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Psychological and Digital Safety Risk in Children's Online Gaming: A Socio-Technical Governance Perspective

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Abstract

The rapid expansion of online gaming among children has intensified scholarly and policy debates regarding its psychological consequences and digital safety risks, yet existing discussions often frame these challenges primarily as individual behavioral problems rather than systemic socio-technical phenomena. This study examines how psychological vulnerability, platform architecture, and institutional governance interact in shaping risks within contemporary gaming ecosystems. Drawing on interdisciplinary literature and qualitative thematic synthesis, the research analyzes the intersection between online gaming addiction, social isolation, digital exploitation, and evolving communication infrastructures. The findings indicate that digital literacy initiatives, parental supervision, and educational interventions remain important but insufficient when implemented without structural regulatory support. Persistent vulnerabilities related to anonymity, virtual economies, and fragmented legal frameworks highlight the need to reconceptualize digital child protection as a governance issue rather than solely a behavioral concern. By proposing integrated strategies involving platform security standards, identity verification mechanisms, and multisectoral policy coordination, this study contributes to the literature by reframing online gaming risks as a socio-technical governance challenge that requires alignment between technological innovation, institutional responsibility, and ethical protection of children in digital environments.

Keywords: *Psychology, Digital Governance, Children, Online Gaming, Policy Studies*

1. Introduction

In recent years, internet use on mobile phones has experienced a significant spike, fundamentally reshaping how individuals communicate, learn, and participate in digital environments (Teodorescu et al., 2023). The increasing integration of smartphones and computers into everyday life has expanded real-time access to information and global interaction at an unprecedented scale. Yet, this rapid technological transformation embodies a persistent ambivalence: while digital technology serves as a powerful medium for education and positive behavioral development, it simultaneously introduces new forms of risk that remain insufficiently addressed within policy and social discourse. Data indicates that among the 4.95 billion internet users worldwide, nearly 30% are teenagers aged 18 and under who access the internet without parental supervision (Zhu et al., 2021). This condition reflects not only the expansion of digital participation but also the

emergence of a vulnerable user group navigating increasingly complex online ecosystems without adequate structural protection.

The rapid development of digital infrastructure has been accompanied by the evolution of online gaming environments, which now feature highly realistic graphics, complex gameplay mechanics, and globally interconnected communication systems. These technological affordances have transformed online gaming from a recreational activity into a socio-digital space where identity formation, interaction, and economic exchange converge. While prior research has often framed online gaming primarily as entertainment or technological innovation, the increasing intensity of immersive gameplay raises critical questions regarding its psychological and social implications, particularly among children and adolescents. Addiction to online games does not merely reflect excessive use; it represents a multidimensional phenomenon that intersects with emotional dependency, social isolation, and exposure to digital exploitation (Kelishadi et al., 2015), where sustained engagement may also be explained through intention-driven behavioral mechanisms shaping users' interaction with digital technologies (Uturestantix, Purwanto, & Lukito-Budi, 2022). The interactive and borderless nature of online gaming platforms creates structural opportunities for various forms of misuse, highlighting the need to examine gaming not only as individual behavior but also as a system shaped by technological design and global connectivity.

A growing body of literature has emphasized the psychological consequences associated with prolonged gaming engagement. Studies have demonstrated that addiction to online games may influence interpersonal relationships, disrupt social functioning, and potentially contribute to destructive behaviors beyond the digital environment (Ferguson, 2015; Van Rooij et al., 2014). However, much of the existing research tends to focus on isolated behavioral outcomes rather than exploring how technological affordances and institutional contexts jointly shape vulnerability. Empirical evidence suggests that adolescents experiencing problematic gaming behavior often face overlapping risks, including depression, aggression, and involvement in serious conflicts (Desai et al., 2010). Although some studies argue that online games are not inherently harmful, high levels of dependency have been linked to severe psychological challenges, such as social withdrawal and exposure to substance-related risks (Van Rooij et al., 2014). Furthermore, early work by Tejeiro et al. (2002) demonstrated that online gaming addiction shares behavioral patterns with substance dependency, using parameters such as gaming frequency, duration, self-perception, and family perception to construct an addiction severity scale.

Despite these insights, the existing literature reveals an important conceptual gap. Many studies treat online gaming addiction primarily as a psychological issue, while fewer investigations address how digital platform characteristics, global interaction mechanisms, and regulatory limitations collectively shape the risks faced by children. Technological transformation repeatedly shows that digital infrastructures reshape behavioral expectations and patterns of engagement in ways that extend beyond traditional psychological explanations (Uturestantix, Saragih, & Akbar, 2025). Consequently, online gaming should not be viewed solely as a behavioral phenomenon but as part of a broader socio-technical system where technological design, user vulnerability, and institutional governance intersect. Based on this perspective, online gaming addiction

can be understood as a complex condition that manifests not only through psychological symptoms but also through structural dynamics within digital environments, reinforcing the urgency of developing more integrated approaches to child protection in the era of digital entertainment.

