of digital gaming. Source: Adapted from Unruh (1979).

2.4. The Constituents of the DGR

While playing digital games can be considered a central source of meaning, interactions with various other aspects of the digital gaming world are also seen to shape the relationship. In other words, this framework considers that the meanings associated with digital gaming can be encountered and internalized, even if the individual does not necessarily play the digital games themselves. For example, interactions with the social world of digital games and their meanings can occur through parenting or work, where digital gaming-related meanings are encountered. It is therefore suggested that digital gaming can be perceived as significant, even if an individual rarely or never plays them. Focusing solely on digital gaming individuals would exclude the vast number of people otherwise engaged with digital games and digital gaming in their lives. Furthermore, this is relevant to the core idea of the framework that everyone has a varying relationship with digital gaming.

Therefore, not only personal digital gaming but also other attitudes and behaviors toward digital gaming culture, which are often less recognized in the literature, are incorporated into the framework. The DGR's holistic approach encompasses individuals' knowledge and perceptions of different facets of digital gaming culture, such as interest in following digital gaming-related brands, players, and influencers on social media, as well as watching competitive digital gaming known as esports and any other digital gaming content. Additionally, the DGR encompasses the production of digital gaming culture, consumption behaviors related to digital gaming, and the integration of digital gaming-related meanings and content into other areas of life. The constituents are not mutually exclusive, but they allow for a comprehensive approach to exploring the interaction with the social world of digital gaming and its meanings.

Following Koski's (2008, 2015, 2017) PAR model, the DGR is also expressed in practical actions in four different areas: (a) personal digital gaming, (b) following digital gaming culture; (c) production of digital gaming culture, and (d) digital gaming culture in everyday life. Personal digital gaming (a) involves playing digital games on any platform. Following digital gaming culture (b) refers to the consumption of different digital gaming-related content, such as videos, live streams, news, reviews, forums, or literature. A popular type of consumption today is viewing other's digital gaming via media or on-site, which typically includes tutorial videos, live streams or recordings of competitive digital gaming events, content related to professional players, or simply normal people playing various video games. Production of digital gaming culture (c) encompasses activities that facilitate digital gaming, such as coaching, mentoring, moderating, and organizing events. It also includes content creation related to digital gaming, such as digital gaming videos, streaming, literature, or educational material. An example of producing digital game culture is hosting a game night with friends. Digital gaming culture in everyday life (d) refers to integrating digital gaming-related aspects into non-digital gaming areas of life and consuming digital gaming-related products and services. This includes purchasing and using merchandise and incorporating digital gaming expressions and terms into other contexts. Examples could be Fortnite-inspired dances or the use of digital gaming slang in the school environment. Additionally, digital game culture can influence identity formation, as the values, attitudes, and meanings associated with digital gaming may impact an individual's decision-making in everyday life.

Due to the socially constructed nature of the approach, each of the four areas is seen to be influenced by individual characteristics and external factors. A similar idea about the factors influencing actions was illustrated in Takeuchi's (2011) study, where cultural, institutional, interpersonal, and developmental forces shaped children's access to and interest in technology. In the DGR framework, this influence mechanism is

demonstrated by applying Rovio and Saaranen-Kauppinen's (2014, p. 23) model of socialization to physical activity within the digital gaming context, which comprises four levels: individual, social, institutional, and societal and cultural.

At the individual level, people are viewed as biological, psychological, and social entities, influenced by factors such as personality, personal needs, and life circumstances. For instance, factors such as personality traits (de Hesselle et al., 2021) or disabilities (Baltzar et al., 2022) may play a significant role. This is followed by the social level, which encompasses friendships, peer groups, and other close communities. In the digital gaming context, the attitudes of peers (Amialchuk & Kotalik, 2016) or parents (Van Petegem et al., 2019) toward digital gaming can be influential and shape one's relationship substantially. Subsequently, the institutional level encompasses different community institutions and groups, including work, education, and political and religious organizations. At this level, an example could be policymaking (Ashton, 2019) or actions of various governing bodies (Thiborg, 2009) related to digital gaming. Finally, the societal and cultural level encompasses ideologies, values, social norms, and attitudes. At this level, broader trends such as the development of digitalization and digital infrastructure (McCauley et al., 2020) can serve as an example. A summary of the different practical actions of the DGR and the four levels of contextual factors that influence them are visualized in Figure 2, which binds up the DGR framework.

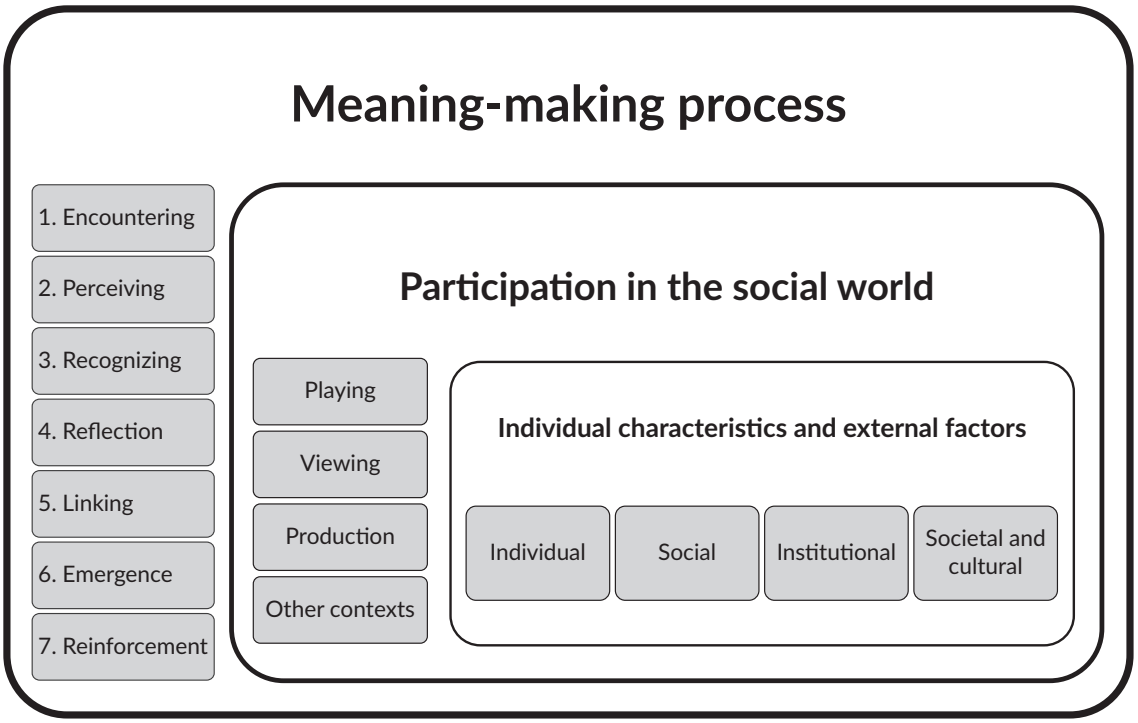

Figure 2. Formation of a DGR and its constituents. Source: Adapted from Koski (2008, 2017) and Rovio and Saaranen-Kauppinen (2014).

3. Examples of Interaction With the World of Digital Gaming Through the DGR Lens

Next, four example profiles are presented to summarize the DGR framework and illustrate its scope in practice. Each profile describes different levels of engagement and the perceived significance of digital gaming. The examples provided are imaginary; however, they are designed to closely resemble plausible

real-world situations, illustrating complex and the way more or less meaningful DGRs exist. Readers can use Figure 2 to help detect from the examples how individual characteristics and external factors have impacted relationships' development, and the various ways of participation in the social world of digital gaming. In addition, the examples describe how the depth of a DGR can vary at different stages of life.

The first example is Kai, whose relationship with digital gaming can be described as superficial and almost non-existent. Kai's personal and friends' interests lie elsewhere. Kai might also live in a country or culture where the lifestyle, values, or social infrastructure simply do not make digital gaming accessible. Kai may have heard about digital games or seen others playing them but may not have any first-hand experience. Due to the lack of experiences and interaction, Kai is not familiar with the meanings related to digital gaming and does not recognize the brands or characters in the world of digital games or cannot understand the digital gaming-specific vocabulary and gestures. In other words, Kai is a stranger to the digital gaming world, making it very unlikely that Kai could have meaningful digital gaming experiences either.

The next person is Robin, an adult whose childhood home never had any digital gaming devices, largely due to a conscious decision by their parents. Robin remembers sometimes trying out some digital games, for example, at friends' houses, but their free time was filled with other hobbies. At Robin's current job, there is a lot of interaction with children, many of whom are very curious about digital games. Robin discusses digital games with children regularly, but rarely agrees to try them out. At the workplace, training sessions on the theme have been organized for staff, which has increased their understanding of the phenomenon. However, Robin remains reluctant to spend free time playing digital games, but does follow the results of a younger relative's esports team on social media. Robin is a tourist of the digital gaming world, who only occasionally visits the social world of digital gaming. The relationship with digital games is not very meaningful, but it exists because Robin encounters, notices, and sometimes even recognizes the meanings associated with digital gaming through work and family.

The third person is Chris, who was not exposed to digital games and did not encounter their meanings as an adolescent. Chris used to compete at the national level in motorsports when younger, but nowadays has mainly settled for the role of spectator. One day, Chris and a friend got to try out a modern racing simulator, which immediately brought back nostalgic memories of Chris's own racing years. The experiment turned into a regular hobby, first with a friend and later at home, when the necessary equipment was purchased. This acquisition has also been enjoyed by Chris's child, who is passionate about digital racing and practices diligently. Chris could be considered a regular in the digital gaming world and is particularly aware of the characteristics of the different digital racing games, their tracks, cars, as well as the evolution and features of the equipment available for simulation purposes. The hobby of digital gaming is shared not only with a friend but also with Chris's own child, whose leisure time activity is enabled by Chris. In addition, the pursuit of personal records, competing, and the use of previously acquired car-related know-how seem equally important aspects of this meaningful leisure time activity.

The last example features a person called Alex, who reflects a so-called insider, whose relationship with digital gaming is active, as it is often part of everyday life and even identity. Years of experience and thousands of playing hours have led to a broad and diverse range of meanings. Alex's relationship with digital gaming began to build during childhood, with games played alone, with siblings, friends, and perhaps even with parents. The standard of living and the digital evolution of society enables Alex to access games not only at home but

also at any time, for example on a smartphone. During Alex's youth, some of the first own-generated money was likely used on something digital gaming-related. Local Area Network events might have been participated in, where peers around the shared interest were met and spent time with. From the events, fan merchandise or textiles were acquired, that were later worn with pride at school and on other occasions too. Over the years, Alex met plenty of new people while participating in digital gaming. There were frequent interactions with friends that formed a core group, with whom the relationship included activities outside of digital gaming as well. Performances of favorite pro players and esports teams were closely followed and were a common topic of discussion. Alex explored and studied digital games' tips and tricks by watching videos and reading forums. The release of the latest versions of favorite digital games was usually an eagerly awaited event, preceded by a lot of hype and speculation. Whenever it was possible, Alex spends most of their free time on digital gaming activities over numerous other options. Alex has a deep and meaningful relationship with digital gaming, which manifests itself in action on many levels.

