

Effect of Perceived Social Support on Internet Gaming Disorder Mediated by Social Connectedness among Emerging Adults in Malaysia



ARTICLE INFO

Article Type

Descriptive Study

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How to cite this article

Goh CZ, Ismail A, Amat MAC, Keh FB, How W. Effect of Perceived Social Support on Internet Gaming Disorder Mediated by Social Connectedness among Emerging Adults in Malaysia. Health Education and Health Promotion. 2025;13(2):331-337.

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Article History

Received: April 15, 2025
Accepted: June 24, 2025
ePublished: July 1, 2025

ABSTRACT

Aims Internet gaming disorder is a growing global concern; however, further research is needed to deepen the understanding of the disorder in order to develop more effective treatment strategies. This research aimed to examine the mediating role of social connectedness in the relationship between perceived social support and internet gaming disorder among emerging adults in Malaysia.

Instrument & Methods This quantitative study investigated the mediating role of social connectedness between perceived social support and internet gaming disorder among emerging adults aged 18 to 29 years in Malaysia between July 2023 and May 2024. The participants were evenly distributed across various states. The selection criteria included non-professional gamers, a minimum score of 32 on the IGDS9-SF, and at least 12 months of gaming experience. Respondent-driven sampling was implemented, starting with 20 seeds and ultimately resulting in 389 participants.

Findings Social connectedness served as a full mediator in the relationship between perceived social support and internet gaming disorder, indicating that perceived social support affects internet gaming disorder indirectly through social connectedness. Higher perceived social support predicted lower internet gaming disorder ($\beta=-0.192$), higher perceived social support predicts higher social connectedness ($\beta=-0.458$), and higher social connectedness predicts lower internet gaming disorder ($\beta=0.323$).

Conclusion Social connectedness significantly mediates the relationship between perceived social support and internet gaming disorder.

Keywords Internet Gaming Disorder; Mediation; Mental Health; Perceived Social Support

CITATION LINKS

[1] The internet ... [2] The prevalence and possible ... [3] Relationship between time spent ... [4] Depression and disordered ... [5] Is internet gaming disorder ... [6] The association between internet ... [7] Relationships between psychological ... [8] International statistical classification ... [9] Problematic ... [10] Internet users ... [11] Internet gaming disorder behaviors in emergent ... [12] A systematic review of the co-occurrence of gaming disorder and other ... [13] Internet gaming disorder ... [14] Internet gaming disorder behaviours ... [15] Emerging adulthood ... [16] Gaming disorder ... [17] DSM-5 diagnosis of internet gaming disorder ... [18] Psychometric properties of the nine-item Korean internet ... [19] Cross-cultural adaptation of the Internet Gaming Disorder Scale-short form ... [20] Psychometric validation of the ... [21] Clarification of the cut-off score ... [22] Efficacy of cognitive behavioural therapy for internet gaming ... [23] Effectiveness of cognitive behavioral therapy-based ... [24] The comparative efficacy of treatments ... [25] Effectiveness of a brief group intervention program for young adults with ... [26] Treatment outcomes of a CBT-based group intervention for ... [27] The “what” and “why” of goal pursuits: Human needs and the self-determination ... [28] Predicting depression ... [29] Defining the beginning ... [30] Emerging adulthood ... [31] Need frustration, gaming ... [32] A powe ... [33] Principles and practice ... [34] A brief guide to structural ... [35] The multidimensional ... [36] The Swedish version ... [37] Validity and reliability ... [38] Social connectedness, dysfunctional ... [39] Translation and adaptation of ... [40] Social connectedness scale-revised ... [41] Measuring DSM-5 internet gaming disorder ... [42] Spanish validation and scoring of the internet gaming ... [43] Social relationships and the health of older adults ... [44] Children’s stressful life experience, school connectedness ... [45] Relationship of internet gaming disorder ... [46] The impact of social and spiritual connectedness ... [47] Stigmatizing attitudes toward internet gaming disorder, problematic ... [48] A systematic review of metacognitions in internet ... [49] Stigma and other public perceptions of recreational gaming ...

Introduction

Internet gaming disorder (IGD) is characterized by “persistent, recurrent, and excessive involvement with computer or video games that is uncontrollable, despite the presence of associated problems” [1]. As society becomes increasingly reliant on the internet for daily activities, this disorder has intensified in contemporary society. Research has identified numerous adverse consequences linked to IGD, including social withdrawal, academic decline, physical health problems [2], sleep deprivation [3], depression [4], cybercrimes, suicidal ideation [5], family conflict, interpersonal relationship issues, and impulsivity [6].

