UNDERSTANDING ADOLESCENT GAMING ADDICTION: PREDICTORS, INFLUENCES, AND CONSEQUENCES

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Abstract:

Adolescents engaging in online gaming activities as part of leisure activities has become a trend and normal practice. The rapidly growing number of adolescents engaging in problematic gaming behaviour triggered significant attention to the psychosocial, familial, and psychological effects of these behaviours. Understanding the complex nature of gaming addiction is crucial to altering interventions and preventative strategies that help adolescents deal with internet gaming addiction behaviours. Therefore, the systematic literature review (SLR), conducted using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, included 21 peer-reviewed articles to identify the psychological predictors and psychosocial predictors and examine the role with regard to both factors in the gaming addiction development among adolescents; to explore the social influences, such as social norms, peer influences, and family dynamics, on adolescent gaming behaviour; and to understand the role of emotional regulation and psychological well-being in adolescent gaming behaviours. Research showed that sensation seeking, social anxiety, internalizing symptoms, as well as low self-esteem are significant predictors of problematic gaming among adolescents. Personality traits and the early onset of gaming activities also influence the development of internet gaming disorders. Peer pressure, peers' gaming habits, social norms, and the social context significantly influenced adolescents' gaming habits. The involvement of parents and family dynamics plays a crucial role in effective interventions for gaming addiction behaviours. Studies also highlighted that adolescents' emotional regulation difficulties are strongly associated with problematic gaming behaviours. Moreover, the long-term effects of gaming addiction behaviours include lower self-esteem, life satisfaction, and social support. A comprehensive and thorough intervention addressing psychosocial predictors, social influence, peers, emotional regulations, family roles, and family dynamics can improve the effectiveness

of prevention and intervention measures for adolescents with problematic gaming. This SLR offers a thorough review of current research on internet gaming addiction with the aim of assisting educators, counsellors, and clinicians in managing adolescents' gaming addiction.

Keywords:

Adolescent, Excessive Gaming, Internet Gaming Disorder, Problematic Gaming Behaviour and Video Gaming Addiction.

Introduction

Over the past few decades, video gaming has grown as one of the most popular leisure activities. The advancement of technology and the availability of internet access have eased the involvement of gaming activities as part of daily life activities. It is reported that 190.6 million of Americans ranging from five years old to ninety years old play video games, and 61% of the United State population spends more than an hour playing video games (Entertainment Software Association, 2024). On the other hand, in the United Kingdom, it is reported that, there were 37.7 million video game players and 55% of the population using video games as a form of entertainment, enjoyment and diversion (Clement, 2024). Although gaming activities provide entertainment and amusement, gaming can lead to pathological behaviours due to uncontrollable, excessive, and compulsive use (Griffiths, 2010). Individuals who are addicted to video games may undergo short-and long-term emotional, psychological and neurological consequences (Mohammad, Jan & Alsaedim, 2023). They might experience social withdrawal and psychological withdrawal as they tend to shift their attention from social interactions towards spending more time playing games. In addition to that, they may feel devastated and lost when they are unable to engage in gaming activities, react impulsively and show emotional instability when they are forced to stop playing games (Mohammad, Jan & Alsaedim, 2023).

A study of the psychosocial causes and consequences with regard to pathological gaming was conducted and highlighted individuals who presented with higher loneliness, lower social competence, lower life satisfaction as well as lower self-esteem are linked with highly problematic gaming behaviours (Lemmens, Valkenburg & Peter, 2011). There is a reciprocal relationship that exists between loneliness and pathological gaming behaviours (Lemmens et al., 2011). Lemmens et al. (2011) addressed the need to highlight a psychosocial issue, which consisted of social incompetence, low self-esteem, including loneliness, to minimize the risk of adolescents developing pathological gaming issues. Therefore, it is essential to acquire a more profound comprehension of the predictors, influences, and consequences of gaming behaviours to develop effective, comprehensive prevention strategies and interventions.

The World Health Organization (WHO) has classified gaming disorder as a specific type of disorder in the International Classification of Diseases (ICD) 11th Revision (WHO, 2018), while the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, has examined Internet Gaming Disorder as a condition warranting additional research, characterized by the following proposed symptoms: i. Preoccupation or obsession with gaming activities; ii. withdrawal symptoms, including anxiety or irritability if gaming is restricted or taken away; iii. tolerance, the requirements to play more games and spend more time gaming to fulfil the craving and urge of gaming; iv. difficulties in reducing

playing, making many unsuccessful attempts to stop gaming; iv. Priorities in gaming include giving up other activities and losing interest in once-enjoyed hobbies because of gaming; v. continuing to play games despite facing issues; vi. lying or deceiving family members about the total duration of time spent in gaming; vii. Using gaming as a tool to relieve negative emotions and escape from negative moods such as guilt or hopelessness; viii. Facing the risk of losing a job or a relationship due to excessive gaming (American Psychiatric Association, 2013). Individuals who fulfil at least five or more proposed criteria within a year will be diagnosed with internet gaming disorder (American Psychiatric Association, 2013).

