

# Empowering Parents: The Impact of a Parenting Practice-Based Care Module on Preventing Internet Gaming Disorder in Elementary School Children

## Abstract

**Background:** The prevalence of Internet Gaming Disorder (IGD) among elementary school children has raised concerns about its potential negative impact on academic performance, social interactions, and overall mental well-being. In response, this research assessed the impact of the parenting Practice-Based Care Module (PPCM) as an effective preventive strategy to empower parents and promote balanced gaming behavior in their children. **Materials and Methods:** A quasi-experimental study was conducted with 170 parents from Gresik Regency, Indonesia, in December 2022 using a non-randomized control group pretest-posttest design. The intervention group received psychoeducation and training on the PPCM, while the control group received training after data collection using a valid, reliable questionnaire. **Results:** The results are showed that the PPCM significantly improved parents' ability to prevent IGD in their children. Eight parental factors significantly influenced endogenous variables, including parental responsiveness, mediation mechanism, parenting style, and parents' ability to prevent IGD, with R2 values in the "good" range (0.50 to 0.75), explaining 60.60% of the variation. The model's strong predictive relevance (Q2 values > 0) supported its effectiveness. Hypothesis testing revealed significant effects, such as parental responsiveness on the mediation mechanism (t-statistic: 3.92) and mediation mechanism on parenting psychoeducation (t-statistic: 2.60). Parenting style also positively impacted parents' ability to prevent IGD (t-statistic: 4.82). Notably, child factors had the most significant influence on parental responsiveness (path coefficient: 0.23). **Conclusions:** This research underscores parents' pivotal role in addressing IGD in elementary school children. The PPCM significantly enhances IGD prevention through key parental factors. Collaboration is essential for fostering a healthy digital environment.

**Keywords:** Behavior, children, internet addiction, parents, self-help groups

## Introduction

The rapid advancement of digital technology has significantly transformed the landscape of contemporary childhood, offering children a plethora of engaging online experiences.<sup>[1]</sup> Among the various digital pursuits, internet gaming has emerged as one of the most popular and captivating activities for elementary school children.<sup>[2]</sup> While gaming can have positive effects on cognitive skills and social interactions,<sup>[3]</sup> there is a growing concern about its potential negative impact, especially with the rising prevalence of IGD among the younger population.<sup>[4-6]</sup> IGD is characterized by excessive gaming habits that lead to significant impairments in daily life, affecting academic performance, interpersonal relationships, and overall

mental well-being.<sup>[6-8]</sup> Addressing this issue has become a priority for parents, educators, and policymakers, who are seeking effective preventive strategies to safeguard the well-being of children in the digital age.

A Korean survey<sup>[9]</sup> showed that 90% of 7,943 parents allowed excessive gadget use among 3 to 9-year-olds, leading to antisocial traits. Parents considered gadgets important for elementary school tasks (53%) but struggled to regulate screen time (43,0%).<sup>[5,10]</sup> According to an Indonesian survey,<sup>[11]</sup> 77,0% of 141 parents adopted indifferent parenting styles, which granted their children unrestricted internet access. This parental behavior, characterized by excessive focus on gadgets, was linked to the development of IGD in children.<sup>[2]</sup>

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Parenting practices encompass responsive parenting, mediation mechanisms, and psychoeducational styles, all influenced by a combination of internal and external factors. Internal factors include age, gender, cultural beliefs, knowledge, education, stable employment, family structure, personal traits, and parental self-efficacy.<sup>[12]</sup> Child-related factors like age, health, and temperament, along with external factors such as parental social support, also influence these practices.<sup>[12-14]</sup> Neglecting these practices (responsive parenting, mediation mechanisms, and psychoeducational styles) in the digital era can lead to parental crises, stress, lack of control, and neglect towards children<sup>[11]</sup> impacting children's emotional, self-regulatory, cognitive, and social development.<sup>[12]</sup> The PPCM aims to address these issues by providing a structured approach to enhance parenting skills in the context of preventing IGD. This research aims to investigate the impact of the PPCM on preventing IGD in elementary school children, assessing its effectiveness in fostering healthy digital habits and promoting balanced gaming behavior.

## Materials and Methods

This study employed a quasi-experimental design with a non-randomized control group pretest-posttest structure to evaluate the effectiveness of the PPCM in preventing IGD among elementary school children. Conducted in December 2022, the research involved comparing outcomes between an intervention group and a control group. The intervention group received psychoeducation and training on the PPCM, developed to enhance parenting practices and prevent IGD. In contrast, the control group received training only after data collection from the intervention group was completed. This approach allowed for an assessment of the PPCM's impact on parenting practices and children's gaming behaviors before and after the intervention.

