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Emotional Intelligence and Gaming Disorder Symptomatology: A Systematic Review and Meta-Analysis

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Abstract
The increasing prevalence of the Internet gaming disorder has created an interest in identifying the factors associated with its development, including emotional intelligence, which has been negatively associated with many addictions. This work aimed to provide a narrative and quantitative synthesis of the association between emotional intelligence and Internet gaming disorder symptomatology. An online search of four electronic databases and an additional manual search identified 49 studies that met the inclusion criteria provided 54 independent samples ($N = 43{,}289$) and a total of 166 correlation coefficients. The selected studies used different definitions of emotional intelligence (i.e., *emotional regulation, social-emotional competence, ability and trait*). Random-effect models were used to estimate the pooled correlation coefficient between emotional intelligence and Internet gaming disorder symptomatology. The results revealed a small-to-moderate negative association between any measure of emotional intelligence and Internet gaming disorder symptomatology. However, the various characteristics involved in its study, such as methodological quality, research design, geographical location and the means of assessing emotional intelligence, could modify the association between both variables. In short, any deficits in emotional regulation or social competence could be a risk factor for developing Internet gaming disorder.

Keywords Emotional Intelligence · Emotional Regulation · Social Competence · Gaming Disorder · Meta-analysis

Introduction

This study investigates the link between emotional intelligence and Internet gaming disorder. The growing prevalence of this disorder emphasizes the need to identify the possible factors associated with its development. This problem is especially significant among adolescents and young adults, who are more vulnerable to developing gaming disorder (Wang et al., 2021). This study proposes a meta-analysis to explore the relationship between gaming disorder and emotional intelligence, as it is believed to have a protective role in preventing other addictions. Emotional intelligence continues to develop throughout adolescence and early adulthood, making this study relevant for both theoretical and practical implications in preventing the onset of gaming disorder.

Internet Gaming Disorder Conceptualization

Internet gaming disorder is becoming an increasingly common problem among the adolescent population (García-García et al., 2021; Wang et al., 2021). It usually begins in early adolescence, in the form of higher rates of gaming-related problems than in older age groups (general population: 3.05%; adolescents: 4.6%; Fam, 2018; Lemmens et al., 2015; Paulus et al., 2018; Stevens et al., 2021; Wang & Cheng, 2021), with higher rates in men (6.8%) than women (1.3%).

Internet gaming disorder was included in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) under the name "Internet gaming disorder" (IGD) (APA, 2013), and later included in the International Classification of Diseases, Eleventh Revision (ICD-11) as

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"Gaming Disorder" (WHO, 2018). According to the DSM-5, the diagnosis of this requires meeting five or more of the following criteria: (1) high preoccupation with gaming, (2) withdrawal symptoms, (3) increased tolerance, (4) unsuccessful attempts to quit or reduce gaming, (5) loss of interest in other hobbies or activities, (6) excessive gaming despite its negative consequences, (7) deceiving others about gaming activities, (8) using it as an escape or to avoid other hobbies or activities, (9) excessive gaming despite negative consequences (APA, 2013; Petry et al., 2014). For its part, ICD-11 considers it as due to addictive behavior, i.e. "a pattern of persistent or recurrent gambling behavior that is not primarily conducted over the internet and is manifested by: (1) impaired control over gambling (e.g. onset, frequency, intensity, duration, termination, context); (2) increasing the priority given to gambling to the extent that gambling takes precedence over other life interests and daily activities; and 3) continuation or escalation of gambling despite experiencing negative consequences" (WHO, 2018, p. 166). Its diagnosis requires a pattern of behavior severe enough to cause significant impairment in core areas of functioning. Gaming behavior patterns may be continuous or episodic but must be recurrent and evident for at least 12 months before diagnosis, although meeting all the criteria and having severe symptoms may reduce this requirement (Saunders et al., 2017; WHO, 2018).

Emotional Intelligence Conceptualization

Emotional intelligence is a broad and plural construct due to being widely studied and the absence of a consensus on its definition. Salovey and Mayer (1990) first defined it as an ability-based construct similar to general intelligence. They defined emotional intelligence as "the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thinking" (Mayer et al., 2008, p. 511), suggesting a multidimensional approach to this construct. Different conceptualizations of emotional intelligence have emerged in the last three decades and can be grouped into three models (Miao et al., 2017): ability, trait, and mixed.

According to the ability models, emotional intelligence is a cognitive ability with emotions that process emotional information (MacCann et al., 2014, 2020; Mayer et al., 2008). The chief ability model is Mayer and Salovey's (1997) *four-branch hierarchical model,* based on Gross' model of emotion regulation (Gross, 1998), which focuses on the four components of emotional ability: (1) emotion perception, (2) emotion facilitation of thought, (3) emotion understanding, and (4) emotion management. The emotional intelligence level ranges in complexity from information processing to the deliberate use of emotions to achieve objectives (MacCann et al., 2020). Emotional intelligence ability can be assessed by performance-based measures in the tradition of measures of intellectual intelligence, where there are right or wrong answers based on the predetermined criteria and by rating-scales (self-report measures). From the performance-based measures framework, the ability-based Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, Mayer et al., 2002, 2003) is the one most frequently used to assess emotional intelligence. Of the rating-scales used to assess emotional intelligence, the Wong & Law Emotional Intelligence Scale (WLEIS, Wong & Lang, 2002) is frequently applied to measure a set of basic emotional abilities consisting of a 16-item scale divided into four subscales: (1) self-emotion appraisal; (2) other's emotion appraisal; (3) use of emotion, and (4) regulation of emotion. The trait model developed by Petrides and Furnham (2001) defines emotional intelligence as a trait, i.e. as persistent behavior over time, and is associated with dispositional tendencies, personality traits and self-efficacy beliefs. Emotional intelligence is thus considered as a constellation of self-perceived abilities and behavioral dispositions assessed by rating-scales (Petrides & Furnham, 2001, 2003) as the Trait Emotional Questionnaire (TEIQue; Petrides & Furnham, 2003) or its short version (TEIQue-SF, Petrides, 2009). This model comprises fifteen emotional intelligence domain personality grouped into four dimensions: (1) well-being, (2) self-control, (3) emotionality and (4) sociability (Petrides, 2009).

The mixed model considered emotional intelligence as a mixture of personality-type items and behavioral preferences and is assessed by rating-scales. According to the mixed model, emotional intelligence is the sum of emotional skills, personality traits and motivational factors that lead to emotionally intelligent behavior (Bar-On, 2006; MacCann et al., 2020; Petrides et al., 2007). These models include Goleman's *emotional competence* (1998), Bar-On's *social-emotional competence* (1997, 2006) and Rindermann' *emotional competence* (2009). Goleman's (1998) model defines emotional intelligence according to four main competencies: (1) self-awareness of one's emotions, (2) self-control, (3) social awareness of other's emotions and (4) social skills. This model thus differentiates between awareness (emotion detection) and management (regulation) of one's own and others' emotions and is measured by Goleman's Emotional Competency Index (ECI; Sala, 2002). Bar-On's (1997, 2006) model focuses on fifteen dimensions of social and emotional competence, which can be grouped into five scales: (1) inter- and (2) intrapersonal competence, (3) stress management, (4) adaptability, and (5) general mood or self-motivation. All of these are considered "key components of effective emotional and social functioning leading to psychological well-being" (Bar-On, 2000, p. 364). The Bar-On model is operationalized by the Emotional Intelligence Inventory (EQ-I, Bar-On, 1997), which is "a self-report measure of emotionally and socially

intelligent behavior that provides an estimate of emotional-social intelligence" (Bar-On, 2009, p. 15). Rindermann's *emotional competence* (2009) includes emotional abilities and behavioral tendencies, which can be grouped into four dimensions of perceived abilities: the multidimensional construct of emotional competence consists of the perceived abilities to (1) recognize and understand one's own emotions, (2) recognize and understand other's emotions, (3) regulate and control one's own emotions, and (4) emotional expressiveness. The emotional competence questionnaire (EKF; German designation: Emotionale-Kompetenz-Fragebogen, Rindermann, 2009), a self-reported measure, was developed to assess Rindermann's *emotional competence* (2009).

The Role of Emotional Intelligence in Addictions

Emotional intelligence relates to well-being or self-control (Petrides et al., 2007). Having emotional self-awareness and cognitive control over one's emotions is an important preventive factor against involvement in problematic behaviors (Kircaburun et al., 2020). Individuals with lower levels of trait emotional intelligence are at a higher risk of facing heightened psychological and interpersonal challenges, which may facilitate potential problematic behavior such as internet or gaming disorder (Kun & Demetrovics, 2010; Leite et al., 2019).

Many studies have found a negative association between emotional intelligence and addictions in adolescents, thereby reinforcing the potentially protective role of emotional intelligence against them (Aslanidou et al., 2019; Henning et al., 2021; Leite et al., 2019). Ranjbar and Bakhshi's (2018) meta-analysis of the association between emotional intelligence and Internet addiction found a moderate and inverse association (pooled correlation = −0.393; 95% CI: −0.564, −0.190). Several empirical studies reported a negative correlation between various behavioral addictions and emotional intelligence. The study by Parker et al. (2008) focused on the relationship between different adolescent behavioral addictions (e.g. gaming, gambling and internet) and their results indicated moderate-to-strong negative correlations between emotional intelligence and behavioral addictions. The results of Hamissi et al. (2013), in a study on a sample of 201 students, indicated small-to-moderate negative correlations between internet disorder and emotional intelligence, in line with others carried out on the general population (Saraiva et al., 2018). Emotional intelligence is also negatively correlated to mobile phone addiction (Arrivillaga et al., 2020; Beranuy et al., 2009), pathological gambling (Parker et al., 2008, 2013), and addiction to video games (Kircaburun et al., 2019; Parker et al., 2008, 2013; Bender et al., 2020). All these findings suggest that lower emotional intelligence scores may represent vulnerability or a risk factor for developing behavioral addictions, especially in adolescence (Henning et al., 2021).

A previous systematic review of the relationship between emotional regulation and Internet gaming disorder (Marchica et al., 2019) found inconsistent results: 90% of the reviewed studies showed a negative and statistically significant relationship between emotional regulation and video gaming disorder symptomology (the higher the emotional regulation, the lower the gaming disorder symptomology), although 10% of the studies did not detect this association between both variables. There are also two previous meta-analyses on risk and protective factors for Internet gaming disorder limited to the Chinese (Ji et al., 2022) and Korean (Koo & Kwon, 2014) contexts. However, the relationship between emotional intelligence and Internet gaming disorder symptomatology across different social contexts (e.g. nationalities) has not been systematically examined to date by a meta-analysis technique.