Adolescence is known as a stage that includes exploring one's identity, wanting autonomy (Steinberg & Silverberg, 1986) and undergoing periods of storm and stress (Arnett, 1999). The ease of internet connections and the presence of multiple types of gadgets, such as smartphones, tablets, laptops, game consoles, and virtual reality gaming, make gaming activities more immersive and interactive. Adolescents are more vulnerable to gaming addictions, as most of them are known as digital natives (Prensky, 2001). Hence, this research aims to discover the complex aspects of adolescent gaming addiction by focusing on the underlying predictors and the influences that increase or decrease the risk of gaming behaviours. The increase in gaming addiction among adolescents has raised a concern about its effects on adolescents' psychological health, general development and social interactions. Although much attention and acknowledgement of this issue, much more needs to be learned about the complex element factors that have contributed to gaming addiction as there is a significant gap between the complex factors that contribute to gaming addiction.

Objectives
There are three research objectives. The first research objective is to identify the psychological predictors, psychosocial predictors and examine both factors with regard to the development of gaming addiction among adolescents. The second objective is to explore the social influences, such as social norms, peer influences, and family dynamics, on adolescent gaming behaviour. The third is to understand the role of emotional regulation as well as psychological well-being in adolescent gaming behaviours.

Literature Review
Previous studies indicate a few predictors that have been linked to the risk of developing gaming addictions among adolescents. Individuals whose basic psychological needs have been fulfilled have more control over their lives and are less influenced by environmental factors (Kaya, Turk, Batmaz & Griffith, 2023). According to self-determination theory (SDT), if one's basic psychological needs are not fulfilled or supressed, it will lead to negative effects such as online gaming addiction (Kaya et al., 2023). SDT theory highlighted people have three basic psychological needs, such as autonomy, competence, and relatedness, that play a significant role in one's well-being and psychological growth (Uysal & Yildirim, 2016). Individuals that gained the sense of autonomy feel more competent and independent and are less vulnerable to external environmental influences such as online gaming, however, if their sense of autonomy is not fulfilled, they may turn to gaming as an alternative to gain control.

Essential psychological needs, such as one's motivation for one's behaviours, are predictors of one's online gaming addiction behaviours (Kaya et al., 2023). Problematic gaming behaviours are often associated with low life satisfaction, a higher level of anxiety, and depression

(Mentzoni et al., 2011). Apart from that, the young age group and male gender are two significant predictors of internet gaming addiction behaviours (Mentzoni et al., 2011).

A study was conducted to explore Baumeister's escape from self-theory among Korean adolescents. The research discovered that "escaping from self" is a strong predictor of internet gaming addiction behaviours and explained that adolescents who suffer from self-discrepancy engage in gaming activities to prevent themselves from dealing with reality (Kwon, Chung, & Lee, 2011). These findings align with the studies conducted by Hellström et al. (2012), which found that adolescents excessively engage in gaming activities as a means for them to escape from their daily problems or to alleviate their worries about problems.

Peers or friends were one of the reasons adolescents engaged in gaming activities (Hellström et al., 2012). Video games are often used as a social engagement tool among adolescents with the aim to communicate, to develop friendship, and to connect with peers (Jin et al. 2021).According to Hellström et al. (2012), motives of playing games are a predictor for negative consequences of gaming; adolescents who engage in gaming activities because they want to have fun, the games are exciting, and they have many friends playing in the game often associates with lower risk in gaming addictions. On the other hand, adolescents who use gaming activities as a way to escape, play games due to peer pressure or demand from others and gain status is associated with a higher risk of gaming addictions. It is important to acknowledge the motives of gaming among adolescents as the predictor for negative consequences of gaming (Hellström et al., 2012). Aside from that, the gaming habits of peers are one of the factors contributing to gaming addiction (Jin, Qin, Zhang & Zhang, 2021). Peers or friends' frequency of engaging in online gaming showed a positive association with internet gaming disorder symptoms (Wang et al. 2023). On the contrary, peer pressure and the desire to fit in are the factors that engage adolescents regularly in gaming activities (Hellström et al., 2012). According to Wang et al.(2022), adolescents who were being discriminated were more likely to surround themselves with deviant friends. The interaction among deviant friends strengthens the development of maladaptive cognitions related to gaming (Wang et al., 2022). Apart from that, gaming activities have become part of daily activities or habitual responses; almost two-thirds of adolescents are prone to selecting gaming as an option because they have nothing more enjoyable to do (Hellström et al., 2012).

The introduction of live-streaming platforms that focus on live-streaming video games, including e-sports competitions, functions as part of the gaming community in creating a loop of positive reinforcement towards targeted adolescents to continue engaging in gaming activities. Furthermore, the design of the game, as the instant reward system followed by the interactive social gaming community, encourages gamers to indulge themselves in gaming activities. Internet gaming addictions can lead to various consequences. Prolonged gaming activities can have a major impact on mental and physical health issues. Preoccupation with gaming activities can lead some adolescents to struggle with building relationships and making friends, and they often feel lonely as they prioritize spending time connecting with gamers' friends and lack experience with social connections in the real world. Hence, they tend to feel they do not fit into the real world compared to the virtual world (Young, 2009). Apart from that, adolescents who are too engaged in gaming tend to neglect taking care of themselves physically. The neglect includes stopping to clean themselves and having proper meals, which leads to weight loss. In addition, some adolescents might experience several health issues, for example, carpal tunnel syndrome, eye strain, as well as back strain, due to prolonged gaming

activities (Young, 2009). In terms of the psychological aspects, excessive gaming activities often lead to decreased life satisfaction, self-esteem, as well as social support (Teng et al., 2020), anxiety, and sleeping problems (Wei et al., 2022). An in-depth understanding of these predictors, influences, and consequences will provide an extensive and comprehensive understanding of adolescent gaming addiction.