While gaming may provide individuals with leisure and potential benefits [6], excessive gaming can lead to addiction, causing them to neglect important life responsibilities [7]. Before the COVID-19 pandemic, the recognition of IGD gained momentum, as it was included in Section 3 of the DSM-5 and classified as a gaming disorder in the ICD-11 by the World Health Organization [8]. In 2020, the pandemic further exacerbated the situation concerning IGD, particularly among adolescents and young adults. It was reported that this increase was due to heightened reliance on the internet for education and limited real-life social interactions [9].

The issue of internet gaming has also affected youths in Malaysia. Despite the lack of precise data regarding the prevalence of IGD in the country, statistics from the Malaysian Communications and Multimedia Commission (MCMC) indicate an increase in the number of internet gamers. MCMC reported that the percentage of online gamers in Malaysia rose from 35.2% in 2018 to 42.8% in 2020 [10]. Compared to adolescents, IGDs among emerging adults are relatively understudied [11-14]. Emerging adults aged 18 to 29 years are particularly susceptible to IGD due to the characteristics of this life stage and a tendency to be more tech-savvy [15].

The DSM-5 lists IGD in Section 3 as a condition that requires further research. However, significant gaps remain in understanding the disorder. For example, there are no standardized diagnostic criteria or universally accepted tools to differentiate between individuals with disordered gaming and those without [16, 17]. To address this gap, Pontes and Griffiths incorporated nine diagnostic criteria from the DSM-5 to create the Internet Gaming Disorder Scale-Short Form (IGDS9-SF) in 2015. Since then, the questionnaire has been universally validated [18-20]. In 2020, Qin *et al.* [21] proposed a cut-off score of 32 out of 45 as sufficient to distinguish between individuals with disordered gaming and those without. Nevertheless, further research is necessary to verify this threshold.

The next gap pertains to the fact that, although most research thus far has predominantly focused on its prevalence, there has been far less emphasis on

discovering protective or intervention strategies for IGD. Treatment approaches for IGD include cognitive behavioral therapy [22, 23], multi-level counseling [24], and family and group-based interventions [25, 26]. While many of these approaches emphasize societal support to mitigate IGD, the underlying mechanisms remain unexplored.

According to self-determination theory [27], individuals may resort to unhealthy behavior as a means of compensation when their basic psychological needs are not satisfied. They may excessively engage in internet gaming when these needs remain unmet in daily life, using online gaming as a form of escapism. While perceived social support may help mitigate this tendency [26], Relationship Motivation Theory [27] further explains that the quality of relationships and a sense of social connectedness may be more crucial than general societal support in reducing IGD. This claim is also supported by Williams & Galliher [28], whose research provided a distinctive definition between social connectedness and perceived social support, stating that social connectedness encompasses not only receiving support but also having a sense of connection and contributing to society. However, this perspective has yet to be examined in the existing body of research. Therefore, investigating the underlying connection between perceived social support and IGD may yield significant insights for improving treatment models for individuals with IGD while also deepening the overall understanding of the disorder.

To address the problems mentioned above, this research focused on emerging adults with IGD. The diagnostic cut-off point of the IGDS9-SF proposed by Qin *et al.* [21] was also utilized to further validate this claim. Additionally, this study aimed to examine the underlying mechanism by which perceived social support could mitigate IGD by proposing social connectedness as a mediating parameter.

Instrument and Methods

Research design and setting

This quantitative research employed a cross-sectional design and a survey method as the most appropriate strategy. The cross-sectional design allows for the collection of data at a specific point in time, whereas the survey method provides a comprehensive understanding of the issue under investigation through the use of structured questionnaires [29]. The study was conducted in Malaysia, with participants recruited evenly across different states, including Kuala Lumpur, Malacca, Negeri Sembilan, Johor, Penang, Kedah, and Sarawak from July 2023 to May 2024.