It is important to note that the examination of emotional intelligence and internet gaming disorder is particularly relevant during stages such as adolescence, considered as a period of heightened vulnerability, impacting both the overall development and susceptibility to addiction (Krishnamoorthy, 2021). Consistent with the findings in the general population, lower scores in emotional intelligence seem to be associated with gaming disorder symptomatology (Aksoy & Erol, 2021; Amendola et al., 2019). In the comparative study between age groups by Kircaburun et al. (2020), the results indicated that the effect of emotional intelligence was stronger in adolescent players than in adult players.

Current Study

Emotional intelligence has been negatively associated with acquiring different addictions, but its specific relationship with internet gaming disorder has not yet been explored. This article describes a meta-analytic study to quantitatively synthetize the relationship between emotional intelligence and Internet gaming symptomatology and to determine the pooled effect of this association (Research Question 1). Its secondary aim was identify the different study characteristics (e.g., geographic location, age, gender, etc.) that could influence the resulting heterogeneous results (Research Question 2).

Methods

A meta-analysis of the relationship between emotional intelligence and Internet gaming disorder was conducted in line with the PRISMA guidelines (Page et al., 2021,

see Supplementary Table 1). A previous search in the PROSPERO and Cochrane databases had confirmed that there were no previous SR or meta-analysis that had already investigated this relationship. A protocol was registered in PROSPERO (Registration Number: CRD42023400540), including the review question, type of review, searches, study conditions, population of interest, types of studies included, the expected results, data extraction, risk of bias, data synthesis strategy and the language of the study.

Study Selection Criteria

The inclusion criteria were as follows: (1) original, quantitative investigation; (2) publication in peer-reviewed journal; (3) included a measure of Internet gaming disorder (e.g. using an instrument that assessed Internet gaming disorder symptoms or its diagnostic criteria, etc.); (4) contained a measure of emotional intelligence in some way (e.g. emotion intelligence, emotion competence, emotion perception, emotion management, etc.); examined the relationship between emotional intelligence and Internet gaming disorder; (6) reported a correlation coefficient or the required statistical data; (7) written in English or Spanish. There were no limits as to date of publication, geographical location or the participants' ages.

All qualitative studies, reviews, meta-analyses, commentaries, editorials and studies that did not explore the relationship between emotional intelligence and Internet gaming disorder were excluded. Those reporting multivariate results (e.g., regression analysis) were also excluded for not being comparable with others (Lipsey & Wilson, 2001).

Search Strategy

The online searches were conducted on September 20th, 2023 in the Scopus, Pubmed, Web of Science and PsycInfo databases using the following search strategy: (emotion* intelligence OR emotion* competence OR socioemotion* competence OR emotion* perception OR emotion* understanding OR emotion* management OR emotion* regulation OR emotion* expression OR emotion* facilitation OR self-awareness OR self-management OR social awareness OR social skills OR intrapersonal competence OR interpersonal competence OR stress management OR adaptability OR self-motivation) AND (gaming disorder OR video game disorder OR videogame disorder). This search resulted in 3639 eligible studies.

A manual search in the reference lists of the retrieved studies was also carried out and yielded 6 additional studies. Finally, references from previous reviews and meta-analyses were examined (e.g., Bäcklund et al., 2022; Bender et al., 2020; Gao et al., 2022; Ji et al., 2022; Koo & Kwon, 2014; Marchica et al., 2019; Pan et al., 2020) but no further eligible studies were found.

Coding of the Studies

A protocol was systematically applied by two independent coders to extract the studies' characteristics as follows: authors, year of publication, country of origin, search design (cross-sectional vs longitudinal), sampling method (probabilistic vs non-probabilistic), sample size, participant's mean age, gender (percentage of males), sexual orientation, ethnicity (percentage of Caucasians), marital status, educational qualifications, conceptualization of emotional intelligence and Internet gaming disorder, percentage of Internet gaming disorder in the sample, hours of play, video game studied, and correlation coefficients or reported statistics to calculate the effect size.

Study Quality

The methodological quality of the primary studies was individually assessed by two researchers, who applied the 10-item checklist previously used by Badenes-Ribera et al. (2019) to examine the relationship between muscle dysmorphia and eating disorders. Each of the 10 checklisted items was given a score of 1 when the study met the criteria and 0 when it did not (see Supplementary Table 2). Their total quality score (range: 0–10) was calculated by adding the corresponding quality item scores, with a higher score indicating a higher methodological quality and lower risk bias.

Effect Size

The effect size index was a correlation coefficient (e.g., Pearson's correlation coefficient, Spearman's correlation coefficient, etc.) computed between measures of emotional intelligence and Internet gaming disorder (Borenstein et al., 2009, 2021), which was then coded and translated into a Fisher's Z score to normalize their distributions and stabilize their variance by applying the following formula (Cooper et al., 2019, pp. 220–221): $Z_r = \frac{1}{2}\log_e\left(\frac{1+r}{1-r}\right)$, with sampling variance: $V(Z_r) = \frac{e^{2Z_r}-1}{e^{2Z_r}+1}$, with e being the base of natural logarithms. The Fisher's Z for the individual effect sizes, as well as those for the pooled effect sizes and their confidence limits, were back translated into the correlation coefficient metric to simplify their interpretation. Following criteria Cohen's guidelines (1988), correlation coefficients of about 0.10, 0.30, and 0.50 (in absolute values) are indicative of low, moderate and large relationships between the variables, respectively.

To handle the statistical dependence among correlation coefficients from the same study, in which multiple

correlation coefficients were reported for the relationship between emotional intelligence and internet gaming disorder (Aksoy & Erol, 2021; Che et al., 2017; Fumero et al., 2020; Hollett & Harris, 2020; Kim et al., 2023; King et al., 2013; Kökönyei et al., 2019), their average was calculated to obtain a synthetic correlation coefficient for each study instead of treating each correlation coefficient as an independent unit in the analysis. This synthetic correlation coefficient was used as the unit analysis (Borenstein et al., 2021; Hedges, 2019). When the studies did not report an emotional intelligence/Internet gaming disorder correlation coefficient, the appropriate statistical data were extracted (e.g., mean and standard deviation) to calculate the effect size and apply translations between them (Dieter et al., 2017; Gentile et al., 2011; Hong et al., 2022; Marchica et al., 2020; Müller & Bonnaire, 2021; Paulus et al., 2021; Uçur & Dönmez, 2021; Yen et al., 2018). For instance, standardized mean differences (d) were computed, after which the d were translated into r, with $r = \frac{d}{\sqrt{d^2+a}}$, where a was estimated by $a = \frac{(n_1+n_2)^2}{n_1 \cdot n_2}$, and n_1, n_2 were the sample sizes in both conditions (Borenstein et al., 2009, 2021). In addition, in the studies with only one control group and two pathological video gaming groups (e.g., King et al., 2013; Müller & Bonnaire, 2021), the sample size of the control group was divided by two to enable two comparisons and avoid statistical dependence. For the longitudinal studies, the data from the first data point (i.e., Time 1) were recorded. Finally, to code the correlation coefficient between any measure of Emotional Regulation and Internet gaming disorder, the effect size was reverse-scored when the emotional regulation was measured by negative indicators (e.g., Difficulties Emotional Regulation Scale). The coded positive effect sizes (r) thus represented an association between Emotional Regulation and a higher degree of Internet gaming disorder.

Statistical Analysis

Separate meta-analyses were conducted to examine the relationships between emotional intelligence and Internet gaming disorder symptomatology, assuming random-effects models. The correlations coefficients were then weighted by inverse variance (Borenstein et al., 2021; Cooper et al., 2019) and a restricted maximum likelihood was used to estimate inter-study variance (τ^2). Pooled correlation coefficients, with their 95% confidence interval (CIs) and credibility interval (CRs), were calculated applying the method recommended by Hartung and Knapp (2001). The statistical significance of the pooled correlation coefficients was assessed by the t test. Forest plots were drawn up to visually examine effect size heterogeneity. Cochran's Q-statistic and the I^2 index were also calculated. A Q-statistic with $p < 0.05$ and $I^2 > 25\%$ indicated effect size heterogeneity (Higgins et al., 2003; Huedo-Medina et al., 2006).

Moderator analyses using a mixed-effects model were carried out (Borenstein et al., 2009, 2021; Knapp & Hartung, 2003; López-López et al., 2014) to identify the study characteristics statistically related to effect sizes for meta-analyses with at least 20 correlation coefficients (López-López et al., 2014). Weighted ANOVAs were applied for the categorical variables and for the continuous variables simple meta-regression were performed. Q_W and Q_E statistics were used to evaluate model misspecification for categorical and continuous variables, respectively. Q_B and Q_R statistics were applied to evaluate the statistical significance of categorical and continuous variables, respectively, while the proportion of variance accounted for by the moderator variable was also estimated (López-López et al., 2014; Raudenbush, 2009).

Funnel plots with Duval and Tweedie's trim-and-fill method for imputing missing data (Duval & Tweedie, 2000) and Egger's test (Sterne & Egger, 2005) were used to examine publication bias. When the meta-analysis only included two studies, the funnel plot and Egger's test could not be applied, given the small number of studies (Sterne & Egger, 2005; Sterne et al., 2000; Thornton & Lee, 2000). Finally, sensitivity analyses were performed to examine the robustness of the meta-analytic results and the impact of including or excluding one-to-one correlation coefficients. All the statistical tests were conducted on the Metafor Package in R (Version 3.0.2) and interpreted assuming a significance level of 5% ($p < 0.05$) using two-tailed tests.