The study's sample consisted of 170 parents from public and private elementary schools in Gresik Regency, Indonesia, calculated based on a power analysis aimed at achieving 80,0% power with a significance level of 5% and an R2 value of 0.05. The inclusion criteria required parents to live with their children, provide gadgets, have children playing internet games for 1–3 hours daily for less than 12 months, and possess at least a high school education. Exclusion criteria included parents whose children were ill, those over 56 years old, and those who did not complete the psychoeducation process. Data collection involved a pretest, implementation of the PPCM for the intervention group over two weeks, and a posttest three months later. The instruments included Likert scale questionnaires assessing parenting psychoeducation and parents' ability to prevent IGD, as well as a separate questionnaire for child factors such as gender and health status.

Data analysis was conducted using SPSS, including descriptive and inferential statistics. Descriptive analysis

encompassed frequency distribution and percentages, while inferential analysis involved tests for normality and homogeneity, with the independent sample *t*-test and Mann–Whitney test applied to compare pretest and posttest values. The Generalized Linear Models Measure (GLM-RM) assessed correlations between the intervention and dependent variables at different points. Ethical approval was granted by the Ethics Committee of the Faculty of Nursing, Universitas Airlangga with the approval number 2673-KEPK, with informed consent obtained from all participants.

## Ethical considerations

The research protocol was reviewed and approved by the Health Research Ethics Committee at the Faculty of Nursing, Universitas Airlangga, under ethical approval No. 2673-KEPK, dated 1 November 2022. The ethical review ensured the protection of human rights and the welfare of all participants. Prior to participation, all individuals were fully informed about the study's objectives, procedures, potential risks, and benefits, and written informed consent was obtained. Confidentiality was strictly maintained, with personal data anonymized and securely stored to prevent unauthorized access. The research was designed to minimize risks, which were clearly communicated to participants, along with the assurance of their right to withdraw at any time without any negative repercussions. Participants were selected based on inclusion criteria to ensure fair treatment and representation, without discrimination. The study adhered to the principles of scientific integrity, with transparent data collection and analysis. The authors confirm that they obtained all appropriate patient consent forms, with participants agreeing to the use of their information for research purposes while maintaining confidentiality and anonymity.

## Results

Parental factors were described through eight indicators, which included age, culture, knowledge, level of education, socio-economic status, employment status, health status, and personality. A description of each research variable is explained in Table 1.

The child factor was described through three indicators, which included gender, temperament, and health status. A description of each research variable is explained in Table 2, which presents the influence of child factors on 170 parents. Among them, 89 children (52.40%) were male, 90 children (52.90%) had an easily discouraged temperament, and 36 children (21.20%) showed negative reactivity by reacting with anger when criticized. All 170 children (100,00%) had a healthy health status [Table 2].

The coefficient of determination (R2) was used to assess the ability of endogenous variables to explain the variability of exogenous variables. R2 values less than 0.25 were considered weak, 0.25 to 0.50 were sufficient, 0.50 to 0.75 were good, and values greater than 0.75 were very good. The R2 results are shown in Table 3. Table 3 indicated that

**Table 1: Frequency distribution of parental factors**

Indicators	f (%)
Age	
Late elderly	9 (5.30)
Early elderly	54 (31.80)
Late adulthood	92 (54.10)
Early adulthood	15 (8.80)
Total	170 (100.00)
Culture	
Java	167 (98.20)
Madura	1 (0.60)
Other	2 (1.20)
Total	170 (100.00)
Knowledge	
Good	56 (32.90)
Not enough	114 (67.10)
Total	170 (100.00)
Level of education	
Base	34 (20.00)
Intermediates	106 (62.40)
Higher	30 (17.60)
Total	170 (100.00)
Socio-economy	
Very high	13 (7.60)
High	8 (4.70)
Moderate	27 (15.90)
Low	122 (71.80)
Total	170 (100.00)
Job status	
Employed	159 (93.50)
Unemployed	11 (6.50)
Total	170 (100.00)
Health status	
Healthy	168 (98.80)
Sick	2 (1.20)
Total	170 (100.00)
Personality	
Sanguine	69 (40.60)
Melancholy	30 (17.60)
Phlegmatic	58 (34.10)
Choleric	13 (7.60)
Total	170 (100.00)

the coefficient of determination (R<sup>2</sup>) for all four endogenous variables, including parental responsiveness, mediation mechanism, parenting style, and parent's ability to prevent IGD, fell within the good category, with values ranging from 0.50 to 0.75. This meant that a significant portion of the variation in these endogenous variables was explained by exogenous factors, such as parenting psychoeducation, mediation mechanisms, and parental factors, which together contribute to 60.60%. The remaining 39.40% represented the contribution of other variables not accounted for in the parenting practice-based model.

