Chapter Seven: Characteristics, causes, effects, and interventions of gaming disorder stigma: a scoping review

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Using Arksey and O'Malley's scoping review framework, we explore the characteristics, causes, effects, and interventions of gaming disorder (GD) stigma discussed in studies from January 1, 2000, to April 10, 2024, in databases including EBSCO, Wiley Online Library, Web of Science, Google Scholar, Cochrane Library, PubMed, Ebase, CNKI, WanFang, and VIP. After three independent screenings, the two authors independently extracted and summarized the data. Ultimately, 32 studies—published between 2009 and 2024—met the inclusion criteria. From these, 10 themes of GD stigma were extracted. These included three themes related to GD stigma characteristics ("holistic stigma," "emphasis on dangerousness," and "transition from stigmatization to rectification"), three themes investigating causes of GD ("bias in media coverage," "technological panic and social control," and "cognitive differences, bias, and inadequacy"), three themes about GD stigma effects ("social exclusion and discrimination," "obstruction of seeking help," and "occurrence of mental problems"), and one theme discussing stigma intervention ("recommendations for GD stigma intervention"). After discussing and summarizing the studies, we propose a model of GD stigma formation. Future studies on GD stigma should improve research quality, expand research content and objects, increase research on stigma mechanisms, and promote the development of intervention measures, thus providing individuals in need with timely and efficient treatment, as well as a tolerant and positive recovery environment.

Gaming disorder (GD) was officially included in the *International Classification of Diseases* (11th Revision) in 2018. The International Classification of Diseases (ICD-11) defines GD as an addictive disorder with the following core symptoms: (1) persistent gaming behavior (online or offline), characterized by impaired gaming control (initiation, frequency, intensity, duration, termination, context, etc.), the prioritization of gaming over other interests and daily activities, and the escalation of gaming behavior despite the occurrence of negative consequences; (2) continuous or episodic and recurrent patterns of gaming, generally lasting an extended period (e.g.,

more than 12 months); (3) significant impairment in important areas of functioning (personal, family, interpersonal relationship, educational, occupational, etc.) caused by gaming; and (4) the lack of a better explanation (e.g., another mental disorder or the effects of substance abuse or medication [1].

In China, Internet games have become an important component of people's daily entertainment because of the growth and popularity of the Internet. Children and adolescents are one of the main—and growing—users of Internet games [2]. According to the "Fifth National Survey Report on Internet Use of Minors," the number of minor Internet users had reached 193 million by 2023, with 67.8% frequently playing games online (increasing 5.5% compared to 2021) and 19.6% reporting Internet dependence [3]. The GD prevalence rate ranged between 2.4% and 7.5% according to epidemiological research on the Chinese population [4]. As children and adolescents are a high-risk group for GD, the GD risk population may rise with the growing base of young game players.

Meanwhile, gaming addiction and Internet addiction have attracted increased concern from parents, teachers, and other related groups. In China, games and gamers are often portrayed negatively in daily life, although numerous studies have shown that playing games has beneficial effects, such as providing pleasure, reducing stress, relieving mood, promoting social interaction, and promoting cognitive development [5, 6]. However, negative media publicity with headlines such as "Internet Addiction," "Excessive Game Recharge," "Teenage Internet Addicts", etc. makes the public constantly vigilant and suspicious of games and GD [7]. To avoid the negative effects of gaming, some adolescents with gaming behavior are taken by parents to hospitals and even "Internet addiction schools" for treatment, even if they do not meet the typical diagnosis of GD. This often strains the parent-child relationship and causes family conflicts [8]. In short, gaming, game behavior, game players, and GD patients face stigmatization in China.

Stigma is a common and cross-cultural phenomenon, occurring when unique or unusual characteristics of individuals are identified as deviations from social norms or morality. Stigmatized individuals may face problems such as labeling, separation from mainstream society, loss of status, and discrimination [9]. In the area of addiction, stigmatization reduces sufferers' motivation for treatment and prevents beneficial transformation. Accordingly, knowledge about how addiction stigmatization works could help to reduce stigma, and so help addicts receive timely treatment and intervention. Previous stigma studies have mainly focused on substance addiction.

Few studies have paid attention to GD stigma and there is still no review for GD stigma. Existing studies on GD have mainly concentrated on epidemiology [4], pathogenesis [10], effect factors [11], negative outcomes [12], and interventions [13]. In this chapter, we analyze current GD stigma studies based on Arksey and O'Malley's scoping review framework and summarize relevant studies using four aspects: stigma characteristics, causes, effects, and interventions. Our goal is to provide a knowledge map and ideas for future research.

1. Materials and methods

1.1 Research questions and inclusion criteria

This chapter answers the following questions: (1) the characteristics and manifestations of GD stigma; (2) the causes of GD stigma; (3) the effects of GD stigma; and (4) how to reduce the stigma of GD.

Following Arksey and O'Malley's "PCC' principle" [14], the inclusion criteria included three elements. (1) Participants: We investigated GD stigma in various groups of people, so all types of populations were included. (2) Concept: The key concepts of this study are GD and stigma. However, we expanded the retrieval scope of GD to get more comprehensive materials, because while the concept of GD was formally introduced in 2018, concerns about "Internet Addiction" have existed longer. Additionally, to achieve more comprehensiveness, we enlarged the definition of stigma because stigma is highly subjective. (3) Context: Stigma may occur anywhere, so our context was broad.

The exclusion criteria of our study included: (1) studies in which the full text was not available; (2) studies not written in Chinese or English; (3) studies that have been published repeatedly; (4) studies not published formally; and (5) studies that did not cover GD stigma in their core conclusions.

1.2 Search strategy

We searched English databases including EBSCO, Wiley Online Library, Web of Science, Google Scholar, Cochrane Library, PubMed, and Ebase. Chinese databases included CNKI, WanFang, and VIP. We used English

and Chinese search terms as presented in Table 1. Table 2 shows an example of our search strategy. The search included citations formally published from January 1, 2000, to April 10, 2024.

Table 1 Search terms for GD stigma studies

Concept	Concept 1 Gaming disorder		Concept 2 Stigma	
Search terms	Chinese: Internet addiction OR gaming addiction OR Internet overuse OR smartphone addiction OR video game disorder OR game OR problematic Internet gaming OR problematic smartphone gaming OR video gaming OR online game OR electronic sports OR e-sports OR phone game OR smartphone gaming OR smartphone game dependence OR game dependence OR smartphone dependence	English: gaming disorder OR Internet gaming disorder OR problematic smartphone use OR problematic social networking site use OR problematic gaming OR gaming behavior OR gamer	Chinese: stigma OR stigmatizing attitudes OR stigmatization OR discrimination OR social exclusion OR social discrimination OR prejudice OR label OR attitudes	English: stigma OR stigmatization OR social stigma OR discrimination OR social discrimination OR stereotyping OR stereotype OR prejudice OR misconceptions OR beliefs OR perceptions OR opinions OR attitudes OR perspectives OR experiences OR views OR shame OR blame OR label OR harm OR disadvantage

Table 2 Example of search strategy in Chinese and English databases

Database (example)	Search strategy	Number of search outcomes
PubMed	(("Stigma"[Title/Abstract] OR "Stigmatization"[Title/Abstract] OR "social stigma"[Title/Abstract] OR "Discrimination"[Title/Abstract] OR "social discrimination"[Title/Abstract] OR "Stereotyping"[Title/Abstract] OR "Stereotype"[Title/Abstract] OR "Prejudice"[Title/Abstract] OR "Misconceptions"[Title/Abstract] OR "Beliefs"[Title/Abstract] OR "Perceptions"[Title/Abstract] OR "Opinions"[Title/Abstract] OR "Attitudes"[Title/Abstract] OR "Perspectives"[Title/Abstract] OR "Experiences"[Title/Abstract] OR "Views"[Title/Abstract] OR "Shame"[Title/Abstract] OR "Blame"[Title/Abstract] OR "Label"[Title/Abstract] OR "harm"[Title/Abstract] OR "disadvantage"[Title/Abstract]) AND ("gaming disorder"[Title/Abstract] OR "internet gaming disorder"[Title/Abstract] OR "problematic smartphone use"[Title/Abstract] OR "problematic social networking site use"[Title/Abstract] OR "problematic gaming"[Title/Abstract] OR "gaming behavior"[Title/Abstract] OR "gamer"[Title/Abstract])) AND (2000/1/1:2024/4/15[pdat])	268
CNKI	(Subject:(stigma + attitudes + stigmatizing attitudes + stigmatization +discrimination + social exclusion + social discrimination + prejudice +label)) AND (Subject:(Internet addiction + gaming addiction + Internet overuse +smartphone addiction + video game disorder + game + problematic Internet gaming + problematic smartphone gaming + video gaming + online game + electronic sports + e-sports + phone game + smartphone gaming +smartphone game dependence))	3087

1.3 Study selection and data extraction

All citations were imported into EndNote X9 after the search to remove duplicates. Following the inclusion and exclusion criteria, three researchers then screened the citations independently by browsing the titles and abstracts, and subsequently reviewed full texts for further selection. For studies the researchers disagreed on including, a decision of whether to include it was made in discussion by the three researchers. Two researchers then extracted the following data from the studies that were included: authors, country, publication date, article type, study type, study design (study subjects, sample size, methods, and data collection tools), and conclusions (characteristics and manifestations, causes, effects, and interventions of stigma).