Results

Study Selection Process

Figure 1 includes a flowchart of the screening and selection process used in this work. As can be seen, the search strategies identified a total of 3645 references. After removing duplicate references ($n = 656$), a total of 2995 articles remained. The titles and abstracts of these references were screened, and 203 potential articles were pre-selected and examined on the basis of their full text, by which 151 studies were excluded for not meeting the inclusion criteria. The search strategy thus identified 49 published articles for systematic review and meta-analysis, all published in peer-reviewed journals between 2008 and 2023, of which 7 did not include emotional intelligence/Internet gaming disorder correlation coefficients or the statistical data required to calculate them (Efrati & Spada, 2023; Liau et al., 2015; Nugraha et al., 2021; Schettler et al., 2023; Torres-Rodriguez et al., 2018; Wichstrøm et al., 2019; Wang et al., 2022b). The authors were contacted by email to request these data, only one of which complied, so that five studies were excluded

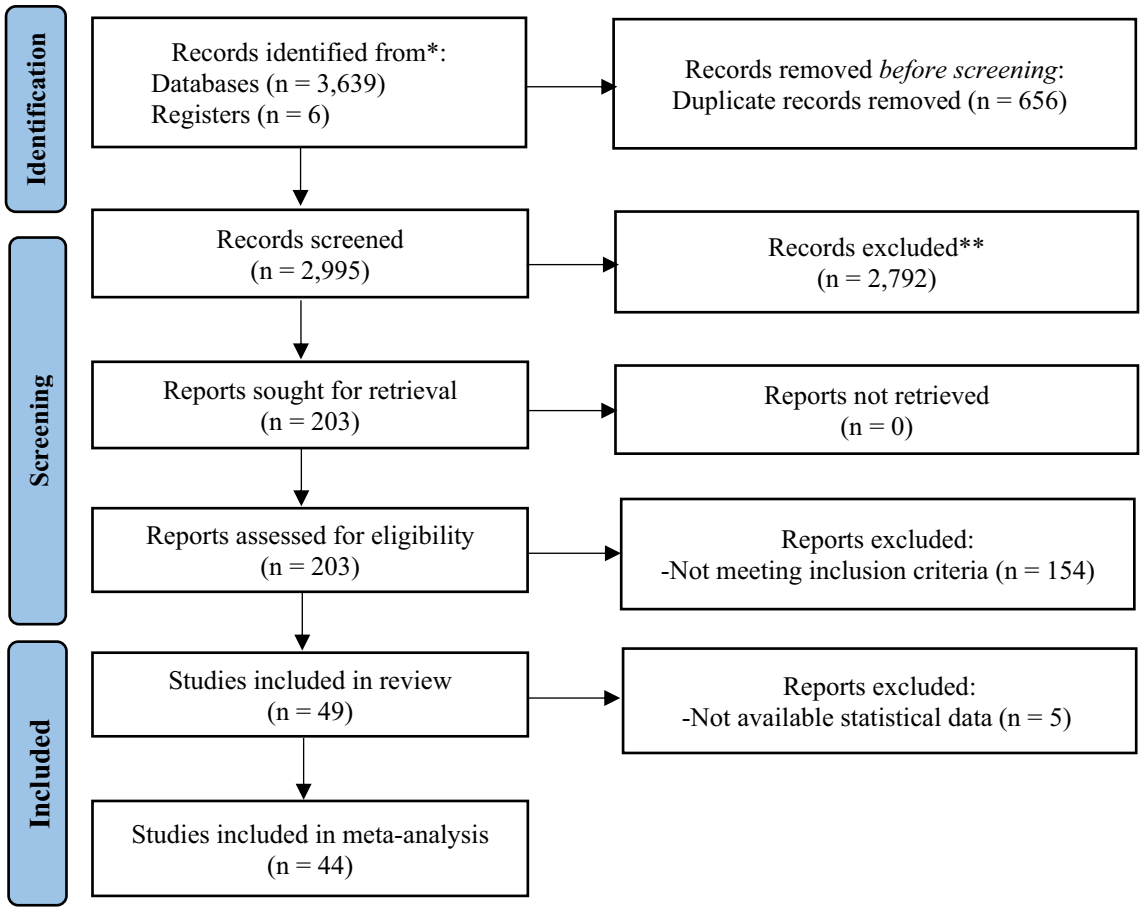

Fig. 1 Flowchart of the screening and selection process following PRISMA guidelines

from the meta-analytic synthesis. Several studies reported on the correlation coefficients from different independent samples (Dieter et al., 2017; Kim et al., 2023; King et al., 2013; Müller & Bonnaire, 2021; Parker et al., 2013, Parker et al., 2008; Soares et al., 2023; van Den Eijnden et al., 2018; Wang et al., 2022b; Wichstrøm et al., 2019), so that the database of the present meta-analysis included a total of 54 independent samples, which provided a total of 166 correlation coefficients.

Study Characteristics

Appendix A includes the descriptive characteristics of the articles included in the systematic review meta-analysis ($n = 49$). Most of these used convenience sampling (e.g., community, university or schools, forums or websites, clinical settings) and a cross-sectional design. Three used stratified random sampling (Kökönyei et al., 2019; She et al., 2021; Wichstrøm et al., 2019) and random sampling (Paschke et al., 2020, 2021; Schettler et al., 2023), two used a crowdsourcing technique from Qualtrics and Prolific (Giordano et al., 2022; Kim et al., 2023) and cluster random sampling (Wu et al., 2022). Eight studies applied a longitudinal research design (Dang et al., 2019; Liau et al., 2015; Van Den Eijnden et al., 2018; Gentile et al., 2011; Mun & Lee, 2022; Paulus et al., 2021; Wichstrøm et al., 2019; Efrati & Spada, 2023), and one study had both a cross-sectional and longitudinal design (Schettler et al., 2023). Ten studies were conducted in China, six in Canada, five in Spain, Germany and Turkey, four in Italy, two in the USA and South Korea, and only one in Hungary, Singapore, The Netherlands, Australia, France, Iran, Indonesia, Norway, Israel, Sweden and Pakistan. Most of the studies ($n = 30$) were conducted on adolescent and young adult samples, fifteen used mixed samples, four used child samples and one included both an adult and a child dyad sample.

The total number of participants in the samples was $N = 43{,}289$, with a mean age of 15.75 years old, ranging from 4 to 75. Two studies did not report any data on the age of the sample participants. Most did not report the participants' ethnicity ($n = 40$) or marital status ($n = 44$), while none reported sexual orientation data.

As can be seen in Appendix A, the 49 studies examined different types of emotional intelligence and used different

instruments to assess Internet gaming disorder and emotional intelligence. Most focused on specific constructs that included emotional intelligence, and only nine addressed this factor emotional intelligence itself. Its most frequently studied emotional intelligence component was emotional regulation ($n = 37$), focusing mainly on difficulties in emotional regulation ($n = 20$). In its turn, the instrument most frequently used to measure emotional intelligence was also specific to emotional regulation difficulties: the Difficulties in Emotional Regulation Scale or its reduced variants (DERS, Gratz & Roemer, 2004; Kaufman et al., 2016) ($n = 19$), following either the Cognitive Emotion Regulation Questionnaire or its short version (CERQ, Garnefski & Kraaij, 2006; Garnefski et al., 2001) ($n = 4$), and the Emotional Regulation Questionnaire (ERQ, Gross et al., 2003) ($n = 3$). The Difficulties in Emotional Regulation Scale assesses clinically relevant difficulties in emotional functioning, including lack of emotional awareness, nonacceptance of one's emotions, lack of ability to engage in goal-directed cognition and behavior, lack of ability to manage one's impulses, lack of emotional clarity, and lack of access to effective strategies for feeling better when distressed. Higher scores in this scale reflect greater difficulties in regulating emotions. The Cognitive Emotion Regulation Questionnaire measures nine cognitive strategies that individuals use in response to stressful life events, which can be grouped into maladaptive (rumination, self-blame, other-blame, and catastrophizing) or adaptive emotional regulation strategies (acceptance, positive refocusing, putting into perspective, positive reappraisal, and planning). Higher scores indicate greater usage of the specific strategy. The Emotional Regulation Questionnaire measures an individual's tendency to regulate his emotions in two ways, according to Gross's (1998) process-oriented approach: cognitive reappraisal and expressive suppression. Higher scores indicate greater usage of the specific strategy.

The Wong and Law Emotional Intelligence Scale (WLEIS, Wong & Lang, 2002) ($n = 3$) was the one most often used in the nine comprehensive studies on emotional intelligence, followed by the Emotional Quotient Inventory: Young Version, (EQ-i:YV, Bar-On & Parker, 2000) ($n = 2$), and the Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF, Petrides, 2009) ($n = 2$). The Wong and Law Emotional Intelligence Scale is a 16-item self-report emotional intelligence ability scale based on Mayer and Salovey's theoretical framework (1997). The Emotional Quotient Inventory: Young Version is a 60-item self-reporting emotional intelligence measure for use with children and adolescents between 7 and 18 years of age, which assesses the way individuals' feel, think or act in most situations. This scale measures total emotional intelligence and four dimensions (intrapersonal, interpersonal, stress management, and adaptability) and provides a total score. Higher scores reflect a higher level of social and emotional competency. The Trait Emotional Intelligence Questionnaire-Short Form contains 20 items divided into four emotional intelligence dimensions, such as well-being, self-control, emotionality and sociability. The emotional intelligence global trait score is obtained via combination of these dimensions. The higher the score, the higher the level of emotional intelligence.

Twenty-eight different instruments were used to measure Internet gaming disorder, the most frequently used being the Internet Gaming Disorder Scale (IGDS), based on DSM-V diagnostic criteria ($n = 13$), followed by the Gaming Disorder Scale for Adolescents (GADIS-A; $n = 5$), the Gaming Addiction Scale (GAS; $n = 4$), and the MULTICAGE CAD-4, and Pathological Video-Game Use (PVU; $n = 3$). The remaining instruments were used in two studies (Ten-Item Internet Gaming Disorder Test (IGDT-10), Problematic Video Game Playing scale (PVP), Pathological Video Gaming Scale (PVGS), Internet Addiction Test – World of Warcraft version (IAT-WoW), Screener for Substance and Behavioral Addictions – Gaming (SSBA Gaming)) or in only one (Questionnaire of Smoking Urges adapted to Gaming (QSU-Brief Gaming), Problematic Online Gaming Questionnaire Short-Form (POGQ-SF), Video Gaming Dependency Scale or "Computerspielabhängigkeitsskala" (CSAS), Game Addiction Inventory for adults (GAIA), 10-item scale DSM-IV, GUP addiction scale, Internet Gaming Disorder Questionnaire (IGDQ), Pathological Video Game Use Questionnaire, Scale for the Assessment of Internet and Computer game Addiction (AICA-30), Problematic Technology Use Checklist, Gaming Disorder Scale for Parents (GADIS-P), Parental version of the Internet Gaming Disorder Scale (P-IGDS), Chen Internet Addiction Scale (CIAS), Korea Agency for Digital Opportunity scale (KADO), Gaming and Social Media Questionnaire (GSMQ).

Assessment of Methodological Quality

Supplementary Table 3 gives the details of the studies' methodological quality assessment. A TQS was also obtained by adding the 1 s and 0 s for the items of the checklist (range: 0–10). The studies obtained an average methodological quality score of 4.83 ($SD = 1.33$, $Min. = 1$, $Max. = 8$). The quality criteria most often used were item 7 (*Absence of reporting bias*, $n = 49$), followed by item 4 (*The measurement instrument used to assess emotional intelligence shows good psychometric properties*, $n = 40$) and item 5 (*The measurement instrument used to assess gaming disorder shows good psychometric properties*, $n = 38$). The least met criteria were item 10 (*Statistical Power*, $n = 2$) and item 3 (*Dropouts were similar in socio-demographic characteristics to those of the final sample*, $n = 4$).