Sampling

The research involved Malaysian emerging adults. The population of emerging adults has been insufficiently studied in relation to IGD compared to

adolescents [11-13]. Emerging adults, typically aged 18 to 29 years [30], are at an increased risk of developing IGD. This developmental stage is marked by heightened independence from parental supervision, in contrast to adolescence, yet individuals do not assume the full responsibilities of adulthood. Moreover, having grown up in a digital era, emerging adults are generally more tech-savvy compared to adults in their 30s and 40s. This phase is also characterized as the age of feeling in-between and experiencing instability in various aspects of life, including career, relationships, and identity, which can lead to increased negative emotions such as anxiety and stress [30]. Consequently, they may seek escapism through digital entertainment and have a higher tendency to develop online-specific addictions, such as internet gaming addiction [15]. Therefore, the inclusion criteria comprised Malaysian emerging adults aged 18 to 29, a minimum of 12 months of gaming experience, and non-professional gamers with a minimum score of 32 on the Internet Gaming Disorder Scale-Short Form (IGDS9-SF). As individuals with IGD are difficult to reach, combined with the absence of formal documentation on IGD cases in Malaysia [31], respondent-driven sampling, a variant of snowball sampling, was utilized. G*Power analysis recommended a minimum sample size of 76 for regression analysis [32], while structural equation modeling (SEM) suggested a minimum of 200 participants [33, 34]. A total of 389 participants were recruited via respondent-driven sampling. After removing participants who did not meet the research criteria and filtering additional cases through preliminary analysis procedures, a total of 259 participants remained in the study.

Research procedures

Upon receiving approval from the Ethics Committee for Research Involving Human Subjects at the University of Putra Malaysia (JKEUPM), the researchers commenced data collection in July 2023. The researcher initially recruited 20 individuals, known as “seeds,” as the first batch of participants. Among these participants, gender and racial distribution were balanced. After the seeds completed the questionnaire, they were instructed to recommend three peers who fulfilled the research criteria to participate in the study. Participants were provided with incentives for both their participation and referrals.

An online questionnaire was created for ease of administration. Since the researcher aimed to recruit individuals who could potentially be categorized as disordered gamers, screening questions were included. The screening questions consisted of the following: “For the last 12 months, do you consider yourself someone who spends a lot of time on either online or offline gaming?” “Are you aged between 18 and 29 years old?” and “Are you not a professional gamer?” Participants who answered “No” to any of

the screening questions were directed to the end of the questionnaire.

Tools

The Multidimensional Scale of Perceived Social Support

Zimet *et al.* [35] developed the Multidimensional Scale of Perceived Social Support (MSPSS) to evaluate individuals’ perceptions of social support from different sources, including friends, family, and significant others. The questionnaire consists of three subscales, each containing four items, for a total of 12 items.

A higher mean score on the questionnaire indicates a better level of perceived social support. The questionnaire demonstrates good internal consistency, has been translated into other languages, and has been used extensively in a range of studies [35-37].

Social Connectedness Scale-Revised

Lee *et al.* [38] created the Social Connectedness Scale-Revised (SCS-R) to assess how connected a person feels within their social surroundings. It comprises a total of 20 items, with ten items having reversed scores. The questionnaire calculates total scores, where higher scores indicate a lesser degree of social connectedness. The questionnaire has been translated into multiple languages and has shown strong internal consistency and validity [39, 40].

Internet Gaming Disorder Scale-Short Form (IGDS9-SF)

Pontes and Griffiths [41] created the Internet Gaming Disorder Scale-Short Form (IGDS9-SF) to evaluate the extent of IGD over the past year. The questionnaire consists of nine items, each aligned with the nine criteria established by the American Psychiatric Association (APA) in the DSM-5 for the diagnosis of IGD. The questionnaire utilizes a five-point Likert scale ranging from 1 (never) to 5 (very often), resulting in a maximum score of 45, with higher scores indicating increased severity of IGD. In 2020, Qin *et al.* [21] suggested that a cut-off score of 32 out of 45 successfully differentiates between disordered and non-disordered gamers, a claim that has been verified by the original author of the questionnaire. The questionnaire has demonstrated high criterion validity and robust internal consistency and has been translated into over 15 languages [18, 19, 42].

Data analysis

A preliminary analysis was conducted using SPSS version 25.

To check the assumptions, both the normality test and regression test were performed. The Kolmogorov-Smirnov test indicated that the data were normally distributed ($P > 0.05$). Cook’s distance was less than 1, the variance inflation factor (VIF) values were below 5, the scatter plots of residuals versus predicted values displayed no discernible pattern, and the scatterplots of independent and dependent variables exhibited a linear relationship.