2. Results

2.1 Search results

A total of 4,036 studies were identified from relevant databases, comprising 3,168 published in Chinese and 868 published in English. After screening, 32 studies from 17 countries were included. Figure 1 presents the flowchart describing the screening process.
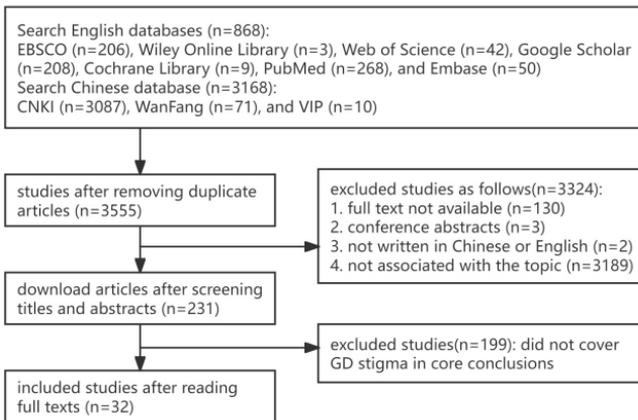

Figure 1 Flowchart of study screening

2.2 Study characteristics

The included 32 studies [7, 15-45] were published between 2009 and 2024. They encompass data on 10,939 participants across different populations and include 6,315 reports. We analyzed and summarized the general characteristics of the 32 studies by country, article type, study type, methodology, study subject, and study situation. The overall distribution is presented in Table 3. In addition, we summed up the studies' conclusions and abstracted information about the study target, data collection tools and analysis methods, characteristics and manifestations of stigma, causes of stigma, effects, and interventions of stigma. These summaries are included in Annex 1. Our analysis identified 10 themes of GD stigma: three themes relevant to characteristics, one related to causes, three concerning its effects, and one discussing interventions.

Table 3 General distribution of included studies

Characteristics	Type and numbers
Country	China (n=16) [Mainland China (n=15), Hong Kong (n=1)]; Australia (n=3); USA (n=2) ; Germany (n=1); Japan (n=1); South Korea (n=1); Hungary (n=1); Italy (n=1); UK (n=1); Indonesia (n=1); Transnational study (n=4)
Article type	Research article (n=21); Thesis dissertation (n=6); Commentary (n=3); Letter (n=1); Letter to editor (n=1)
Study type	Qualitative research (n=7); Quantitative research (n=15); Mixed methods research (n=5); N/A (n=5)
Study subject (a)	Reports (n=9); Gamers (n=5); Public (n=9); Medical professionals (n=2); Students (n=4); Teachers (n=2); Parents (n=1); ACG* fans (n=1); N/A (n=5)
Study situation (b)	Online (n=12); Media materials (n=10); School (n=5); Treatment facility (n=2); Cybercafe (n=1); N/A (n=5)

2.3 Characteristics of GD stigma

Among the 32 studies, 29 studies referred to the characteristics of GD stigma [7, 15-22, 24-28, 30-45]. After analyzing the conclusions of these 29 studies using thematic analysis, we abstracted three central themes of GD stigma characteristics: boundary ambiguity, emphasis on dangerousness, and the transition from stigmatization to rectification.

2.3.1 Holistic stigma

Despite the ICD-11 clearly describing the diagnostic criteria of GD, consensus has not been reached in the scholarly literature. Consequently, GD stigma appears to have the characteristic of a "holistic stigma;" namely, the general public receives and incorporates concepts without clear boundaries (such as games, gaming behavior, problematic Internet use, gamers, gaming disorder, etc.) and stigmatizes these activities broadly and "holistically." In total, 10 studies discussed "holistic stigma." We identified two manifestations of "holistic stigma": (1) controversy over GD diagnosis and (2) boundary ambiguity.

Controversy has persisted since the inclusion of GD in the ICD, with the central topic of whether GD diagnosis leads to increased stigmatization. Four of the included studies discussed the issue. Galanis et al. [16], Kiraly et al. [21], and Pontes et al. [30] expressed concerns that the inclusion of the GD diagnosis in the ICD may stigmatize casual gamers. They also worried the inclusion may lead to misdiagnosis of highly engaged but non-problematic gamers. These three studies also indicated the existence of GD-related problems and suggested that more specific diagnostic criteria would both increase public attention to GD and reduce stigma. They also called for further research to verify the arguments. Reviewing data from the National Hospital in Japan, Higuchi et al. [19] indicated that game-related stigma had existed before the publication of ICD-11, so it is not exclusively a product of GD diagnosis. Furthermore, they argue that clear diagnostic criteria would help distinguish between normal game behavior and addictive behavior in order to improve the ability and quality of diagnosis and intervention. Although numerous scholars argue that clear diagnosis criteria for GD can reduce stigma, most of them emphasize its positive effects on diagnosis and treatment from a medical rather than a social perspective. More research is thus needed to explore the role of GD diagnosis in reducing social discrimination and exclusion.

From the perspective of social cognition, it is often difficult for the general public to distinguish concepts such as game, gaming behavior, problematic gaming, gaming addiction, and gaming disorder. In daily narratives, problems such as overgeneralization, concept confusion, and concept misapplication often occur, showing the boundary ambiguity of GD stigma. Six studies referred to this problem. To investigate the public stigma towards different types of gamers, Galanis et al. [17] investigated public stigma toward different types of gaming. They conducted a randomized controlled trial and reported the existence of stigma across all types of gamers. They also found that gamers meeting the criteria of GD faced the highest levels of stigma, while the level of stigma against casual and regular gamers was relatively low. The study also indicated that health information had no significant effect on stigma and stigma was related to the severity of gaming behavior. Wong et al. [32] interviewed adolescents in Internet cafes in Hong Kong and found that those young people were worried about being regarded as "teenage Internet addicts" by teachers and parents for their gaming behavior in Internet cafes. In their perception, playing games in an Internet cafe was often equated with being an Internet addict. Monley et al. [28] reported that the general public viewed all gamers as potential problematic gamers, without distinguishing between healthy gaming and problematic gaming. Additionally, holistic stigma was quite prevalent in media reports. In China, games and gamers were often associated with negative consequences such as drugs and crimes. This is concretized in a media framework that frames games as harmful to youth and may cause some of the stigmatization.

2.3.2 Emphasis on dangerousness

An emphasis on dangerousness is the most significant characteristic of GD stigma. It has two specific manifestations: (1) associating gaming with negative concepts such as crime, immorality, and incompetence; (2) emphasizing the negative consequences of gaming. Of the studies we analyzed, 22 studies addressed this topic.

Associating gaming with negative concepts such as crime, immorality, and incompetence refers to people's tendency to view gaming behaviors and gamers as contrary to social ethics and dangerous. Eight of the studies summarized the social images of games and gamers in Chinese media reports, reporting that in early years games were described by the media as "flood and monster," "electronic heroin," and "electronic opium" [7, 34,

36]. These descriptions linked games with concepts such as crime and substance abuse, implying that games are harmful and addictive, which also contributed to the construing of gamers as criminals, immoral, and incompetent individuals. Specifically, game players were described as: (1) people with negative traits (callous, withdrawn, violent, impulsive, irritable, etc.); (2) troubled teenagers or people with negative behaviors (truancy, violence, crime, and other extreme behaviors); (3) victims of addictive gaming (with physical and mental problems, suffering academic failure and employment difficulties, and even dying due to over-gaming) [7, 34, 38, 41, 42, 44, 45]. In addition to media portrayals, eight studies investigated games' and gamers' images in other populations and found similar results. Li et al. [39] found that the public perceived ACG culture (a subculture centered around animation, comics, and games) as in conflict with mainstream values and as having immoral components. According to this study, the public considered ACG fans to be deviant and lacking moral fiber. Zhao et al. [33] reported that in the marriage market, gamers were commonly considered to be aggressive, socially incompetent, and lazy, and therefore less likely to be chosen as a marriage partners. Yan et al. [43] analyzed college students' perceptions of games and indicated that college students often attached negative characteristics (e.g., wasting time, wasting money, addictive, isolated from reality, with monotonous gameplay patterns, full of violence, fraud, and pornography, etc.) to games. Liu et al. [40] investigated teachers' attitudes toward online games and reported that teachers tended to view teenagers who played online games as being mischievous, unmotivated, and socially inept. They also found that teachers perceived gaming to affect learning, induce violent tendencies, and lead to exposure to pornography or other unhealthy information. Miriyagalla et al. [27] reported that people tended to assume players of high-violence games may have moral problems, including negative traits such as unkindness and lack of sympathy. Kuss et al. [24] and Lopez-Fernandez et al. [26] note an additional stigma faced by female gamers: women were often considered unsuitable for games, not affected by gaming addiction, and not even real gamers, which resulted in further discrimination and marginalization as well as sexualization and objectification that prevented them from seeking help. Monley et al. [28] compared the attitudes of the American public toward gamers and non-gamers and indicated that adult non-gamers may have the stereotype of gamers as lonely young males with poor social skills. Although some studies have demonstrated that relevant stereotypes do not

correspond to the actual images of gamers [23], the perceptions of games and game-related things were mostly negative across most groups.