Quantitative synthesis: Meta-analysis

The final dataset of the meta-analysis consisted of 44 studies published between 2008 and 2023 (Median = 2020), which provided 54 independent samples and 166 correlation coefficients. All of these were written in English. Sample size ranged from 48 to 3136 participants (Median = 412 participants) with an average participants' mean age of 18.21 years old (Median = 16.27, *SD* = 6.18, *Min.* = 9.18, *Max.* = 41.80) and the average percentage of males in all the studies was 56.3% (Median = 54.8).

To quantitatively synthetize the relationship between emotional intelligence and Internet gaming disorder symptomatology, several independent meta-analyses were conducted by type of emotional intelligence examined (i.e., Emotional Regulation, Social-Emotional Competence, Intelligence as ability and Intelligence as trait) and by measurement instrument used for assessing emotional intelligence.

Relationships Between Emotional Intelligence Measured as Emotional Regulation and Internet Gaming Disorder Symptomatology

The 36 correlation coefficients reported for the relationship between Emotional Regulation and Internet Gambling disorder symptomatology ranged from − 0.52 to 0.25, with a pooled correlation coefficient of − 0.237 (95% CI: − 0.287, − 0.186, $p < 0.001$) (see Table 1 and Fig. 2), indicating that the higher the emotional regulation, the lower the Internet Gambling disorder symptomatology. According to Cohen's (1988) criteria, a pooled correlation coefficient of − 0.223 can be considered as reflecting a low-to-medium relationship. The heterogeneity analysis showed that there was a large degree of heterogeneity among the correlation coefficients reported ($Q(35) = 614.156$, $p < 0.0001$, $I^2 = 93.7\%$).

Gauged by measurement instrument (see Table 1), the relationship between the Difficulties Emotional Regulation Scale (DERS) total score and the Internet gaming disorder symptomatology was 0.299 (95% CI: 0.236, 0.359, $p < 0.0001$, $k = 18$), ranging from 0.07 to 0.52, indicating that the greater the difficulties emotional regulation, the greater the Internet gambing disorder symptomatology.

Table 1 Pooled correlation Coefficients, 95% confidence intervals, 95% prediction intervals, and heterogeneity statistics for the relationship between emotional regulation and internet gaming disorder symptomatology

				95% CI		95% PI				
Outcome	*k*	*N*	r_+	LL	UL	LL	UL	*Q*	I^2	τ
Any measure	36	24,450	− .237	− .287	− .186	− .502	.068	614.156***	93.7	0.023
DERS										
Total score	18	13,113	.299	.236	.359	.020	.535	350.147***	92.6	0.018
Nonacceptance	13	9467	.201	.130	.271	− .057	.435	182.678***	90.3	0.013
(lack of) Goals	12	9245	.192	.121	.260	− .058	.419	171.039***	89.9	0.012
Impulse	10	7584	.296	.227	.362	.070	.413	113.191***	87.6	0.010
(lack of) Awareness	13	7678	.077	.037	.118	− .026	.179	25.218*	51.7	0.002
(lack of) Strategies	10	7584	.289	.207	.367	.020	.519	142.187***	90.7	.014
(lack of) Clarity	15	9668	.194	.131	.256	− .039	.407	147.438***	87.2	.011
CERI										
Negative Impact	2	995	.258	− .551	.817	− .812	.930	3.835*	73.9	0.007
CERQ										
Maladaptive cognitive strategies	5	6282	.196	.109	.279	.028	.353	16.820**	73.4	0.003
Adaptative cognitive strategies	3	1866	− .049	− .365	.278	− .585	.517	9.078*	74.4	0.015
ERQ										
Cognitive Reappraisal	3	375	− .162	− .322	.006	− .322	.006	1.140	0.0	0.0
Expressive Suppression	3	375	.256	− .083	.541	− .322	.695	4.951	58.3	0.013
ERQ-Sort										
Total score	2	740	.052	− .987	.990	− 1.00	1.00	30.307***	96.7	0.080

Note. DERS = Difficulties Emotional Regulation Scale. CERI = Comprehensive Emotion Regulation Inventory. CERQ = Cognitive Emotion Regulation Questionnaire. ERQ = Emotional Regulation Questionnaire. *k* = number of independent samples. *N* = total sample size. r_+ = pooled correlation coefficient. CI: Confidence interval for r_+. PI: prediction interval for r_+. LL and UL = lower and upper limits of the 95% confidence and prediction intervals for r_+. *Q* = Cochran's heterogeneity *Q* statistic; *Q* statistic has *k* − 1 degrees of freedom. I^2 = heterogeneity index. τ = between-studies standard deviation estimated using restricted maximum likelihood. *$p \leq .050$, **$p < .010$, ***$p < .0001$

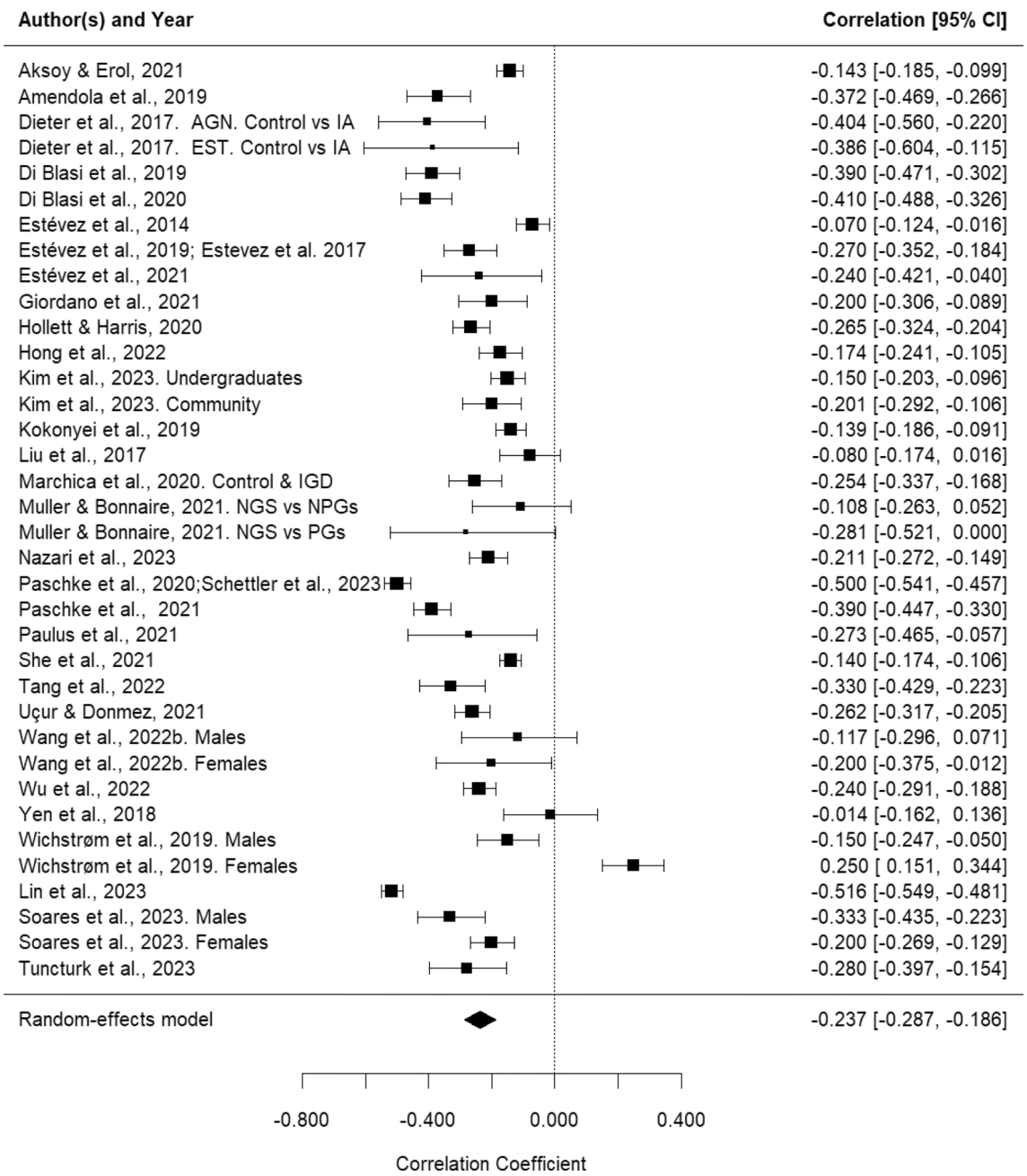

Fig. 2 Forest plot of the association between any measured of emotional intelligence as emotional regulation and internet gaming disorder symptomatology

According to Cohen's (1988) criteria, a correlation coefficient of 0.299 can be considered as reflecting a medium relationship. For the Difficulties Emotional Regulation Scale (DERS) subscales, the pooled correlation coefficient for the nonacceptance subscale was 0.201 (95% CI: 0.130, 0.271, $p < 0.0001$, $k = 13$), ranging from 0.03 to 0.42; for the lack of goals subscale was 0.192 (95% CI: 0.121, 0.260, $p < 0.0001$, $k = 12$), ranging from 0.03 to 0.42; for the impulse subscale was 0.296 (95% CI: 0.227, 0.362, $p < 0.0001$, $k = 10$), ranging from 0.16 to 0.47; for the lack of awareness was 0.077 (95% CI: 0.037, 0.118 $p = 0.001$, $k = 13$), ranging from 0.03 to 0.29; for the lack of strategies subscale was 0.289 (95% CI: 0.207, 0.367 $p < 0.001$, $k = 10$), ranging from 0.13 to 0.48; and for the lack of clarity subscale was 0.194 (95% CI: 0.131, 0.256 $p < 0.0001$, $k = 15$), ranging from 0.01 to 0.39.

Concerning the Cognitive Emotion Regulation Questionnaire (CERQ), the 5 correlation coefficients reported on

the association between the maladaptive cognitive emotion regulation strategies and Internet gaming disorder symptomatology ranged from 0.059 to 29, with a pooled correlation coefficient of 0.196 (95% CI: 0.109, 0.279 $p = 0.003$), indicating that the higher the maladaptive cognitive emotion regulation, the higher the Internet gaming disorder symptomatology. According to Cohen's (1988) criteria, a pooled correlation coefficient of 0.196 can be considered as reflecting a low-to-moderate relationship. Moderate to large heterogeneity was noted among the correlation coefficients reported ($Q(4) = 16.820$, $p = 0.002$, $I^2 = 73.4.0\%$), although the adaptive cognitive emotion regulation strategies were not related with Internet gaming disorder symptomatology ($p = 0.593$).

In the Emotional Regulation Questionnaire (ERQ), the 3 correlation coefficients reported for the relationships between Cognitive reappraisal subscale and Internet gaming disorder symptomatology ranged from − 0.24 to − 0.10, with a pooled correlation coefficient of − 0.162 (95% CI: − 0.322, 0.006, $p = 0.053$, $k = 3$), indicating that both variables were not associated. For the expressive suppression subscale, the 3 correlation coefficients reported ranged from 0.12 to 0.35, with a pooled correlation coefficient of 0.256 (95% CI: − 0.083, 0.541, $p = 0.083$, $k = 3$), indicating no relationship between both variables. However, following Cohen's (1988) criteria, a pooled correlation coefficient of 0.162 and 0.256 can be considered as reflecting low-to-medium relationships.