4. Applicability in Practice

The idea of adapting the PAR approach to the digital gaming context was initially proposed as an unpublished thesis in Finnish (Sokka, 2021). Based on those preliminary ideas, the utility of the framework has been applied in practice in a few publications. First, Meriläinen (2023) stated how the approach helped make sense of young people's engagement with digital gaming in both research and practice contexts and suggested some developments to it. Then, Meriläinen and Ruotsalainen (2023) utilized the framework to explore how different aspects of digital gaming actualize in young people's lives, and how various features of digital gaming culture participation come together to form their experience. Following these works, similar qualitative settings that utilize the DGR approach could provide significant knowledge on the issues that can be otherwise challenging to measure. For example, exploring the details and differences of perceived significance of digital gaming between various player segments could provide valuable details of the complex roles that games may play in different individuals' lives. Although meanings and significance are primarily associated with positive intentions and thoughts toward digital gaming, potential barriers to involvement could be studied too with the help of the DGR, similar to the PAR approach (Koski et al., 2022). Meriläinen's (2023) reported barriers included overwhelming competitiveness and toxic digital gaming communities that acted as distancing forces from playing digital games. Furthermore, by analyzing the personal and external factors presented in the DGR, new insights could be gained into how cultural, geographical, socioeconomical differences, as well as family and peer dynamics, may influence players' DGRs over their life spans. Such research could also illuminate the issue of gatekeeping and other discriminatory acts that have been observed in the digital gaming world (e.g., Passmore & Mandryk, 2020).

To extend the applicability to quantitative settings would require significant developmental work regarding suitable measures. The challenge of the operationalization of the meaning approach lies in the subjectiveness and complexity of meanings, which can require trade-offs between comprehensiveness and practicality when designing a scale. An option could be to adopt similar questionnaires that have been used with the PAR (see Koski et al., 2022; Koski & Tähtinen, 2005; Koski & Zacheus, 2012) and test if they are suitable to the digital gaming context. Another option in the future could be to try adapting tested and comprehensive digital gaming motive scales to the meaning approach, such as the Motivation to Play Scale (Holl et al., 2024). The Motivation to Play Scale was based on a literature review and started with over 1,000 items. The final scale ended with a reliable and valid questionnaire with 58 items in a 10-factor structure. With a stable scale, DGR's central

hypothesis of a positive association between digital gaming time and the perceived significance of digital gaming could be tested, as it has been done in the PAR context (see Koski et al., 2022). A potential continuation of this would be to compare meaning profiles across different player segments, sorted by factors such as age, cultural background, and preferred digital gaming platform or genre.

The initial reason to adapt the physical activity-based PAR framework to the digital gaming context stemmed from experiences and observations followed by an idea that physical activities and digital gaming activities may hold similar meanings (e.g., to compete, socialize) for people. This idea calls for further clarification and investigation at this stage, although some observations along the same lines have been made in previous literature. Vahlo (2018) argued that digital gaming, player-game interaction, and ways of experiencing digital games are not fundamentally different from traditional non-digital games, but represent manifestations of the same phenomenon. Moreover, according to Turtiainen (2022) sports and physical activities are linked to digital games in several ways, but she also notes that despite this, they are often considered as separate phenomena and commonly contrasted in debates.

The nascent idea of shared meanings between the two activities also continues the discussion around the displacement hypothesis (e.g., Lizandra et al., 2019), which suggests that the use of modern technologies such as digital games results in the displacement of less active leisure activities, thus potentially missing out on the well-known health benefits of physical activities. Asefi et al. (2024) explored the displacement hypothesis in their study by identifying five themes for preferring digital games over physical activities among male gamers. These included game characteristics, game space, game outcomes, peer pressure, and accessibility. Given the potential detriments to well-being that declining physical activity and increasing (mostly sedentary) digital gaming activity levels of youth may have (e.g., Hygen et al., 2022), the relationship between the two topical phenomena should be investigated more closely. Attention should be paid especially to adolescents, who are known to be active digital gamers. However, only one-fifth of adolescents globally met the recommended level of physical activity (Guthold et al., 2020). To further study the connections between physical activity and digital gaming activity in adolescents' lives, the joint framework of DGR and PAR could provide a fruitful starting point. Appropriate measures require developmental work first, but exploring the perceived significance of physical activities and digital gaming activities side-by-side could contribute to a deeper understanding of this timely issue.

5. Conclusion

Understanding the appeal of digital gaming is crucial for professionals in many fields. Moreover, theories increasing understanding of digital games, and their culture are also increasingly relevant to understanding wider media production and use (Chess & Consalvo, 2022). This article presented a novel approach to interpreting and understanding individuals' complex and varying relationships with digital gaming. It also illustrated how meaningful relationships with digital games can include much more than just playing them. Furthermore, the mechanisms of an individual's socialization process to the digital gaming world and the surrounding culture were theorized. The current literature on meaningful or eudaimonic digital gaming experiences draws on philosophical and psychological well-being research, whereas the DGR is rooted in the sociological perspective of symbolic interactionism which provides insight into how players build significance in their digital gaming experiences through social interactions within the game world. The two perspectives share similar conceptualizations, with eudaimonic digital gaming focusing on the objective

outcomes that enhance well-being, and the DGR exploring the subjective process of meaning-making. For future studies, the DGR approach provides a comprehensive framework to explore and analyze various player segments. Moreover, with the joint theoretical background with the PAR approach, it could be used to gain insight into the roles of physical activities and digital gaming activities in people's lives. To extend the framework's use and further test its applicability in quantitative settings, developmental work regarding suitable measures should be conducted.

Funding

This work was supported by the Finnish Ministry of Education and Culture project funding: OKM/84/626/2022:646988

Conflict of Interests

The authors declare no conflict of interest.

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Media and Communication
2025 • Volume 13 • Article 8701
https://doi.org/10.17645/mac.8701

ARTICLE

Open Access Journal

A Survey Study on Public Attitudes Toward Gaming Disorder

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Submitted: 15 May 2024 **Accepted:** 24 September 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

The World Health Organization's decision to include addictive game use ("gaming disorder") in the International Classification of Diseases was the subject of controversial scientific debates (e.g., Aarseth et al., 2017; Rumpf et al., 2018; for an overview, see Reer & Quandt, 2021). However, knowledge is scarce on how addictive game use is perceived outside of academic circles (Schatto-Eckrodt et al., 2020). The current study aimed to fill this research gap by interviewing a stratified German sample (N = 1,075) on their attitudes toward the topic. We found that critical views about games and their addiction potential are rather common among the German general population. Further, we found evidence that many participants overestimated the number of players affected by gaming disorder. Regression analyses showed that age, gender, and gaming experience play a role in how individuals think about risks associated with game use. Interestingly, having heard about the topic in the media was associated with more critical attitudes and higher presumed prevalence rates. More exchange between scholars and the wider public is needed to increase knowledge on the topic. Further, media reports on gaming disorder should cover the latest research findings and the opposing views of scientists.

Keywords

computer games; digital games; gaming addiction; gaming disorder; problematic game use; societal perception; video games

1. Introduction

Playing digital games is one of the most popular leisure-time activities worldwide: According to the American Entertainment Software Association, 212.6 million Americans play digital games one hour or more per week, which equals 65% of the US population (American Entertainment Software Association, 2023). In European

countries like Germany (where the current study was conducted), six out of 10 people in the age group of 6 to 69 years play digital games (Game—Verband der deutschen Games-Branche, 2023). The number of gamers worldwide was estimated to be 3.42 billion in 2024 (Newzoo, 2024).

However, notwithstanding this popularity, there have always been worries in parts of academia and society concerning the possible negative impacts of playing digital games (e.g., Ferguson & Beaver, 2017; Przybylski, 2014; Reer et al., 2024). Despite a growing number of studies considering the beneficial effects of gaming, there is some evidence that media coverage still often portrays games and gamers in a biased and sensationalistic manner (e.g., Bigl & Schlegelmilch, 2021; Jung, 2019; Whitton & Maclure, 2017). Regarding the addiction potential of digital games, the media frequently report extreme cases of adolescents or younger adults who develop serious problems because of their excessive gaming behavior and thus have to undergo medical treatment (e.g., Reumschüssel, 2012; von Hayek, 2020). The topic received particular attention in 2019 when the World Health Organization (WHO) confirmed the inclusion of addictive game use ("gaming disorder" [GD]) in the 11th edition of the International Classification of Diseases (ICD-11; WHO, 2024).

What is less well-known among the wider population is that the WHO's decision to include GD in the ICD-11 was controversial among scholars (Reer & Quandt, 2021). An analysis of the X (formerly Twitter) debate about GD showed that the topic was discussed not only in academia and the health sector but also among other societal groups, such as parents, journalists, and gamers (Schatto-Eckrodt et al., 2020). However, it is important to note that only a relatively small percentage of gamers are affected by GD: For example, in Germany, a representative survey of internet users aged 14 to 39 years found prevalence rates of 2.4% among gamers and 1.9% among the entire population (Reer et al., 2021). A recent meta-analysis reported an average worldwide GD prevalence rate of around 3% (1.96% if only studies with stratified samples are considered; Stevens, Dorstyn, et al., 2021).

In general, little is known about how addictive game use is perceived in society as a whole. The topic is of societal relevance, as a lack of knowledge about GD, disproportionately critical opinions on games, and a systematic overestimation of the prevalence rate could, for example, fuel unfounded worries and lead to wrong decisions concerning the regulation of gaming. Further, individuals suffering from addictions (including behavioral addictions, such as GD or gambling disorder) face public stigmatization and experience blame and social distancing (e.g., Peter et al., 2019). Such negative effects could also affect players who are mistakenly thought to be addicted to digital games.

In the current study, we surveyed a stratified German sample of internet users aged 16 to 84 years on their attitudes toward the topic. Besides providing descriptive insights into how the general population thinks about disordered game use, we additionally examined different factors that might contribute to a more critical vs. a more liberal opinion.

1.1. The GD Debate

The WHO was not the first health organization to include addictive game use in its diagnostical manual (Reer & Quandt, 2021). In 2013, the American Psychiatric Association included "internet gaming disorder" (IGD) in the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5). Referred to as a

"condition for further study," IGD is defined by nine criteria (e.g., preoccupation, withdrawal, or loss of interest in other activities), five of which must be observable for one year or more before a diagnosis can be considered (American Psychiatric Association, 2013).

Several scholars criticized the inclusion of IGD in the DSM-5 and expressed concerns about the decision-making process underlying the proposal, as well as about the proposed diagnostic criteria (Reer & Quandt, 2021).