Another significant manifestation of the perceived danger of gaming is revealed in the focus on gaming's negative consequences. A total of seven studies mentioned the negative opinions of different populations about gaming in their conclusions. Those opinions can be divided into two categories, one addressing negative biopsychosocial consequences and the other discussing intervention effects of GD. In terms of negative biopsychosocial consequences, five studies indicated a common belief among different populations that GD can cause impairment in personal, family, interpersonal, educational, occupational and other fields, specifically manifesting as: (1) Conflict between gaming and daily life: Individuals immersed in games would ignore daily activities and responsibilities, thus interfering with normal socialization and possibly resulting in academic and career failure, and even crime; (2) Reduction in social interaction: Individuals immersed in games would reduce real-life social interaction, contributing to less social support, interpersonal frustration, social avoidance, and a sense of loneliness; (3) Health problems: Long-term gaming may inflict physical problems (e.g., visual and auditory damage, cardio-cerebrovascular disease, obesity, cervical spondylosis, sudden death, etc.), and may increase the risk of anxiety, depression, sleep disorders, addiction, and other mental disorders; and (4) Family relationship problems: Indulgence in games may stimulate conflicts between family members and teenagers [18, 20, 25, 28, 32].

Additionally, Casale et.al [15] compared the stigma of Internet game disorder, problematic smartphone use, and problematic social networking site use, and revealed that the public considered symptoms of Internet game disorder to be more severe and difficult to control. In terms of GD intervention effects, two studies examined the perceptions of medical professionals toward GD treatment. These studies indicated that professionals recognized the risks and causes of GD, but there were cognitive differences in treatment efficacy and controllability of GD. Hanafi et al. [18] reported that psychiatrists view GD as a chronic disease that is difficult to control. Koski-Jännes et al. [22] compared the attitudes of addiction treatment professionals from Finland and France toward GD and gambling disorders, and reported that French professionals had less confidence in GD treatment, and considered GD harder to cure.

2.3.3 Transition from stigmatization to rectification

Despite the persistence of GD stigma, there has been a gradual transition from stigmatization to rectification, which was reported in six of the studies we reviewed. Miriyagalla et al. [27] surveyed 1,084 people about stereotypes of gamers and found that their stereotypes were overall positive, in contrast to the negative impressions generally reported in previous studies. The transition is particularly evident in Chinese media. Five studies investigated the variation of game-related media coverage in China and revealed that there was a gradual change from homogeneous negative reports to more pluralistic and balanced content, as well as a transition from media attitudes focusing on the negative aspects of gaming to more focus on games' economic and cultural value [34-36]. He et al. [37] described this transition as "from e-heroin to created in China." The media portrayals of gamers have also become more varied from the original "deviants" and "teenage Internet addicts" to include "athletes" and "e-sports talents" following the development of the electronic sports industry.

2.4 Causes of GD stigma

A total of 17 studies referred to the causes of GD stigma in their conclusions. After thematically analyzing the conclusions of these 17 studies, we abstracted three themes about the cause of GD stigma: bias in media coverage, moral panic and social control, as well as cognitive differences, bias, and inadequacy.

2.4.1 Bias in media coverage

Bias in media coverage is one cause of GD stigma. According to Walter Lippmann, news reporting is a process of selecting and processing objective reality to form symbolic reality [46]. Consequently, the way media processes and shapes the image of games determines how people view things related to games. Screening the citations, we found 13 studies suggested that negative media coverage or reporting bias is a contributory cause of GD stigma [7, 21, 25, 27, 30, 33, 34, 36-38, 41, 42, 44, 45].

There are two forms of media coverage bias. One is adopting methods that highlight adverse consequences, thus associating games, GD, and gamers with crimes, immorality, and other negative images through label-

ing and demonizing [7, 25, 27, 30, 33, 36, 37, 45]. Additionally, to increase attraction, the media often exaggerate conflicts and contradictions in reports and use emotional expressions to dramatize the stories, which reinforces the stigmatization of games, GD, and gamers [21, 34, 36, 38, 41, 44]. The other form of media coverage bias is to deprive relevant people of the right to speak and adopt an outside perspective.

2.4.2 Technological panic and social control

Technological panic and social control are environmental causes of GD stigma. Seven studies referred to this theme. The growth of the gaming industry has been driven by the rapid development of technology and the gaming business, which also raises concerns about potential risks, including technological panic about GD. This technological panic often results in more social control, such as unreasonable restrictions and regulations on the gaming industry, which also affects the image of gaming as normal entertainment [7, 30, 34, 36-38, 42]. In China, the image of the gaming industry has experienced a shift from negative to positive over its development. Likewise, public policies have transitioned from strict regulation and crackdowns in the early years to support for the development of the gaming industry in recent years. Nevertheless, because of the long-term supervision and restrictions of the gaming industry, people still hold negative attitudes toward games, gamers, and GD to some extent [7, 42]. Furthermore, despite the implementation of more new policies on the regulation and development of the gaming industry, changing the public's cognitive bias toward games and game players is still a challenge [34, 38].

2.4.3 Cognitive differences, bias, and inadequacy

Differences and bias in cognition are cognitive contributors to GD stigma. Seven studies referred to this issue. Besides the impact of media bias on public cognition, different populations reveal differences in their understanding of normal gaming behaviors and GD. A study on Indonesian psychiatrists' perceptions of GD noted that 85% of psychiatric residents lacked adequate knowledge of GD to effectively diagnose and treat it [18]. Kiraly et al. [21] considered whether the public actually understands the definition of GD or confuses it with normal gaming entertainment. They also noted how the inclusion of GD as an official psychiatric disorder also contributes to

the stigmatization of GD patients as psychotics. Lee et al. [25] indicated that the public tendency to view GD simply as a personal problem rather than a widespread social-cultural phenomenon would aggravate stigma, similar to how alcoholism is often reduced to personality problems. Wong et al. [32] revealed that parents and teachers lacked understanding of games and were unable to distinguish among GD, internet addiction, and normal gaming behaviors, which encouraged the stigmatization of GD. He Pengpeng considered that the lack of scientific education and research on GD has led to a superficial understanding of GD, preventing the public from realizing the essence of GD and dealing with it properly [36].

Intergenerational cultural differences also contribute to stigma between generations. Older East Asian generations often emphasize educational and professional achievements, personal responsibility, and compliance with social norms. On this view, gaming implies a waste of time, a distraction from daily activities, and even irresponsibility and immorality, which results in the moral condemnation of gamers by older generations [34, 36]. Li et al. [39] noticed that the differences and conflicts between ACG and mainstream cultures also fostered concerns, biases, and even stigma among the mainstream population regarding the internet usage and gaming behaviors of ACG fans.

2.5 Effects and interventions on GD stigma

A total of 22 studies referred to the effects and interventions of GD stigma in their conclusions. Among them, 18 studies explored the impact of GD stigma. We abstracted three themes from these: social exclusion and discrimination; increased difficulties in seeking help; and the occurrence of mental problems. Regarding interventions on GD stigma, one study discussed the impact of different types of information on public perceptions of GD and 11 studies suggested interventions only in their conclusions. We summarized these ideas as "recommendations for GD stigma intervention."

2.5.1 Social exclusion and discrimination

The most direct effect of GD stigma is social exclusion and discrimination toward both those living with GD and normal gamers [15, 16, 19, 21, 28, 30, 32, 33, 39, 41, 42, 45]. This is manifested in the following ways: further social distance [15, 21, 28, 30, 44], stronger negative emotional reactions

(mainly anger and blame) from the public [15], less understandability [15, 42], restrictions in marriage, employment, and education [16, 33, 41], and cultural exclusion and closure [32, 39, 45].

2.5.2 Increased difficulties in seeking help

Social exclusion and discrimination also make help-seeking more difficult for those living with GD [16, 17, 22, 24, 26, 28-30, 32, 33, 41], which is manifested in the following two aspects. One is the level of helpers' willingness to offer assistance. In a study among Finnish and French addiction treatment professionals, Koski-Jännes et al. [22] reported that perceptions of GD individuals affected professionals' willingness to treat patients as well as the application of treatment methods, especially when they viewed GD as more difficult to cure or as an individual problem. Furthermore, Peter et al. [29] indicated that people were less willing to help GD patients with financial difficulty. The second is that stigmatized people may be reluctant to seek help or have difficulty expressing their needs. Studies have found this is particularly prevalent among female gamers or patients. Kuss et al. [24] suggested that stereotypes about women may lead the public to ignore the negative impact of gaming behaviors on their lives, and thus ignore the possibility that they could be GD patients. Lopez-Fernandez et al. [26] reported that GD may not be fully recognized in the female population, making it more difficult for female patients to get treatment and support.

2.5.3 Occurrence of mental problems

The social exclusion and help-seeking obstruction caused by GD stigma can further induce or exacerbate mental health problems of patients, specifically manifested in psychological distress (e.g., impaired self-identity, low self-esteem, self-blame, and self-stigma) [16, 41, 44] and aggravated psychiatric problems (e.g., anxiety, depression, social phobia, and GD) [16, 28, 32].