Relationships Between Emotional Intelligence Measured as Social-Emotional Competence and Internet Gaming Disorder Symptomatology

The 13 correlation coefficients reported for the relationships between Social-Emotional Competence and Internet gaming disorder symptomatology ranged from − 0.570 to 0.034, with a pooled correlation coefficient of − 0.230 (95% CI: − 0.333, − 0.121, $p < 0.001$) (see Table 2 and Fig. 3), indicating that higher social competence, lower Internet gaming disorder symptomatology. According to Cohen's (1988) criteria, a pooled correlation coefficient of − 0.160 can be considered as reflecting a low-to-moderate relationship. Again, a large degree of heterogeneity was noted among the correlation coefficients reported ($Q(12) = 107.338$, $p < 0.0001$, $I^2 = 92.9\%$).

The relationships between the Teenage Inventory of Social Skills (TISS) total score and Internet gaming disorder symptomatology by measurement instrument was − 0.129 (95% CI: − 0.220, − 0.036, $p = 0.036$, $k = 2$), ranging from -12 to − 0.14, indicating that the higher the Social Skills, the lower the Internet gaming disorder symptomatology. However, the TISS positive and negative social skills subscales did not show a relationship with Internet gaming disorder symptomatology ($p = 0.824$, $p = 0.899$, respectively). Finally, for Harters' Self Perception Profile of Adolescents total score, the pooled correlation did not reach statical significance − 0.291 (95% CI: − 0.812, 0.489, $p = 0.138$, $k = 2$).

Relationships Between Emotional Intelligence as Ability and Internet Gaming Disorder Symptomatology

The 2 correlation coefficients reported for the relationships between Wong and Law's Emotional Intelligence Scale (WLEIS) total score and Internet gaming disorder symptomatology ranged from − 0.23 to − 0.23, with a pooled correlation coefficient of − 0.249 (95% CI: − 0.386, − 0.101, $p < 0.001$), indicating that the higher the Emotional Intelligence, the lower the Internet gaming disorder symptomatology (see Table 2). According to Cohen's (1988) criteria, a pooled correlation coefficient of − 0.249 can be considered as reflecting a low-to-medium relationship.

Relationships Between Emotional Intelligence as Trait and Internet Gaming Disorder Symptomatology

The pooled correlation of the Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF) total score with Internet gaming disorder symptomatology (see Table 2) did not reach statical significance ($r_+ = -0.276$, 95% CI: − 0.977, 0.929, $p = 0.314$, $k = 2$).

Moderator Analyses

Moderator analyses were performed on the relationship between any measure of Emotional regulation and Internet gaming disorder symptomatology, since this was the one outcome that presented more than 20 correlation estimates. To facilitate the interpretation of meta-regression analyses, the correlation coefficients representing the relationships between any emotional regulation and internet gaming disorder symptomatology were adjusted so that all of them were positive. Simple meta-regression analyses revealed that the methodological quality of primary studies exhibited a positive and statistically significant association with the correlation coefficients, accounted for 12.7% of the variance (see Table 3).

The weighted ANOVAs applied to correlation coefficients found that three categorical moderator variables showed an association with correlation estimates (see Table 4): the research design ($p = 0.020$), measurement instrument applied for assessing emotional regulation ($p = 0.022$) and country in which the study was conducted ($p = 0.014$). The research design, classified as cross-sectional versus longitudinal, accounted for 14.8% of the variance. Stronger

Table 2 Pooled correlation Coefficients, 95% confidence intervals, 95% prediction intervals, and heterogeneity statistics for the relationship between emotional intelligence measured as social-emotional competence, trait or ability with Internet gaming disorder symptomatology

Outcome	*k*	*N*	r_+	95% CI		95% PI		*Q*	I^2	τ
				LL	UL	LL	UL			
Emotional intelligence as Social-Emotional Competence										
Any measure	13	7394	−.223	−.333	−.121	−.544	.141	107.338***	92.9	0.027
EQ-i:YV										
Total score	4	1193	−.249	−.386	−.101	−.485	.021	7.221	59.7	.005
Intrapersonal	4	1193	−.160	−.308	−.004	−.423	.128	7.815*	65.6	0.006
Interpersonal	4	1193	−.291	−.408	−.163	−.493	−.059	6.401	52.8	0.004
Adaptability	4	1193	−.059	−.123	.005	−.123	.005	1.436	0.0	0.00
Stress management	4	1193	−.208	−.329	−.080	−.409	.013	5.759	48.1	0.003
EKF										
Total score	2	143	−.528	−.807	−.056	−.807	−.056	0.240	0.0	0.000
EKF-EE	2	143	−.461	−.677	−.172	−.677	−.172	0.090	0.0	0.000
EKF-EA	2	143	−.268	−.793	.486	−.793	.486	0.551	0.0	0.000
EKF-RE	2	143	−.233	−.368	−.090	−.482	.050	8.814	44.7	0.009
EKF-EX	2	143	−.419	−.681	−.061	−.681	−.061	0.126	0.0	0.000
TISS										
Total score	2	1026	−.129	−.220	−.036	−.220	−.036	0.056	0.00	0.00
Positive Skills	2	1026	.039	−.936	.945	−.994	.995	19.264***	94.8	0.036
Negative Skills	2	1026	.110	−.895	.931	−.987	.992	15.344***	93.4	0.028
HSPPA										
Total score	2	538	−.291	−.812	.489	−.908	.724	2.290	56.6	.005
Emotional intelligence as ability										
WLEIS										
Total score	2	597	−.249	−.386	−.101	−.485	.021	0.000	0.0	0.00
Emotional intelligence as trait										
TEIQue-SF										
Total score	2	948	−.276	−.977	.929	−.998	.995	21.887***	95.4	0.044

Note. EQ-i:YV = Emotional Quotient Inventory: Young Version. EKF = Emotional competence questionnaire. EKF-EE = Recognizing and understanding the own emotions. EKF-EA = Recognizing and understanding others' emotions. EKF-RE = Regulation and control of the own emotions. EKF-EX = Emotional expressiveness. TISS = Teenage Inventory of Social Skills. HSPPA = Harters' Self Perception Profile of Adolescents. TEIQue-SF = Trait Emotional Intelligence Questionnaire-Short Form. WLEIS = Wong and Law's Emotional Intelligence Scale. *k* = number of independent samples. *N* = total sample size. r_+ = pooled correlation coefficient. CI: Confidence interval for r_+. PI: prediction interval for r_+. LL and UL = lower and upper limits of the 95% confidence and prediction intervals for r_+. *Q* = Cochran's heterogeneity *Q* statistic; *Q* statistic has *k* – 1 degrees of freedom. I^2 = heterogeneity index. τ = between-studies standard deviation estimated using restricted maximum likelihood. *$p \leq .050$, ***$p \leq .0001$

emotional regulation-Internet gaming disorder associations were found in cross-sectional ($r_+ = -0.244, p < 0.001$) than in longitudinal studies ($r_+ = -0.033, p = 0.715$). The measurement instrument applied to assess emotional regulation explained 30.9% of the variance. The ERQ-Sort instrument was the least sensitive to capturing the relationship between the emotional regulation-Internet gaming disorder relationships found ($r_+ = 0.051, p = 0.608$), in comparison with the other instruments used ($r_+ = -0.254, p < 0.001$). The country in which the research was carried out explained 36% of the variance.

Analysis of Publication Bias

The funnel plot with the trim-and-fill method and Egger's test were applied for each meta-analysis to examine publication bias. The Egger's tests applied did not reach statistical significance for any the meta-analysis of the relationships between any measure of Social Emotional competence and Internet gaming disorder symptoms (see Appendix B). In addition, the trim-and-fill method required the imputation of correlation coefficients to achieve symmetry in twelve other funnel plots, in eleven of which the adjusted pooled correlation coefficient displayed a negligible difference from the original pooled correlation coefficient (see Table 5). The adjusted

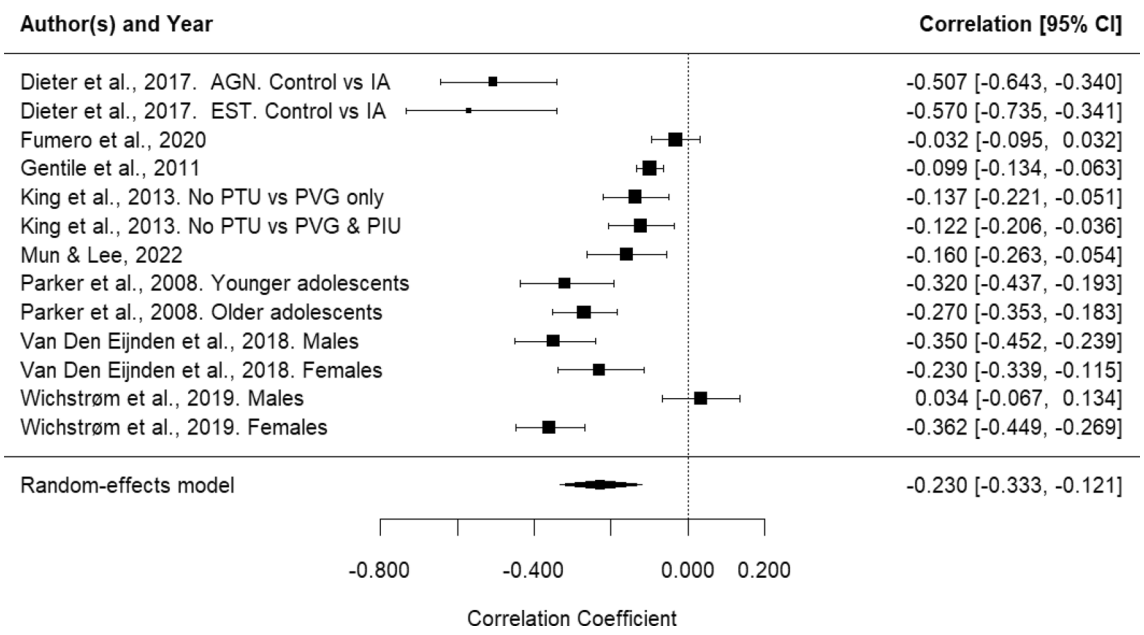

Fig. 3 Forest plot of the association between any measured of emotional intelligence as social-emotional competence and internet gaming disorder symptomatology

Table 3 Results of the simple meta-regressions applied on correlation coefficients for the relationships between any emotional regulation and internet gaming disorder symptomatology, taking continuous moderator variables as predictors