Methodology

Systematic Literature Review (SLR) aims to enable researchers to make critical judgements and draw conclusions about what is known and unknown about the response to the review questions, with different levels of consistency, confidence, and certainty (Briner & Denyer, 2012). There are three phases involved, and the first phase involves examining keywords as well as searching for related terms. The second phase is screening by implementing inclusion and exclusion criteria to screen and select studies. The third stage is the eligibility process, which involves reviewing the article to determine whether it is eligible and matches the research objectives.

Identification

Systematic Literature Reviews facilitate researchers to make judgements and draw conclusions from the findings with certainty, consistency, and rigorous analysis. In this study, Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) were employed. The review procedure is transparent and repeatable, and it is a comprehensive report that enhances the reliability of the findings and reduces bias in the selection and synthesis of studies by referring to standardised procedures (Moher et al., 2009). The methodology for this Systematic Literature Review on "Understanding Adolescent Gaming Addiction: Predictors, influences and Consequences" process involves three phases to choose relevant papers to include for this study. The first phase is to identify the keywords and search for related terms using thesaurus, dictionary, and previous research. After all relevant keywords have been enriched, a full search string using the Boolean operator, wildcard, and field code functions were conducted on databases -Scopus and Web of Science (WOS) (refer to Table 1) have been generated. In the first phase of the systematic review procedure, 99 papers were obtained from both databases.

Table 1: The Search String

Scopus	TITLE-ABS-KEY (("factor" OR "cause" OR "determinant" OR "contributor") AND ("Internet Gaming Disorder" OR "Gaming Disorder" OR "Online Gaming Addiction" OR "Internet Game Addiction") AND ("Video Gaming Addiction" OR "Video Game Addiction" OR "Problematic Gaming" OR "Compulsive Gaming") AND ("Adolescent" OR "Adolescents" OR "Teenagers" OR "Teens" OR "Youth")) AND (LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2023) OR LIMIT-TO (PUBYEAR , 2024)) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (LANGUAGE, "English"))
Web of Science	("factor" OR "cause" OR "determinant" OR "contributor") AND ("Internet Gaming Disorder" OR "Gaming Disorder" OR "Online Gaming Addiction" OR "Internet Game Addiction") AND ("Video Gaming Addiction" OR "Video Game Addiction" OR "Problematic Gaming" OR "Compulsive Gaming") AND

("Adolescent" OR "Adolescents" OR "Teenagers" OR "Teens" OR "Youth") (Topic) and Preprint Citation Index (Exclude – Database) and 2024 or 2023 or 2022 or 2021 or 2020 (Publication Years) as well as Article (Document Types) and English (Languages)

Source: (Scopus and Web of Science)

Screening

At the beginning of the screening, 9 duplicate papers with records in both Web of Science and Scopus databases should be removed. This step is essential to prevent double review. The screening process involves the researcher choosing which articles to review and including them in the screening process. A total of 50 papers were excluded based on various inclusion-and-exclusion criteria determined by researchers. In the second phase, 40 articles were evaluated. Next, the researcher proceeds with the exclusion of papers based on the article language (English), timeline of the research (the year 2020-2024), publication stage (final) as well as publications in the form of reviews, systematic reviews, meta-synthesis, meta-analyses, book series, books, chapters, as well as conference proceedings are excluded from the present study. The inclusion and exclusion criteria are presented in Table 2 and were used to choose the articles found through the search method.

Table 2: The Selection Criterion in Searching

| Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline / Years	2020 – 2024	< 2020
Literature type	Journal (Article)	Review, Book, Conference,
Publication Stage	Final	In Press

Source: (Scopus and Web of Science)

Eligibility

The third phase in PRISMA is known as eligibility. Note that there are a total of 40 articles available for the eligibility process. Research proceeds with reviewing the article to determine whether it is eligible and matches the research objectives. A total of 21 articles are eligible as they fulfilled and fit into the requirements of the present study (see Figure 1). A total of 19 papers were omitted because the publication in the form of systematic reviews, reviews, meta-analyses (n=7), abstracts not associated with the objective of the study (n=8), and the sample of the population insignificant to the objective of the study (n=4).

Data Abstraction and Analysis

For this study, an integrative analysis was performed to examine and synthesize the articles. This thorough analysis comprises the use of quantitative methods to analyse and integrate various research approaches to identify related themes and sub-themes. Data collection constituted the primary stage of the theme's evolution. Figure 1 shows how researchers carefully conducted analysis on all 21 publications. Next, the researcher evaluates the recent significant studies by meticulously analysing the methodology used and findings in all studies.