Kardefelt-Winther (2015) argued that many IGD criteria were adopted from substance use disorders or gambling and do not fit the context of gaming very well. For example, he stated that it is not uncommon to feel preoccupied with a favorite leisure-time activity (be it gaming) to a certain degree and to experience frustration (similar to withdrawal symptoms) when not being able to play for a longer period of time (Kardefelt-Winther, 2015). To adequately distinguish between enthusiastic healthy engagement and harmful addictive behavior, it is most important to examine whether serious psychosocial and functional impairments can be observed (Kardefelt-Winther et al., 2017).

A wide spectrum of additional arguments against the DSM-5 proposal were put forward (Reer & Quandt, 2021): For example, other authors argued that the "internet" in IGD is misleading since this terminology inadequately suggests that excessive play only concerns online (and not offline) gaming (Kuss et al., 2017). In general, IGD, as defined in the DSM-5, "is lacking a well-defined object" (Quandt, 2017, p. 121), and the classification of excessive gaming as a behavioral addiction may have a negative impact on how gaming is perceived in society, possibly leading to a pathologization of a normal leisure behavior (Kardefelt-Winther et al., 2017; Quandt, 2017).

Notwithstanding these critical voices, the WHO in 2019 decided to fully recognize GD as a diagnosis in the ICD-11 (WHO, 2024). The ICD-11 defines GD as:

> A pattern of persistent or recurrent gaming behaviour ("digital gaming" or "video-gaming"), which may be online (i.e., over the internet) or offline, manifested by: 1. impaired control over gaming (e.g., onset, frequency, intensity, duration, termination, context); 2. increasing priority given to gaming to the extent that gaming takes precedence over other life interests and daily activities; and 3. continuation or escalation of gaming despite the occurrence of negative consequences. The pattern of gaming behaviour may be continuous or episodic and recurrent. The pattern of gaming behaviour results in marked distress or significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. The gaming behaviour and other features are normally evident over a period of at least 12 months in order for a diagnosis to be assigned, although the required duration may be shortened if all diagnostic requirements are met and symptoms are severe. (WHO, 2024)

Notably, some of the concerns raised against the DSM-5 criteria were addressed by the WHO (Reer & Quandt, 2021). For example, controversial criteria such as preoccupation are not part of the ICD-11 GD definition, while functional impairment is stressed (Billieux et al., 2017; Reer & Quandt, 2021).

Even more so than the inclusion of IGD as a "condition for further study" in the DSM-5, the full recognition of GD as a mental condition in the ICD-11 sparked debate among scholars (Reer & Quandt, 2021): For

example, a group of researchers questioned the scientific basis of the decision, coming to the conclusion that full recognition of GD as a formal diagnosis is premature. In consequence, premature diagnoses could occur, leading to an increase in false-positive cases and incorrect treatment (Aarseth et al., 2017; van Rooij et al., 2018). Further, policy on games could change, and the large majority of healthy gamers may be negatively affected (Aarseth et al., 2017). There were also concerns as to whether GD constitutes a unique disorder or whether it is more a symptom of other underlying mental problems (Bean et al., 2017; Ferguson et al., 2020).

In contrast, others supported the decision of the WHO (Reer & Quandt, 2021), stressing that the inclusion of GD in the ICD-11 is necessary from a clinical perspective to establish professional treatment (e.g., Higuchi et al., 2017; Rumpf et al., 2018; van den Brink, 2017). Accordingly, the points raised by Aarseth et al. (2017) and van Rooij et al. (2018) might carry the risk that health insurance companies adopt these arguments to refuse payment for therapies (Rumpf et al., 2018). Király and Demetrovics (2017) argue that even though some of the concerns raised against the ICD-11 GD criteria are legitimate, the advantages of the classification outweigh the disadvantages.

The disagreements among scientists were also reflected in a study by Ferguson and Colwell (2020), who surveyed 214 scholars about their opinions on the DSM-5 and ICD-11 classifications of GD. Ferguson and Colwell (2020) found that 60.8% of the participants agreed that addictive gaming is indeed a mental disorder (30.4% disagreed). Further, 49.7% agreed that the DSM-5 criteria are valid (36.7% disagreement), while slightly more (56.5%) agreed that the ICD-11 GD diagnosis criteria are valid (33.1% disagreement; Ferguson & Colwell, 2020). Interestingly, 54.9% stated they were worried that healthy youths may be pathologized based on the WHO GD criteria (36% disagreement), and 43.5% agreed that gaming addiction diagnoses may be more harmful than useful (47.7% disagreement; Ferguson & Colwell, 2020).

1.2. Media Coverage and Societal Perception of GD

While the debate articles that were published about the inclusion of GD in the DSM-5 and ICD-11 give a good impression of researchers' controversial opinions, much less is known about how the wider public thinks about the topic and how good knowledge of the state of research is beyond academia (Schatto-Eckrodt et al., 2020). In the current study, we were particularly interested in how well German citizens are able to realistically estimate the prevalence of GD and how widespread critical vs. liberal opinions on the topic are.

A few survey studies have tried to capture how games and gamers are perceived in society (e.g., Kort-Butler, 2021; Kowert et al., 2012; Przybylski, 2014; Stone, 2019), most of them not focusing on addictive use. Further, there are some content analyses examining how the media report on gaming-related topics (e.g., Bigl & Schlegelmilch, 2021; Jung, 2019; Whitton & Maclure, 2017).

Researchers often discuss whether the way gamers are portrayed in the media contributes to the persistence of moral panics (Bowman, 2016; Ferguson & Beaver, 2017; Sørensen, 2013). Moral panics are defined as periods when "a condition, episode, person or group of persons emerges to become defined as a threat to societal values and interests; its nature is presented in a stylized and stereotypical fashion by the mass media" (Cohen, 2002, p. 1, as cited in Sørensen, 2013, p. 965).

Indeed, media reports have associated the use of games with several negative effects, such as the displacement of more valuable activities, risks to physical health, negative social effects, and an increased

risk of violence (Bowman, 2016; Jung, 2019; McKernan, 2013). An analysis of the press coverage following the school shooting in Emsdetten (Germany) in 2006 showed that reportage about violent games was rather fragmented but that violent games were repeatedly presented as a field of political intervention, with discussion of bans to prevent such incidents in the future (Sørensen, 2013). A few content analyses have also identified favorable topic frames, for example, gaming as an emotional outlet that may enhance certain cognitive skills (Williams, 2003), as a "valuable artistic form" (McKernan, 2013, p. 308), or in relation to aspects of "team play and tactics, prudence, strategy and communication" (Sørensen, 2013, p. 972). However, several studies have found that media representations of gaming are still often negative, biased, stereotypical, or sensationalistic (Bigl & Schlegelmilch, 2021; Jung, 2019; Whitton & Maclure, 2017; Williams, 2003).

This rather negative image of gaming is also observable in survey studies that examined perceptions and opinions relating to games and gamers. For example, Kowert et al. (2012) conducted a survey of 342 internet users and found that negative stereotypes about gamers (e.g., being unattractive, overweight, or socially inept) were widespread and that especially non-gamers to a certain degree tended to adopt them as personal opinions. In a more recent study, Stone (2019) found that even though perceptions of gamers had changed to some extent, negative stereotypes were still prevalent. Notably, several studies have indicated that the extent to which negative stereotypes are internalized depends on various factors, including age, gender, self-identification as a gamer, and gaming habits (Kort-Butler, 2021; Kowert et al., 2012; Przybylski, 2014; Stone, 2021).

Further, research has sporadically examined the interplay between media coverage or reception and perceptions of gaming (e.g., Jung, 2019; Kümpel & Haas, 2016). For example, Jung (2019) conducted a multi-method study in Korea (combining an analysis of news content and a survey) and found evidence that "exposure to mass media that highlights the negative aspects of games has strong impacts on attitudes toward game regulation and leads people to agree with the idea that game playing has negative connotations" (p. 157).

However, only a few studies have explicitly focused on the societal perception of addictive game use. Carter et al. (2020) conducted qualitative interviews with 29 young gamers aged 9 to 14 years and asked them about their opinions and perspectives on GD. They reported that knowledge of what constitutes addictive behaviors was rather low and that GD, enthusiasm for a game, and high engagement were often conflated. Further, they found clear indications that the media discourse played a significant role in how children perceived games and GD, potentially contributing to a stigmatization of digital game use (Carter et al., 2020). This finding is in line with a quantitative content analysis examining media coverage of the WHO's decision to include GD in the ICD-11: Examining 513 newspaper articles published between June 2018 and June 2019, Parrott et al. (2020) found that the opinions of health professionals were overrepresented, while gamers' perspectives were rarely considered. Further, they observed that the media seldomly reported about the controversial debate among game scholars, but simplified the complexity of the topic and apparently legitimized the WHO's decision (Parrott et al., 2020). A computational analysis of the X debate surrounding the WHO decision showed that the topic was in fact also discussed among gamers and the wider public, with many posts opposing the classification of GD in the ICD-11 (Schatto-Eckrodt et al., 2020).

1.3. The Current Study

As outlined above, research on the societal perception of addictive game use is scarce. Following an explorative attempt, we asked the following research question:

> RQ1: How is addictive game use perceived in society?

We additionally aimed to provide a deeper understanding of the underlying explanatory factors that could contribute to a more critical vs. a more liberal view of games and their addiction potential. Based on the literature outlined above, we identified several factors that might play a role here.

Studies have found that older age (e.g., Jung, 2019; Przybylski, 2014), female gender (Jung, 2019; Przybylski, 2014), non-identification as a gamer (e.g., Kort-Butler, 2021; Kowert et al., 2012; Stone, 2021), and a lack of personal experiences with games (e.g., Kort-Butler, 2021; Kowert et al., 2012; Przybylski, 2014; Quandt et al., 2015) were associated with more critical attitudes and beliefs in stereotypes on games and gamers. Against this background, we posed the following hypotheses:

> H1: Age is positively associated with more critical attitudes toward games (H1a) and a higher presumed GD prevalence rate (H1b).
>
> H2: Female gender is positively associated with more critical attitudes toward games (H2a) and a higher presumed GD prevalence rate (H2b).
>
> H3: Playing time is negatively associated with more critical attitudes toward games (H3a) and a higher presumed GD prevalence rate (H3b).
>
> H4: Never having played a digital game is positively associated with more critical attitudes toward games (H4a) and a higher presumed GD prevalence rate (H4b).
>
> H5: Gamer identity is negatively associated with more critical attitudes toward games (H5a) and a higher presumed GD prevalence rate (H5b).

Some studies found evidence that personal experiences with addictions can influence how individuals perceive the risks of substances like alcohol or tobacco (e.g., Koski-Jännes et al., 2012; Weinandy, 2023). We hypothesized that those who have experiences with GD themselves or who personally know someone who is assumingly affected by GD might hold more critical views:

> H6: Self-identification as addicted to digital games is positively associated with more critical attitudes toward games (H6a) and a higher presumed GD prevalence rate (H6b).
>
> H7: Knowing someone who is thought to be addicted to games is positively associated with more critical attitudes toward games (H7a) and a higher presumed GD prevalence rate (H7b).