2.5.4 Recommendations for GD stigma intervention

The existing empirical studies on GD stigma interventions are still insufficient. Only one study we reviewed specifically investigated the effects of different types of information in intervening in people's perception of GD,

referred to the effects of different types of information on perceptions of GD. Ren et al. [31] reported that narrative messages were more effective in making adolescents adopt the medical view of GD. They further found that improving immersion in narratives can effectively affect their attitudes, while the adolescents. Another 11 studies [16, 19, 21, 25, 28, 34, 36, 41, 42, 44, 45] only outlined the main directions for stigma intervention. These include: (1) strengthen studies on GD, including empirical research on GD stigma, studies on the impact of GD diagnosis (e.g., on public perceptions, public health, and society), studies on GD intervention and prevention, and transnational scientific cooperation; (2) promote the standardization and popularization of the GD diagnostic system; (3) strengthen education and increase health promotion activities to raise public awareness of GD; (4) stress media responsibility and appeal for coverage based on gamers' perspective and multiple perspectives, as well as calls for media neutrality, increasing positive reporting, attention to individual differences, etc.; (5) improve social support for gamers, patients, and other relevant groups; (6) improve system construction and focus on the social responsibility of gaming companies.

3. Discussion

3.1 Improvement of study quality and expansion of study content

Several selected citations showed that stigma studies on topics such as games, gamers, and GD had existed long before the inclusion of GD in the ICD-11. This suggests that GD stigma is a long-standing social and cultural phenomenon. For the studies we reviewed, there are two problems.

The first is the lack of high-quality studies on GD stigma. Among the included studies, only three of the 15 quantitative studies designed experiments to compare differences in GD stigma among the public [15, 17, 29]. Only four of the remaining 12 studies used scales for measurement [18, 23, 26, 33]. These included: (1) outcome indicators related to stigma level, including social distance, general stigma level, stigma attribution, dangerousness, perceptibility, and exposure level, etc.; (2) outcome indicators related to illness perception, including perceptions of addictive disorders, GD, and problematic gaming; (3) outcome indicators related to stigma consequences, including similarity in mate selection, mental health level, coping strategies, social motivation, and self-identity. The other eight stud-

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ies used self-made questionnaires to evaluate outcome indicators related to GD stigma.

It is thus clear that there is still an absence of effective and accepted measurement tools for assessing stigma and relevant outcome indicators around GD. Because stigma is always complex, further research is needed to assess whether the existing outcome indicators can comprehensively reflect the multiple dimensions of stigma. Moreover, cultural difference is another essential background factor that needs to be considered in stigma research. Furthermore, how to define GD is also a key issue in GD stigma studies. Although the diagnostic criteria for GD were not established until 2018, the concepts of gaming addiction and Internet addiction had appeared in previous studies. It is thus important for researchers to determine whether these concepts are the same as GD.

Secondly, the topics and objects of GD stigma studies need to be further expanded. Existing studies focus primarily on describing how stigma manifests, the overall level of stigma, and differences based on different levels of gaming engagement, etc. In contrast, studies on GD stigma formation mechanisms and interventions are lacking. As for the objects of study, existing studies focus on the media, the public, and gamers. The relationship between media and GD stigma has been particularly popular in China [7, 34-38, 41, 42, 44, 45], where the media sources are mainly from mainstream media reports such as People's Daily. However, in recent years, newly emerging media types, such as self-media and we-media, have been continuously expanding their influence on public perception. Therefore more research is needed on the roles of different types of media. Moreover, in China, the issue of GD stigma is not just related to media coverage. The effect of parents, teachers, and gamers (especially adolescents) on GD stigma all need more scholarly attention.

3.2 GD stigma formation model

Based on the scoping review of the 32 included studies, this study integrated the manifestations, causes, and effects of GD stigma to propose a model of GD stigma formation. In this model (shown in Figure 2), cognitive differences, bias, and inadequacy are the cognitive bases for GD stigma formation, which determine individuals' original perceptions of concepts such as gaming, GD, and gamer. In this process, GD stigma has already developed to a certain extent in some groups due to cultural differences and

the stigma of mental disorders. Technological panic and social control are the environmental bases of GD stigma formation, which induce negative perceptions and value orientation about games and the gaming industry, potentially contributing to the negative cultural and value environment for GD stigma. Of course, with the reduction of panic and the loosening of social control, such values and perceptions could turn neutral or even positive. Since technological panic and social control are affected by media reporting, media coverage bias contributes to the formation of GD stigma, particularly by constructing specific negative images and emphasizing the negative values of gaming culture. Meanwhile, GD stigma creates biopsychosocial dilemmas for individuals, which in turn provides more negative materials for media coverage.
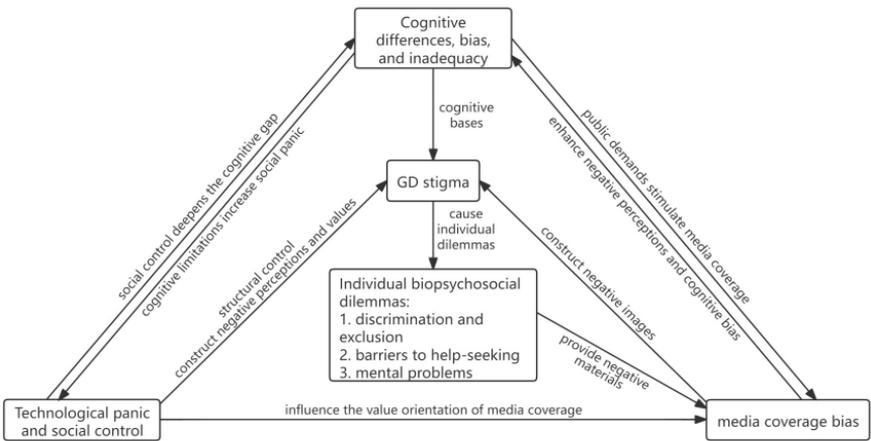

Figure 2   Model of GD stigma formation

Cognition, environment, and media also interact with each other, in addition to influencing GD stigma. Differences, bias, and inadequacy in cognition increase public panic toward technology and promote the strengthening of social control, which further prevents the public from better understanding game-related things. Furthermore, technological panic and social control influence the value orientation of media coverage, increasing negative reports and thus contributing to cognitive divergences and bias. At the same time, public discontent with the negative consequences of gaming behavior also encourages the media to report negative information. Thus, we can see that GD stigma is a complicated process, and therefore

interventions against stigma rely on cooperation across multiple systems and fields.

4. Deficiencies and prospects

This study only described and summarized the included literature without conducting rigorous quality and reporting assessment of its own. Additionally, the GD stigma formation model proposed above is an ideal model based on summarizing the conclusions of the included studies. This means it lacks evidence to verify its effectiveness and only provides theoretical reference for future studies.

With the advancement of the gaming industry and the spread of gaming culture, there would be an expected expansion of the gaming population base and, consequently, an increasing risk of GD. This warrants that more attention be given to GD stigma research. Our analysis suggests that future research should concentrate on the following aspects:

First, the development and screening of GD stigma measurement tools should be intensified. It is also necessary to increase qualitative studies to explore the concept connotation of GD stigma through interviewing different populations, as well as developing GD stigma scales on this basis. Also, in quantitative studies, the design of outcome indicators and the selection of measurement tools should be improved to enhance methodological quality.

The second aspect is to expand the content and objects of studies. Future research should concentrate on the mechanism of GD stigma formation—especially on the cognitive, environmental, and media factors proposed in the model above—to obtain quantitative evidence and confirm the causal relationships among these factors. Furthermore, because the stigmatization of GD is a dynamic process, more longitudinal studies are needed in addition to cross-sectional studies to better understand the formation and development of GD stigma. Relatedly, GD stigma intervention is also an important research direction. Future studies could try to construct systematic intervention models for GD stigma through intervention attempts at the macro, meso, and micro levels. In terms of study objects, our analysis suggests increasing targeted studies on different populations, especially on groups related to GD stigma, such as teachers, parents, patients, and normal gamers.

The final aspect is to validate the theoretical model proposed in this study. Based on the literature review, we presented a GD stigma formation model that summarized the roles of cognitive, environmental, and media factors in stigma formation. Though more empirical studies are needed to validate the model, it provides a framework for future studies to conduct validation, optimization, and refinement.

It is undeniable that GD stigma exists in the public and media, causing problems for both gamers and patients. Further research is needed to explore the mechanism of GD stigma and to develop research-based intervention tools aimed at providing timely and effective treatment, as well as a tolerant and positive rehabilitation environment for individuals in need.