Collaboration between co-authors to identify themes based on the data in the study's context. During the data analysis process, the author recorded all analyses, ideas, and viewpoints that were relevant to the data interpretation in a log. Primarily analysing the methodology used and findings in all studies. Next, the author meticulously compares whether there is any inconsistency in the theme design process. Both authors will discuss and debate any differences in views about the concept or generated themes to ensure consistency among the themes. Based on the search results, 21 articles that met the inclusion criteria for review as shown in Figure 1.
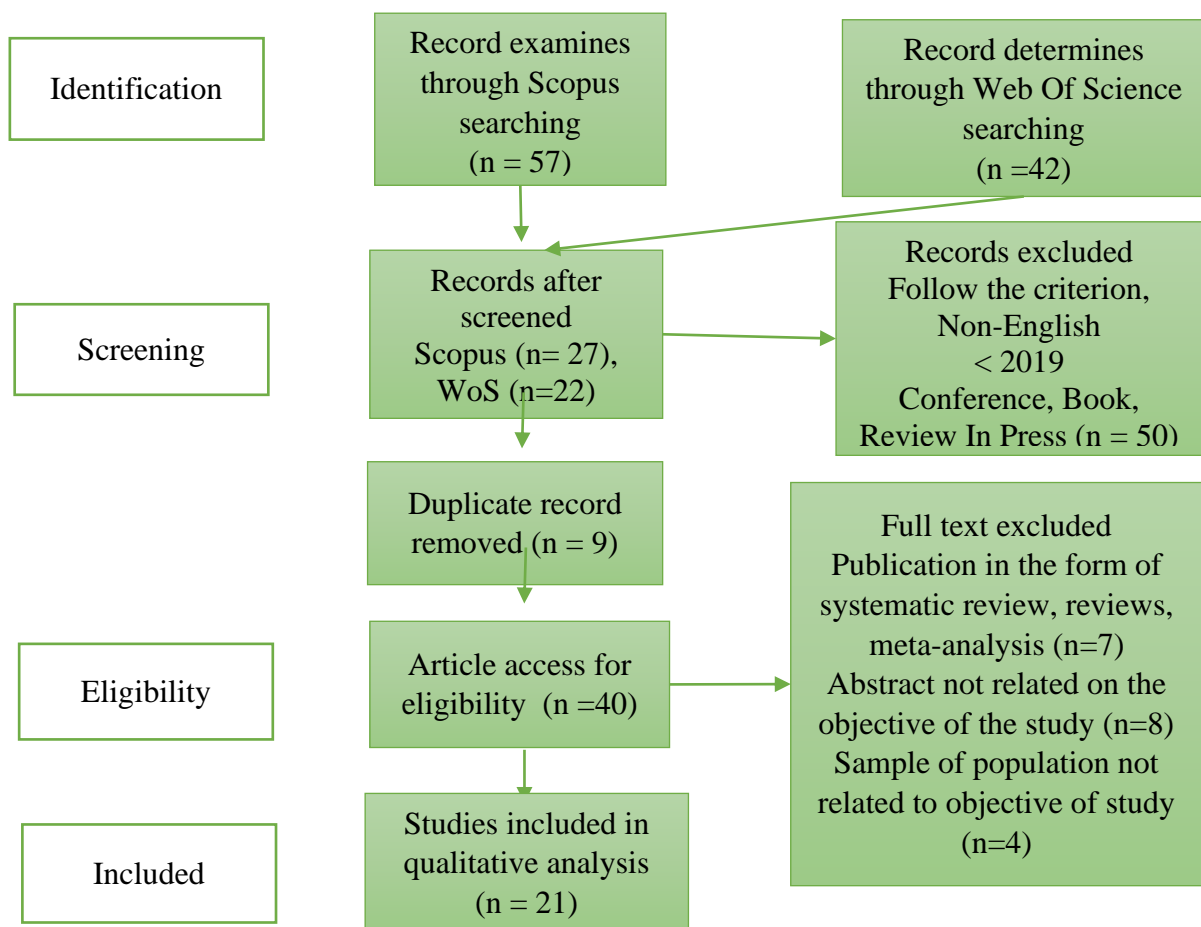
Figure 1. PRISMA Flow Diagram

Source: (Moher et al. 2009)

The related themes were adjusted in the end to maintain coherence. Two experts conducted the analysis selection, one in counselling (more than 20 years in counselling and psychotherapy, welfare and community services, education counselling, guidance and counselling, Juvenile and youth counselling.) and the other in counselling (13 years of experience in guidance and counselling), to assess the validity with regard to the problems. The expert review phase ensures the clarity, significance, and appropriateness of each subtheme by defining the domain.

Result and Finding

The following are the findings of this study. There are generally three themes: i. psychological and psychosocial predictors and factors in the gaming addiction development among adolescents; ii. Social influences, social norms, peer influences, and family dynamics affect adolescents' gaming behaviours. iii. The role of emotional regulation and psychological well-being in adolescent gaming behaviours.