There is some indication that the media often report about games (e.g., Bigl & Schlegelmilch, 2021; Jung, 2019; Whitton & Maclure, 2017) and GD (e.g., Parrott et al., 2020) in a rather unbalanced manner, potentially

influencing audience perceptions (Carter et al., 2020; Jung, 2019; Kümpel & Haas, 2016) and thus contributing to stigmatization and moral panic (Bowman, 2016; Carter et al., 2020; Ferguson & Beaver, 2017). Also, some scholars have argued that the classification of GD in the ICD-11 in general might contribute to moral panic and a stigmatization of players (e.g., Aarseth et al., 2017). Knowledge of the WHO decision might therefore be another factor that could foster critical views. We hypothesized:

> H8: Consumption of media reports on GD is positively associated with more critical attitudes toward games (H8a) and a higher presumed GD prevalence rate (H8b).
>
> H9: Knowledge of the WHO decision to include GD as a diagnosis in the ICD-11 is positively associated with more critical attitudes toward games (H9a) and a higher presumed GD prevalence rate (H9b).

Finally, we also considered two more general factors: personality and education. We assumed that individuals with a fearful personality and a generally dangerous worldview (e.g., Leiser et al., 2017) might tend to have more concerns that games can have negative impacts on players. Further, we asked how formal education is related to the perception of games and their addiction potential. We posed the following hypotheses:

> H10: A scary worldview is positively associated with more critical attitudes toward games (H10a) and a higher presumed GD prevalence rate (H10b)
>
> RQ2: How is education related to attitudes toward games (RQ2a) and presumed GD prevalence rate (RQ2b)?

2. Methods

The central aims of the study were to gain information about how the German general population thinks about games and their addiction potential and to identify predictors of more liberal vs. more critical opinions. In order to achieve these goals, a quantitative stratified survey seemed particularly suitable, since it allows the collection of descriptive data and to conduct regression analyses to examine the hypotheses. Against the background of these considerations, the study was conducted as part of a larger quantitative online survey project carried out in cooperation with a leading professional German survey research institute.

The external survey institute followed the ethical guidelines of the International Code on Market, Opinion and Social Research and Data Analytics by the International Chamber of Commerce and the European Society for Opinion and Market Research to provide high research and data protection standards to the participants. Further, the study procedures were confirmed by the university department's research ethics board.

The survey questions were selected and designed by the authors of this article. The survey research institute programmed the online questionnaire, conducted a technical pretest, and recruited the participants via an online access panel to participate in computer-assisted web-based interviews. A stratification procedure (criteria: gender, age, living region in Germany) was applied to more closely match the sample with the German general population.

The dataset provided by the survey research institute consisted of 1,108 cases. Before analyzing the data, the dataset was screened for invalid cases. One person reported an unrealistically high internet usage time of 9,600 minutes per week (160 hours) and also showed signs of straight-lining. The person's data were deleted from the dataset. Another 30 cases were also deleted for straight-lining and two for highly implausible answers. The final sample consisted of 1,075 German internet users aged 16–84 years (mean age: 44.93, *SD* = 16.70; 48.8% female, 51.1% male, 0.1% diverse).

2.1. Measures

The online questionnaire consisted of different thematic blocks (including parts not relevant to the current study). The first block focused on demographic data (area of residence in Germany, age, and gender). The second block consisted of questions on the use of different types of media. The questions on game use were introduced as follows:

> In the following section, we are interested in the use of computer games. By computer games, we understand all forms of digital games that are played online or offline, e.g., via a desktop computer, laptop, tablet, gaming console, or mobile device, such as a smartphone.

In the survey, we used the term *addiction* when referring to disordered use. We are of course aware that there are discussions among scholars about whether the term should be used in the context of gaming (e.g., Ferguson et al., 2020; Reer & Quandt, 2021). However, we deliberately used it in the survey because this is the term most people are familiar with, while alternative terms such as *GD* or *problematic gaming* are possibly unknown among the general public.

Several questions addressed demographics and background factors. We asked the participants about their gender and age. Formal education was assessed by asking the participants about the German school-leaving qualification they had achieved. Participants who were still attending school were asked about the type of school. To measure individual differences in the general perception of the world, we adopted the 5-item dangerous worldview scale by Leiser et al. (2017; for original items, see Altemeyer, 1988; Duckitt et al., 2002). The scale consists of statements about how dangerous people in general perceive their social surroundings ("any day now chaos and anarchy could erupt around us, all the signs are pointing to it"; 1 = *strongly disagree*, 6 = *strongly agree*; Cronbach's $\alpha = 0.808$, $M = 3.36$, $SD = 1.04$).

Concerning attitudes toward (addictive) game use, the existing quantitative studies on public perceptions of games and gamers had a different focus than that of the current study, and, for example, examined beliefs in aggression risks associated with playing violent games (Przybylski, 2014), general stereotypes associated with gamers (Kowert et al., 2012; Stone, 2021), or stigmatization of addicted gamers (Peter et al., 2019). Other studies that included items on attitudes toward GD were conducted among experts and not among the general public (e.g., Ferguson & Colwell, 2017, 2020; Quandt et al., 2015). In the absence of a suitable existing scale, eight items were created to measure critical attitudes toward games, primarily focusing on addictive use. They were rated on a scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. The survey block containing the items on addictive gaming was presented using the following instruction: "We will now again focus on the topic of computer games. We are interested in your opinion: How much do you agree with the following statements?" A full list of all items and descriptive statistics is provided in Table 1. A principal axis factor

analysis (varimax rotation; eigenvalue > 1) showed that all eight items loaded highly on one single factor that explained 62.56% of the initial variance. We computed a mean index of the eight items ($\alpha = 0.913$, $M = 3.28$, $SD = 1.01$). A high mean value indicates a stronger belief in the harmfulness and addictiveness of games, while a low value indicates a more liberal opinion. Additionally, using a slider from 0 to 100%, the participants were asked to estimate the prevalence rate of addicts among game users ("Please estimate: What percentage of computer game users are addicted to them?").

Further, the questionnaire included several gaming-related measurements. Participants were asked how much time they spent gaming in a normal/average week. In total, 227 participants indicated that they have never actively played a digital game and 259 stated that they currently do not play. The average weekly game usage time was 4.42 hours ($SD = 8.00$) among the entire sample (including non-gamers), and 8.15 hours ($SD = 9.36$) among active gamers (playing time > 0.00 hours). Three items were used to measure the participants' level of identification as a gamer (based on Ellemers et al., 1999; Tang et al., 2020; e.g., "I identify with other gamers"; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 1.65$, $SD = 1.03$, $\alpha = 0.908$).

Lastly, the participants were asked about personal experiences with addictive gaming and knowledge about the WHO decision. We asked them whether they would consider themselves addicted to computer games and whether they know someone personally whom they would consider addicted. A single item rated on a 5-point scale (1 = *never* to 5 = *very often*) was used to measure how often the participants have heard something about computer game addiction in the media ($M = 2.38$, $SD = 0.89$). Finally, the participants were asked whether they are aware of the WHO's decision to include GD in the ICD-11.

3. Results

To answer RQ1, we calculated descriptive statistics for all eight items on attitudes toward addictive game use. For simplification, we aggregated options one and two (disagreement), and options four and five (agreement) of the provided 5-point scale.

As can be seen in Table 1, most participants had a rather critical view of games. A majority showed agreement that games can be addictive, that their addiction potential is similar to that of alcohol or cigarettes, that professional therapies are needed, that game addiction is a serious societal risk, and that official acknowledgment is useful. Results concerning statements on stricter laws, a prohibition of particular games, and the comparability of game addiction with heroin and cocaine abuse were more balanced.

The participants on average considered 36.70% of gamers to be addicted ($SD = 23.52$). The median for the estimated prevalence rate was 32%. Overall, 2.8% of the participants would consider themselves addicted, while 24.7% indicated personally knowing someone whom they would consider addicted to computer games. Interestingly, only 16.2% of the participants were aware of the WHO decision.

To examine the hypotheses, two regression models were calculated: one predicting the mean index of attitudes toward game addiction, and one predicting the presumed prevalence rate (see Table 2). Education (high = 1) and gender (female = 1) were dichotomized. To account for non-normality, bootstrapping with 95% bias-corrected and accelerated confidence intervals (*CI*) was applied (10,000 bootstrap samples).

Table 1. List of items on attitudes toward gaming addiction.

Topic	Item	*M* (*SD*)	Disagreement (1 and 2)	(3)	Agreement (4 and 5)
Addictiveness	Computer games can be addictive	4.05 (1.11)	118 11%	138 12.8%	819 76.2%
Alcohol/nicotine	The addiction potential of computer games is similar to alcohol or cigarettes	3.45 (1.24)	243 22.6%	261 24.3%	571 53.1%
Heroin/cocaine	The addiction potential of computer games is similar to heroin or cocaine	2.87 (1.31)	426 39.6%	284 26.4%	365 34%
Stricter laws	We need stricter legal regulations of computer games	2.87 (1.35)	436 40.6%	276 25.7%	363 33.8%
Prohibition	Some computer games should be forbidden because of their addiction potential	3.02 (1.45)	409 38%	234 21.8%	432 40.2%
Therapies	We need professional therapies and facilities for the treatment of computer game addiction	3.36 (1.22)	236 22%	311 28.9%	528 49.1%
Societal risk	The addiction potential of computer games is a serious societal risk	3.28 (1.26)	294 27.3%	280 26%	501 46.6%
Acknowledgment	An official acknowledgment of computer games addiction as a diagnosable disease is useful	3.36 (1.27)	262 24.4%	284 26.4%	529 49.2%

We found that age predicted more critical views toward games but was not significantly related to a higher presumed prevalence rate. Thus, hypothesis H1a was confirmed, while H1b had to be rejected. H2a and H2b were both confirmed, as female gender was positively related to more critical attitudes as well as to higher presumed prevalence rates.

Concerning gaming experiences, we found that never having played a game was positively related to more critical attitudes and a higher presumed prevalence rate (confirming H4a–b), while gaming time was a negative predictor of both dependent variables (confirming H3a–b). Hypothesis H5 was only partly supported, as gamer identity negatively predicted critical attitudes (supporting H5a) but was not significantly related to the presumed prevalence rate (not confirming H5b).

As expected, knowing someone who is thought to be addicted to games predicted more critical attitudes (supporting H7a) and higher presumed prevalence rates (supporting H7b). However, self-identification as someone who is addicted to games only predicted a higher presumed prevalence rate (confirming H6b) and was not significantly related to more critical attitudes (not confirming H6a).

Hypotheses H8a–b predicted a positive effect of media consumption on the two outcome variables and were both supported. Knowledge of the WHO decision showed no significant effect on presumed prevalence rates (H9b). The effect for critical views (H9a) approached significance ($p = 0.055$); however, the beta coefficient ($\beta = 0.05$) was very small.

Table 2. Regression models.

