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Traditional Bullying, Cyberbullying and Internet Gaming Disorder in Adolescents and Young Adults: A Rapid Systematic Review

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Abstract: Cyberbullying and internet gaming are prevalent in adolescence and young adulthood. This rapid systematic review aimed to explore the existing literature from the last 10 years on relationships, potential predictors, and mediating variables between cyberbullying and internet gaming disorder (IGD) in adolescent and young adult populations. PsycINFO/PsycARTICLES and PubMed/Medline were examined. Seventeen studies met inclusion criteria. Findings suggest bidirectional associations between cyberbullying and IGD such that cyberbullying may promote IGD and vice versa. Further longitudinal research is needed.

Keywords: Bullying, Cyberbullying, Addictive Behaviors, Impulsive Behaviors, Compulsive Behaviors, Victimization, Internet Gaming Disorder.

Introduction

The advent of the internet, around the 1980s, has reshaped everyday functioning (Fineberg et al., 2018). For some individuals, internet use can become maladaptive, leading to problematic use of the internet (PUI) (Fineberg et al., 2018; Fineberg et al., 2022). This umbrella construct includes a wide variety of activities, including internet gaming disorder (IGD) and cyberbullying (Fineberg et al., 2018). These behaviors typically have associated negative individual and social consequences and costs, such as disruptions in various life contexts and, consequently, a reduction in quality of life (Fineberg et al., 2024; Wegmann et al., 2022).

In the specific case of IGD, it was first recognized in the Diagnostic and Statistical Manual in the fifth edition (DSM-5; American Psychiatric Association, 2013). Subsequently, IGD, operationalized/defined as gaming disorder, was included as a clinical condition in the International Classification of Diseases, 11th Revision (ICD-11; World Health Organization, 2019), classified primarily under disorders due to addictive behaviors. Like IGD, gaming disorder are characterized by impaired control and the continuation or escalation of the behavior despite negative consequences (World Health Organization, 2019).

Another domain of PUI is cyberbullying, which may constitute an evolution of (traditional) bullying. (Traditional) bullying has been defined by the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, 2018) as "any unwanted aggressive behavior/s by another youth or group of youths who are not siblings or current dating partners that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated. Bullying may inflict harm or distress on the targeted youth including physical, psychological, social, or educational harm" (Kowalski & McCord, 2020). Relatedly, cyberbullying is defined as the use of digital technologies to bully. Thus, cyberbullying involves the repetitive use of digital means to inflict direct or indirect violent behaviors against individuals who are often not well equipped to adequately defend themselves (McInroy & Mishna, 2017; Smith et al., 2008). Therefore, both bullying and cyberbullying are characterized, among other aspects, by intention, repetition, and power imbalance (Englander et al., 2017; Hutson, 2016).

As both cyberbullying and IGD are phenomena rooted in internet use, they fall under the umbrella of PUI. However, these behaviors may be related for other reasons. First, both are problematic risk behaviors that tend to emerge in early stages of development that are characterized by heightened propensities to engage in risky behaviors (Arnett, 1992; Bozzini et al., 2021; Ciranka & Hertwig, 2023; Mestre-Bach et al., 2022). Such risk-taking may reflect immaturity of cortical brain regions involved in cognitive control in the setting of relatively more mature subcortical regions involved in motivational drives (Ciranka & Hertwig, 2023; Hutton et al., 2024). Second, as highlighted by the Interaction of Person, Affect, Cognition, and Environment (I-PACE) theoretical model, both phenomena may share risk

factors stemming from core personal characteristics, such as biopsychological constitution (e.g. early childhood experiences), personality features (characterized by high levels of impulsivity and low self-esteem), social cognitions (e.g., loneliness), and psychopathology (e.g., depression) (Brand et al., 2016). Third, the Problem-Behavior Theory (Jessor, 1987) suggests that involvement in one problematic behavior may promote involvement in other problematic behaviors. Therefore, the development of IGD could lead to the development of (traditional) bullying/cyberbullying or vice versa. This may be further exacerbated by the fact that contemporary online gaming environments incorporate social interactions that can foster bullying behaviors, influenced by anonymity, competitive dynamics, and negative peer interactions (Kwak et al., 2015). Additional frameworks, such as the general strain theory (Agnew 1992), suggest that stress and motivations for stress reduction may link bullying behaviors with IGD.