Numerous studies have been conducted to further explore the contributing factors to addiction to gaming activities. Previous studies highlighted that psychological and emotional dependence, personality traits, motivations behind gaming behaviours and psychosocial aspects are among the predictors, factors and causes that affect one's addiction behaviours. Akbari et al. (2023) conducted a study to identify psychosocial predictors associated with problematic gaming, gambling, as well as social media use among adolescents and reviewed that adolescents with problematic gaming behaviours and highly engaged in social media have high social anxiety, high sensation-seeking and present higher internalizing symptoms. This finding is aligned with studies conducted by André, Broman, Hakansson, and Claesdotter-Knutsson (2020), which highlighted psychological factors as the predictors that contributed to behaviour addictions. According to André et al. (2020), compared to non-addicted gamers, adolescents who have gaming addictions presented higher psychological distress. Milani & Gentile (2024) also reviewed the role of psychological factors, especially adolescents who suffer from interpersonal relationships with low coping abilities and have high scores in externalization are more likely to suffer from internet gaming disorder. Emotional dependence, detachment from other activities, social withdrawal, and long durations spent playing games are the predictors of engagement in online gaming activities among Indian youth (Misra, Singh, & Singh, 2020). One's emotional dependence, where adolescents use gaming as an escapism from dealing with daily life events; the behaviours of social withdrawal, where a tendency to be absent from socially connected people due to engagement in gaming activities; detachment from other activities and prioritizing gaming over other activities in life; and long duration spent in gaming activities resemble high addiction levels (Misra et al., 2020). Besides psychological factors, one's personality traits also possess a greater impact concerning the development of gaming addictions. According to González-Bueso et al. (2020), the level of engagement with internet gaming addictions is based on one's personality differences. The study highlighted personality traits and factors associated with gaming addiction behaviours. According to González-Bueso et al. (2020), Individuals with a present profile with more pronounced psychopathological symptoms presented with higher scores for personality traits like introversive, doleful, inhibited, forceful, unruly, self-demeaning, oppositional, and borderline tendencies followed by lower scores in histrionic, egotistic, and conforming more susceptible to more severe internet gaming disorders. Different combinations of personality traits contributed to determining the severity and complexity of gaming addiction disorders. Besides personality factors, it is essential to include the motivations behind gaming behaviours among adolescents. A study performed by Larrieu et al. (2022) discovered that "competitive" players and "escapers" players showed higher scores in internet gaming addictions compared to "recreational" players. The study also reviewed that, among the three motivational clusters of players, "recreational," "competitive," and "escapers," the psychological health scores for the escapers players were found to be highest compared to all three types of players and these findings align with the previous study on the role of psychological factors in determining the engagement of gaming activity behaviours (Milani & Gentile, 2024). Therefore, we can conclude that the purpose of gaming determines the severity of internet gaming among

adolescents. On the other hand, according to Nakayama et al. (2020), the development of gaming habits, especially in children who start playing games weekly at the age of 5 as part of their weekly routine lifestyles, exposes them to the risk of developing gaming addictions or problematic gaming behaviours compare to children who have an onset of gaming after ten years old. Early onset of gaming activities is the contributing factor in adolescents developing internet gaming disorders (Blasco-Fontecilla et al., 2023).

The presence of peers, family members, and social norms has a significant impact on adolescents' gaming behaviours. Peer and friend influence plays an essential role during the adolescent stages; this includes the development of gaming activity habits. Individuals who engage in gaming activities regularly tend to have higher scores for internet gaming addiction disorder (Labrador et al., 2023). The studies also review that male' gamers engage in gaming activities more frequently than female players, and the social contexts and peer interactions during gaming activities have an impact on the development of internet gaming addiction behaviours (Labrador et al., 2023). According to Angelini et al. (2024), adolescents who suffer from problematic gaming behaviours have a positive association with social norms and their friend's regular engagement in gaming activities. Angelini et al. (2024) highlighted that adolescents who utilise gaming as a coping mechanism for their troubled emotions are more vulnerable to social influence. Gaming activities have become part of a daily activity or habitual routine. Adolescents who are highly engaged in gaming tend to continue the activities towards adulthood. A longitudinal study carried out by Coyne et al. (2020) to uncover the progression of problematic gaming behaviours from adolescence to adulthood found that adolescents who suffered from severe symptoms of problematic gaming behaviours since adolescents exhibited worsening conditions as they suffered not only from problematic gaming behaviours but also problematic cell phone behaviours, presented together with a high level of anxiety, depression, aggression, and shyness. On the other hand, a study was conducted to study the connection between adolescent internet gaming disorder and simulated gambling activities reviewed that adolescents who engage in playing loot-boxed games that feature the characteristics of mini-gambling components or social casino games were likely to fulfil the criteria for internet gaming disorders (Hing et al., 2023). These findings suggest that social settings, which comprise gambling-simulated conditions, worsen the condition of problematic gaming issue. According to Nogueira-López et al. (2023), male' adolescent family environments without traditional structure, an unstable environment, elevated internet connection duration, and utilising phones in class tend to have problematic internet gaming. Overall, emotional regulation issues and one's psychological well-being play a role in the development of internet gaming addictions among adolescents. Note that a study about the relationship between mothers' depression in childhood and problematic gaming in their children reviewed that children are at risk of developing problematic gaming in later developmental stages if their mother suffers from depression during their childhood stage (Roza et al., 2023). According to Nielsen et al. (2022), parents' engagement and the dynamics of family play a crucial role in assisting adolescents with gaming disorders. Family dynamics and the engagement of family members are essential in assisting adolescents who suffer from gaming addictions (Nielsen et al., 2021). The result aligns with other research that focuses on enhancing parents' role in the therapeutic process by assisting their children in managing their gaming addiction, which showed a reduction in symptoms of gaming addiction behaviours (Huelquist et al., 2022).