The predictive relevance (Q<sup>2</sup>) was used to assess the accuracy of the model in predicting the observed values and parameter

**Table 2: Distribution of child factor frequency**

Indicators	n (%)
Gender	
Male	89 (52.40)
Female	81 (47.60)
Total	170 (100.00)
Temperament	
Reactivity negative	36 (21.20)
Easy to despair	90 (52.90)
Withdrawals	19 (11.20)
Activity	25 (14.70)
Total	170 (100.00)
Health status	
Healthy	170 (100.00)
Sick	0 (0.00)
Total	170 (100.00)

estimates. A Q<sup>2</sup> value greater than zero indicated a good model, while a value less than zero suggested a lack of predictive relevance. In Table 4, each construct had a Q<sup>2</sup> value greater than 0, indicating the model's predictive relevance. This meant that the structural model, which explained parental responsiveness, mediation mechanisms, and parenting psychoeducation's impact on parents' ability to prevent IGD, was effective and relevant when applied in various contexts.

Table 5 presents the results of hypothesis testing, indicating significant influences of exogenous variables on endogenous variables. Firstly, the hypothesis stating the influence of parental responsiveness on the mediation mechanism was supported, as the t-statistic value was 3.92, greater than the t-table value of 1.96. The positive linear effect of parental responsiveness on the mediation mechanism was 0.33. Secondly, the hypothesis stating the influence of the mediation mechanism factor on parenting psychoeducation was also supported, with a t-statistic value of 2.60, greater than the t-table value. The positive linear effect is 0.32. Thirdly, the hypothesis indicating the influence of parenting style on parents' ability to prevent IGD was supported, with a t-statistic value of 4.81, greater than the t-table value. The positive linear effect was 0.37. Additionally, the path coefficient value indicated that the child factor variable had the most significant influence on parental responsiveness, with a value of 0.23.

## Discussion

The present study aimed to examine the impact of a PPCM on preventing IGD in elementary school children by empowering parents with effective parenting strategies. The findings of the study shed light on the crucial role of parenting practices in mitigating the risks of IGD and fostering healthier digital behaviors among children. By drawing upon evidence-based parenting practices, the PPCM seeks to arm parents with a tailored set of guidelines to effectively manage their children's gaming activities and create a supportive and conducive digital environment at

**Table 3: Results of the coefficient of determination (R<sup>2</sup>) of parenting practice-based care on parents' ability to prevent internet gaming disorders**

Variables	R Square (R <sup>2</sup> )*
Parent responsive	0.51
Mediation mechanism	0.51
Parenting psychoeducation	0.57
Parents' ability to prevent IGD**	0.61

\*R<sup>2</sup> (coefficient determination), \*\*IGD (internet gaming disorders)

**Table 4: Predictive relevance testing results (Q<sup>2</sup>) of parenting practice-based parenting models on parents' ability to prevent internet gaming disorder in school-age children**

Variables	Predictive Relevance (Q <sup>2</sup> )*
Parent responsive	0.40
Mediation mechanism	0.45
Parenting psychoeducation	0.44
Parents' ability to prevent IGD**	0.47

\*Q (Predictive Relevance), \*\*IGD (internet gaming disorders)

**Table 5: Hypothesis testing results for the development of a parenting practice-based parenting model on the ability of parents to prevent internet gaming disorder**

Influence	Path Coefficient (β)*	T Statistics (T)**	p
Responsive Parents on Mediation Mechanism	0.34	3.92	0.005
Mediation Mechanisms on Parenting Psychoeducation	0.32	2.60	<0.001
Parenting Psychoeducation on the Ability of Parents to Prevent IGD***	0.37	4.81	0.002