Thus, IGD may positively associate with both traditional bullying and cyberbullying for multiple reasons. However, to the best of our knowledge, studies that have so far analyzed the specific association between IGD and (traditional) bullying or cyberbullying have not been reviewed. Therefore, the main objective of this rapid systematic review was to synthesize and explore the existing literature on relationships, potential predictors, and mediating variables between traditional bullying/cyberbullying (considering both perpetrators and victims) and IGD in adolescents and young adults. Understanding how these different risk behaviors are linked may help to develop better prevention strategies to limit their negative impacts on the mental health of developing individuals.

Methods

Protocol

This rapid systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (*NEW Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Website*).

Eligibility criteria

Study characteristics

We included the following: (A) Population: (1) human beings, (2) general population, (3) any sexual orientation, (4) any gender or sex, (5) adolescents and young adults; (B) Assessment: (1) articles that include standardized traditional bullying or cyberbullying assessments (e.g. self-reported psychometric instruments) – either as victims and/or perpetrators, (2) articles that include IGD assessment (e.g. self-reported psychometric instruments); and (C) Articles specifically evaluating the association between traditional bullying/cyberbullying and IGD.

Exclusion criteria included the following: (1) clinical populations; (2) articles that did not include or specify the standardized measures of

traditional bullying/cyberbullying used or that included only individual items, and (3) articles that measured constructs similar to traditional bullying/cyberbullying but that are not precisely traditional bullying/cyberbullying, such as social relations/maltreatment.

Report characteristics

The inclusion criteria for our rapid systematic review were as follows: (1) peer-reviewed articles published or in press, (2) articles written in English or Spanish, (3) articles published from 27 March 2014 to 27 March 2024, (4) studies with a cross-sectional or longitudinal design, and (5) studies utilizing a quantitative research methodology.

We excluded the following types of publications: (1) gray literature, including books, book chapters, conference papers or abstracts, and any non-peer-reviewed materials; (2) publications in languages other than English or Spanish; (3) any work published outside the specified date range; (4) case reports, case series, meta-analyses, and existing systematic reviews; and (5) research with a qualitative approach. Furthermore, any article lacking an abstract or not presented as a full article was also not considered.

Information Sources and Search Strategy

Two electronic databases were used: PubMed/Medline and PsycINFO/PsycARTICLES. The search strategy was as follows: "(bullying OR cyberbullying OR cyber-bullying OR cyberaggression OR "cyber aggression" OR cybervictimization OR "cyber victimization" OR "cyber victim" OR "cyber harassment" OR "cyber bullied") AND (gaming OR gambling)". The search included articles published in the last 10 years (between 27 March 2014 and 27 March 2024).

Study Selection

The assessment of search outcomes was conducted through a two-step approach. Initially, the lead author independently evaluated all possible studies by examining their titles and abstracts before accessing the complete texts. Subsequently, the author undertook a detailed screening of those studies deemed suitable for comprehensive examination, applying the eligibility criteria specific to this rapid systematic review. This entire procedure was done using Covidence software.