This study contributes to the literature by reframing online gaming risks among children as a socio-technical governance challenge, integrating psychological vulnerability with platform architecture and institutional regulation to offer a more holistic understanding of digital child protection in contemporary gaming ecosystems.

2. Method

This study adopted a qualitative literature-based approach designed not merely to summarize existing findings but to build an integrative analytical understanding of the psychological and digital safety risks associated with online gaming among children. Rather than functioning as a traditional narrative review, the methodological strategy positioned the literature as an empirical field through which conceptual patterns, theoretical tensions, and policy gaps could be systematically interpreted. The analysis integrated evidence from peer-reviewed journal articles, institutional reports, and policy analyses published between 2000 and 2024 in order to capture both foundational discussions and contemporary developments within rapidly evolving digital environments.

The selection criteria prioritized studies that addressed three interrelated dimensions: (1) psychological and behavioral consequences of online gaming among children and adolescents, (2) exposure to digital violence, exploitation risks, and online grooming practices, and (3) policy responses and governance mechanisms related to digital safety. This purposive sampling strategy enabled the study to bridge disciplinary boundaries while maintaining a clear analytical focus on child protection within digital ecosystems.

Data were synthesized through a theory-informed thematic analysis. Instead of coding solely for descriptive categories, the analysis sought to identify recurring conceptual mechanisms underlying the literature. Findings were organized into three core domains: psychological vulnerability associated with gaming addiction, structural exposure to digital risks, and the effectiveness of preventive frameworks and regulatory interventions. Comparative analysis was subsequently applied to reveal converging and diverging patterns across cultural contexts and regulatory regimes, allowing the study to move beyond single-case interpretations toward broader conceptual insights.

The multidisciplinary lens adopted—drawing from psychology, criminology, and digital governance—was not only intended to broaden empirical coverage but also to illuminate the interaction between individual-level behavior and institutional-level regulation. By positioning the literature as a source of theoretical construction rather than merely background information, this methodological approach supports the article's broader objective of understanding online gaming risks as a socio-technical phenomenon shaped by technological design, psychological dynamics, and policy infrastructures.

3. Findings

The synthesis of the literature indicates that digital literacy consistently appears as one of the most prominent strategies for mitigating psychological and digital safety risks associated with online gaming among children. Digital literacy extends beyond technical proficiency and includes ethical awareness, critical thinking, and the protection of personal data when interacting within online environments (Gallud et al., 2023; Wardoyo et al., 2021). Children who receive structured digital literacy education demonstrate greater caution in online interactions and show improved understanding of privacy and responsible digital behavior. These findings highlight that educational interventions aim to strengthen individual resilience, enabling children to navigate increasingly complex digital ecosystems while maintaining awareness of cross-cultural interactions and online risks.

In addition to educational approaches, parental supervision and screen-time regulation emerge as significant preventive mechanisms. Studies emphasize the importance of clear household rules regarding the duration and timing of gaming activities, as well as active parental involvement in monitoring and accompanying children during gameplay (Liu et al., 2024). Such practices are associated with improved communication, increased trust, and reduced negative psychological outcomes related to excessive gaming. Educational institutions further complement these efforts through the integration of digital-based curricula that encourage responsible media usage and monitor harmful content such as violent material, pornography, and hate speech (Otieno, 2020). Teachers play an important role in fostering digital ethics and self-control, positioning schools as institutional actors that extend child protection beyond the family environment.

Beyond individual and educational interventions, the literature reveals substantial structural vulnerabilities within contemporary online gaming ecosystems. Features such as anonymity, global communication networks, and complex virtual economies create environments that may be exploited by offenders, who often shift interactions from public gaming spaces to encrypted channels to avoid detection (Cheong et al., 2015). Platform-level weaknesses, including inadequate identity verification systems and ambiguous data retention policies, further complicate child protection efforts (Threadgall & Horsman, 2019). At the global level, legislative responses remain uneven, with only a limited proportion of countries implementing comprehensive legal frameworks addressing online child exploitation (ICMEC, 2023). Empirical evidence also indicates that chat platforms and social networking features play a significant role in facilitating abuse incidents (Faraz et al., 2022). While some developed countries have begun introducing stricter device regulations in educational settings (Rahali et al., 2024), many developing contexts continue to rely primarily on family-based interventions despite high levels of gaming addiction among youth populations (YBKB, 2024).