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Annex1: Characteristics of included studies

First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		
				Causes of GD stigma	Effects of GD stigma	Intervention recommendations
Silvia Casale, 2023	To compare public perception towards Internet game disorder, problematic smartphone use, and problematic social networking site use	1. Questionnaire: Illness Perception Questionnaire (IPQ-R), Blame/Personal responsibility subscale of the Universal Stigma Scale (USS), The Vanity Attribution Scale (VAS), Dangerousness subscale of the Attribution Questionnaire (AQ), Social Distance Scale (SDS), Concealability/Noticeability measure. 2. Analysis methods: chi-square	1. Internet game addiction is more serious and symptomatic, easily viewed as a moral issue, and difficult to be understood by others. 2. Problematic smartphone use is less dangerous and relatively controllable. 3. Problematic social networking site use is a milder form of addiction, motivated by demands of social intercourse rather than addictive behaviors. Patients often have obvious vanity and are easier to be blame.	N/A	1. More severe negative emotional reaction 2. Further desired social distance 3. Less understandability	N/A

First author and published year	Study target	Data collection tools and analysis methods	Conclusions			
			Characteristics and manifestations of GD stigma	Causes of GD stigma	Effects of GD stigma	Intervention recommendations
Christina R. Galanis, 2023	To explore the effects of GD information on public stereotypes of gamers	test, Mann-Whitney U test 1. Questionnaire: Attribution Questionnaire (AQ), Universal Stigma Scale (USS) 2. Analysis methods: Two-way analysis of variance (ANOVA), Tukey post hoc analysis, Repeated-Measures ANOVA, Bayesian analysis	1. Problem gamers gained higher stigma scores than regular gamers and casual gamers. 2. Health information had no significant effect on stigma scores. 3. On the blame and responsibility subscale of the USS, participants in the addition group gained lower scores than participants in the non-addiction group, suggesting that addiction information may reduce blame and responsibility towards gaming behavior.	N/A	1. Impaired self-identity 2. Social isolation 3. Anxiety and depression 4. Disorder for help-seeking 5. Self-discrimination 6. Stigma transmission 7. Employment and education restrictions 8. Aggravate symptoms	N/A
Christina R.	1. Call for research to test stigma-related	N/A	1. Risk of stigma: The inclusion of GD into the formal diagnosis system	N/A	1. Effects on the gaming industry: By using its public platform and	1. Most of the current stigma-related arguments are based on speculation,

First author and published year	Study target	Data collection tools and analysis methods	Conclusions			
			Characteristics and manifestations of GD stigma	Causes of GD stigma	Effects of GD stigma	Intervention recommendations
Galanis, 2021	arguments against GD 2. Explore the effects of GD diagnosis on public attitudes, gamer communities, and regulation policies 3. Emphasize the need to scientifically evaluate the effects of GD diagnosis in terms of public health and public perception		may stigmatize casual gamers, especially young people. 2. Misdiagnosis: GD diagnostic guide may mislabel highly engaged but non-problematic gamers as pathological gamers.		force, the global gaming industry's support for scholars who challenge GD would influence the diagnosis acceptance and research of GD. 2. Effects on policy and treatment: It has been proposed that GD diagnosis would lead governments to conduct restrictive regulatory measures and unsafe treatment protocols, which has negative effects on gamers and the whole society.	therefore more studies are needed to test whether GD diagnosis leads to stigma. 2. The effects of GD diagnosis on different types of players, including casual gamers and problematic players, need to be studied to explore its influence on public perception. 3. The public health and social effects of GD diagnosis need to be scientifically evaluated through rigorous research rather than intuition.
Enjeline Hanafi, 2019	To determine the perception of Internet addiction among psychiatric residents in an ur-	1. Questionnaire: the illness perception questionnaire revised version for addiction (IPQ-A),	In the residents' perspective, Internet addiction is: 1. emotionally stressful; 2. understandable; 3. cyclical;	1. Lack of knowledge: 85% of surveyed residents felt their current knowledge of Internet addiction was inadequate	N/A	N/A

First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		Intervention recommendations
				Causes of GD stigma	Effects of GD stigma	
	ban area of Indonesia	self-made questionnaire 2. Analysis methods: Two-way ANOVA, Tukey post hoc analysis, Repeated-Measures ANOVA, Bayesian analysis	4. difficult to control; 5. a chronic disorder; 6. addiction that may cause significant impairment in personal, family, social, educational, occupational, or other important areas of life.	to make diagnosis and management decisions. 2. Education: Senior residents presented a deeper understanding of the consequences of Internet addiction than junior residents, suggesting that education and clinical experience may improve the perception of Internet addiction. 3. Uncertainty in diagnosis and management: Lack of perception and knowledge leads to uncertainty of residents in diagnosis and management of Internet addiction.		
Susumu Higuchi, 2017	To emphasize the necessity of recognizing GD as a diagnosis category in the	N/A	Existing stigma	N/A	Stigma may influence policy making and induce unfair treatment or discrimination against gamers.	1. Prevent stigma: Defining functional impairment as a core criterion of GD to prevent overdiagnosis and moral panic.

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First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		Intervention recommendations
				Causes of GD stigma	Effects of GD stigma	
	ICD-11, and demonstrate its positive effects on clinical practice, research, and policy development.					2. Avoid overdiagnosis: Clearly defining the criteria of GD in the ICD-11 can help to reduce over-diagnosis and stigma. 3. Improve stigma-related situations: Drawing a clear boundary between normal play and GD can improve stigma-related situations.
Zaheer Hussain, 2009	To explore the attitudes, feelings, and experiences of online gamers	Semi-structured interviews; thematic analysis	1. Self-recognition of addiction 2. Negative effects of game addiction: immersiveness of game, time management issues, social effects and personal consequences of addiction 3. A metaphor for addiction: Compare MMORPGs to "new cocaine", emphasizing high	N/A	N/A	N/A

First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		Intervention recommendations
				Causes of GD stigma	Effects of GD stigma	
Orsolya Király, 2017	To support the inclusion of GD in the ICD-11 as a formal diagnosis. Emphasize the potential benefits of this inclusion and the necessity for future research.	N/A	addictive potential of them. 4. Cognitive ambiguity in addiction criteria 5. Prevention and control of addiction 1. The existence of GD-related reality problems: Some players suffer significant functional and psychological impairment due to their gaming manner. 2. Concerns about stigma: The inclusion of GD in the ICD-11 is more likely to reduce rather than intensify stigma, by regarding problematic gaming behavior as a disorder rather than a personal weakness or moral failure.	1. Media scaremongering 2. Generational differences 3. Lack of GD knowledge 4. Misunderstanding of diagnostic criteria 5. Public attitudes towards mental disorders 6. Risks of overdiagnosis and overtreatment	Social isolation: Negative views from society may make GD patients feel isolated, therefore affecting their social relationships and engagement.	The necessity of diagnostic criteria: The study supported the inclusion of GD in the ICD-11 as a formal diagnosis, considering it will contribute to improving the quality of further studies, standardizing assessment criteria, and clarifying relevant controversies.
Anja Koski-	To investigate treatment pro-	Self-made questionnaire; de-	1. Cognition of addiction risk: Compared to treat-	N/A	Selection of treatment strategies: Cognition and	N/A

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First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		Intervention recommendations
				Causes of GD stigma	Effects of GD stigma	
Jannes, 2017	fessionals' perceptions towards excessive behaviors, and how their attitudes vary by cultural background, occupation, and other background factors.	scriptive statistics, Logistic regression analysis	ment professionals in Finland, professionals in France were more likely to consider a high risk of addiction or dependence after gambling attempts and Internet use. 2. Opinions about chances of recovery: Treatment professionals in France had less confidence in the chances of recovery and significantly less trust in treatment than Finnish professionals, both for gambling addiction and Internet addiction. 3. Responsibility attribution: Professionals in both two countries emphasized more responsibility of individuals than society for solving their own addiction problems.		perceptions may influence professionals' willingness to offer assistance to addicted individuals and the application of "evidence-based" treatment strategies.	

First author and published year	Study target	Data collection tools and analysis methods	Conclusions			
			Characteristics and manifestations of GD stigma	Causes of GD stigma	Effects of GD stigma	Intervention recommendations
Rachel Kowert, 2014	To systematically assess the stereotypes of online game players and clarify whether social, physical, and psychological impairments are present in these gamers.	1. Questionnaire: self-made questionnaire, gaming motivation scale, Game Addiction Scale (the short form), Berlin Social Support Scale (an abridged version), Social competence subscales of the California Psychological Inventory (CPI), problematic gaming scale 2. Analysis methods: descriptive statistics, ANOVA analysis, regression analysis	1. Insufficient empirical support for stereotypes: The online gaming population does not match the negative characteristics described in popular culture. 2. Relationship between game engagement and stereotypical characteristics: Gamers with higher involvement levels may better fit the relevant stereotypes (e.g., unpopular, unattractive, lazy, socially incompetent).	N/A	N/A	N/A
Seung-Yup Lee, 2017	To clarify the harms of GD, demonstrate the	N/A	GD stigma manifests as:	1. Inadequate knowledge of GD	N/A	1. Standardized Diagnostic System: Establishing a standardized diagnostic

First author and published year	Study target	Data collection tools and analysis methods	Conclusions			
			Characteristics and manifestations of GD stigma	Causes of GD stigma	Effects of GD stigma	Intervention recommendations
	necessity of its inclusion in ICD-11, and refute the concerns of Aarseth et al.		1. regarding gaming addiction as a kind of disease; 2. believing that gaming addiction needs treatment, and the ICD-11 would help increase public cognition and understanding of gaming addiction as well as promote treatment and prevention; 3. considering gaming addiction to be similar to alcohol use disorder and require the same attention and treatment, as they are both addictive and harmful; 4. Emphasizing that it is dangerous to deny the dangers of gaming addiction; 5. considering gaming addiction as not limited	2. Misunderstanding by the media and the public 3. Opposition from the gaming industry 4. Lack of standardized diagnosis and treatment		system would contribute to the correct identification and treatment of GD. 2. Public education and health promotion activities: Strengthen education and increase health promotion activities to reduce public misunderstanding of GD. 3. Position of internationally recognized authorities: The inclusion of GD in the ICD-11 by the World Health Organization (WHO) may help progressively obsolete inappropriate treatment methods, and promote evaluation and management of healthcare professionals considering the best interests of the patient, which would help