Data Collection Process and Data Items

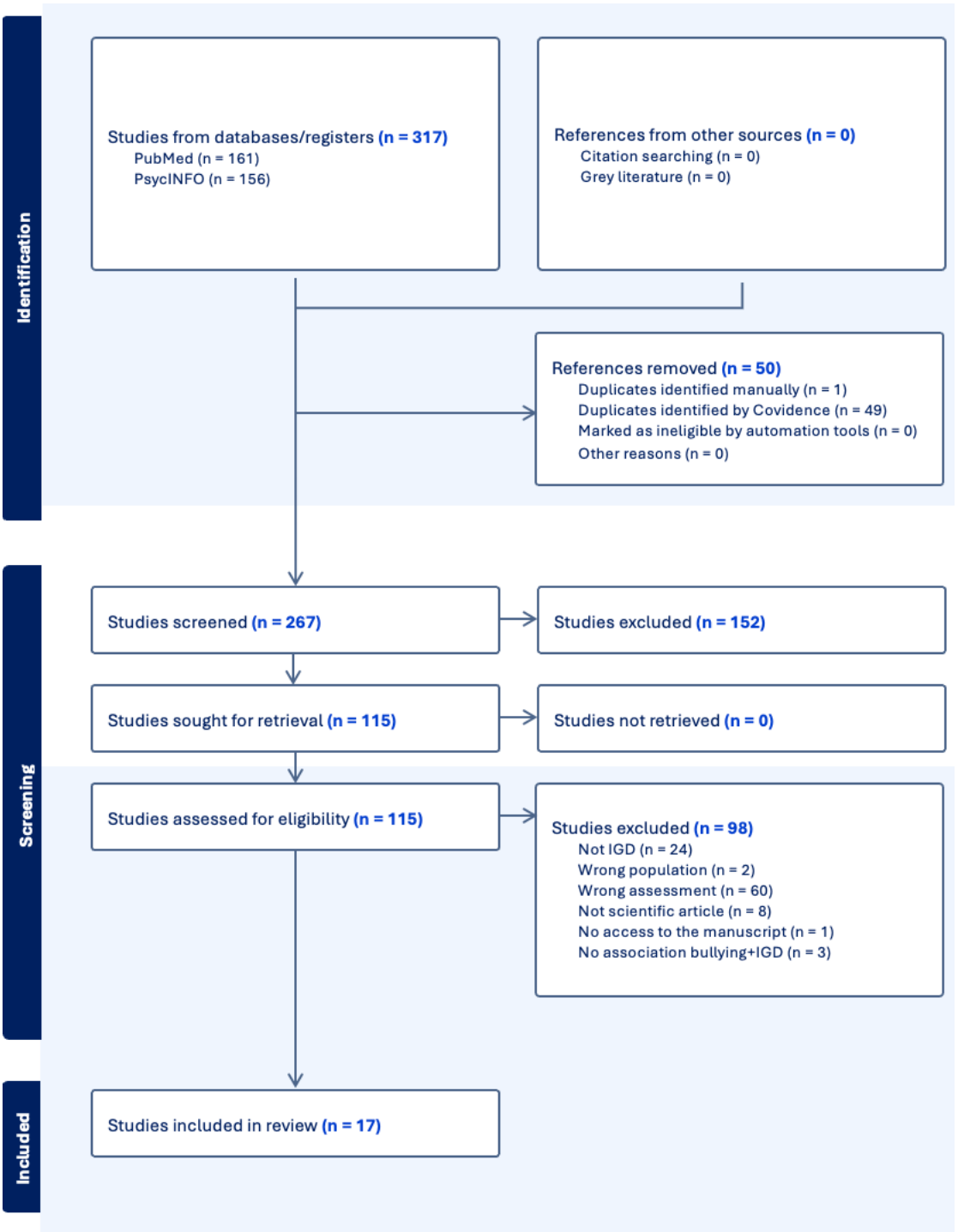
Extracted data included first author and year, country, sample size, participants characteristics (gender and age), traditional/cyberbullying assessment, IGD assessment, and main results.

Results

Study selection

After 317 records were retrieved from the literature search in PubMed/Medline and PsycINFO/PsycARTICLES and eliminating 50 duplicates, 152 of the 267 remaining articles were excluded after checking their titles and abstracts. The remaining 115 studies were screened at a full-text level. Of these 115 articles, 17 were finally included in the present rapid systematic review. The reasons for excluding the other 98 articles included: (a) the articles did not assess IGD (e.g., they assessed constructs such as problematic internet use (n=24)); (b) the articles were focused on general/older adults or clinical populations (n=2); (c) the articles did not use clear standardized assessments for traditional bullying/cyberbullying and/or IGD (n=60); (d) the articles were not scientific articles (n=8); (e) the articles did not assess directly the association between traditional bullying/cyberbullying and IGD (n=3); or (f) the articles were not accessible (n=1) (see Figure 1).

Figure 1. Flow chart



Study characteristics

Overview of studies and samples

Seventeen articles focusing on IGD were included in this rapid systematic review. Among these, 8 examined solely traditional bullying/victimization, 7 focused solely on cyberbullying/victimization, and 2 analyzed both traditional bullying/victimization and cyberbullying/victimization.

