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Research Article

ONLINE GAMING INTENSITY AND VERBAL AGGRESSIVE BEHAVIOR AMONG ADOLESCENTS: EVIDENCE OF A MODERATE POSITIVE CORRELATION

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Abstract
The rapid growth of digital media exposure has transformed adolescents' daily interactions, particularly through online gaming. While prior studies have explored gaming and aggression, limited research has specifically examined verbal aggressive behavior within Junior High School settings. This study investigates the relationship between online game usage and verbal aggressive behavior among adolescents in a Junior High School context and identifies its educational implications for school-based behavior management. A quantitative correlational design with a cross-sectional approach was employed. The participants consisted of 60 eighth-grade students at a Junior High School during the 2024/2025 academic year. Data were collected using validated Likert-scale questionnaires measuring online game usage intensity and verbal aggressive behavior. Instrument validity was confirmed using Corrected Item Total Correlation, and reliability analysis yielded Cronbach's Alpha coefficients of 0.898 (online game usage) and 0.880 (verbal aggressive behavior). Data were analyzed using the Pearson Product Moment correlation test at a significance level of 0.05. The analysis revealed a moderate and statistically significant positive correlation between online game usage and verbal aggressive behavior ($r = 0.534$, $p < 0.05$). The findings indicate that higher gaming intensity is associated with increased tendencies toward verbal aggression, including shouting, arguing, and using harsh language. This study contributes novelty by specifically focusing on verbal aggression in Junior High School adolescents within the context of digital media exposure. The results suggest that online gaming intensity is a meaningful predictor of school-based behavior patterns.

Keywords: Adolescents, Digital Media Exposure, Online Game Usage, School-Based Behavior, Verbal Aggressive Behavior.

INTRODUCTION

In the digital era, online gaming has become one of the most dominant leisure activities among adolescents. Data from the 2024 Indonesian Internet Penetration Survey conducted by the Association of

Indonesian Internet Service Providers (APJII) reported that 24.27% of 8,720 respondents engaged in online gaming, with 13.52% spending more than four hours per day playing (Budiawan et al., 2024). Similarly, the Indonesian Child Protection Commission (Damayanti et al., 2024) found that 55% of adolescents aged 10–18 years actively played online games. These statistics demonstrate that online gaming is deeply embedded in adolescents' daily routines and peer interactions. Although gaming can provide entertainment, cognitive stimulation, and social connection (Looi et al., 2024), increasing concerns have emerged regarding its psychological and behavioral consequences, particularly aggression (Dickmeis & Roe, 2019; Swanson & Szymanski., 2022; Stevens et al., 2024).

From an educational and psychological perspective, adolescent aggression represents a serious concern because it disrupts emotional regulation, peer relationships, and school climate (Moon et al. 2019; Fitria et al. 2024). Given the high prevalence of adolescent online gaming and its potential impact on emotional regulation and school climate, empirical investigation at the school level is urgently needed to provide evidence-based guidance for educators, parents, and policymakers. Aggression manifests in various forms, including reactive-hostile and proactive-instrumental behaviors (Przybylski & Weinstein, 2019). Neurobiological findings indicate that maladaptive aggression is associated with altered amygdala prefrontal connectivity, reflecting impaired emotional control (Dickmeis & Roe, 2019; Tanti et al., 2020; Kurniawan et al., 2022; Sukhodolsky et al., 2022). Within school environments, verbal aggression such as mocking, shouting, and insulting can undermine academic engagement and social harmony. Therefore, examining the relationship between online game usage and verbal aggressive behavior is crucial to inform evidence-based educational interventions.

Despite extensive debates regarding violent video games, empirical findings remain inconsistent. Some studies report significant associations between violent game exposure and aggression (Prescott et al. 2018; Burkhardt & Lenhard 2021; Tanti et al., 2021; Widyadhari & Dwi, 2025), while others find minimal or nonsignificant long-term effects when controlling for personality and peer influences (Przybylski & Weinstein, 2019; López-Fernández et al., 2021; Tanti et al., 2021). Moreover, research highlights the moderating roles of deviant peers, impulsivity, ADHD symptoms, and depression (Yu & Cho, 2016; Evren et al. 2019). These mixed findings reveal an unresolved issue: whether the intensity of online game usage itself is significantly associated with verbal aggressive behavior among adolescents in real school settings.