Emotional regulations are a key factor in dealing with gaming addictions. Adolescents who exhibit prominent levels of stress, are low in emotional regulation or are present with gaming addiction behaviours have a high tendency toward suicidal behaviours (Chamarro et al., 2024). Another study performed by Schlettler et al. (2024) found that there exists a substantial association that exists between emotional regulation difficulties and problematic gaming. It is reported that boys who suffer from problematic gaming behaviours show difficulties in purposeful behaviours and a lack of emotional awareness. Apart from that, Schlettler et al. (2024) also highlighted those difficulties in emotional regulation further triggered problematic gaming while accompanied by procrastination continuously prolonged and maintained problematic gaming. Simonelli et al. (2024), in a study of the prevalence of internet gaming addiction among children and adolescents with autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD), discovered that higher scores of internet gaming disorder were found. Autism spectrum disorder (ASD)adolescents with internet gaming disorders showed more severe symptoms of internet gaming disorders and attention problems (Simonelli et al., 2024). According to Teng et al. (2020), the negative consequences of internet gaming disorders include one's self-esteem, life satisfaction, and social support.

Table 3 provides an overview finding of selected studies, highlighting the psychological predictors and psychosocial predictors and examining both factors with regard to the development of gaming addiction among adolescents, highlighting the social influences, such as social norms, peer influences, and family dynamics, on adolescent gaming behaviour and the role of emotional regulation as well as psychological well-being in adolescent gaming behaviours.

Table 3: Overview Finding of Selected Studies

Authors (Year)	Title	Findings
Akbari M.; Bahadori M.H.; Khanbabaei S.; Milan B.B.; Horvath Z.; Griffiths M.D.; Demetrovics Z. (2023)	Psychological predictors of the co-occurrence of problematic gaming, gambling, and social media use among adolescents	The study highlighted the importance of recognising the psychological risk factors (lower social support, lower self-esteem, high internalizing symptoms, sensation seeking and social anxiety) linked to the co-occurrence of problematic gaming, social media use, and gaming behaviours. Adolescents who presented with healthier psychological profiles show minimal symptoms of internalising issues.
André F.; Broman N.; Håkansson A.; Claesdotter-Knutsson E. (2020)	Gaming addiction, problematic gaming and engaged gaming – Prevalence and associated characteristics	The study reviewed that high engagement or more time spent in chatting presented a stronger correlation with problematic gaming behaviour than with active gaming.
González-Bueso V.; Santamaría J.J.; Oliveras I.; Fernández D.; Montero E.; Baño M.; Jiménez-murcia	Internet gaming disorder clustering based on personality traits in adolescents, and its relationship	Patients with Internet Gaming Disorder (with higher comorbid symptoms) showed high scores in introversive, inhibited, doleful, unruly, forceful, oppositional, self-demeaning, and borderline traits. They also

S.; Del Pino-Gutiérrez A.; Ribas J. (2020)	with comorbid psychological symptoms	showed higher anxiety symptoms. The study highlighted the internet gaming disorder is associated with certain personality traits.
Hing N.; Russell A.M.T.; King D.L.; Rockloff M.; Browne M.; Newall P.; Greer N. (2023)	Not all games are created equal: Adolescents who play and spend money on simulated gambling games show greater risk for gaming disorder	Adolescents who experienced stimulated gaming activities are more likely to exhibit gaming disorder criteria.
Larrieu M.; Billieux J.; Décamps G. (2022)	Problematic gaming and quality of life in online competitive videogame players: Identification of motivational profiles	The study revealed three distinct motivational clusters among online gamers: recreational players, competitive players, and escapers. Competitive and escaper players presented a higher score of Internet Gaming Disorder. The study highlighted that both psychological health and motivation play an essential role in assessing the problematic nature of competitive gaming.
Milani, Luca; Gentile, Douglas A. (2024)	Factorial structure of the Internet Gaming Disorder questionnaire in the Italian setting: a single-factored ailment or a multifaceted condition?	Individuals presented with internet gaming disorder have lower scores in interpersonal relationships, less effective coping mechanisms, and high scores in externalisation behaviours.
Misra R.; Singh S.; Singh N. (2020)	Assessing behavioral patterns for online gaming addiction: A study among Indian youth	Emotional dependence, social withdrawal detachment from other activities, and long duration spent in gaming activities are predictors of online gaming addiction.
Nakayama H.; Matsuzaki T.; Mihara S.; Kitayuguchi T.; Higuchi S. (2020)	Relationship between problematic gaming and age at the onset of habitual gaming	The risk of problematic gaming is positively associated with a younger age of starting weekly gaming.
Angelini F.; Pivetta E.; Marino C.; Canale N.; Spada M.M.; Vieno A. (2024)	Social norms and problematic gaming among adolescents: The role of Internet use coping motives	Peer influences play a crucial role in the development of problematic gaming behaviours. Social norms and perceived friends's gaming frequency were positively associated with one's gaming behaviours and problematic gaming.