	Critical attitudes				Presumed prevalence rate			
	B (*SE*)	Beta	95% *CI*	p	*B* (*SE*)	Beta	95% *CI*	*p*
(Constant)	1.53 (0.18)		1.19, 1.89	0.001	6.06 (4.29)		−2.61, 14.78	0.158
Age	0.01 (0.00)	0.20	0.01, 0.02	0.001	0.05 (0.05)	0.04	−0.04, 0.14	0.273
Female gender	0.27 (0.06)	0.14	0.16, 0.38	0.001	6.01 (1.33)	0.13	3.43, 8.49	0.001
High education	0.07 (0.06)	0.03	−0.05, 0.18	0.272	−4.95 (1.42)	−0.10	−7.71, −2.09	0.001
Scary worldview	0.16 (0.03)	0.16	0.10, 0.21	0.001	5.15 (0.68)	0.23	3.84, 6.47	0.001
Gaming hours (week)	−0.01 (0.00)	−0.07	−0.02, −0.001	0.034	−0.28 (0.10)	−0.09	−0.48, −0.09	0.005
Never played game	0.24 (0.07)	0.10	0.09, 0.38	0.001	4.63 (1.74)	0.08	1.25, 8.09	0.007
Gamer identity	−0.16 (0.04)	−0.16	−0.23, −0.09	0.001	−1.33 (0.84)	−0.06	−2.97, 0.26	0.117
Self-identified addict	−0.30 (0.19)	−0.05	−0.69, 0.07	0.101	18.73 (4.19)	0.13	10.27, 26.83	0.001
Knowing an addict	0.34 (0.07)	0.15	0.21, 0.47	0.001	11.97 (1.66)	0.22	8.85, 15.23	0.001
Media consumption	0.28 (0.04)	0.24	0.21, 0.35	0.001	4.20 (0.81)	0.16	2.61, 5.80	0.001
Knowledge WHO	0.14 (0.07)	0.05	−0.01, 0.28	0.055	−0.50 (1.83)	−0.01	−4.02, 3.12	0.788
R^2	0.25				0.22			

Notes: n = 1,064 (11 cases were excluded because the education level was unclear); significance tests and 95% *CI* based on bootstrapping (10,000 samples; bias-corrected and accelerated); dichotomous variables were coded with 0 and 1.

Finally, we found that a scary worldview was a significant predictor of both more critical attitudes (supporting H10a) and higher presumed prevalence rates (supporting H10b). Concerning RQ2, we found that high education significantly predicted lower presumed prevalence rates (RQ2b), but no significant effect for critical attitudes (RQ2a) was identified.

Because outliers can influence model estimation, we additionally calculated alternative robust regressions using the "lmrob" function of the "robustbase" package for *R* (Maechler et al., 2024) to compare results. The only remarkable difference in the significance of the predictors was that the *p*-value for knowledge of the WHO decision on critical attitudes turned significant (unstandardized $B = 0.16$; $p < 0.05$), while it was not significant in the classical bootstrapping approach (unstandardized $B = 0.14$; $p = 0.055$).

4. Discussion

Our results show that critical views about games and their addiction potential are rather common among the German general population. A majority showed agreement that games can be addictive, that their addiction potential is similar to that of alcohol or cigarettes, that professional therapies are needed, that game addiction

is a serious societal risk, and that an acknowledgment of computer game addiction as a diagnosable disease is useful. Notably, about one-third even (rather) agreed that the addiction potential of digital games is similar to that of heroin or cocaine. Further, a considerable number of participants also (rather) agreed that stricter legal regulation of games is needed (33.8%) and that some games should be forbidden because of their addiction potential (40.2%). These findings are in line with previous research showing that even though perceptions of games and gamers have shifted to a certain degree in recent years, negative views are still widespread (Stone, 2019, 2021).

The high average presumed prevalence rate of 36.70% indicates that many participants overestimated the number of players addicted to games. In fact, the global prevalence rate of GD was recently found to lie around 2% to 3% (Stevens, Dorstyn, et al., 2021), and similar rates were also reported for Germany (e.g., Reer et al., 2021). The reasons for the overestimation of GD prevalence may be manifold. The simplest explanation could be that people are generally not very good at estimating numbers. However, it can also be interpreted as a rather widespread misperception of gaming or misunderstandings of the term *addiction*. Previous studies have shown that knowledge of what constitutes an addiction is rather low and that enthusiastic play and GD are often conflated (Carter et al., 2020). In general, it seems difficult for laypersons to identify (behavioral as well as substance) addictions sufficiently (Jamieson & Dowrick, 2021), and public understanding of the term *addiction* is complex and goes beyond the diagnostic criteria defined in the ICD-11 or DSM-5 (Weinandy, 2023). Thus, the high estimated prevalence rate could be indicative of difficulties in distinguishing between problematic, addictive, and healthy play. Likewise, the relatively high percentage of participants who stated that they knew someone whom they would consider addicted (24.7%) raises the question of whether this perhaps reflects a lack of knowledge rather than a widespread addiction problem. In this context, it is also noteworthy that only a minority (16.2%) was aware of the WHO decision to officially acknowledge GD. This indicates that the topic and the intensive scientific debate surrounding the decision (e.g., Aarseth et al., 2017; Higuchi et al., 2017; Rumpf et al., 2018; van Rooij et al., 2018) have probably not been noticed by large parts of the German public.

The results of the regression analyses give further insights into what factors play a role in how people think about games and GD. We found that females and older participants were more critical about games, and females also estimated GD prevalence higher. These findings are in line with earlier studies: For example, Jung (2019) found that older persons and females more often supported stronger regulation of games and in general had more negative opinions about games. Przybylski (2014) reported similar results concerning beliefs in aggression effects, finding that "demographic cohorts who did not grow up with games and those who lack concrete gaming experience" (p. 228) were more critical of games. Consistent with this, we found that playing time per week and identification as a gamer were associated with more liberal opinions, and gaming time negatively predicted the presumed prevalence rate. Further, participants who had never actively played a digital game themselves were more critical and estimated the prevalence rate as higher. Thus, negative perceptions of games and overestimations of the addiction problem might to a certain degree be attributed to a lack of personal experience with the subject (e.g., Ferguson & Colwell, 2017, 2020; Kort-Butler, 2021; Kowert et al., 2012; Przybylski, 2014; Quandt et al., 2015). Alternatively, one could argue that individuals who highly identify as gamers and who themselves regularly play tend to be less critical about games.

Further, regression analysis indicated that those who considered themselves addicted to gaming estimated prevalence as higher. Also, knowing someone who was thought to be addicted to gaming was associated

with more critical attitudes and higher estimations of the prevalence rate. Koski-Jännes et al. (2012) found that individuals in treatment perceived the risk of dependence for legal substances like alcohol and tobacco as higher than the general population and health professionals, while non-significant or opposing results were reported for behavioral addictions and illegal substances. Weinandy (2023) reported that individuals with personal addiction experiences perceived some objects as more addictive than individuals without such experiences. We think that it makes sense that individuals who belong to the minority of players affected by GD themselves (or who personally know someone potentially belonging to this group) estimate prevalence rates as higher due to the negative experiences they have had with games. The average player (who may have played for years without experiencing any negative consequences) may consider it less likely that a large proportion of players become addicted to gaming. However, one should consider that the group sizes were small and that the results are based on subjective assessments of one's own (addictive) gaming behavior and the (addictive) gaming behavior of others. Thus, the results should be interpreted cautiously. Further research is needed to verify the influence of personal experiences with GD on the perception of GD.

Several scholars have argued that the inclusion of addictive gaming in the DSM-5 and ICD-11 might lead to a stigmatization of players and a pathologization of a normal leisure-time activity (e.g., Aarseth et al., 2017; Quandt, 2017; van Rooij et al., 2018). However, according to our data, knowledge about the WHO's decision had no significant influence on the estimated GD prevalence rate and influence on critical attitudes was unclear. A recent experimental study indicated that framing problematic gaming as an addictive disorder (in line with the ICD-11 classification) has little influence on the stigmatization of gamers (Galanis et al., 2023). This could be interpreted as a hint that worries concerning a general pathologization of gamers due to the WHO decision could be unfounded. However, more research on this topic is needed to substantiate these findings.

Further, researchers have frequently discussed the role of media coverage in fostering moral panics about games and gaming's potentially negative effects (e.g., Bowman, 2016; Ferguson & Beaver, 2017; Sørensen, 2013). Indeed, studies have shown that the media often portray games in a rather unbalanced manner (e.g., Bigl & Schlegelmilch, 2021; Jung, 2019; Whitton & Maclure, 2017), potentially influencing audience perceptions (Carter et al., 2020; Jung, 2019; Kümpel & Haas, 2016). Accordingly, we found that having heard about the topic in the media was associated with more critical attitudes and higher presumed prevalence rates. This may be interpreted as a hint that the way media reports about GD promotes critical views.

Additionally, we found that some more general background factors play a role in the perception of games and GD: High education was negatively associated with the estimated GD prevalence rate, indicating that individuals with higher formal education estimated the prevalence as lower. A plausible explanation could be that individuals with high education have better knowledge of the topic and therefore are less likely to overestimate the prevalence of GD. Alternatively, one could also argue that persons with high formal education are perhaps in general better at giving estimations for rather abstract concepts, such as the GD prevalence rate. Further, we found that participants with a fearful personality who perceived the social surroundings as dangerous had a more skeptical view of games and estimated GD prevalence as higher.

Finally, we want to emphasize that several other factors that might influence the perception of games and GD but that were out of the scope of the current study could be examined in future research. For example, there is currently considerable discussion about the extent to which predatory mechanisms (such as loot boxes or

micropayments) can increase the addiction potential of games (e.g., Reer & Quandt, 2021; Stevens, Delfabbro, & King, 2021). For example, Stevens, Delfabbro, and King (2021, p. 1) found that "in-game spending features (microtransactions) that resemble or facilitate electronic gambling" are perceived as particularly risky. Further, new technical features that allow a more immersive gaming experience (such as virtual reality technologies) are also discussed as increasing the addictiveness of games (e.g., Reer & Quandt, 2021; Stavropoulos et al., 2019). It seems plausible that such recent developments in the games sector have a particularly large influence on how games and their addiction potential are perceived. Concerning females' critical views of games, they may in part be explained by negative experiences females have had with games. For example, several studies have shown that female gamers are often confronted with hostility and sexual harassment in online gaming contexts (e.g., Fox & Tang, 2017; Tang et al., 2020). Qualitative follow-up studies may be particularly valuable to address some of the questions left open by the current study.

4.1. Limitations

Of course, our study is not free of limitations. For example, the question on the consumption of media coverage did not distinguish between conservative and more liberal media outlets, which could differ in how they report about GD as well as in how audience opinions on games are potentially influenced. Also, one should keep the cultural context of our study in mind when interpreting the results. The study was conducted in a Western industrial country (Germany), and perceptions of GD could be quite different in other cultural contexts. For example, there is evidence that the popularity of gaming in general, but also GD rates, are higher in Asian countries (e.g., Stevens, Dorstyn, et al., 2021). This might influence societal perceptions, which could be an interesting topic for future cross-cultural studies.