4. Discussion

The findings indicate that existing strategies aimed at reducing risks in children's online gaming environments remain predominantly centered on individual-level interventions, particularly digital literacy education, parental supervision, and curriculum-based initiatives (Gallud et al., 2023; Wardoyo et al., 2021; Liu et al., 2024; Otieno, 2020). While these approaches contribute to enhancing awareness and self-regulation, their

effectiveness appears constrained when considered within broader socio-technical contexts. Rather than functioning solely as behavioral safeguards, digital literacy and supervision practices may be interpreted as adaptive responses to structural conditions embedded within platform architectures and digital communication infrastructures.

From a socio-technical governance perspective, the persistence of risks despite widespread educational interventions suggests that vulnerabilities are not merely the result of individual behavior but are also shaped by technological affordances and institutional arrangements. Features such as anonymity, transnational interaction, and virtual economic systems create asymmetrical environments that expose children to manipulation and exploitation (Cheong et al., 2015; Threadgall & Horsman, 2019). The uneven implementation of legal frameworks across countries (ICMEC, 2023) further illustrates how fragmented governance structures may inadvertently sustain digital risks despite localized preventive efforts. These findings imply that effective child protection requires extending responsibility beyond families and schools toward platform-level accountability and regulatory oversight.

Taken together, the discussion reframes online gaming risks as outcomes of socio-technical governance configurations rather than isolated psychological phenomena. The reliance on educational and familial strategies in many developing contexts (Rahali et al., 2024; YBKB, 2024) reflects a broader policy tendency to individualize responsibility for digital safety, potentially overlooking systemic vulnerabilities embedded within digital infrastructures. By interpreting digital literacy and parental supervision as components within a larger governance ecosystem, this study advances the argument that safeguarding children in digital gaming environments requires alignment between technological design, institutional regulation, and ethical accountability. This interpretative shift provides a conceptual bridge toward the policy-oriented conclusions that follow, emphasizing the need for integrated governance strategies capable of addressing the structural dimensions of digital risk.

5. Conclusions

The findings demonstrate that risks associated with children's online gaming cannot be understood solely as individual behavioral problems but instead emerge from a complex interaction between psychological vulnerability, technological design, and institutional governance structures. Although digital literacy initiatives and parental guidance remain essential components of child protection, their effectiveness becomes limited when implemented without broader structural and regulatory support. The persistence of exploitation risks suggests that contemporary gaming ecosystems operate as socio-technical environments in which anonymity, global connectivity, and reward-driven engagement mechanisms intensify children's exposure to digital threats. Consequently, effective intervention requires a shift from reactive and fragmented responses toward integrated governance approaches capable of addressing the structural dimensions of digital risk.

This study highlights three interrelated policy directions. First, platform-level security needs to be strengthened through standardized identity verification systems and improved monitoring of communication infrastructures. Second, multisectoral task forces involving educators, policymakers, digital platform providers, and child protection

agencies are necessary to enable early detection and coordinated responses to online exploitation. Third, national regulatory frameworks governing device usage and digital interaction within educational environments should be developed to ensure consistent child protection standards across contexts. These policy orientations reposition digital child protection as a governance challenge that requires collaboration across technological, educational, and legal domains.

Rather than framing online gaming solely as a source of harm, this study advocates a balanced perspective that acknowledges the transformative potential of digital technology while emphasizing the ethical responsibility to safeguard children as vulnerable users within rapidly evolving digital ecosystems. Ultimately, protecting children in online gaming environments should be understood not only as a technological necessity but also as a social, ethical, and policy imperative that demands sustained political commitment and adaptive regulatory innovation in an increasingly interconnected world.

References

Cheong, Y.-G., Jensen, A.K., Guðnadóttir, E.R., Bae, B.-C. and Togelius, J. (2015), "Detecting predatory behavior in game chats", *IEEE Transactions on Computational Intelligence and AI in Games*, IEEE, Vol. 7 No. 3, pp. 220–232. https://doi.org/10.1109/TCIAIG.2015.2424932

Cronin, C., Sood, S. and Thomas, D. (2017), "From innovation to transcreation: adapting digital technologies to address violence against children", *Child Abuse Review*, Wiley Online Library, Vol. 26 No. 3, pp. 215–229. https://doi.org/10.1002/car.2447

Desai, R.A., Krishnan-Sarin, S., Cavallo, D. and Potenza, M.N. (2010), "Video-gaming among high school students: health correlates, gender differences, and problematic gaming", *Pediatrics*, American Academy of Pediatrics Elk Grove Village, IL, USA, Vol. 126 No. 6, pp. e1414–e1424. https://doi.org/10.1542/peds.2009-2706

Faraz, A., Mounsef, J., Raza, A. and Willis, S. (2022), "Child safety and protection in the online gaming ecosystem", *Ieee Access*, IEEE, Vol. 10, pp. 115895–115913. https://doi.org/10.1109/ACCESS.2022.3218415

Ferguson, C.J. (2015), "Do angry birds make for angry children? A meta-analysis of video game influences on children's and adolescents' aggression, mental health, prosocial behavior, and academic performance", *Perspectives on Psychological Science*, Sage Publications Sage CA: Los Angeles, CA, Vol. 10 No. 5, pp. 646–666. https://doi.org/10.1177/1745691615592234