Findings

A total of 259 participants with an average age of 23.79±2.94 years participated in the study (Table 1).

Table 1. Frequency of demographic profile of participants (n=259)

Parameter	Values
Age (year)	
18-29	259(100)
Gender	
Male	229(88.4)
Female	30(11.6)
Ethnicity	
Chinese	209(80.7)
Malay	26(10.0)
Indian	24(9.3)

Simple linear regression investigated the predictive relationships between perceived social support and IGD, perceived social support and social connectedness, and social connectedness and IGD. There was a significant relationship between perceived social support and IGD ($p < 0.01$, $\beta = -0.192$), indicating that higher levels of perceived social support were associated with lower levels of IGD. Similarly, the relationship between perceived social support and social connectedness was significant ($p < 0.01$, $\beta = -0.458$), suggesting that increased perceived social support was linked to decreased social connectedness. Finally, the evaluation of social connectedness as a predictor of IGD also yielded significant results ($p < 0.01$, $\beta = 0.323$), indicating that greater social connectedness was associated with higher levels of IGD (Table 2).

Table 2. Linear regression model results

Path	Standardised coefficients beta	F	R ²	p-value
PSS --> IGD	-0.192	9.83	0.037	0.002
PSS --> SC	-0.458	68.27	0.210	0.0001
SC --> IGD	0.323	29.89	0.104	0.002

PSS: Perceived Social Support; SC: Social Connectedness; IGD: Internet Gaming Disorder

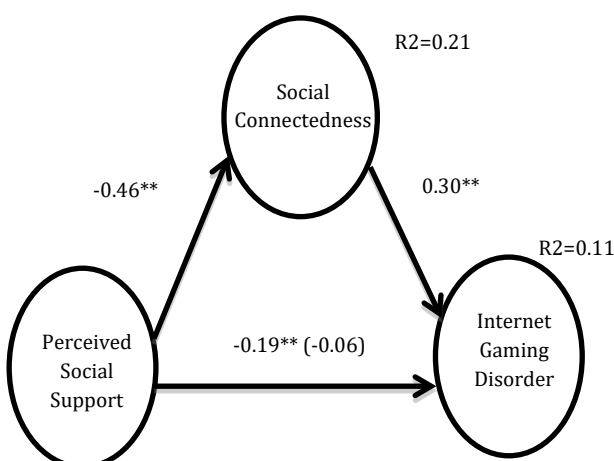


Figure 1. The mediation role of social connectedness in the relationship between perceived social support and Internet gaming disorder

The direct effect of perceived social support on IGD was non-significant when all parameters were

included in the model (Figure 1). However, the indirect pathways from perceived social support to social connectedness and from social connectedness to IGD remained significant, resulting in a significant indirect effect ($\beta = -0.136$, $p < 0.05$; Table 3).

Table 3. Mediation analysis

Path	Estimate	Standard error	Critical ratio	p-value
PSS --> SC	-0.641	0.077	-8.279	0.0001
PSS --> IGD	-0.020	0.024	-0.842	0.400
SC --> IGD	0.076	0.017	4.490	0.0001

PSS: Perceived Social Support; SC: Social Connectedness; IGD: Internet Gaming Disorder

Bootstrapping further confirmed this indirect pathway (95% CI [-0.206, -0.067]). The relationship between perceived social support and IGD was fully mediated by social connectedness. In other words, the direct effect of perceived social support on IGD was only present in the context of social connectedness (Table 4).

Table 4. The bootstrap results

Parameter	Bootstrapping (95% CI)		
	Upper Bound	Lower Bound	Two-Tailed p-value
Standardised direct effect	0.061	-0.193	0.400
Standardised indirect effect	-0.067	-0.206	0.0001
Standardised total effect	-0.305	-0.305	0.0001

Discussion

This research aimed to examine the mediating role of social connectedness in the relationship between perceived social support and internet gaming disorder among emerging adults in Malaysia. The relationship between perceived social support and IGD among emerging adults in Malaysia was fully mediated by social connectedness. One plausible explanation for this result is that, although no study has simultaneously examined all three variables within a mediation model, the indirect links between perceived social support and social connectedness, as well as between social connectedness and IGD, are clear. For instance, individuals who perceive strong social support are often associated with higher social connectedness [43]. Additionally, maintaining strong social connections with family members and peers may mitigate the risk of IGD [44, 45].