A major methodological limitation concerns the cross-sectional survey approach, which did not allow testing for causality. For instance, having a critical view on games might also lead a person to consume more media coverage on the topic. Thus, further research should be conducted with longitudinal and experimental approaches to investigate the relationships between the variables in more detail. Further, it is very likely that there are several additional factors that influence the perception of games and GD that we did not consider in our survey and that could be identified following a qualitative approach. In general, we could only test a very limited set of attitudes toward games and GD and a qualitative follow-up study could help to offer a more complex picture.

Finally, we relied on self-reported data, and effects of social desirability (for example regarding gamer identity or gaming behavior) cannot be ruled out. Further, even though significant, some of the effects we detected were only small and therefore should not be over-interpreted.

4.2. Conclusion

Taken together, our results suggest that critical attitudes toward games are widespread and that the number of gamers affected by GD is often overestimated. Further, profound knowledge about GD seems to be rather low, and personal experience with games seems to play a role in how gaming and GD are perceived. More exchange between digital natives and older cohorts, as well as between gamers and non-gamers, would be desirable to prevent misunderstandings and misconceptions about gaming and GD. Health campaigns could help improve the public's understanding of what constitutes addictive playing and how it can be distinguished

from healthy forms of enthusiastic gaming. Also, research findings are perhaps not sufficiently communicated outside the scientific community. More exchange between scholars and the wider public is needed to increase knowledge on the topic. Further, the media should report on GD in a balanced way that considers the latest research findings and the opposing views of scientists.

Finally, we would like to encourage further research into the perception of games and GD in order to better understand the different opinions in society (and the reasons for these opinions). From a societal perspective, it is important that misconceptions and misunderstandings concerning games and GD are identified to avoid stigmatization of healthy players, but also to adequately help those affected by GD and to minimize the risks gaming has for some players.

Acknowledgments

The authors would like to thank the anonymous reviewers for their useful comments.

Conflict of Interests

The authors declare no conflict of interests. In this article, editorial decisions were undertaken by Teresa de la Hera (Erasmus University Rotterdam) and Salvador Gómez-García (Complutense University of Madrid).

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Media and Communication
2025 • Volume 13 • Article 8800
https://doi.org/10.17645/mac.8800

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Open Access Journal

Beyond Play: Researching the Transformative Power of Digital Gaming in Deeply Mediatized Societies

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Submitted: 5 June 2024 **Accepted:** 13 September 2024 **Published:** 13 February 2025

Issue: This article is part of the issue "Digital Games at the Forefront of Change: On the Meaningfulness of Games and Game Studies" edited by Felix Reer (University of Muenster), Teresa de la Hera (Erasmus University Rotterdam), and Salvador Gómez-García (Complutense University of Madrid), fully open access at https://doi.org/10.17645/mac.i460

Abstract

Digital gaming has evolved from a peripheral activity to a central aspect of mediatized lifeworlds, significantly impacting media culture and society. Despite its pervasive influence, digital gaming research often occupies a marginalized status within broader academic disciplines. This article advocates for recognizing digital gaming as an integral part of the media landscape and understanding its role within a deeply mediatized society. By adopting a holistic perspective, this study emphasizes the interconnectedness of digital gaming with other media forms and cultural practices, highlighting its significance in driving digital transformation. Therefore, we argue for a dual development: one that removes gaming from its segregated special status and recognizes it as an integral part of the media landscape, and another that situates the unique aspects of gaming within the broader context of a society deeply transformed and shaped by media; capturing both its significance and its role as part of the whole. We elaborate on the concept of gamevironments bridging deep mediatization research and communicative figurations to comprehend change brought about by the transformative power of digital gaming in deeply mediatized societies. Gamevironments encompass transmedia figurations and narratives, cross-media adaptations, social interactions, user-generated content, and the cultural and educational impacts of gaming. We discuss the analytical potential of gamevironments along five distinct yet interrelated areas (making of gamevironments, values in and of gamevironments, governance of gamevironments, education in and for gamevironments, and researching gamevironments) to provide a comprehensive view of digital gaming's transformative impact on digital society.

Keywords

communicative figurations; consequence; deep mediatization; digital gaming; emergence; gamevironment; media cultures; transformation

1. Introduction

Digital gaming is no longer a peripheral phenomenon in society. Computer, console, as well as mobile games, are now—and have been for some time—an integral part of deeply mediatized lifeworlds (Engelstätter & Ward, 2022; Wimmer, 2012). They have become one of the dominant sectors in the media industry in terms of economic relevance and user engagement (Goh et al., 2023). Furthermore, games and gaming have been catalysts for the emergence of unique media cultures, playing a crucial role in mediatized everyday culture (Thomas & Brown, 2011). Game development has become well-established and professionalized but also a vivid arena for DIY-amateurism (Aasman et al., 2021) and exploration of technologies and skills (e.g., in modding communities; Gee & Tran, 2016). In this trajectory, digital gaming has fostered innovative forms of media expression and established contexts and norms for communicative interaction. Beyond gaming-specific contexts, the consequences of digital gaming in deeply mediatized societies influence various aspects of our social and cultural interactions (Kowert & Quandt, 2017). It is remarkable that while other new media—such as written culture, radio, television, the internet, and recently communicative AI (Hepp et al., 2023; McLuhan, 1995, 2011; Meyrowitz, 2005; Ong, 2012)—have been thoroughly researched and discussed for their societal impact from their inception, a similar perspective on gaming is lacking. Despite its widespread popularity and influence, gaming's effects on digital life, thinking, and orientation remain underexplored, even though its prominence and impact rivals that of earlier media innovations. Rather than delving into the reasons for this notable absence, this article aims to illustrate how a similar approach can be applied to understanding the transformative power of digital gaming within deeply mediatized societies.

Since the very advent of gaming from the rise of arcade culture (Kocurek, 2015) to the domestication of computer gaming (Haddon, 1992), peripheral media emerged. The proliferation of video game journalism, ranging from again community-based amateurism to professionalized editorial work falls into this category (Nieborg & Foxman, 2023; Perreault & Vos, 2020). Against this backdrop, digital gaming can be seen as an incubator of creative formats of public expression, from more traditional magazines and participatory television shows to live coverage of eSports events, from print to online portals and multimedia online content, and the hybridization between journalism and opinionated influencer-style communication (Nieborg & Foxman, 2023); highlighting some of the boundary work between journalism and interlopers (Eldridge, 2018). YouTube and streaming cultures where gamers record themselves playing and commenting on games, current affairs, and whatever else (Radde-Antweiler et al., 2014) created subcultures centered around gaming entertainment and commentary (Wolf, 2012). Platforms like Twitch, perpetuating practices from the early days of gaming, became global hubs for translocally organized gaming communities, fostering a sense of community and belonging beyond their territorial location (Hepp & Vogelgesang, 2008; Quandt & Wimmer, 2008; Selnow, 1984; Wolling et al., 2008). Additionally, under the concept of gamification, principles and elements of gaming are increasingly transferred to non-gaming contexts (e.g., health prevention and educational settings; Johnson et al., 2016; Raczkowski & Schrape, 2018; Walz & Deterding, 2015). Gaming therefore diffuses a more playful and experimental approach to the appropriation of new media formats or platforms with a much wider impact on society's communication practices than more technical pioneer groups such as DIY_MAKER (Wolf & Wudarski, 2018). Digital gaming has long since found its role as an accelerator and driver of the diffusion of new digital technologies into society, bringing about particular social and cultural formations—like the arcade (Kocurek, 2015)—or impacting existing formations and arrangements of mediated communication with their long-standing logics of inclusion or exclusion

(Kiesler et al., 1985). First, the computerization of the private home (Haddon, 1992), then the proliferation of gaming whilst on the go and its huge impact on the evolution of mobile devices, mobile and smartphones respectively, and currently digital gaming's role in penetrating society with virtual reality technologies (Foxman, 2021) and shaping an understanding of AI applications in playful contexts and beyond. Imminent and possible technological futures were presented at tech fairs (Schwarzenegger & Balbi, 2020) and gaming conventions (Trattner, 2020) where new games, consoles, and technologies are showcased to the world, influencing, and synchronizing digital gaming culture and trends globally. In this regard, digital gaming opens venues to engage with digital futures that might come about and the impact they might bring to our social world—on the level of technologies to engage with the imminent future as well as through the content of the games that is simulated within a game.

Digital games and gaming are located at the forefront of change in media culture and society, as the examples above demonstrate. Yet, digital games research often occupies an "odd place" within the broader disciplines in which it is conducted, as Chess and Consalvo (2022) have noted. The study of digital games and gaming is frequently relegated to niches, and the scholars involved often hold an outsider status—whether this status is imposed or embraced—engaging in activities that are seen as out of the ordinary and beyond the typical scope of their disciplines.

In this article, we advocate for a holistic perspective that shifts from analyzing games and gaming in a separate field and in a sort of self-sufficient seclusion to understanding digital gaming as an influential part of a deeply mediatized society that has consequences for its broader communicative practices and that therefore research on digital gaming should be an integral part of communication and media studies nowadays. This approach emphasizes the necessity to place digital gaming within digital media environments. We call out to researchers of deep mediatization in and beyond media and communication scholarship, emphasizing that research into deep mediatized societies can no longer ignore gaming studies and the rich research performed there, but has to include them as part of the research objective. We elaborate on the notion and concept of gamevironments (Radde-Antweiler et al., 2014) to research how our communicative practices and their contexts/situations transform through gaming (related) practices. Digital gaming is therefore portrayed as a focal point for media theoretical, practical, and ethical challenges, allowing us to derive insights into broader dimensions of digital transformation and life in a digital society. These dimensions include media appropriation, technology acceptance, social and individual consequences, new communication formats, innovative learning practices, implications for memory culture, and the mediation of discursive worldviews, knowledge, and values. The deep integration of gaming practices into everyday practices and social relationships, and their diverse intersections with other phenomena of media communication and digital transformation raise various communication, ethical, educational, and media scientific questions. This positions computer games and gaming as a comprehensive subject within communication and media studies, demanding transmedia, diachronic, situational, and long-term transformative perspectives on (dis)empowerment and (in)equality. Integrating digital games research with perspectives on media change and deep mediatization allows us to move from merely examining the consequences of games and gaming to exploring the emergence, maintenance, transformation, and occasional disappearance of phenomena, practices, and cultures within gamevironments. This opens new vistas for change in digital gaming, with digital gaming, and through digital gaming. So, let's level up and press start to continue.

2. Research Relevance on Change in Digital Gaming in a Deeply Mediatized Society

Media and communication research is somewhat obsessed with change and newness (Menke & Schwarzenegger, 2019). Speaking metaphorically, Driessens (2023) described change as the dominant gene immediately sticking out of the DNA of communication inquiry. Change is typically seen as both imminent and perpetual (Postill, 2012), and as Balbi (2023) has noted, for decades now, people have believed they are living in a time of digital revolution. It may be reassuring and comforting for people (and academics) to believe they are witnessing a decisive moment when the most profound changes are happening or about to happen. One of the main lenses to address change over time in media and communication research is the mediatization approach.