Gallud, J.A., Carreño, M., Tesoriero, R., Sandoval, A., Lozano, M.D., Durán, I., Penichet, V.M.R., *et al.* (2023), "Technology-enhanced and game based learning for children with special needs: a systematic mapping study", *Universal Access in the Information Society*, Springer, Vol. 22 No. 1, pp. 227–240. https://doi.org/10.1007/s10209-021-00824-0

International Centre for Missing and Exploited Children (ICMEC). (2023), *Child Sexual Abuse Material: Model Legislation & Global Review*. Available online at: https://www.icmec.org/child-pornography-model-legislation-report/

Kelishadi, R., Qorbani, M., Motlagh, M.E., Heshmat, R., Ardalan, G. and Jari, M. (2015),

"Relationship between leisure time screen activity and aggressive and violent behaviour in Iranian children and adolescents: the CASPIAN-IV Study", *Paediatrics and International Child Health*, Taylor & Francis, Vol. 35 No. 4, pp. 305–311. https://doi.org/10.1080/20469047.2015.1109221

Liu, J., Xie, T. and Mao, Y. (2024), "Parental Phubbing Behavior and Adolescents' Online Gaming Time: The Mediating Role of Electronic Health Literacy", *Behavioral Sciences*, MDPI, Vol. 14 No. 10, p. 925. https://doi.org/10.3390/bs14100925

Otieno, D. (2020), "Integrating digital literacy in competency-based curriculum", *Handbook of Research on Literacy and Digital Technology Integration in Teacher Education*, IGI Global, pp. 142–155. https://doi.org/10.4018/978-1-7998-1461-0.ch008

Rahali, M., Kidron, B. and Livingstone, S. (2024), *Smartphone Policies in Schools: What Does the Evidence Say?*, LSE The London School of Economics and Political Science, London.

Van Rooij, A.J., Kuss, D.J., Griffiths, M.D., Shorter, G.W., Schoenmakers, T.M. and Van de Mheen, D. (2014), "The (co-) occurrence of problematic video gaming, substance use, and psychosocial problems in adolescents", *Journal of Behavioral Addictions*, Akadémiai Kiadó, co-published with Springer Science+ Business Media BV …, Vol. 3 No. 3, pp. 157–165. https://doi.org/10.1556/JBA.3.2014.013

Tejeiro Salguero, R.A. and Morán, R.M.B. (2002), "Measuring problem video game playing in adolescents", *Addiction*, Wiley Online Library, Vol. 97 No. 12, pp. 1601–1606. https://doi.org/10.1046/j.1360-0443.2002.00218.x

Teodorescu, C.A., Durnoi, A.-N.C. and Vargas, V.M. (2023), "The Rise of the Mobile Internet: Tracing the Evolution of Portable Devices", *Proceedings of the International Conference on Business Excellence*, Vol. 17, pp. 1645–1654. https://doi.org/10.2478/picbe-2023-0147

Threadgall, R. and Horsman, G. (2019), "An examination of gaming platform policies for law enforcement support", *Digital Investigation*, Elsevier, Vol. 31, p. 200887. https://doi.org/10.1016/j.fsidi.2019.200887

Uturestantix, Saragih, A. S., & Akbar, A. S. (2025). Consumer Intention Shift in the Wake of Technological Disruption: The Case of Starlink and Loyalty Decline among IndiHome Users in Eastern Indonesia. *International Journal of Economics (IJEC)*, *4*(1), 761–768. https://doi.org/10.55299/ijec.v4i1.1458

Uturestantix, Purwanto, B. M., & Lukito-Budi, A. S. (2022). Role of Desire and Implementation of Intention in the Theory of Planned Behavior: A Bibliometric Analysis. *Binus Business Review*, *13*(1), 97–107. https://doi.org/10.21512/bbr.v13i1.7898

Wardoyo, C., Satrio, Y.D., Narmaditya, B.S. and Wibowo, A. (2021), "Do technological knowledge and game-based learning promote students achievement: lesson from Indonesia", *Heliyon*, Elsevier, Vol. 7 No. 11. https://doi.org/10.1016/j.heliyon.2021.e08467

YBKB. (2024), "Waspada Adiksi Game Online", *Yayasan Bangun Kecerdasan Bangsa (YBKB)*. https://www.ybkb.or.id/waspada-adiksi-game-online/

Zhu, C., Huang, S., Evans, R. and Zhang, W. (2021), "Cyberbullying among adolescents and children: a comprehensive review of the global situation, risk factors, and preventive measures", *Frontiers in Public Health*, Frontiers Media SA, Vol. 9, p.

634909. https://doi.org/10.3389/fpubh.2021.634909