First author and published year	Study target	Data collection tools and analysis methods	Conclusions			
			Characteristics and manifestations of GD stigma	Causes of GD stigma	Effects of GD stigma	Intervention recommendations
			to children and adolescents; 6. simply treating gaming addiction as an individual problem; 7. regarding gaming addiction as a natural transitional developmental phenomenon in children and adolescents, and ignoring the positive aspects of gaming addiction.			reduce infringement of children's rights.
Corey M. Monley, 2023	To demonstrate the development process of problematic gaming through self-determination theory.	Semi-structured focus group interviews; thematic analysis	1. Stereotypes: Gamers may be stereotyped as lonely, socially incompetent young males and be stigmatized by adult non-gamers (ANGs). 2. Pathologization of gaming behavior: The frustration of gaming addict's needs for autonomy, competence, and relatedness in real life	N/A	Stigmatization would have negative effects on gaming addicts, including social exclusion, impaired social interaction, and mental problems, which may cause gaming addicts to hide their gaming behavior and avoid seeking help.	1. Treatment and prevention of GD: The study suggests that treatment and prevention strategies should focus on helping individuals meet basic psychological needs in real life, instead of just limiting gaming time. 2. Experiences of gaming addicts: The study emphasizes the importance

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First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions			Intervention recommendations
				Causes of GD stigma	Effects of GD stigma		
			may be ignored, denying that they may seek satisfaction of these needs through gaming, leading to the view of gaming addiction as a disease. 3. Overgeneralization: All gamers are regarded as potentially problematic without distinguishing between healthy and problematic gaming behavior.				of gaming addicts' voices and experiences to comprehensively understand their needs and difficulties.
Samuel C. Peter, 2019	To compare public stigma levels towards three different kinds of behavior addiction and to compare them to the stigma of individuals with financial crises suffering simi-	1. Questionnaire: The Social Distance Scale (SDS), the Attribution Questionnaire (AQ-27), Level of Contact Report (LOCR) 2. Analysis methods: ANOVA analysis, ANCOVA analysis	1. Perception of controllability: The public tends to perceive gaming addiction and online gambling addiction as controllable. 2. The public regards online gambling and gaming addiction as inappropriate and to be blamed.	N/A	1. Stigma is regarded as a major barrier for individuals seeking treatment and other help. Stigmatized individuals may experience shame, embarrassment, and fear of being identified or judged, which prevents them from seeking help.		N/A

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| First author and published year | Study target | Data collection tools and analysis methods | Characteristics and manifestations of GD stigma | Conclusions | | Intervention recommendations |
				Causes of GD stigma	Effects of GD stigma	
	lar levels of impairment and distress.		3. The public prefers to keep a further social distance from addicts. 4. Gaming addiction is considered as dangerous as online gambling. 5. Addicts are believed to require isolation and compulsive medical treatment.		2. People are less willing to help addicts with financial problems.	
Halley M. Pontes, 2022	To provide a more comprehensive perspective to promote the understanding as well as treatment of GD and to reduce stigma, promoting the development of research and practice in this field.	N/A	1. Stigma of healthy gamers: It is concerned that diagnosis of GD may stigmatize healthy gamers without functional impairment, resulting in false categorization of them as problematic individuals. 2. Over-pathologization: It is concerned that normal gaming behavior may be over-pathologized even if they do	N/A	1. Inappropriate selection of treatments 2. Social exclusion and isolation 3. Unreasonable restrictions and regulations of the gaming industry, which influence the acceptance of games as normal entertainment 4. Barriers to treatment and help-seeking 5. Stigma not only influences the mental health and social function of in-	N/A

First author and published year	Study target	Data collection tools and analysis methods	Conclusions			Intervention recommendations
			Characteristics and manifestations of GD stigma	Causes of GD stigma	Effects of GD stigma	
			not cause actual effects or impairment in life.		dividuals, but also leads to biased social cognition and understanding of GD issues.	
Yuchen Ren, 2022	To compare the impact of narrative messages and informational messages on attitudes towards adolescent GD.	1. Questionnaire: self-made questionnaire; 2. Analysis methods: multivariate ANOVA, mediation effect analysis, moderation effect analysis	N/A	N/A	N/A	1. Compared with the informational messages, narrative messages result in more positive attitudes of adolescents and are more effective in making them adopt the medical view of GD. 2. Narratives influence adolescents' attitudes to GD by increasing their immersion. 3. Adolescents' level of behavior involvement (e.g., frequency of playing video games) moderates the effect of narratives on attitudes and attitude certainty. 4. Attitude certainty: Narratives influence adoles-

| First author and published year | Study target | Data collection tools and analysis methods | Characteristics and manifestations of GD stigma | Conclusions | | Intervention recommendations |
				Causes of GD stigma	Effects of GD stigma	
Olatz Lopez-Fernandez, 2019	The study aimed to: 1. construct an international profile for female gamers; 2. determine predictive factors associated with perceived internet gaming disorder (IGD); 3. recognize female gamers who may face the risk of developing online gaming addiction and identify their characteristics.	1. Questionnaire: Internet Gaming Disorder Scale – Short Form (IGDS9-SF), Online Game Motivation Scale (OGMS), Antecedents of Identification (AoI), Embodied Presence (EP), Coping Strategies (CS), Symptom Checklist-27-Plus (SCL-27-Plus), Body Shape Questionnaire-8c (BSQ-8c), Bem Sex Role Inventory – Short Form (BSRI)	1. Gender stereotypes: A female gamer may not be viewed as a real or hardcore player. 2. Sexualization of female characters: Female characters in games are often hypersexualized and objectified. 3. Social expectations: It is generally considered that females are less likely to be addicted, while males are more likely to become problematic gamers.	N/A	As there are still controversies over GD diagnosis and treatment, female gamers may face more barriers in seeking help. Inadequate cognition of GD in the female population may add difficulties for them in accessing appropriate treatment and support.	N/A
						cents' attitudes to GD as well as increasing their attitude certainty.

First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		Intervention recommendations
				Causes of GD stigma	Effects of GD stigma	
		2. Analysis methods: descriptive statistics, correlation analysis, regression analysis				
Irene Lai Kuen Wong, 2016	The study aimed to: 1. explore the reasons for gaming in Internet cafés; 2. assess the perceived benefits and harms of gaming; 3. identify psychological and social risk factors for GD.	Semi-structured interviews; thematic analysis	1. Negative aspects of gaming: People often focus on the negative effects of games, such as time management problems, decline in academic performance, physical and mental health problems, and family relationship problems. 2. Concerns about stigma: Some adolescents are afraid of being caught playing games in Internet cafés and are fearful of being labeled as "teenage Internet addicts". 3. Lack of cognition: Some adolescents believe	1. lacking knowledge of games 2. overemphasizing negative effects 3. lacking scientific cognition	1. Effects on mental health: Stigma would increase the psychological burden of adolescents, leading to anxiety, depression, and other negative emotions. 2. Preventing help-seeking: Stigma would prevent adolescents from seeking help for fear of being labeled as "teenage Internet addicts". 3. Effects on social integration: Stigma would lead to social exclusion of adolescents and interfere with their social integration.	N/A

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First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		
				Causes of GD stigma	Effects of GD stigma	Intervention recommendations
			their gaming behaviors are normal and can hardly realize their own addiction tendency. 4. Denying addiction: Some addicted teenagers may deny their addictive gaming behaviors and refuse to seek help, believing they can control their gaming behaviors. 5. Self-acceptance: Some adolescent addicts may accept their addictive gaming behaviors as a lifestyle.			
Upekha Pathumi Miriyagal, 2023	To investigate the content of social stereotypes of video game players, especially exploring how stereotypes vary with game	self-made questionnaire; ANOVA	1. Positive stereotypes of gamers: Social stereotypes of gamers are generally positive, which contrasts with the image of negative stereotypes in previous studies. 2. Stereotypes of players in high-level violence	Game content, media reports of high-violence games, and the conflict between social moral expectations and game content lead to negative perceptions and stigma towards high-violence games and their gamers.	N/A	N/A

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First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		Intervention recommendations
				Causes of GD stigma	Effects of GD stigma	
	violence level and gamer identity.		games are more negative in terms of morality, and the public may consider these players as morally questionable. 3. Stereotypes of players in high-level violence games are also more negative in terms of warmth, and these players are often perceived as less friendly and caring, and even cold or cruel. 4. Effects on gamer identity: Low-identifiers have more negative stereotypes of players in high-violence games, while high-identifiers hold a slightly more positive view.			
Wei He, 2018	To explore how People's Daily, as a representative of China's	keywords retrieval in game reports of the People's Daily;	1. In the early years, media reports often stigmatized games and gamers, especially by adopting	1. Negative framework of media reports 2. Effects of policies and regulations	N/A	N/A