Predictor variable	k	b_j	95% CI		F	Q_E	R^2
			LL	UL			
N	36	0.000	−0.0001	0.0001	0.009	601.017***	.000
Gender	35	0.002	0.005	0.004	2.513	565.807***	.057
Age Mean	36	0.006	−0.003	0.014	1.940	596.097***	.029
Age SD	34	0.012	−0.005	0.029	2.234	492.748***	.034
Year	36	0.015	−0.011	0.040	1.378	549.830***	.025
MQ total score	36	0.052	0.008	0.097	5.769*	550.891***	.127

Note. N = sample size. Gender = percentage of males in the sample. Age Mean = average age (years) of the sample. Age SD = standard deviation of the age (years). Year = publication year of the study. MQ = Methodological quality of primary studies. k = number of independent samples. b_j = regression coefficient of each predictor. LL and UL = lower and upper limits of the 95% confidence interval for b_j. F = Knapp-Hartung's statistic for testing the significance of the predictor (the degrees of freedom for this statistic are 1 for the numerator and $k - 2$ for the denominator). Q_E = statistic for testing the model misspecification. R^2 = proportion of variance accounted for by the predictor. $^*p \leq .050$, $^{***}p < .001$

pooled correlation coefficient showed a slight difference from the original only for the meta-analysis on the adaptive cognitive strategies as measure of emotional regulation outcome ($r_+ = -0.049$, $r_{adj+} = 0.072$, difference = 0.121) but was not relevant. In both cases, the relationships between the adaptive cognitive strategies as measure of emotional regulation outcome and Internet gaming disorder was not statistically significant so that publication bias can be safely discarded as a threat to the meta-analytic results.

Analyses of Sensitivity

Sensitivity analyses were performed to examine the robustness of the results and the impact of including or excluding one-to-one correlation coefficients. By deleting each study one by one and performing the analyses again each time, the pooled correlation coefficient for the relationships between emotional intelligence measured as emotional regulation and Internet gaming disorder symptomatology ($k = 35$) ranged from − 0.227 (95% CI: − 0.178, − 0.275) to − 0.251 (95% CI: − 0.207, − 0.294), and for the relationship between emotional intelligence measured as social-emotional competence and Internet gaming disorder symptomatology ($k = 12$), the pooled correlation coefficient ranged from − 0.206 (95% CI: − 0.102, − 0.305) to − 0.249 (95% CI: − 0.144, − 0.349), indicating that the pooled correlation coefficients were robust. Supplementary Material 2 provides the results of the sensitivity analysis for each measurement instrument and

Table 4 Results of the weighted ANOVAs applied on correlation coefficients for the relationships between any measure of Emotional Regulation (ER) and IGD, taking categorical moderator variables as independent variables

Variable	*k*	*N*	r_+	95% CI		ANOVA results
				LL	LU	
Research design						$F(1,34) = 5.956$, $p = .020$
Cross-sectional	33	23,630	−.254	−.302	−.204	$R^2 = .148$
Longitudinal	3	820	−.033	−.211	.147	$Q_W(34) = 559.491$, $p < .001$
Sampling method:						$F(1,34) = 0.024$, $p = .877$
Convenience	33	18,868	−.239	−.292	−.184	$R^2 = .00$
Random	3	5582	−.225	−.386	−.051	$Q_W(34) = 587.791$, $p < .001$
Target population:						$F(6,29) = 0.804$ $p = .575$
Clinical	3	397	−.265	−.447	−.063	$R^2 = .00$
Community	13	8835	−.243	−.324	−.158	$Q_W(29) = 485.599$, $p < .001$
Gamers	2	2154	−.365	−.540	−.160	
Mixed (Clinical & Community)	2	143	−.396	−.604	−.138	
Mixed (Gamers & Community)	4	421	−.168	−.341	.016	
School students	8	10,302	−.205	−.309	−.096	
University students	4	2198	−.193	−.343	−.032	
Measurement Instrument for ER						$F(8,27) = 2.891$, $p = .018$
ALPS	1	2001	−.143	−.375	.107	$R^2 = .310$
CBCL	1	80	−.273	−.547	.054	$Q_W(27) = 398.717$, $p < .001$
CERI	2	995	−.263	−.428	−.082	
CERQ	5	6282	−.169	−.283	−.049	
DERS	18	13,113	−.299	−.345	−.241	
EKF	2	143	−.397	−.583	−.171	
ERQ-Sort	2	740	.051	−.137	.236	
ERICA	1	301	−.200	−.442	.069	
ERQ	4	594	−.101	−.248	.048	
Measurement Instrument for ER (II)						$F(1,34) = 9.271$, $p = .005$
ERQ-Sort	2	740	.051	−.149	.248	$R^2 = .200$
Other	34	23,710	−.254	−.300	−.207	$Q_W(34) = 552.123$, $p < .001$
Country						$F(8,24) = 3.161$, $p = .014$
Canada	5	3364	−.239	−.346	−.125	$R^2 = .360$
China	8	7778	−.202	−.292	−.108	$Q_W(24) = 338.282$, $p < .001$
France	2	201	−.174	−.389	.058	
Germany	5	2244	−.406	−.512	−.289	
Italy	3	1075	−.391	−.515	−.252	
Italy & Sweden	2	995	−.264	−.429	−.081	
Norway	2	740	.051	−.138	.237	
Spain	3	1883	−.186	−.334	−.028	
Turkey	3	3290	−.225	−.363	−.077	
Continent:						$F(2,33) = 0.453$, $p = .640$
Asia	12	12001	−.207	−.294	−.116	$R^2 = .000$
Europe	18	8784	−.261	−.333	−.185	$Q_W(33) = 610.409$, $p < .001$
North America	6	3665	−.233	−.352	−.107	

Note. ALPS = Adolescent Lifestyle Profile Scale. CBCL = Child Behavior Checklist. CERQ = Cognitive Emotion Regulation Questionnaire. DERS = Difficulties Emotional Regulation Scale. EKF = Emotional competence questionnaire. ERQ-Sort = Emotion Regulation Q-Sort. ERICA = Emotion Regulation Index for Children and Adolescents. ERQ = Emotional Regulation Questionnaire. *k* = number of independent samples. *N* = total sample size. r_+ = pooled correlation coefficient. LL and LU = lower and upper 95% confidence limits for r_+. *F* = Knapp-Hartung's statistic for testing the significance of the moderator variable. Q_W = statistic for testing the model misspecification. R^2 = proportion of variance accounted for by the moderator

Table 5 Publication bias analysis: Results of the Trim-and-Fill method

Outcome	k	k_{imp}	k_{TaF}	r_{adj+}	95% CI		95% PI		Difference (r_+ and r_{adj+})
					LL	UL	LL	UL	
DERS									
Total scores	18	2	20	.323	.261	.382	.037	.560	−0.024
Nonacceptance	13	2	15	.227	.161	.292	−.028	.455	−0.026
(Lack of) Goals	12	2	14	.219	.153	.283	−.027	.440	−0.027
Impulse	10	2	12	.325	.262	.385	.103	.517	−0.029
(Lack of) Awareness	13	3	16	.061	.023	.099	−.053	.174	0.016
(Lack of) Strategies	10	1	11	.307	.234	.377	.056	.522	0.018
CERQ									
Adaptative cognitive strategies	3	2	5	.072	−.110	.250	−.331	.453	0.121
ERQ									
Cognitive Reappraisal	3	1	4	−.151	−.244	−.056	−.244	−.056	0.011
Any measure of SEC	13	1	14	−.211	−.305	.111	−.525	.155	0.012
EQ-i:YV									
Total Scores	4	1	5	−.228	−.307	−.146	−.382	−.062	0.021
Adaptability	4	1	5	−.070	−.121	−.018	−.121	−.018	0.011
Stress management	4	1	5	−.180	−.262	−.097	−.341	−.009	0.028

Note. DERS = Difficulties Emotional Regulation Scale. CERQ = Cognitive Emotion Regulation Questionnaire. ERQ = Emotional Regulation Questionnaire. SEC = Social Emotional Competence. EQ-i:YV = Emotional Quotient Inventory: Young Version. k = number of original independent samples. k_{imp} = Number of imputed independent sample by the Trim- and-Fill method. k_{TaF} = number of independent samples from the Trim- and-Fill method. r_{adj+} = adjusted pooled correlation coefficient from the Trim-and-Fill method. CI: Confidence interval for r_+. PI: prediction interval for r_+. LL and UL = lower and upper limits of the 95% confidence and prediction intervals for r

shows that all the meta-analytic results were significantly robust.

Discussion

The prevalence of Internet gaming disorder has increased, and there is interest in identifying protective factors against its development. This study examined the association between Internet gaming disorder and a variable that is protective against other types of addiction: emotional intelligence. This study provides a meta-analytic synthesis of the existing research on the association between emotional intelligence and Internet gaming disorder symptomatology. Previous meta-analyses (Ji et al., 2022; Koo & Kwon, 2014) focused on specific social contexts (i.e., China and Korea), without considering potential differences across countries. Separate meta-analyses were performed to examine the relation between emotional intelligence and Internet gaming disorder symptomatology across different social contexts.

The results showed a negative and statistically significant relationship between emotional intelligence measured as emotional regulation and Internet gaming disorder symptomatology, indicating that the higher levels of emotional regulation were related to lower levels of Internet gaming disorder symptomatology. According to Cohen's (1988) criteria, a pooled correlation coefficient of $r_+ = -0.237$ can be considered as reflecting a low-to-medium association. Higher Internet gaming disorder scores are associated with lower emotional regulation scores, suggesting two possible implications. On one hand, deficits in emotional regulation or maladaptive regulation strategies may be a risk factor in Internet gaming disorder development and gaming may provide an escape from emotional distress. On the other hand, emotional regulation deficits have also been linked to impulsivity (or deficits in self-control), another risk factor for multiple addictions (Estévez et al., 2019, 2021). In this case, emotional regulation could play a mediating role between impulsivity and Internet gaming disorder.

A negative and statistically significant relationship was found between emotional intelligence measured as social-emotional competence and Internet gaming disorder symptomatology, indicating that higher levels of social-emotional competence are related to lower levels of Internet gaming disorder symptomatology. According to Cohen's (1988) criteria, a pooled correlation coefficient of $r_+ = -0.230$ can be considered as reflecting a relevant low-medium association. These results indicate that there is a not only a negative

correlation between Internet gaming disorder and emotional intelligence, but also a correlation with one of the key emotional intelligence components: social-emotional competence. As in the case of emotional regulation, this correlation may have different implications, e.g., deficits in social competence may favor dysfunctional gaming. Although video games do have a social character, they do not necessarily require direct interaction with other players, which may be an aspect sought by people with little social competence. On the other hand, excessive gaming patterns may be linked to less time spent on other social activities and could impair social performance.