Eleven of the 17 studies were conducted in Asia (specifically in China), with the other studies conducted in Europe (specifically, in Croatia, Spain, and Germany), America (specifically in Brazil), and Africa (specifically in Tunisia). As some authors, such as Gao et al. (2023), highlight, it is important to consider cultural contexts. For example, Chinese adolescents often place greater importance on school and spend more time there compared to their counterparts in Western cultures. This cultural distinction may influence bullying behaviors in China.

Sample sizes ranged from 425 to 5,130. All studies included both genders/sexes and were focused on adolescents and youth. There was considerable heterogeneity in the psychometric instruments used to assess traditional bullying/cyberbullying and IGD (see Tables 1 and 2).

Traditional bullying and IGD

Relationships between traditional bullying and IGD

A positive and significant association has been described between traditional bullying, school-based victimization, and IGD (Castro-Sánchez et al., 2020; Chagas Brandão et al., 2022; Qin & Gan, 2023; G. Xiang et al., 2024). In this vein, Gao et al. (2023) explored this association according to victim/offender profiles. More specifically, they identified three latent classes of bullying victimization and perpetration: (1) the non-involvement class, which included students who were not or were barely involved in any type of bullying victimization and perpetration; (2) the victimization-predominant bully-victim class, which involved frequent victimization and less bullying perpetration; and (3) the aggression-predominant bully-victim class, which included students who were more likely to report bullying perpetration and less victimization. Among these classes, the second and third showed significantly higher IGD scores compared to the non-involvement class. However, there were no significant differences in IGD scores between classes 2 and 3. Based on the general strain theory (Agnew 1992), the authors suggested that individuals who were unable to cope adaptively with negative emotions, particularly those related with bullying involvement, were more likely to exhibit aggressive behavior or engage in escape behaviors, such as IGD.

Traditional bullying as a potential predictor of IGD

Traditional bullying and school victimization have been identified as statistical predictors of IGD in some studies (Neumayer et al., 2023; Šincek et al., 2017; G. Xiang et al., 2024; Zhao et al., 2020), although with

small effect sizes (G. Xiang et al., 2024) and gender-related differences (Neumayer et al., 2023; Zhao et al., 2020) in reported associations.

Zhao et al. (2020) hypothesized that traditional bullying victimization is highly stressful and could lead early adolescents to develop IGD. They analyzed the association between bullying victimization and IGD in a sample of 1,665 adolescents and explored the potential mediating role of two dimensions of meaning in life (specifically, the presence of meaning and the search for meaning) in this association. The findings revealed gender-related differences in this association. Specifically, the path from bullying victimization to IGD was statistically significant for boys, but not for girls. Moreover, for boys, neither meaning in life nor the search for meaning in life mediated the relationship between bullying victimization and IGD. However, for girls, meaning in life did play a mediating role whereby girls lacking meaning in real life may be more likely to seek meaning in life through video games, which could lead to the development of IGD. According to the authors, the presence of meaning in life might be a protective factor against developing IGD, especially for adolescent girls. However, traditional victimization has also been related to more severe problematic internet gaming in the case of boys, compared to girls (Neumayer et al., 2023).

IGD as a potential predictor of traditional bullying

Gan et al. (2022) reported that IGD statistically predicted bullying in a sample of 768 adolescents. Potentially, IGD-related impairment could generate intense negative emotions in adolescents, which could develop into aggressiveness towards peers. Therefore, the authors suggested that addressing adolescent IGD could help mitigate bullying. The predictive role of IGD on traditional bullying and school victimization has also been explored by other authors (G. Xiang et al., 2024), with small effect sizes noted.

IGD as a mediating variable between traditional bullying and other factors

Gan et al. (2022) observed that IGD acted as a mediating variable in the relationship between school assets and adolescent bullying. In other words, school assets (understood as protective factors in the school environment) reduced IGD, which in turn led to a decrease in bullying. Similarly, IGD has also been described as a mediating variable in the association between school resources, traditional bullying, and school victimization (G. Xiang et al., 2024). Along with self-control, IGD may mediate relationships between school resources, school victimization, and traditional bullying (G. Xiang et al., 2024). Gan et al. (2022) suggested, therefore, that school assets may be effective in both preventing and reducing problematic behaviors in adolescents, such as IGD and bullying.