Coyne S.M.; Stockdale L.A.; Warburton W.; Gentile D.A.; Yang C.; Merrill B.M. (2020)	Pathological video game symptoms from adolescence to emerging adulthood: A 6-year longitudinal study of trajectories, predictors, and outcomes.	Individuals who presented with increasing symptoms of pathological gaming symptoms have a higher tendency to exhibit increases symptoms over time, such as a higher level of depression, anxiety, aggression, shyness, and problematic in handphone use.
Hülquist J.; Fangerau N.; Thomasius R.; Paschke K. (2022)	Resource-Strengthening Training for Parents of Adolescents with Problematic Gaming (Res@t-P): A Clinical Pilot Study	Resource- strengthening training for parents of adolescents with problematic gaming shows there is an improvement in parental and family dynamics and helps in reduction of problematic gaming symptoms among adolescents.
Labrador M.; Sánchez-Iglesias I.; Bernaldo-de-Quirós M.; Estupiñá F.J.; Fernandez-Arias I.; Vallejo-Achón M.; Labrador F.J. (2023)	Video Game Playing and Internet Gaming Disorder: A Profile of Young Adolescents	Individuals who have higher Internet Gaming Disorder scores are often linked to increased gaming frequency. Males showed preferences for game consoles, and females prefer mobile phones.
Nielsen P.; Christensen M.; Henderson C.; Liddle H.A.; Croquette-Krokar M.; Favez N.; Rigter H. (2021)	Multidimensional family therapy reduces problematic gaming in adolescents: A randomised controlled trial	Parental, family dynamics, and family therapy (Multidimensional Family Therapy) were effective in treating adolescents with internet gaming disorder.
Nielsen P.; Rigter H.; Weber N.; Favez N.; Liddle H.A. (2023)	In-session gaming as a tool in treating adolescent problematic gaming	Parents and family factors play a role in the development of problematic gaming behaviour. Negative parenting and conflictual family dynamics heightened the risk of problematic gaming, whereas positive parenting and more supportive family dynamics reduced the risk of developing problematic gaming behaviours.
Blasco-Fontecilla H.; Menéndez-García Á.; Sanchez-Sanchez F.; Bella-Fernández M. (2023)	Lack of educational impact of video game addiction in children and adolescents diagnosed with ADHD: A cross-sectional study	Impulsivity influenced by neurodevelopmental, clinical, and neuropsychological factors is a risk factor for internet gaming disorder.

Chamarro A.; Díaz-Moreno A.; Bonilla I.; Cladellas R.; Griffiths M.D.; Gómez-Romero M.J.; Limonero J.T. (2024)	Stress and suicide risk among adolescents: the role of problematic internet use, gaming disorder and emotional regulation	Adolescents presented with poor emotional regulation on problematic gaming were vulnerable to the risk of suicide due to stress. Stress's impact on suicide risk was not mediated by problematic internet use but is mediated by emotional regulation and gaming disorder.
Nogueira-López A.; Rial-Boubeta A.; Guadix-García I.; Villanueva-Blasco V.J.; Billieux J. (2023)	Prevalence of problematic Internet use and problematic gaming in Spanish adolescents	Risk factors for problematic gaming are male gender, unstable living situation or non-traditional family structure, elevated internet connection time, and using a mobile phone in class.
Roza T.H.; Rabelo-da-Ponte F.D.; Spritzer D.T.; Hoffmann M.S.; Massuda R.; Salum G.A.; Miguel E.C.; Rohde L.A.; Pan P.M.; Kessler F.H.P.; Gadelha A.; Passos I.C. (2023)	Depression in mothers at childhood: Direct and indirect association with problematic gaming in late adolescence/young adulthood	A child whose mother suffered from depression during their childhood is one of the risk factors for the child to develop problematic gaming behaviours later in life.
Schettler L.M.; Thomasius R.; Paschke K. (2024)	Emotional dysregulation predicts problematic gaming in children and youths: a cross-sectional and longitudinal approach	Emotional regulation difficulties and procrastination are the risk factors for developing problematic gaming behaviours.
Simonelli V.; Narzisi A.; Sesso G.; Salvati A.; Milone A.; Viglione V.; Tolomei G.; Masi G.; Berloffa S. (2024)	Internet Gaming Disorder in Children and Adolescents with Autism Spectrum Disorder and Attention Deficit Hyperactivity Disorder	Autism spectrum disorder patients with internet gaming disorder showed greater severity and more severe attention problems.
Teng Z.; Pontes H.M.; Nie Q.; Xiang G.; Griffiths M.D.; Guo C. (2020)	Internet gaming disorder and psychosocial well-being: A longitudinal study of older-aged adolescents and emerging adults	Internet gaming disorder showed a negative impact on psychosocial well-being, self-esteem, social support, and life satisfaction.