The results also showed the existence of a negative and statistically significant relationship between emotional intelligence measured as an ability and Internet gaming disorder symptomatology, indicating that the higher levels of emotional intelligence were related to lower higher levels of this symptomatology. According to Cohen's criteria (1988), a pooled correlation coefficient of $r_+ = -0.249$ can be considered as reflecting a low-to-medium association, in line with previous studies focusing on the association between Internet gaming disorder and emotional intelligence as ability (Dang et al., 2019; Fatima & Zulfiqar, 2023). These findings may suggest that emotional intelligence acts as a protective factor, and therefore working on emotional awareness and management in prevention programs may reduce the likelihood of developing online gaming problems (Henning et al., 2021).

A negative and statistically significant relationship was detected between emotional intelligence measured as a trait and Internet gaming disorder symptomatology was found, indicating that the higher levels of emotional intelligence are related to lower higher levels of Internet gaming disorder symptomatology. According to Cohen's (1988) criteria, a pooled correlation coefficient of $r_+ = -0.276$ can be interpreted as reflecting a low-to-medium association, in line with previous studies on the association between emotional intelligence and Internet gaming disorder (Hamissi et al., 2013; Parker et al., 2008; Ranjbar & Bakhshi, 2018; Saraiva et al., 2018). Higher Internet gaming disorder scores are associated with lower emotional intelligence scores, suggesting that emotional intelligence may mediate the users' level of addiction. The results suggest that trait emotional intelligence, which is a stable personality trait, may be inversely related to internet gaming disorder symptomatology. One implication is that people with higher levels of trait emotional intelligence may be less likely to develop Internet gambling problems. Previous evidence suggests that this relationship is stronger in adolescents than in adults (Kircaburun et al., 2020).

Overall, as the size of the relationships between any emotional intelligence and Internet gaming disorder symptomatology presented a large variability across studies, moderator analyses (e.g., ANOVAs and meta-regressions) were conducted to identify the study features that could explain at least part of the correlation coefficient variability. However, they could only be performed on the relationship between emotional intelligence measured as emotional regulation and Internet gaming disorder symptomatology due to the small number of studies that examined the other relationships (e.g., trait emotional intelligence and social competence with Internet gaming disorder symptomatology). Several characteristics of the studies were statistically associated with correlation coefficients, such as the methodological quality of primary studies, the research design, the measurement instrument for assessing emotional regulation, and the country in which the study took place. The studies with a higher methodological quality score were more sensitive in identifying the relationships between emotional regulation and Internet gaming disorder symptomatology. In other words, those with higher methodological quality scores showed a stronger relationship between emotional regulation and Internet gaming disorder than those with a lower score, exemplifying the benefits of rigorous methodologies in achieving more robust and trustworthy findings. The commitment to higher methodological standards not only enhances the precision of estimations but also facilitates a more accurate identification of the relationships of interest (Cohen, 1988). Also, stronger emotional regulation-Internet gaming disorder associations were found in cross-sectional than in longitudinal studies, suggesting that the studies' methodological characteristics could explain differences in the magnitude of the relationship between emotional intelligence and Internet gaming disorder symptoms found in the literature.

The findings revealed that of all the emotional regulation measurement instruments, the ERQ-Short (Shields & Cicchetti, 1997) was the least sensitive tool in identifying relationships with Internet gaming disorder symptomatology. Based on this result, the ERQ-Short should be the last choice for assessing emotional regulation when it wants to examine the co-occurrence of internet gaming disorder symptomatology and difficulties emotional regulation. In addition, the country in which the study was conducted was also statistically related to correlation coefficients, which suggests that the strength of this relationship could vary across different social contexts. These findings support the view that emotional intelligence is culturally specific, reflecting differences in the cultural and individual dimensions of understanding, regulating, and managing emotions (Pathak & Muralidharan, 2020). Previous research has shown that individualistic-collectivist orientations in society tend to shape and influence psychological processes, with a stronger relationship found between collectivist cultures and emotional intelligence (Bhullar et al., 2012; Margavio et al., 2012). Similarly, the prevalence of gaming

disorder differs across countries, particularly in Asia and North America, which the highest rates of video game consumption are found (Warman, 2018).

On the other hand, the participant's age, gender distribution, and the target population (e.g., clinical, community, gamers, mixed, school students or university students), did not show a statistically significant association with the correlation coefficients, which suggests that age, gender, and the target population does not affect the strength of the relationship, which therefore does not systematically vary across age, genders, and the target population. The size of the relationship between emotional intelligence measured as emotional regulation and Internet gaming disorder symptomatology are thus equally regardless of age, gender, and target population.

The present present meta-analysis has limitations in terms of sample size and characteristics of the sample studies. One of the limitations is associated with the small number of studies included in certain analyses ($k = 2$). This limitation could affect the precision of the estimation, potentially failing to accurately reflect the true relationship between emotional intelligence and the symptoms of internet gaming disorder. The results of these analyses should therefore be interpreted with caution. Additionally, the present meta-analysis is limited by the following points: most of the included studies used a non-probabilistic sampling method (i.e., convenience sample, non-representative sample), which makes it difficult to generalize the meta-analytic results. Most also used a cross-sectional research design, which cannot draw causal inferences on the association between emotional intelligence and Internet gaming disorder symptomatology. Longitudinal studies might help to understand this association in chronological terms to determine whether emotional intelligence precedes Internet gaming disorder symptomatology (or vice versa). In addition, four studies which examined the relationship between emotional intelligence and Internet gaming disorder symptomatology could not be included in the meta-analyses as they did not provide statistical data to compute the effect sizes and their authors did not reply to the request for data. There was also great heterogeneity among the correlation coefficients, so that there are possibly other moderator variables which could not be considered in the present analysis because they did not report on the original studies (i.e., hours playing or percentage of Internet gaming disorder in the sample) and could be relevant in explaining this variability. It would be interesting in future primary studies to analyze the emotional intelligence-Internet gaming disorder relationship to include other variables that could be used as moderators, such as participant variables (i.e., personality traits), consumption habits (i.e., hours of playing, game genre, game mode) and study methodology (i.e., study design, sampling method, risk of bias). Future research could focus on analyzing the components of emotional intelligence that have a greater protective effect on the development of Internet gaming disorder, and whether they are differential in the development of other types of addiction. Also, a study could explore whether the size of the correlation between emotional intelligence and Internet gaming disorder symptomatology found is stable across different age groups, or whether there is an age group in which the correlation becomes stronger. Practical implications for the practical field can also be drawn from the results, especially in preventing Internet gaming disorder prevention and in its treatment programs.

Conclusion

The increasing incidence of Internet gaming disorder highlights the need to investigate factors associated with its onset. This study examined emotional intelligence as a study variable in relation to Internet gaming disorder, due to its relevance to the development of other addictive behaviors. The results suggest a significant negative association between Internet gaming disorder and emotional intelligence. A low-to-medium association was found between Internet gaming disorder and overall emotional intelligence, emotional regulation, and social competence. Given the protective role of emotional intelligence in substance and behavioral addictions, a similar role can be expected for gaming disorder. The authors consider that these results could make a valuable contribution to the improvement of research in this area, especially as regards understanding the development of gaming addiction in adolescence and early adulthood.

Appendix A

Studies' Characteristics

Author	Country	Research design	Sampling method	Sample size	Mean Age	SD Age	% Man	Ethnicity	Sexual orientation	Marital Status	IGD Scale	EI Scale
Aksoy & Erol, 2021	Turkey	CS	Convenience sampling collected from three high schools	2001	16.5	1.07	66.6	NR	NR	NR	GASA	ALPS
Amendola et al., 2019	Italy	CS	Convenience sampling collected from secondary schools	280	13.31	2.33	51	NR	NR	NR	CSAS	DERS
Che et al., 2017	China	CS	Convenience sampling from two middle schools	931	16.18	0.95	100	NR	NR	NR	CIAS	Chinese Emotional Intelligence Scale
Dang et al., 2019	China	L	Convenience sampling from university	282	20.47	1.15	40	NR	NR	NR	DSM-5 Criteria	WLEIS
Di Blasi et al., 2019	Italy	CS	Convenience sampling from WoW forums	390	28.28	8.24	74.10	NR	NR	NR	IAT-WOW	DERS-18
Di Blasi et al., 2020	Italy	CS	Convenience sampling from WoW forums, Facebook groups and gaming pages	405	28.1	8	75.1	NR	NR	NR	IAT-WOW	DERS-18
Dieter et al., 2017	Germany	CS	Convenience sampling in a clinic and with advertisements on the websites of the Central Institute of Mental Health and Mannheim University	44 healthy controls and 51 internet addicts (30 IGD)	27.15	8.21	54.74	NR	NR	NR	AICA.30 subscale	EKF
Efrati & Spada, 2023	Israel	L	Convenience sampling from institutes	1056	15.77	1.43	57,7	NR	NR	NR	IGDS9-SF	ERQ-CA
Estévez et al., 2014	Spain	CS	Convenience sampling from schools, universities and leisure time groups, and from associations and centers associated with FEJAR	1316	17.28	2.70	57.4	NR	NR	NR	MULTICAGE CAD-4	DERS
Estévez et al., 2017	Spain	CS	Convenience sampling from nine high schools and vocational education centers	472	15.6	1.33	48.4	NR	NR	NR	MULTICAGE CAD-4	DERS
Estévez et al., 2021	Spain	CS	Convenience sampling of a gambling disorder treatment clinic	95	41.8	13.2	93.5	NR	NR	43.2	MULTICAGE CAD-4	DERS
Fumero et al., 2020	Spain	CS	Convenience sampling from private and public schools	946	14	1.52	51.5	NR	NR	NR	PVP	Social Skill Scale
Gentile et al., 2011	USA	L	Convenience sampling from grades 3,4,7,8 of 6 primary and secondary schools	2998	11.2	2.06	72.6	NR	NR	NR	DSM-5 Criteria	PSI-II
Giordano et al., 2022	USA	CS	Crowdsourcing from Qualtrics	350	15.23	1.35	48.6	44.9% White	NR	NR	IGDS9-SF	ERICA