Traditional bullying as a mediating variable between IGD and other factors

Traditional bullying has also been explored as a mediating variable. Xiang et al. (2024) observed in their longitudinal study that self-control and traditional bullying demonstrated sequential mediating effects in the association between school resources, school victimization, and IGD.

Table 1. Association between traditional bullying and IGD (sorted by year of publication)

FIRST AUTHOR AND YEAR	COUNTRY	SAMPLE SIZE	GENDER/SEX AND AGE	CYBERBULLYING/ CYBERVICTIMIZATION ASSESSMENT	IGD ASSESSMENT	MAIN RESULTS
(Šincek et al., 2017) (also included in Table 2)	Croatia	1,150	53,7% girls; Mage =14.77, SD=2.259	TSBQ	POGQ	Committing violence against peers (traditional bullying) statistically predicts problematic internet gaming.
(Castro-Sánchez et al., 2018)	Spain	734	54.8% girls; Mage = 10.88, SD = 0.69	School Victimization Scale	CERV	The association between the use of video games and victimization was positive and direct, but weak.
(Castro-Sánchez et al., 2020)	Spain	734	54.8% girls; Mage = 10.88, SD = 0.69	MPVS	VEQ	Video game use was positively and directly associated with victimization.
(Zhao et al., 2020)	China	1,665	48.9% girls; Mage = 11.80 years, SD = 1.23	DBVS-S	PVGUQ	For boys, the path from bullying victimization to IGD was statistically significant, while for girls it was not.
(Chagas Brandão et al., 2022)	Brazil	3,939	50.6% girls; Mage = 13.20, SD= 0.84	Olweus Bully/Victim Questionnaire	Nine-item dichotomous (yes or no) scale, based on the DSM-5	Bullying perpetration was slightly more frequent among youth who used video games (88.93% vs. 84.81%), with this difference being higher among those with problematic video game use (42.63 vs. 22.45%). Regarding bullying victimization, youth with problematic video game use reported a higher frequency (36.23% vs. 21.53%). An association was found between problematic internet gaming, bullying perpetration and bullying victimization.
(Gan et al., 2022)	China	768	46.2% girls; M age = 13.91, SD = 2.01	Bullying Questionnaire	IGD Questionnaire	T2 IGD positively predicted T2 bullying. T1 school assets could increase the level of T2 intentional self-regulation, thereby diminishing T2 IGD, which in turn further attenuated the likelihood of bullying at T2.
(Gao et al., 2023)	China	758	48.4 % girls; Mage= 13.45, SD= 0.96	DBVS-S	IGDT-10	Victimization-predominant bully-victims and aggression-predominant bully-victims reported greater levels of IGD compared with those in the non-involvement class.
(Neumayer et al., 2023)	Germany	4,390	54.78% girls; Adolescents grades 5-13	Olweus Bullying Questionnaire Revised	Nine items based on the nine diagnostic criteria for IGD	Traditional victimization predicted changes in problematic internet gaming.

(also included in Table 2)						For boys, traditional victimization led to a greater increase in problematic internet gaming compared to girls.
(Qin & Gan, 2023)	China	742	45.38% girls; Mage = 13.88, SD = 1.99	Olweus Bully Questionnaire	Eleven-item Internet Gaming Disorder Questionnaire	T2 traditional bullying was positively associated with T2 IGD.
(G. Xiang et al., 2024)	China	789	47.02% girls; Mage=14.00, SD=2.05	BSCS	Chinese version of the IGD Questionnaire	IGD and school bullying concurrently predicted each other with small effect sizes. IGD and school victimization at T1 could also predict each other. IGD could mediate the relationships between school resources at T1, school bullying at T2 and school victimization at T2. T1 self-control and T2 IGD played chain-mediating roles in the associations between T1 school resources, T2 school victimization and T2 school bullying.

Note. BSCS: Chinese version of the Brief Self-Control Scale; CERV: Questionnaire of Experiences Related to Video Games; DBVS-S: Delaware Bullying Victimization Scale-Student; IGD: Internet Gaming Disorder; IGDT-10: Internet Gaming Disorder Test; MPVS: Multi-dimensional Peer-Victimization Scale; POGQ: Problematic Online Gaming Questionnaire; PVGUQ: Pathological Video-Game Use Questionnaire; T: time; TSBQ: Traditional School Bullying Questionnaire; VEQ: Videogame Experience Questionnaire.