First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		
				Causes of GD stigma	Effects of GD stigma	Intervention recommendations
	mainstream media, reported and built the image of games in the past 40 years, and to reveal the ideological changes beyond the transforming discourse of game reports.	Critical Discourse Analysis (CDA)	a reporting framework of "damage adolescents", which constructed a stereotypical portrayal of gamers as "perpetrators/victims/rescued", lacking direct interviews and presentation of the gamers' voice. 2. Ideological transformation: With the development of the Chinese gaming industry, especially the rise of original games, the social perception of games gradually transformed from negative to positive, and games were accepted as a part of Chinese creation. 3. Changes in reporting framework: The framework of game reports changed from "damage adolescents" to "industri-	3. Moral panic: Social concerns and criticisms lead to moral panic towards GD, as GD is considered a social threat. 4. Use of metaphors 5. Lack of multiple perspectives 6. Differences in social value and perceptions 7. Boom of the gaming industry 8. Education and family factors 9. Social panic and misunderstanding of new technology		

First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		
				Causes of GD stigma	Effects of GD stigma	Intervention recommendations
			al economy" and "a new way of entertainment". 4. Reduction of stigma: As games have become a common and familiar part of social life in recent years, and with the boom of the gaming industry, game-related stigma has reduced.			
Xin Han, 2015	To explore the development orientation of the public opinion field of online games, based on the reports of traditional public media since 2004.	keywords retrieval in media reports, semi-structured interviews; content analysis	1. Changes in media image: The media image of online games experiences a transition from stigmatization to neutrality and rationalization. 2. Reduction of stigma: The dominance of negative media reports in the public opinion field has been challenged, though there is still a negative tendency in online game reports.	1. Transition of social cognition 2. The development of online gaming industry attracts the media's attention to its positive aspects, resulting in more reports focused on the economic benefits of the gaming industry. 3. Enhancement of media responsibility 4. Diverse demands of audiences motivate the	N/A	N/A

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			3. Attitudes of the media: Although some reports emphasize the potential addictive or negative consequences of online games, the media begins to present more comprehensive comments on online games. 4. Opinions of game addicts: Adolescent gamers notice the changes in media reports and recognize the positive effects of these changes on gaming environment.	media to report more comprehensively. 5. Policies and regulations influence the reporting direction and encourage the media to pay more attention to positive aspects of online gaming industry. 6. Evolution of cultural and social values: The evolution of cultural and social values leads to a more tolerant attitude towards the entertainment methods of adolescents.		
Dehuan Liu, 2015	To explore the cognition and attitudes of teachers towards adolescent online gaming and to analyze the influence factors.	self-made questionnaire; independent sample t-test, factor analysis, logistic regression analysis	1. Teachers tend to regard teenagers who frequently play online games as poor in performance, mischievous, and unmotivated, while less likely to consider them as smart, self-controlled, and self-confident.	Teachers' perceptions of parents' attitudes may influence teachers' attitudes towards teenage online gaming.	N/A	N/A

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			2. There is bias in teachers' evaluation of the social communication competence of online gaming teenagers, considering them to be less socially competent than students who don't play games. 3. Most teachers acknowledge that playing online games can relieve academic pressure, improve reflexes and develop intelligence. 4. Teachers believe that playing games may induce violent tendencies, influence studying, and lead to exposure to pornography or other unhealthy information. 5. Teachers hold conservative attitudes to online games and are mainly			

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First author and published year	Study target	Data collection tools and analysis methods	Characteristics and manifestations of GD stigma	Conclusions		Intervention recommendations
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Daocheng Yan, 2014	To reveal the differences and similarities between mainstream official news websites and commercial news websites in constructing media images of young online gamers.	keywords retrieval in Sina Net and People's Daily Online; content analysis	against teenagers playing them. 6. Teachers playing games themselves have more positive perceptions of teenage online gamers and have higher evaluations on games' positive effects. Stigma can be manifested by: 1. associating gaming with crimes; 2. emphasizing the health problems caused by game addiction; 3. emphasizing the social dysfunction caused by game addiction; 4. associating game addicts with character defects; 5. viewing game addiction as a symbol of family education failure;	1. Exaggeration of individual cases: The Internet media often reports and exaggerates typical cases of online teenage gamers from different perspectives, constructing negative images of these gamers. 2. Emphasis on negative consequences: Reports tend to focus on negative consequences of game addiction, such as crime, physical problems, and mental problems.	The existence of stigma widens the gap between teenage online gamers and their educators, interfering with the normal socialization process of them, and may lead to exclusion from mainstream society.	1. Internet reports should take improved measures. The mainstream Internet media should appraise teenage online gamers from a comprehensive, fair, and objective perspective, and the official media should guide the public to focus on the image construction of young gamers. 2. The management should regulate the online game industry development-

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			6. considering game addicts as lacking social responsibility.			opment and recognize the positivity of online games.
Daocheng Yan, 2013	To explore how media coverage constructs the stigma against teenage online gamers and indicate the effects of stigma.	keywords retrieval in Baidu News; content analysis	Teenage Internet gamers are often associated with negative labels such as lack of responsibility, troubled teenagers, criminal tendency, violent personality, and characters of irritable, callous, cruel, and manic.	1. Demonization measures: (1) deprivation of discourse (2) dramatization (3) strongly emotional statements (4) labeling 2. Dominance of commercial values 3. Effects of market demands	1. Stigma may result in psychological imbalance and even mental problems. 2. Stigma may obstruct the socialization process of teenage online gamers.	1. Reporters should keep a neutral perspective and give teenage gamers more opportunities to express their own opinions. 2. Media reports should comprehensively consider the family, school, and social backgrounds of young online gamers, instead of criticizing them from a single perspective. 3. More expert opinions should be adopted in reports to provide a deeper and more comprehensive perspective.
Hongwei Yan, 2011	To explore the social representations of Chinese university students to-	Open-ended questionnaire for word association test, self-made online game so-	1. Negative social representations of online games: Online games are viewed as wasting time, wasting money, addic-	N/A	N/A	N/A

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	wards online games, and to discuss the possible causes of online game stigma.	cial representation scale; descriptive statistics, factor analysis, ANOVA	tive, isolated from reality, single mode, full of violence, fraud, pornography, and other unhealthy information. 2. The universality of stigmatization: The average score of positive representations towards online games is significantly lower than that of negative representations, and there are differences among various populations.			
Shuo Wang, 2023	To reveal the discourse characteristics and strategies in the People's Daily's coverage of teenage video gamers, and to explore how the discourse con-	conducting keywords retrieval in game reports of the People's Daily; content analysis	1. Non-confrontational stage (1983-1999): Video games were regarded as a gambling form of entertainment, and young video gamers were described as "deviants", associated with crime and misconduct, and labeled as "gamblers", "tru-	1. Concerns about addiction 2. Social anxiety 3. Neglect of individuals' voice 4. Neglect of economic and cultural backgrounds 5. Blame for social problems on games	Teenage video game players may face challenges in social identity due to stigma and have difficulty gaining social acceptance and understanding.	The article suggests: 1. strengthening the media's sense of responsibility; 2. increasing public awareness of video games; 3. providing more policy support; 4. reporting the positive aspects of e-sports;

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	tributes to the transformation of these teenage players' media image.		ants", "unhealthy" and "outcasts". 2. Contradictory stage (2000-2018): The image construction of teenage video gamers began to diverge. On the one hand, they were labeled as "addicts"; on the other hand, the rise of e-sports gave some young gamers new identities as "athletes". 3. Stable stage (2019-2022): The image of teenage video gamers was further positively constructed. As e-sports were included in sports events, e-sports players were given positive status as "members of the national team" and were regarded as "e-sports talents".	6. Single perspective of the media coverage 7. Strict regulation and crackdown on video games in early policy discourse		5. emphasizing the role of video games in spreading culture and strengthening cultural confidence; 6. providing appropriate family and school guidance; 7. enhancing industry self-discipline; 8. building and improving social support systems for young video gamers; 9. encouraging scientific research on the effects of video games; 10. adopting multiple perspectives in reporting and considering video games; 11. promoting de-stigmatization; 12. enhancing international cooperation.

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Pengpeng He, 2021	To reveal the media and text presentation characteristics of the video game reporting discourse in People's Daily, the discourse characteristics and influencing factors of video game coverage in different periods, the impact of discourse on social practices, and the effects of discourse on social concept construction, gamers' identity and the gaming	conducting keywords retrieval in game reports of the People's Daily; content analysis	1. Negative labels: Online games are considered electronic drugs. Gamers are described as lonely, unsociable, and having irregular life habits. 2. Health problems: Some reports associate video games with physical and mental health problems in adolescents. 3. Blame for social problems: Video games are regarded as the source of juvenile delinquency, academic failure, and other social problems in some situations. 4. Emphasis on addiction: The addictive consequence of video games is overemphasized, describing games as an irresistible temptation.	1. Psychosocial factors: panic and anxiety towards new technologies and phenomena, conservative attitudes 2. Cultural and cognitive differences: cultural barriers, generational cognitive gap 3. Tendency of media coverage: negative reports, clickbait headlines 4. Influence of policies and regulations: negative orientation of early policies, regulation vacancies 5. Deficiency in knowledge popularization and education: lack of proper guidance, deficiency in popularization of relevant knowledge	N/A	The research suggests: 1. raising public awareness; 2. emphasizing media responsibility; 3. strengthening science education; 4. increasing policy support; 5. strengthening family education; 6. improving the anti-addiction system; 7. providing professional guidance; 8. establishing the social support system; 9. increasing cross-department cooperation; 10. enhancing cultural guidance; 11. strengthening international communication; 12. increasing research investment.