Author	Country	Research design	Sampling method	Sample size	Mean Age	SD Age	% Man	Ethnicity	Sexual orientation	Marital Status	IGD Scale	EI Scale
Hollett & Harris, 2020	Canada	CS	Convenience sampling from social media advertisements	928	25.6	6.5	61.7	88% White	NR	33.8	PVP	DERS-36
Hong et al., 2022	China	CS	Convenience sampling and online survey	780	14	de 7 a 18	49.9	NR	NR	NR	IGDS	DERS
Kim et al., 2023	Canada	CS	Convenience sampling from universities	1827	19.86	4.34	26.7	39.1% White	NR	78.4	SSBA Gaming	DERS-18
Kim et al., 2023	Canada	CS	Crowdsourcing from Prolific	528	29.12	9.24	43.7	40% White	NR	56.3	SSBA Gaming	DERS-18
King et al., 2013	Australia	CS	Convenience sampling from public and private schools	1287	14.8	1.5	50	NR	NR	NR	PTU Checklist	TISS
Kircaburun et al., 2019	Turkey	CS	Convenience sampling from a high school	470	16.29	1.17	40.4	NR	NR	NR	IGDT-10	TEIQue-SF
Kircaburun et al., 2020	Turkey	CS	Convenience sampling from gaming forums	478	20.88	4.79	96	NR	NR	NR	IGDT-10	TEIQue-SF
Kökönyei et al., 2019	Hungary	CS	Stratified random sampling	1646	15.4	2.19	62.9	NR	NR	NR	POGQ-SF	CERQ-short
Liau et al., 2015	Singapore	L	Convenience sampling from schools	2998	–	–	72.6	72.6% Chinese, 14.2% Malay, 8.8% Indian and 4.3% others	NR	NR	10 item scale DSM-IV	PSI-II
Lin et al., 2023	China	CS	Convenience sampling from social networking sites and gaming forums	1768	17.96	3.04	64	NR	NR	NR	IGDS9-SF	DERS-16
Liu et al., 2017	China	CS	Convenience sampling from elementary schools	420	9.74	0.45	52.3	NR	NR	NR	PVGU	ERQ
Marchica et al., 2020	Canada	CS	Convenience sampling from colleges, universities and social media sites	753	20.77	2.73	45.82	NR	NR	NR	IGDS9-SF	DERS-36
Müller & Bonnaire, 2021	France	CS	Convenience sampling from a school and Facebook groups	201	19.02	4.2	63.18	NR	NR	NR	GAS	DERS
Mun & Lee, 2022	South Korea	L	Data from a longitudinal investigation (GUP)	336 dyads	NR	NR	7.1(fathers)/ 58(boys)	NR	NR	NR	GUP	Social Intelligence Scale

Author	Country	Research design	Sampling method	Sample size	Mean Age	SD Age	% Man	Ethnicity	Sexual orientation	Marital Status	IGD Scale	EI Scale
Nazari et al., 2023	Iran	CS	Convenience sampling from a web-based platform	933	15.08	0.82	58.6	NR	NR	NR	GADIS-A/ IGDS9-SF	DERS-SF
Nugraha et al., 2021	Indonesia	CS	Convenience sampling from schools	136	16.02	0.69	63.2	NR	NR	NR	GAS	ICQ
Parker et al., 2008	Canada	CS	Convenience sampling from communities in Ontario	667	16.20	1.45	37.3	84% White	NR	NR	PVGS	EQ-i:YV
Parker et al., 2013	Canada	CS	Convenience sampling from a local pediatric clinic and special needs school	526(270 clinical outpatients + 256 spceial need students	15.22/16.27	1.63/1.21	64.4	91.5/79% White	NR	NR	PVGS	EQ-i:YV
Paschke et al., 2020	Germany	CS	Random sampling method from market research	1221	13.01	2.36	59.9	NR	NR	NR	GADIS-A/ IGDS/P-IGDS	DERS-SF
Paschke et al., 2021	Germany	CS	Random sampling method from market research	800 dyads	46.38 (parents)/12.99 (children)	0.93(parents)/2.37(children)	47.8(parents)/58.6(children)	NR	NR	NR	GADIS-P/ GADIS-A/P-IGDS	DERS-SF
Paulus et al., 2021	Germany	L	Convenience sampling from a psychiatric clinic	80	9.2	2.03	63.7	NR	NR	NR	DSM-5 Criteria	DERS
Schettler et al., 2023	Germany	CS/L	Random sampling method from market research	1221/659	13.04/13.11	2.39/ 2.38	54/53	NR	NR	NR	IGDS/GADIS-A	DERS-SF
Seo et al., 2012	South Korea	CS	Convenience sampling from schools	2199	13.37	2.09	58.8	NR	NR	NR	KADO Scale	Emotional Intelligence Questionnaire
She et al., 2021	China	CS	Stratified random sampling from secondary schools	3136	13.6	1.3	48	NR	NR	NR	DSM-5 Criteria	CERQ-Short
Soares et al., 2023	Italy/Sweden	CS	Convenience sampling from social media and university campuses	995	25	6.31	31.3	NR	NR	NR	GSMQ-9	CERI (subscale Negative Impact)
Tang et al., 2022	Canada	CS	Convenience sampling from a university	287	19.8	3.01	47	43.6% White	NR	94.8 single, 2.4 married, 2.8 common law	GAIA	DERS-36
Torres-Rodriguez et al., 2018	Spain	CS	Convenience sampling from two public mental health centers (clinical sample IGD+)	31	14.97	1.74	100	NR	NR	NR	IGD-20	TMMS-24
Tuncturk et al., 2023	Turkey	CS	Convenience sampling from an outpatient clinic specialized in GD	222 (111 IGD+)	14.39	2.18	NR	NR	NR	NR	IGDS9-SF/ GADIS-A	DERS

Author	Country	Research design	Sampling method	Sample size	Mean Age	SD Age	% Man	Ethnicity	Sexual orientation	Marital Status	IGD Scale	EI Scale
Uçur and Dönmez, 2021	Turkey	CS	Convenience sampling from schools	1067	14.7	1.8	54.3	NR	NR	NR	GAS	DERS-36
Van Den Eijnden et al., 2018	The Netherlands	L	Convenience sampling from two secondary education schools	538	12.9	0.73	48.9	NR	NR	NR	IGDS	Harters' Self Perception Profile of Adolescents
Wang et al., 2022a	China	CS	Convenience sampling from an online survey	789	20.78	3.72	34.9	NR	NR	NR	IGDQ	WLEIS
Wang et al., 2022b	China	CS	Convenience sampling from online advertisements and posters	109	21.7	2.26	49.5	NR	NR	NR	QSU-Brief Gaming	CERQ
Wichstrøm et al., 2019	Norway	L	Stratified sampling from 2003 and 2004 birth cohorts	740	10	0	51.4	91.7% White	NR	NR	DSM-5 Criteria	Emotion Regulation Checklist/ Social Skills Rating System
Wu et al., 2022	China	CS	Cluster random sampling method from schools	1,28	16.09	0.98	44	NR	NR	NR	PVGU	CERQ
Yen et al., 2018	Taiwan	CS	Convenience sampling from advertisements at universitites	87	23.29	2.34	80.5	NR	NR	NR	DSM-5 Criteria	ERQ
Zahra et al., 2020	Pakistan	CS	Convenience sampling from universities	315	23.97	6.07	51.1	NR	NR	NR	IGD-20	WLEIS

Note. AICA.30 = checklist for the Assessment of Internet and Computer game Addiction. ALPS = Adolescent Lifestyle Profile Scale. CBCL = Child Behavior Checklist. CERI = Comprehensive Emotion Regulation Inventory. CERQ = Cognitive Emotion Regulation Questionnaire. CIAS = Chinese Emotional Intelligence Scale. CSAS = Video Game Dependency Scale. DERS = Difficulties in Emotion Regulation Scale. EKF = Emotional Competence Questionnaire. EQ-i:YV = Emotional Quotient Inventory: Youth Version. ERICA: Emotion Regulation Index for Children and Adolescents. ERQ = Emotion Regulation Questionnaire. GADIS- A = Gaming Disorder Scale for Adolescents. GADIS-P = Gaming Disorder Scale for Parents. GAIA = Game Addiction Inventory for Adults. GAS = Gaming Addiction Scale. GASA = Game Addiction Scale for Adolescents. GSMQ-9 = Gaming and Social Media Questionnaire. IAT-Wow = Internet Addiction Test – Wow Version. ICQ = Interpersonal Competence Questionnaire. IGDS = Internet Gaming Disorder Scale. PSI II = Personal Strenghts Inventory II. PTU = Pathological Technology Users. PVGS = Problematic Video Game Scale. PVGU = Pathological Video Game Use Questionnaire. PVP = Problematic Videogame Playing. QSU = Brief Questionnaire of Smoking Urges. TEIQue-SF = Trait Emotional Intelligence Questionnaire-Short Form. TISS = Teenage Inventory of Social Skills. TMMS-24 = Trait Meta Mood Scale. WLEIS = Wong and Law's Emotional Intelligence Scale

Appendix B

Publication Bias Analysis: Results of the Egger's Test

Outcome	*k*	b_0	95% CI		*t*	*df*	*p*
			LL	UL			
Any measure of ER	36	−0.231	−0.342	−0.121	−0.227	34	0.822
DERS							
Total score	18	0.318	0.130	0.206	−0.119	16	0.907
Nonacceptance	13	0.205	0.010	0.401	−0.012	11	0.991
(Lack of) Goals	12	0.220	0.028	0.413	−0.334	10	0.745
Impulse	10	0.337	0.081	0.593	−0.301	8	0.771
(Lack of) Awareness	13	0.004	−0.082	0.090	2.030	11	0.067
(Lack of) Strategies	10	0.341	0.038	0.644	−0.351	8	0.735
(Lack of) Clarity	15	0.244	0.104	0.384	−0.822	13	0.426
CERQ							
Maladaptive cognitive strategies	5	0.203	0.007	0.400	−0.113	3	0.918
Adaptative cognitive strategies	3	0.146	−0.111	0.403	−5.958	1	0.106
ERQ							
Cognitive Reappraisal	3	−0.066	−2.563	2.432	−0.518	1	0.696
Expressive Suppression	3	0.163	−4.479	4.805	0.289	1	0.822
Any measure of SEC	13	0.065	−0.097	0.226	−4.2361	11	0.001
EQ-i:YV							
Total score	4	−0.253	−2.070	1.565	−0.004	2	0.997
Intrapersonal	4	−0.249	−2.090	1.593	0.209	2	0.854
Interpersonal		−0.560	−1.884	0.763	0.858	2	0.481
Adaptability		−0.161	−0.783	0.461	0.712	2	0.550
Stress management	4	0.071	−1.142	1.285	−1.012	2	0.418

Note. ER = Emotional Regulation. DERS = Difficulties Emotional Regulation Scale. CERQ = Cognitive Emotion Regulation Questionnaire. ERQ = Emotional Regulation Questionnaire. SEC = Social Emotional Competence. EQ-i:YV = Emotional Quotient Inventory: Young Version. *k* = number of independent samples. b_0 = intercept. LL and UL = lower and upper limits of the 95% confidence interval for b_0. *t* = t-test. *df* = degrees of freedom. *p* = p-value

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Declarations

Conflict of interest The authors report no conflict of interests.

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