Within mediatization research, the technologies, interactions, and implications of digital gaming have largely played a subordinate role. While the scope of mediatization research has continuously expanded—recently encompassing the deep mediatization of culture and society (Hepp, 2020)—gaming has rarely caught significant attention. As Hepp, Bolin, et al. (2024) summarized the field's evolution beyond its origins in mass media research, "expanding its scope, mediatization research now delves into a wider range of cultural and societal domains, including fashion, war, sports, finance, and everyday life." Gaming can be seen as an element subsumed within the notion of everyday life (Kaun & Fast, 2014), but it is not explicitly mentioned or indexed. While it is broadly accepted that media and their infrastructures uniquely "weave" themselves into nearly all domains of social life, there is a notable absence of gaming-related studies in the inquiry of transforming communications in times of deep mediatization (Hepp, Breiter, & Hasebrink, 2018). We find this discomforting, not so much because a topic we care about does not find the attention we argue it deserves from media and communication scholars researching the digital transformation of media, culture, and society. Instead, we argue that digital gaming provides a prime example of the emergence, diffusion, and transformation of a media phenomenon in its entirety (Wolf & Wudarski, 2018). It is very rare that the life cycle of cultural and technological innovations can be observed in its completeness. Digital gaming would provide such a case, but it is not being adopted to its full potential by media and communication scholars.

The engagement with change over time and digital transformation in media and communication history—a field devoted to transformation in media, culture, and society—again demonstrates a suspicious absence of almost anything gaming-related (Balbi, Ribeiro, et al., 2021), unless gaming or digital games are the main focus of the work. A few notable exceptions appear to prove the rule (Balbi & Magaudda, 2018; Schwarzenegger et al., 2022; Stöber, 2013). For example, Jesper Verhoef's 1980s and 1990s media history manifesto (Verhoef, 2023), an enigmatic call to inquire the neglected histories of new technologies in these seminal decades, mentions Nintendo very briefly in a footnote but does not discuss Atari, Commodore, or Amiga—the powerful and fascinating gaming systems through which many people of those generations first encountered the potentials, joys, and conflicts that digital technologies could bring into their homes. This negligence becomes significant in its outcome: While gaming might not be decisive for many questions regarding digital transformation and change, its absence leaves an incomplete picture. We need to understand digital gaming and gaming-related or gaming-derived practices not only explicitly connected to core gaming but must additionally recognize the deep-rooted influence gaming might have on all other activities in a deeply mediatized world. Consequently, a perspective that takes the transformative power of digital gaming seriously not only addresses when and how people engage with digital gaming, but also what they do when they don't and how they do other things.

A world in which digital gaming exists is fundamentally different from one without it. This seemingly banal observation gains a significant trajectory when considered comprehensively within the context of media change and transformation. Following Balbi (2015), Scolari (2013, 2023), and others, we argue that the advent of new media, such as digital games, affects and transforms all pre-existing media within a media ecology. Digital games enter the media environment and not only carve out their place and role within this ecology, but also establish relationships with previously existing media forms and their users. This process changes the functions of media and user practices, forcing established media to adapt or redefine their unique purposes. Yet, importantly, imagining these developments as just the consequence of digital gaming would be shortsighted. Instead, we observe a complex interplay of emergence, expansion, and diffusion, sometimes of resistance and persistence against change (Balbi, Hagedoorn, et al., 2023). This interplay causes consequences on the one hand, but on the other, it opens a space of possibilities for new forms and formats to emerge, including those around older media:

> As games and play move from the periphery of playgrounds, living rooms and arcade halls toward the center of our cultural, social and economic life, so cultural, social economic actors become interested in shaping an harnessing them for their purposes: other realms of life impress their forms on games and play. (Deterding, 2015)

Digital gaming, therefore, should be understood not only for its direct impact but also for its broader influence within the dynamic media landscape:

> The point here is that video games and their tools are integral parts of the broader media industries. Companies have bought and sold products, processes, and ideas, attempting to crack the code on video games (so to speak) for two decades now, and the result is that video game content has diffused into everything. (Chess & Consalvo, 2022)

For instance, the emergence of digital gaming expands the options for media entertainment: Listening to music, reading, watching TV, or going to the movies are complemented by the option of gaming, thereby redefining their roles in users' repertoires of practices. Digital gaming introduces—and is introduced with (Moretti, 2023)—new expectations for the "good life" (Moretti, 2023), imaginations of the future, fantasies, desires, and experiences for those who can use the technology and play games, as well as for those who cannot afford gaming or lack interest. Actively rejecting gaming offers a path to distinction in the Bourdieusian sense, but it also necessitates thoughtful communication and self-positioning. This approach sets one apart while requiring careful navigation of social perceptions. When digital gaming exists in the world, whether we engage with it or not, it calls for a stance and expression. The world is changed by the presence of digital gaming, but how this change plays out, evolves, and is appropriated in different localities around the globe or within countries remains to be observed and clarified. The dissemination of home computer technology (for gaming purposes), gaming consoles, game genres, and more, results from the transnational flow of hardware, software, and information. This process makes visible the complex and diverse local appropriation of potentially global technologies and practices (Wasiak, 2014). The advent of digital gaming can illuminate political, legal, technological, and cultural influences in the making of "glocality" (Meyrowitz, 2005) in digital gaming—specific local expressions within the context of globalized communication on the one hand and local media systems and cultures on the other.

Generally speaking, the impact of digital gaming on society is often described with a focus on the consequences for players at an individual level, particularly during vulnerable stages of the human life cycle. This focus tends to highlight mostly detrimental effects, such as cognitive and psychological harm, violence, and addiction (Burkhardt & Lenhard, 2022; Kim et al., 2022; Wolf, 2007). Occasionally, beneficial consequences are noted, particularly in the context of informal learning and education (Clark et al., 2016; Ito et al., 2009; L.-H. Wang et al., 2022; Wolf & Wudarski, 2018). Also, collective consequences playing out for the whole of specific societies or social domains can be addressed, e.g., as studies about gamification demonstrate—although these studies tend to examine gamification more from an instructional (Sailer & Homner, 2020) or a managerial (Hammedi et al., 2021) point of view. In this trajectory, gaming and gamers have long been described with a sense of exceptionalism and formalism, treating them as "the other." This perspective then characterizes individuals, collectives, or domains primarily through their relationship to games and gaming, rather than considering games as just one strand of media engagement in hybrid media environments. Communication and media researchers have otherwise acknowledged that in media-saturated societies, it is not a single media offering that drives personal or social and cultural change. Instead, the role of specific media for society, collectives, or individuals should be assessed against the whole of the media environment, domain-specific media ensembles, and individually curated media repertoires through which people navigate and make sense of the digital realm and participate in digitalized societies. With gaming, it appears, we are not there yet. It is almost a constant of communication history that the advent of new communication technologies has perpetually been welcomed with reservations, resentments, and rejection as perilous. However, it is rather unique to games and gaming that communication and media studies as a collective body of knowledge production have only partially overcome this initial stage of concerned curiosity and cursoriness. Ignorance of games and gaming is still viable for communication studies engagement with (deep) mediatization of culture and society.

Therefore, we need a dual development: one that removes gaming from its segregated special status and recognizes it as an integral part of the media landscape, and another that situates the unique aspects of gaming within the broader context of society deeply transformed and shaped by media; capturing both its significance and its role as part of the whole. Only through this dual approach can we comprehensively understand and appropriately appreciate the role of gaming in a deeply mediatized society. The strong focus on the consequences of change brought about by media, however, may play out in peculiar ways with the case of gaming, but it is characteristic of how communication and media research and related fields address their subjects of interest. In a forthcoming article, Hepp (in press) argues that most research in media and communication studies revolves around the idea that the establishment of new media and infrastructures has consequences for culture and society. According to him, this leads to an implicit questioning of the consequences of these developments and innovations as a main orientation in the field. The alleged relevance of the phenomenon under investigation is then derived from its status as an integral part of a globalized media-related transformation. The research into consequences requires retrospective and reconstructive thinking that takes the influential factor as something that is given, e.g., through the innovation of new media technologies or practices and sees change as its consequence. In contrast to that, he advocates for a re-shifting of our focus from consequence to emergence. A concept of emergence underscores that media, infrastructures, related practices, and cultures do not just appear to then have consequences but that they arise and are socially (co-)constructed within specific social configurations that must be understood within their broader societal and cultural contexts. This entails studying the development of new media technologies as well as the transformations of culture and society, thereby

offering insights into the complex interrelationships between digital gaming and broader societal trends. Research should thus encompass both the study of the development of new media and communication technologies and the transformations of culture and society. Therefore, combined research into consequence and emergence is called for.

Digital gaming, in our understanding, provides a prime example to illustrate the potential of such an emergence approach, as it calls for perspectives that situate gaming in wider social contexts and as part of changing media environments and transformative societies. We propose a perspective on digital gaming that is capable of viewing gaming as part of a whole, anchored within the overall phenomena of deep mediatization and digital transformations of society. This approach recognizes that digital gaming itself:

a) Generates its own emergent cultural and social formations and practices;
b) Is disseminated through these formations and practices, spreads and expands further in the process of diffusion, and has consequences as it begins to play a role in societal (transformation) processes beyond gaming;
c) Evolves and changes through influences from beyond gaming in a complex entanglement of technological, social, cultural, economic, and legal factors;
d) Is related to the transformation and emergence of new cultural and social formations of media communication beyond digital games, including interactions with older media;
e) Requires agency and effort to maintain and sustain themselves over time and in the face of technological, social, and cultural change;
f) And, furthermore, this perspective acknowledges that singular cultural and social formations and practices may disappear because they become obsolete, are replaced by others, or merge into new forms, while new digital forms and formations of gaming can continuously emerge in an ongoing process of emergence.

Combining these elements requires a complex, holistic, context-sensitive, and long-term perspective, which we believe we have found in the concept of gamevironments for the case of digital gaming. Gamevironments can be understood and conceptualized as gaming-related communicative figurations (Radde-Antweiler, 2018). Change over time, the digital transformation of societies, and the refiguration of social life are characterized, driven, and shaped by the emergence and consequences of cultural and social formations and practices. Gamevironments can provide an understanding of the broader contexts and settings in which digital gaming-related change plays out. They allow us to identify and compare varying preconditions and outcomes for change and transformation, and they highlight the subtle changes related to gaming that extend beyond the realm of gaming itself.

3. Gamevironments as Gaming-Related Communicative Figurations

Gamevironments is a concept used to describe the dynamic media environments built around digital games, extending beyond the games themselves to encompass related media content, community interactions, and various forms of engagement. The notion was coined as a neologism bringing together gaming and environment, originally in the context of the study of religion and digital gaming, but can be expanded beyond this field (Radde-Antweiler, 2018; Radde-Antweiler et al., 2014). This concept encapsulates the broader ecosystem of media and cultural practices that emerge around games, involving transmedia

narratives, cross-media adaptations, social interactions, user-generated content, and the cultural and educational impacts of gaming.