Another potential explanation lies in the fundamental distinction between perceived social support and social connectedness. Social connectedness encompasses a broader sense of integration and belonging within a community, in contrast to perceived social support, which pertains to the assistance and reassurance one receives from others [28, 46]. People develop strong social connectedness when they feel valued, have opportunities to contribute, and engage in meaningful interactions with others. In this regard, perceived social support is merely one component of social connectedness. To experience a genuine sense of belonging, it is

necessary not only to receive support but also to be able to offer assistance, feel appreciated, and make meaningful contributions to society. Thus, although perceived social support may help mitigate the severity of IGD, social connectedness may be more influential, as a profound sense of belonging to society could be the primary factor in preventing problematic gaming behaviors.

The robust theoretical framework that underpins the mediated model could be another reason for these findings. The current study applied relationship motivation theory and self-determination theory [27], both of which emphasize that the quality of social connection is a key determinant in fulfilling basic psychological needs, including autonomy, relatedness, and competence in daily life. When individuals experience a profound sense of integration within their social environment, they are less inclined to resort to problematic gaming as a means of fulfilling unmet psychological needs. Instead, they derive satisfaction and validation from meaningful engagements and real-world interactions.

When considering these theories in relation to emerging adults, instability and challenges in life can make them vulnerable to using online entertainment as an escape; however, this is not a permanent solution [15]. Emerging adults should instead actively build and maintain real-world relationships to foster a sense of belonging and social connection. Seeking professional help from counselors could also be a way to enhance real-world connections and identify more effective methods to improve their social integration with the world.

While this study uncovered key findings and drew significant conclusions, it is essential to acknowledge its limitations. Firstly, there are still no official or formal diagnostic criteria for IGD to date. Even though Pontes and Griffiths [41], the original developers of the IGDS9-SF, have validated the diagnostic cut-off score proposed by Qin *et al.* [21], it remains an informal diagnostic measure. Given the severity of IGD, it is imperative for mental health practitioners to establish formal diagnostic criteria in the future.

Additionally, the potential for social desirability bias must be considered, as some participants have expressed feelings of embarrassment regarding their IGD [47, 48]. Individuals affected by this disorder may be hesitant to openly discuss their excessive gaming behaviors for fear of stigma or judgment from others. As a result, they may underreport or deny their problematic behaviors, which could lead to an inaccurate prevalence of the disorder. This issue is even more pronounced in cultures where gaming is stigmatized [49].

Moving forward, future research is recommended to investigate different online game genres, such as Role-Playing Games (RPGs) and Multiplayer Online Battle Arenas (MOBAs), and their connections with

IGD. T'ng *et al.* [31] have mentioned that addiction levels may fluctuate depending on the type of game; however, there is still very limited research comparing the addictiveness of different game types and exploring intervention strategies that could be effective in mitigating IGD.

In terms of implications, the current research may contribute to the body of literature on IGD and professional organizations such as the American Psychiatric Association, as it provides further evidence for its classification under the DSM-5-TR as a condition requiring further study, with the hope that it may one day be officially recognized as a formal disorder. Additionally, the study could assist counselors in improving their therapeutic strategies by emphasizing the importance of strengthening real-life connections among clients with IGD. Furthermore, individuals with IGD may gain a deeper understanding of their condition, seek appropriate assistance when needed, and recognize that they are not alone in facing these challenges.

Conclusion

Social connectedness fully mediates the relationship between perceived social support and IGD among emerging adults in Malaysia.

Acknowledgments: Nothing to report.

Ethical Permissions: This research is derived from a doctoral dissertation in Counseling and was approved by the Ethics Committee for Research Involving Human Subjects at the University of Putra Malaysia (JKEUPM), with the reference number JKEUPM-2023-448. All steps carried out in this research have been reviewed and approved by the university's research ethics committee.

Conflicts of Interests: Nothing to report.

Authors' Contribution: Goh CZ (First Author), Introduction Writer/Main Researcher/Methodologist/Discussion Writer (30%); Ismail A (Second Author), Introduction Writer/Main Researcher/Discussion Writer (25%); Amat MAC (Third Author), Methodologist/Discussion Writer (15%); Keh FB (Fourth Author), Statistical Analyst/Discussion Writer (15%); How W (Fifth Author), Methodologist (15%)

Funding/Support: Nothing to report.

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