Discussion

Prior research outlines that adolescent presented with social anxiety, high internalizing symptoms, and sensation seeking are prone to gaming addiction behaviours (Akbari et al., 2023; André et al., 2020). Psychological and social factors are significant predictors of the development of gaming addiction. Understanding these patterns facilitates identifying adolescents who pose a higher risk of internet gaming addictions. Furthermore, interventions should be targeted at addressing psychological issues faced by adolescents by strengthening their coping mechanisms. The age-onset of gaming, the high frequency of engagement in gaming activities, and involvement in gambling-like components of these activities increase the risk of adolescents developing problematic gaming addictions (Nakayama et al., 2020). This means that it is crucial to include these findings as part of early intervention and prevention actions targeted at younger children and parents to reduce the risk of developing gaming addiction behaviour among children and adolescents. Note that it is important to address the motivation for playing games among gamers, as previous studies showed recreational players are less addicted compared to "competitive players' and "escapers (Larrieu, Billieux, & Decamps, 2022). Gaming activities should be viewed as leisure activities or stress-relieving activities rather than tools to escape from reality.

Previous studies have demonstrated that peers, family, and social norms have a heavy impact on adolescents' gaming behaviours. Several findings suggested that adolescents with problematic gaming are frequently influenced by their friends' gaming habits and social norms, especially when they utilise gaming as a tool to cope with emotions (Angelini et al., 2024); the gaming behaviours are further reinforced by their peers to fulfil their need to be accepted as part of a group enhance more engagement in gaming activities. Adolescents who are regular players tend to have a higher score of internet gaming addictions, and their behaviour is influenced by peer interaction and the social context. Therefore, family dynamics and the engagement of family members are essential in assisting adolescents who suffer from gaming addictions (Nielsen et al., 2021). Parents are crucial in assisting their children in managing gaming addiction. The empowerment of parents' roles, such as monitoring, providing support, and providing guidance in helping adolescents cope with gaming addictions, should be taken as part of the intervention strategy. There is a potential risk that adolescents will develop a gaming addiction if the games they play have game content that is designed like gambling activities (Hing et al., 2023). This finding suggests there is a need to carefully look at the design and content of the games that adolescents and children choose for gaming activities to prevent the risk of gaming and gambling addictions. Therefore, parents play a crucial role in helping adolescents filter and select types of games that benefit them and bring less harm to them.

Emotional regulations are vital in addressing gaming addictions among adolescents. Males suffered more from problematic gaming, and they often suffered difficulties in purposeful behaviours and a lack of emotional awareness (Schettler et al., 2024). Therefore, it is important to include specific topics that focus on being aware of one's emotions, understanding different emotions, and regulating emotion strategies as part of the content for effective intervention in helping adolescents deal with internet gaming disorders. On the other hand, vulnerable groups like children and adolescents who are diagnosed with ASD as well as ADHD and also have internet gaming disorders experience more severe symptoms of internet gaming disorders compared to others (Simonelli et al., 2024). The findings contribute to developing a more profound comprehension of the symptoms of internet gaming disorder among adolescents diagnosed with ASD and ADHD through in-depth and effective interventions. Internet gaming

disorders lead to negative impacts on the psychological well-being of adolescents. Adolescents with internet gaming disorders might suffer from social support, lower self-esteem, as well as life satisfaction (Teng et al., 2020). To have a better understanding of internet gaming addictions among adolescents, it is crucial to include one's psychological well-being, emotional regulation, personality traits, motivations of gaming behaviours and procrastination behaviours. Intervention strategies should consider these factors and be personalized according to their needs.

Conclusion

Gaming addictions among adolescents are an emerging issue, and the conditions have become more complicated due to the complex interaction between psychological, psychosocial, emotional, personality traits, peer influence, and social norms. The objective of study has been successfully achieved. The psychological, psychosocial predictors, social influences, and family dynamics on the development of gaming addiction among adolescents has been identified. The findings reviewed show that adolescents' psychological well-being, psychosocial factors, social norms, peers' gaming habits, peer pressure, and the social environment have a significant impact on their gaming habits. Adolescents exposed to gaming at a younger age also tend to have a higher risk of developing gaming addiction behaviours. Adolescents with low emotional regulation have trouble with gaming.

The findings contribute valuable insights into both the causes of gaming addiction and potential intervention strategies in manging gaming addiction behaviours. Comprehensive and individualized interventions that consider psychological, social, emotional, and family dynamics should be implemented as part of prevention and intervention strategies. Most of the data presented in the studies is self-reported, which is potentially biased.

Apart from that, due to the diversity and complexity of the gaming context, for future study, it is essential to include cultural variations, game genres, and the various tools or consoles used in gaming. Furthermore, there are limited studies that focus on long-term effects, as most of the research focuses on immediate consequences, which might include neglecting or ignoring potential variables or factors that may be essential for a comprehensive understanding of gaming internet addictions. Hence, to gain an enhanced understanding of the long-term effects of gaming, it is suggested to include longitudinal studies to be implemented for the future study.

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