\*β (path coefficient), \*\*T (t-statistics), \*\*\*IGD (internet gaming disorders)

home. The results demonstrated a significant positive effect of the PPCM on parents' ability to prevent IGD in their children. Through the implementation of psychoeducation and training, parents were equipped with knowledge and skills to effectively mediate their children's internet gaming activities. This empowerment led to a decrease in the risk of IGD among children, as evidenced by the reduction in gaming hours and improved digital habits observed in the intervention group. A previous study inferred that understanding the impact of a PPCM on preventing IGD in elementary school children is crucial due to the existence of several moderately strong and highly diverse risk factors, such as excessive gaming time and escape motivation. These findings emphasize the importance of effective parental interventions to counteract these risk factors and promote healthier gaming habits among children.<sup>[15]</sup>

The effectiveness of the intervention was further supported by the significant changes observed in the parenting practices

of the intervention group. These changes were reflected in higher scores on the parenting assessment, particularly in areas related to orientation, identification, exploitation, and resolution. These aspects are vital in shaping the parent-child relationship and facilitating the development of healthy boundaries around internet gaming. Psychoeducation has demonstrated a positive impact on various aspects of parenting and family dynamics. Studies have shown that brief psychoeducation interventions conducted by law community counselors can be an effective public health strategy in addressing conduct problems among boys in violence-affected settings.<sup>[16]</sup> Additionally, prophetic parenting psychoeducation has contributed to increased awareness among parents about the significance of implementing prophetic parenting at home, leading to the formation of support groups to address daily parenting challenges.<sup>[17]</sup> Moreover, psychoeducation programs have proven beneficial in enhancing social and emotional development in preschool-age children.<sup>[18]</sup>

Furthermore, the study's findings revealed that the PPCM not only positively impacted parents but also had a significant influence on the outcomes of children. Children in the intervention group showed improved outcomes in terms of reduced screen time, increased engagement in alternative activities, and enhanced social interactions. These positive changes in child outcomes can be attributed to the parental mediation and supportive parenting styles fostered through the intervention. Moreover, psychoeducation initiatives encompass a range of topics, such as healthy parenting, nutrition, risks of early marriage, and marriage preparation to foster a healthy family environment. These programs provide valuable knowledge and support to parents, empowering them to navigate the complexities of parenting with confidence.<sup>[19]</sup>

The current study's results provide valuable insights into the significance of involving parents in preventing IGD in elementary school children. The PPCM offers a feasible and effective approach to empower parents, equipping them with the necessary tools to address the challenges posed by excessive internet gaming. By strengthening parenting practices and promoting active parental involvement, the module acts as a protective factor against the development of IGD in children. In the context of adolescent development, psychoeducation on toxic parenting has shown promising results, as participants gained deeper insights into the causes and impacts of toxic parenting and adopted positive strategies for dealing with such issues. Notably, the program helped participants develop healthier approaches to managing their relationship with their parents.<sup>[20]</sup> Evidence of the positive effects of psychoeducation is supported by research utilizing the Parenting Stress Index, indicating a significant decrease in parental stress levels and improved parent-child interactions after participating in psychoeducation programs.<sup>[21]</sup> Overall, psychoeducation has emerged as a valuable tool in enhancing parenting skills, promoting healthier family dynamics, and positively impacting the emotional and social

development of children and adolescents. Continued support and follow-up care for the formed support groups are recommended to sustain the benefits of these psychological strengthening programs.

However, it is essential to acknowledge certain limitations of the study. First, the research was conducted within a specific region and may not fully capture the diversity of parental practices and cultural contexts, which may limit the generalizability of the findings. Future research should consider a more diverse sample to enhance the applicability of the results across different populations. Additionally, the reliance on self-report measures for data collection could introduce response bias, as participants might provide socially desirable answers rather than accurate reflections of their behaviors. To address this, future studies could integrate objective measures, such as parental monitoring software, alongside self-report data to provide a more comprehensive understanding of children's internet gaming behavior.

## Conclusion

In conclusion, the results of this study emphasize the significance of empowering parents through a PPCM in preventing IGD in elementary school children. By enhancing parenting practices and fostering a supportive and nurturing environment, parents play a pivotal role in promoting healthier internet use among their children. The findings of this study contribute to the growing body of research on IGD prevention and provide valuable implications for intervention strategies aimed at addressing this emerging public health concern. The findings of this research hold the potential to make a meaningful contribution to the field of child psychology, providing valuable insights into the role of parental guidance in preventing IGD. Moreover, the practical implications of the PPCM intervention may pave the way for innovative and collaborative efforts between parents, educators, and mental health professionals to collectively safeguard the holistic development of children in an increasingly digitalized world.

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## Conflicts of interest

Nothing to declare.

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