Cyberbullying and IGD

Relationships between cyberbullying and IGD

A positive association between IGD and cyberbullying (Wang et al., 2020; G.-X. Xiang et al., 2022; Ye et al., 2024) / cybervictimization (Nie et al., 2024) has been described. For example, Nie et al. (2024) found positive associations across waves 1 to 6, spanning the period from 2018 to 2021, with data collected every six months. Similarly, Gan, Qin, et al. (2023) described positive associations between IGD, cyberbullying victimization, and cyberbullying perpetration.

Cyberbullying as a potential predictor of IGD

Cross-sectionally (Šincek et al., 2017; G.-X. Xiang et al., 2022) and longitudinally (Gan, Xiang, et al., 2023), cyberbullying/cybervictimization has been linked to IGD. Similarly, cybervictimization may promote problematic internet gaming (Neumayer et al., 2023). Both traditional victimization and cybervictimization, especially when occurring simultaneously, seem to be associated with greater levels of problematic internet gaming. A decrease in problematic gaming seems to occur when victimization ceases in both contexts. Moreover, an additive effect was noted if traditional victimization extended to cyberspace (Neumayer et al., 2023).

Gender-related differences have also been observed in associations. Specifically, cybervictimization may lead to greater increases in problematic internet gaming for boys compared to girls (Neumayer et al., 2023).

IGD as a potential predictor of cyberbullying

IGD has been identified as a statistical predictor of cyberbullying/cybervictimization in cross-sectional (G.-X. Xiang et al., 2022) and longitudinal (Gan, Xiang, et al., 2023) studies.

IGD as a mediating variable between cyberbullying and other factors

IGD may mediate associations between aspects of youth development and cyberbullying/cybervictimization (Gan, Xiang, et al., 2023). Specifically, adolescents and youth with greater perceived positive youth development resources appear less likely to experience IGD, which in turn may predict lower involvement in other online concerns such as cyberbullying.

A mediating role of IGD in the relationship between parental neglect and cyberbullying perpetration has also been described (Gan, Qin, et al., 2023). This suggests that adolescents who experience parental neglect may be at higher risk of developing IGD. This situation may generate negative emotions, which may, in turn, may lead youth to engage in cyberbullying (Gan, Qin, et al., 2023).

Cyberbullying as a potential mediating variable between IGD and other factors

A mediating role for cyberbullying in the association between IGD and psychoticism has been described (Fekih-Romdhane et al., 2023). Therefore, cyberbullying may account for part of the relationship between these two phenomena. IGD may act as an environmental stressor which, when combined with cyberbullying and other factors, could increase the risk of developing psychotic symptoms. Cyberbullying also appears to play a mediating role in the association between aspects of poor youth development and IGD (Gan, Xiang, et al., 2023).

Table 2. Association between cyberbullying and IGD (sorted by condition and year of publication)