Based on the deep mediatization concept, gamevironments adopt a research paradigm of a *non-media-centered* analysis of communicative processes (Hepp, Breiter, & Hasebrink, 2018). Instead of games, the (empirical) starting point and element of analysis are social domains, such as groups, communities, organizations, (sub)systems, life-worlds, social worlds, or even whole social fields (Hepp & "Communicative Figurations" research network, 2017). Every social domain has its own typical constellation of actors (Schimank, 2010), which describe all relevant actors, and their shared practices and relations to each other. Furthermore, a communicative figuration is characterized by a thematic framing that serves as a guiding topic. Based on that the gamevironments approach—instead of analyzing one-way media "influences"—focuses on (a) the transformations of communicative practices; (b) media changes and adaptations to communicative practices; as well as (c) consequences of these transformations, changes, and practices to the social subsystem(s) of the respective social domains. As a theoretical framework, the concept of *communicative figurations* helps to tackle fundamental problems of individuals' autonomy vs. mutual dependency of individuals and society, as well as the distinction between social change and structural change. According to the process sociology approach by Norbert Elias (Elias, 1978), every structural change can be understood as a transforming interrelation between individuals and society. Elias calls these dynamic networks as *figurations* of individuals (Elias, 1978). In the communicative figurations approach, the *constellation of actors* is analysed together with their *communicative practices*, to describe the processes of the communicative construction of social reality within specific social domains (Hepp & "Communicative Figurations" research network, 2017). Understanding gamevironments as gaming-related communicative figurations helps to research how trends within society that are related to digital gaming are evolving and connected to transformation processes. For example, the trend of differentiation that refers to the variety of technologically-based communication media is, nowadays, quite important in relation to digital gaming: Playing a game does not only contain the game—be it on a PC or on a console, but furthermore instant messaging services such as Discord, video streaming services for Let's Plays, and discussion forums, just to name a few. This is also connected to the other trend "increasing connectivity of and through these media" (Hepp & "Communicative Figurations" research network, 2017). Another important point becomes clear here: These trends have not only an impact on the field of digital gaming but also on other fields. Due to the specific requirements of gaming, new technological platforms such as instant messaging for example were developed, which were then also discovered and used for other areas.

Originally, the gamevironments concept was used to advocate for an actor-centered approach to digital gaming, rather than focusing too much on the artifact of games, their aesthetics and symbolism. However, since and beyond that, the concept was refined to incorporate even more gaming-related and gaming-inspired aspects of digital life worlds (Radde-Antweiler, 2018). In our understanding, gamevironments offer a unique lens to understanding the pervasive influence of digital gaming on various aspects of digital culture and communication, far beyond gaming. In a similar vein, Chess and Consalvo (2022) emphasize that the exploration of human interaction within virtual environments is essential and that the insights from game studies are vital and must inform broader communication and media studies in these areas. Following their argument, we agree that by examining the intersections of gaming with broader digital phenomena, we can uncover how elements of gaming resonate in diverse—sometimes unexpected and unlikely—areas. For instance, digital activism often adopts strategies and aesthetics from gaming, utilizing

game mechanics for engagement, gamifying participation, and creating immersive narratives to drive social change. Even extremist groups have exploited game environments to recruit, communicate, and strategize, highlighting how deeply gaming's influence can permeate. Political communication and news consumption are also affected; gamified elements in apps and platforms encourage user interaction and retention, shaping how people engage with information and political discourse. From social media platforms incorporating game-like features to news outlets adopting interactive storytelling, or not least monetization strategies, the principles of game design and gaming are embedded in the fabric of digital experiences far beyond what gamers do with their video games. Digital gaming, its design logics, mechanisms, logics, language, and practices have ceased to be the exceptional or the other but have become part of the inventory of life-worlds in deeply mediatized societies. For better or worse, they can no longer be studied in isolation. Along these lines, the argument that "digital gaming is just not for me" loses traction. If, as a communication and media scholar, you aspire to research the deep mediatization of society, the digital transformation of life-worlds and how media and media-related practices are woven into the very fabric of culture and society, digital gaming should matter to you because it matters to what you are researching:

> Video games should matter to media studies scholars, broadly, because as convergence culture becomes less of a special case and more of an everyday reality, the medium itself matters less. Video games are dispersed throughout all industries, not just in overt ways but in subtler ways such as gamification in streaming services, and the increasing reliance on games as a part of transmedia storytelling. Video games, as a proper and defined medium, may not be relevant to everyone, but game studies analysis and theorization is relevant to the field, in subtle yet compelling ways. (Chess & Consalvo, 2022)

Understanding gamevironments allows us to see the intricate ways gaming shapes behaviors, interactions, and perceptions across various domains, providing a comprehensive view of its transformative impact on digital society. But beyond that, gamevironments are also a vessel to observe and research change, transformation, and refiguration of culture and society as part of the deep mediatization of society between the emergence and consequence of phenomena, cultures, social formations, and practices.

For studying gamevironments and using them as a framework to examine digital gaming-related phenomena as well as changes in media culture and society, we propose an agenda comprising several key research areas to explore their multifaceted impact on digital culture and society in three dimensions.

First, the making of gamevironments area focuses on the emergence, expansion, maintenance, and transformation of gaming-related media environments and cultures over time. It aims to understand how these environments and cultures were created. For instance, this includes the rise of early gaming communities sharing online dungeons or the subcultures that "played beyond the manual" (Schäfer, 2006). Examples include the cracker-warez scene, the demoscene (Hartmann, 2017; Polgár, 2008), hacking (Gül Erdogan, 2021), community of practice building (Wolf, 2007), phreaking, and the ASCII art scene using the Commodore 64 and Amiga. These cultural formations contributed to the proliferation and expansion of gamevironments. Additionally, the evolution of games journalism as part of gamevironments, and the many stages of transformation it has undergone.

Secondly, the values in and of gamevironments area examines how values, social norms, imaginations of the good life, future visions, and ethical frameworks are portrayed, disseminated, and integrated into society

through games and around games. Grieve et al. (2020) stress that game rules, narratives, and design, as well as gaming as such, are deeply connected to decision-making processes and with specific values that give meaning to the gamers' decisions. Games then trigger the discussion of ethical and moral behavior. For example, the ethical dilemmas in games illustrate how games can shape players' understanding of moral complexities. Furthermore, games promote values of community, cooperation, and sustainable living. How games are presented, advertised, and normalized, and what values and vision of how we should strive to live are implemented in the process is also an area of inquiry. Moretti (2023), for instance, has investigated how gaming advertisements in the 1980s and 1990s have helped spread a neoliberal mindset around gaming. More recently, the potential of digital gaming to advocate for climate awareness finds scrutiny in the context of environmental-friendly gaming and ecogames (Beke et al., 2024).

And third, the governance of gamevironments strand investigates how governance—by developers, external regulators, and user communities—shapes gaming environments (Eccleston & Gray, 2013; Vasiliev et al., 2023). It seeks to uncover the impact of policies, didactical design (Wolf, 2012), and rules on these spaces, such as content moderation policies affecting online gaming communities. Questions regarding which elements of a game can be copyright protected, which are free to share and redistribute, and what limitations legal frameworks impose on creative processes are of relevance here. Additionally, it explores how governance addresses unruly actors within gamevironments, such as cheaters, glitch-users, and gold farmers. The study of governance in gamevironments demonstrates their dynamic and conflict-ridden nature, contributing to the continuous emergence of new cultural and social formations on two levels: education in and for gamevironments, and researching gamevironments.

In regards to education in and for gamevironments, this area looks at the educational potential of games and their use in learning environments. It aims to leverage the engagement factor of games to enhance educational outcomes, such as through gamified educational platforms that improve student engagement and retention. For example, games like Minecraft: Education Edition (Bar-El & E. Ringland, 2020) and platforms like Kahoot! (A. I. Wang & Tahir, 2020) illustrate how gaming can be integrated into educational settings to promote interactive and immersive learning experiences. Moreover, it also considers unintended educational outcomes, such as how players learn technical skills through activities like modding, optimizing gaming PCs, or game development (Acevedo, 2021; Valdez et al., 2023; Wolf & Wudarski, 2018).

As for researching gamevironments, this area addresses the specific methodological challenges associated with studying gamevironments. It involves developing and refining interdisciplinary methods and innovative data collection techniques to study the complex interactions within these environments. While communication and media research are well-equipped for studying consequences, the study of emergence and transformation remains a challenge. This area seeks to overcome these challenges by advancing methodologies that capture the dynamic and evolving nature of gamevironments.

By exploring these dimensions, we aim to grasp how digital gaming serves as an extraordinary catalyst for change while becoming an ordinary aspect of daily life. We see the potential of gamevironments as a framework to focus and reflect on who and what serves as agents of change within gamevironments, how their agendas influence the making of gamevironments, and what formations emerge, transform, disappear, or are reconfigured within and outside gamevironments across cultures, technological environments, and infrastructures in different times and places. Through this comprehensive approach, we seek to understand

how digital gaming reconfigures media consumption, social interactions, and cultural narratives, driving transformation and signaling broader societal shifts toward digital futures.

4. Conclusion

In this article, we argued that digital gaming should not be understood as an isolated phenomenon or "the other stuff" separate from the media we as communication and media scholars have long explored with seriousness and dedication. The transformative power of digital gaming in deeply mediatized societies influences various aspects of all our social and cultural interactions. Therefore, it must be understood both as a distinct entity and as a crucial part of the overall media environment. By recognizing its pervasive influence, we can better comprehend the full scope of its impact on contemporary media practices and societal transformations.

By integrating digital games research with perspectives on media change and deep mediatization, we have moved from merely examining the consequences of games and gaming to exploring the emergence, maintenance, transformation, and occasional disappearance of phenomena, practices, and cultures within gamevironments. The research we suggest opens new vistas for change in digital gaming, with digital gaming, and through digital gaming. We advocate for a comprehensive perspective on digital gaming, one that considers its multifaceted impact within the broader context of media and societal transformations putting it at the forefront of change. This holistic approach, embodied in the concept of gamevironments, emphasizes the interconnectedness of digital gaming with other media forms and cultural practices. By adopting this perspective in communication and media studies (with an emphasis on change), we can better grasp the complex interplay between digital gaming and broader societal dynamics. In conclusion, our work suggests shifting the focus from games research to the transformative power of digital gaming in deeply mediatized societies, emphasizing its role as both a distinct entity and a crucial part of the overall media environment.

Acknowledgments

Thanks to the academic editors and reviewers for their thorough and careful work on this thematic issue.

Conflict of Interests

The authors declares no conflicts of interests.

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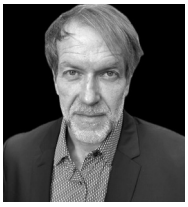

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MEDIA AND COMMUNICATION
ISSN: 2183-2439

Media and Communication is an international, peer-reviewed open access journal dedicated to a wide variety of basic and applied research in communication and its related fields. It aims at providing a research forum on the social and cultural relevance of media and communication processes.

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