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	industry development.		5. The public lack recognition of the video games' positive effects. 6. Pathologization labels: In some reports, gaming addiction is described as a pathological state similar to other addictive disorders, which may lead to public bias and discrimination against gaming addicts. 7. Excessive attention: Although it is necessary to pay attention to the problem of gaming addiction, over-concern may result in neglect of the positive effects and entertainment value of proper gaming.	6. Social values and moral judgment: value conflicts, moral panic 7. Interests drive: The rapid development of gaming industry attracts the market's attention to the problem of game addiction, which may be driven by economic benefits and lead to exaggeration of game addiction problem. 8. Group psychology and collective behavior: conformity effect, collective behavior		
Ying Gao, 2020	To explore the effects of mainstream media's reports of on-	conducting keywords retrieval in game reports of People's Daily	1. From negative to positive: In the early years, online games were labeled negatively as "elec-	1. emphasis on traditional social concepts on educational and occupational achievements	N/A	1. The media should further understand the online game market and

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	...line gaming on the youth and propose suggestions and strategies to promote the healthy development of gaming industry and the overall growth of adolescents.	...and China Youth Daily; content analysis, descriptive statistics	tronic opium" and "flood and monster". Since 2011, positive images have begun to appear in reports of online games. 2. Focus on negative consequences: Most of the WeChat reports of People's Daily and China Youth Daily are negative, concentrating on the harm of online games. 3. Negative image of gamers: Traditionally, game players may be portrayed as a group of addicted and idle people, and this image still exists in some reports. 4. Perspective differences: Media practitioners may not be able to fully understand and present the diversity and complexity of gamers	2. negative media coverage 3. lack of comprehensive understanding 4. the opinion that online games are barriers to academic and personal development 5. social anxiety and panic 6. excessive attention of policies and regulations to negative outcomes of online games 7. intergroup gap 8. economic factors 9. rapid development of technology		report from the online gamers' position. 2. The media should adopt a balanced reporting method to avoid over-emphasizing the negative effects of online games. 3. The media should establish effective communication with online gamers.

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Yuwei Qiao, 2017	To analyze the bias in the media image of teenage online gamers and to explore the causes of bias.	keywords retrieval in game reports from Sina.com, self-made questionnaire, semi-structured interviews; content analysis, descriptive statistics, correlation analysis	due to differences in age, educational background, and social experience. 1. Cognitive bias: The public often has a stereotype of young online gamers and game addiction, considering teenage online gamers to be problematic teenagers addicted to games and with abnormal behaviors, and view game addicts as "good-for-nothing" people lacking self-control. 2. Attitude orientation: Teachers and parents are relatively tolerant of teenagers' online game behaviors, but parents are more concerned about the game addiction problem. Social members take a more	The sentimental and dramatic reporting language attracts people's attention to the negative content, while depriving the discourse of young online game players and conducting biased attributions to them.	1. Negative self-perception: Game addicts may have negative comments about their own behaviors due to the stigma, leading to mental problems such as low self-esteem and self-blame. 2. Rejection of seeking help: Gaming addicts may be ashamed to seek help due to the fear of discrimination, which worsens their addiction. 3. Social exclusion: Game addicts may have difficulties in integrating into society due to social exclusion, which affects their normal life and work.	1. The government should strengthen regulative legislation and provide resources and support. 2. The media should improve quality, report objectively, and guide positively. 3. Society should create a tolerant atmosphere to provide support and understanding, and strengthen home-school cooperation. 4. Game companies should shoulder social responsibility actively, develop more healthy games, and provide supporting tools.

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			negative attitude towards online gaming teenagers, considering that they should reflect on themselves instead of seeking help.			
Guo Huang, 2014	By exploring the effects of politics, economics, and mainstream culture on the attitudes and decisions of teenage online gamers, the study described the "speechless" state of young gamers influenced by the three powers.	analyzing reports from China Youth Daily, People.com, and Legal Report in CCTV from 2008 to 2013	1. Demon image: Gamers are described as having violent tendencies, impulsive and irritable, and committing crimes such as theft, robbery, murder, and rape. 2. Victim image: Gamers are described as addicted to online gaming, resulting in physical, mental, and social life abnormalities, and are associated with physical weakness, psychopathy, declining grades, employment difficulties, and even dying due to over-gaming.	1. Media factors: imbalance of the number of negative reports, construction of extreme images, adoption of the "other perspective", emotional expression, compliance with the market logic 2. Social factors: social control, social anxiety, cultural differences 3. Policy factors: over-regulation, limited policy publicity, lack of communication between departments	N/A	N/A

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Qunjun Wen, 2014	The research aimed to: 1. analyze the presentation of the image of online game players on mainstream news websites; 2. explore the real-life state of online gamers; 3. compare the image of online gamers in media reappearance with the real state of gamers; 4. discuss the causes of bias in news.	keywords retrieval in reports from Sina, Netease, Sohu, and People websites, self-made questionnaire, semi-structured interviews; content analysis, descriptive statistics	1. Negative image of online gamers: Gamers are often viewed as a group of people having negative behaviors and are addicted to games. 2. Negative image of online games: "mental opium", "Internet addiction" 3. Losing of voice: Online game players lack the right to speak in the public opinion field. 4. Mental disorder labels: Game addiction is regarded as a kind of mental disorder that needs to be treated and cured. 5. Over-treatment: Game addicts may be over-treated, bringing gamers psychological burdens and interfering with their normal lives.	1. Media factors: News bias such as the phenomenon of "rehashes" and "advertising news", commercial operations, and the absence of journalism professionalism contribute to the stigma formation. 2. Social factors: social anxiety, differentiated attitudes of different cultures towards online games 3. Gamers' own factors: Gamers' addictive and negative behaviors promote the building of negative images, contributing to stigma formation. 4. Internet factors: Internet violence and Internet addiction increase the stigmatization of games and gamers.	N/A	N/A

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Shuguang Zhao, 2022	To investigate the social interaction between gamers and non-gamers in the real world, especially in the marriage market in China, and to explore how different attitudes towards games influence the interaction.	1. Questionnaire: fictional marriage partner descriptions, ideal marriage partners similarity rating (IMPSR), participants' subjective reports of game situation, demographic information 2. Analysis methods: ANOVA, mediation effect analysis, moderation effect analysis	1. Stereotypes: Gamers are stereotyped as a group of people with negative features such as aggressiveness, lack of social skills, laziness, etc. 2. Prejudice in the marriage market: Non-gamers would prefer not to choose gamers as potential mates. 3. Misunderstanding of gaming addiction: The public may view all gaming behaviors as potentially gaming addiction. 4. In-group preference and out-group discrimination: Male gamers may	5. Policy factors: Excessive regulation and the lack of game-related policies lead to inadequate public cognition of online games and gamers. 1. Moral panic 2. Negative media coverage	1. Stigma may result in unfair treatment of gamers, affecting their social opportunities and interpersonal relationships. 2. Impact on marriage mate selection: Non-gamers may exclude gamers as potential mates based on negative perceptions of games, reducing gamers' opportunities in the marriage market.	N/A

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			tend to select marriage partners among other gamers.			
Daria J. Kuss, 2022	The study investigated female gamers' identities, positive and negative perceptions of gaming behaviors, and their gaming experiences.	Semi-structured interviews; thematic analysis	1. Social stereotypes: The public tends to believe that female gamers won't be addicted to gaming and that female-oriented games are easy forms of entertainment. 2. Neglect of female gaming addiction by medical institutions 3. Social discrimination against female gaming addiction: Female gamers may suffer from discrimination and blame while admitting they have addiction problems.	N/A	Due to stereotypes, the public believes female gamers are hardly affected negatively by their gaming behaviors, thus neglecting their possible problem of gaming addiction.	N/A
Yungeng Li, 2023	To explore the association between teenager use and obses-	self-made questionnaire; descriptive statistics, correlation	1. Childish image: ACG culture is regarded as the culture of children, with	1. Cultural differences: The differences between ACG and mainstream culture easily contribute	1. Psychological pressure: Stigma brings ACG fans mental pressure and	N/A

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	sion with ACG platforms, and to discuss the psychosocial mechanisms.	analysis, moderated mediating effect analysis	childish and superficial content. 2. Social communication barriers: ACG fans are considered indulging in the virtual world, introverted, and lacking real-life social skills, and are labeled as "otaku". 3. Lower moral evaluation: ACG culture is considered not to conform the mainstream values, with unhealthy components. ACG fans are regarded as "outcasts" with lower moral levels. 4. Restrictions on activity participation: ACG activities are seen as abnormal and not appropriate for public participation. And ACG fans are worried to be discriminated against or excluded by	to misunderstanding and prejudice. 2. Social structure: The relative weakness of the ACG fan community makes it easier to become the target of stigma.	leads to feelings of inferiority and anxiety. 2. Social exclusion: Stigma contributes to social exclusion of ACG fans and adds to their difficulties in integrating in mainstream society. 3. Cultural closure: Stigma promotes the closure of ACG culture and hinders its communication and integration with the mainstream culture.	

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			others for their participation in ACG activities.			