FIRST AUTHOR AND YEAR	COUNTRY	SAMPLE SIZE	GENDER/SEX AND AGE	CYBERBULLYING/ CYBERVICTIMIZATION ASSESSMENT	IGD/GD ASSESSMENT	MAIN RESULTS
(Šincek et al., 2017) (also included in Table 1)	Croatia	1,150	53,7% girls; Mage =14.77, SD=2.259	CBI	POGQ	Committing violence against peers (cyberbullying) statistically predicted problematic gaming.
(Wang et al., 2020)	China	5,130	55.11% girls; Mage = 16.20, SD = 3.24	Cyberbullying scale adapted from Ybarra et al. (2007)	IGDT-10	A positive association was found between IGD and cyberbullying.
(G.-X. Xiang et al., 2022)	China	425	42.11% girls; Mage = 15.06, SD = 1.48	E-BVS	Chinese version of the IGDQ	Cyberbullying was positively associated with IGD. The mediating effect of positive youth development attributes was significant in the relationship between cyberbullying and IGD.
(Fekih-Romdhane et al., 2023)	Tunisia	851	53.7% girls; Mage=21.26, SD=1.68	RCBI-II	IGD-20	Cyberbullying mediated the association between IGD and psychoticism.
(Gan, Xiang, et al., 2023)	China	995	67.33% girls; Mage = 15.97, SD = 0.77	E-BVS	Chinese version of the IGD Questionnaire	Adolescents who experienced IGD also showed greater engagement in cyberbullying/victimization. T3 IGD statistically predicted greater involvement in T3 cyberbullying/victimization, and vice versa.
(Gan, Qin, et al., 2023)	China	699	53,6% girls; Mage = 14.18, SD = 1.22	Cyber Victimization/Bullying Scale	IGD Questionnaire	Positive associations were observed between cyberbullying victimization and IGD. Cyberbullying victimization and IGD play roles in the relationship between parental neglect and cyberbullying perpetration both individually and jointly. The more experience young people have with cyberbullying victimization, the more likely they are to develop IGD.
(Neumayer et al., 2023) (also included in Table 1)	Germany	4,390	54.78% girls; Adolescents grades 5-13	Olweus Bullying Questionnaire Revised	Nine items based on the nine diagnostic criteria for IGD	Cybervictimization predicted increases in problematic internet gaming. Both traditional and cybervictimization, especially when occurring simultaneously, were linked to higher levels of problematic internet gaming. A decrease in problematic internet gaming was observed only when victimization ceased in both contexts. Additionally, an additive effect was noted if traditional victimization extended to cyberspace. For boys, cybervictimization led to

						a greater increase in problematic gaming, compared to relationships in girls.
(Nie et al., 2024)	China	4,206	49.6% girls; 12–17 years	E-VS	IGDS9-SF	No significant cross-lagged dynamic within-person effects were found between cyber-victimization and IGD symptoms. There were significant within-person relationships and between-person relationships (i.e., random intercepts) between cyber-victimization and IGD symptoms.
(Ye et al., 2024)	China	1,347	58.3% girls; Mage = 20.12, SD = 1.35	AO-ABS	OGAS	A positive association was found between IGD and cyberbullying.

Note. AO-ABS: Adolescent Online Aggressive Behavior Scale; CAGI: Canadian Adolescent Gambling Inventory: CBI: Cyberbullying Inventory; CBQ-V: Cyberbullying Questionnaire-Victimization; E-BVS: E-Bullying and E-Victimization Scale; E-VS: E-Victimization Scale; IGD: Internet Gaming Disorder; IGDQ: Internet Gaming Disorder Questionnaire; IGDS9-SF: nine-item Internet Gaming Disorder Scale-Short Form; IGDT-10: Internet Gaming Disorder Test; OGAS: Online Gaming Addiction Scale; POGQ: Problematic Online Gaming Questionnaire; RCBI-II: Revised Cyber Bullying Inventory-II.
*Only the community sample group has been considered in this rapid systematic review.

Discussion

Several studies have reported a significant and positive link between IGD and traditional bullying (Castro-Sánchez et al., 2020; Chagas Brandão et al., 2022; Qin & Gan, 2023; G. Xiang et al., 2024) or cyberbullying (Nie et al., 2024; Wang et al., 2020; G.-X. Xiang et al., 2022; Ye et al., 2024). Drawing on general strain theory (Agnew 1992), some authors have proposed that individuals who struggle to manage negative emotions - especially those stemming from experiences of bullying or cyberbullying- may be more prone to respond with aggression or to seek avoidance strategies, such as excessive gaming characteristic of IGD.

The relationship between bullying/cyberbullying and mental health has been described in several studies, suggesting bidirectional relationships between bullying/cyberbullying and mental health problems such as depression and anxiety (Kowalski et al., 2014). That is, while certain psychopathology may be a predictor of involvement in bullying or cyberbullying, this psychopathology may also be a consequence of the behavior (Kowalski et al., 2014). On the one hand, some studies have supported a predictive role of traditional bullying (Neumayer et al., 2023; Šincek et al., 2017; G. Xiang et al., 2024; Zhao et al., 2020) or cyberbullying (Neumayer et al., 2023) in the development of IGD. Gender-related differences have been shown in this link. Specifically, traditional bullying or cybervictimization may lead to greater increases in IGD for boys compared to girls (Neumayer et al., 2023; Zhao et al., 2020). Other gender-differences have been described in the context of bullying or cyberbullying. Although both boys and girls are similarly likely to experience bullying or cyberbullying, girls are more likely to experience or perpetrate verbal bullying and indirect and emotional bullying, whereas boys are more likely to experience or perpetrate direct physical bullying (Armitage, 2021).

On the other hand, IGD has been described as a statistical predictor of traditional bullying and cyberbullying (G.-X. Xiang et al., 2022; Gan, Xiang, et al., 2023; Gan et al., 2022). This may be explained by difficulties associated with IGD leading to heightened emotional distress in adolescents, which may, in turn, be expressed through aggressive behaviors toward their peers. In addition to IGD, other possible predictors of traditional bullying or cyberbullying may include personality features, indiscreet postings on social networks, family violence, and time spent on social media, among others (Ighaede-Edwards et al., 2023; Giumetti & Kowalski, 2022).

Therefore, studies point to a bidirectional relationship between IGD and traditional bullying or cyberbullying, although more research in this area is needed to reach more solid conclusions.

Clinical implications

The findings highlight the importance of educating adolescents and young adults about safe internet use and the consequences of cyberbullying, as well as promoting skills to manage negative emotions and impulsivity, particularly in relation to IGD. These programs may benefit from considering both cultural and gender-related differences in order to promote healthier and safer digital and school environments.

Limitations

The following limitations have been identified in the literature on traditional bullying/cyberbullying and IGD: (1) there is a marked scarcity of studies examining associations between ICD-11-defined gaming disorder and traditional bullying/cyberbullying in adolescents and young adults from general populations; (2) multiple studies considering IGD have been conducted in Asia, and therefore the generalization of results to other jurisdictions and cultures is limited; (3) the sample sizes in most studies are relatively small; (4) there is considerable heterogeneity in the instruments used to assess traditional bullying/cyberbullying and IGD, which complicates comparisons across studies; (5) there is considerable heterogeneity in the use of terms such as cyberbullying/cybervictimization; (6) few studies have explored gender-related differences; and, (7) there are multiple cross-sectional studies, precluding establishment of causal relationships.

Conclusion

Although more longitudinal and methodologically rigorous studies are needed, an association between traditional bullying/cyberbullying and IGD has been reported. More specifically, findings suggest bidirectional associations between traditional bullying/cyberbullying and IGD. On the one hand, IGD may predict traditional bullying/cyberbullying, perhaps as IGD-related impairment could generate intense negative emotions in adolescents, which could develop into aggressiveness towards peers. On the other hand, traditional bullying/cyberbullying may predict IGD. In such cases, IGD may be acting as a maladaptive coping strategy to deal with intense negative emotions derived from traditional bullying/cyberbullying. Moreover, traditional bullying/cyberbullying and IGD have been found to act as mediating variables in multiple relationships. These findings, therefore, are in line with the problem-behavior theory (Jessor, 1987), which suggests that being involved in one problematic behavior (e.g., traditional/bullying) may promote involvement in a different one (e.g., IGD).

Ethics approval
N/A.

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Relative Contributions
All authors conceived of the study, wrote the manuscript and approved the final version.

Competing interests
None declared. Dr. Potenza discloses that he has consulted for and advised Baria-Tek and Boehringer Ingelheim; been involved in a patent application with Yale University and Novartis; received research support from the Mohegan Sun Casino and the Connecticut Council on Problem Gambling; consulted for or advised legal, non-profit, healthcare and gambling entities on issues related to impulse control, internet use and addictive behaviors; performed grant reviews; edited journals/journal sections; given academic lectures in grand rounds, CME events, and other clinical/scientific venues; and generated books or chapters for publishers of mental health texts.

Research Promotion
Cyberbullying and internet gaming are prevalent in adolescence and young adulthood. This article reviewed the existing literature from the last 10 years on relationships, potential predictors, and mediating variables between cyberbullying and internet gaming disorder (IGD) in adolescent and young adult populations. Findings suggest bidirectional associations between cyberbullying and IGD such that cyberbullying may promote IGD and vice versa.

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