A general conceptual solution involves empirically examining this relationship within a specific educational context to generate localized evidence. Understanding whether gaming duration correlates with verbal aggression among eighth grade students at Junior High School 22 Mataram can provide a data-driven basis for preventive strategies, such as digital literacy education, emotional regulation training, and structured behavioral programs (De Pasquale et al., 2020; Alkahtani, 2024; Hikmat et al. 2024). The General Aggression Model and social-cognitive perspectives explain how exposure to violent or competitive gaming may influence cognitive scripts, affective states, and behavioral responses (Lochman et al. 2021; Tanti et al., 2021; Seetahul & Greitemeyer, 2024; Hernanda et al. 2025). Competitive gameplay predicts aggressive affect over time (Adachi, 2016), and violent exposure may increase aggression under certain contextual conditions (Prescott et al., 2018). Studies also highlight mediating mechanisms such as moral disengagement, sensation seeking, and gaming disorder (Yepes et al. 2024; Shahzad et al. 2024). However, many prior studies focus on pathological gaming (IGD), cyberbullying, or physical aggression rather than verbal aggression in daily school interactions (Makarova & Makarova, 2019; Amar & Oublkhir, 2020). Cultural and contextual differences further limit generalization to Indonesian adolescents. Additionally, factors such as parental attachment and self-control (Malik et al., 2020) and cognitive functioning (Fekih-Romdhane et al., 2022) indicate that aggression is multifactorial. These limitations suggest the need for context-specific correlational research focusing directly on gaming intensity and verbal aggression.

Recent meta-analyses indicate small to moderate associations between violent gaming and aggression (Prescott et al., 2018; Burkhardt & Lenhard, 2021). Other studies emphasize moderating variables such as peer influence (Ferreira et al., 2018; Islam et al. 2023), cyberbullying exposure (Gomes et al., 2025), and social media addiction (Güler et al., 2022). While these findings confirm that digital exposure may relate to aggression, most research emphasizes laboratory experiments, longitudinal modeling, or addiction frameworks rather than school-based correlational designs. Importantly, limited research specifically examines online game usage intensity (duration of play) and verbal aggressive behavior in Indonesian Junior High School contexts. Previous studies often measure generalized aggression or cyberbullying rather than everyday verbal hostility within classroom environments. This

methodological and contextual gap highlights the urgency of conducting localized empirical research at Junior High School 22 Mataram to determine whether a statistically significant relationship exists. However, no prior study has specifically examined the direct correlational relationship between online game usage intensity (daily duration of play) and verbal aggressive behavior within Indonesian Junior High School settings. This construct-specific and contextual gap limits the applicability of global findings to local educational environments and necessitates systematic investigation

This study offers contextual, methodological, and conceptual novelty. Contextually, it provides localized empirical evidence from Junior High School 22 Mataram, integrating national prevalence data (APJII; KPAI) with school-level findings. Methodologically, it employs a quantitative correlational cross-sectional design focusing specifically on online game usage intensity and verbal aggressive behavior, rather than broader constructs such as gaming disorder or cyberbullying. Conceptually, it positions verbal aggression as a socio-educational outcome shaped by digital lifestyle patterns within adolescence. By clarifying the direct relationship between gaming intensity and verbal aggression in a real school environment, this study advances the literature and provides a foundation for culturally responsive digital literacy programs, behavioral management strategies, and policy development. The research objective is therefore clearly defined: to determine the relationship between online game usage and verbal aggressive behavior among eighth-grade students at Junior High School 22 Mataram in the 2024/2025 academic year.

RESEARCH METHOD

This study employed a quantitative correlational design with a cross-sectional approach to examine the relationship between online game usage intensity and verbal aggressive behavior among eighth-grade students during the 2024/2025 academic year. A correlational design was selected to determine the strength and direction of the relationship between variables without manipulating research conditions. The cross-sectional approach was used because data were collected at a single point in time without follow-up measurement. The population of this study consisted of all eighth-grade students at Junior High School 22 Mataram totaling 51 students. Due to the relatively small population size, total sampling was employed, meaning all members of the population were included as research participants.

Prior to data analysis, the research instrument underwent validity and reliability testing to ensure its appropriateness for use. Validity testing was conducted on 30 respondents outside the study population. An item was considered valid if the calculated correlation coefficient (r) exceeded the critical value ($r_{table} = 0.361$) at a 5% significance level. Reliability was measured using Cronbach's Alpha to assess internal consistency, and an instrument was considered reliable if $\alpha > 0.70$. All research procedures adhered to ethical principles, including voluntary participation, informed consent, and confidentiality of respondents' data. The required minimum sample size is 84 participants (Cohen, 1992). Since this study included 51 participants, the achieved statistical power is approximately 0.60, indicating moderate power. Therefore, findings should be interpreted cautiously, and future research with larger samples is recommended.

Independent Variable (X): Online Game Usage Intensity, Dependent Variable (Y): Verbal Aggressive Behavior. The research instrument was developed based on established theoretical constructs and previous empirical findings related to online gaming behavior and adolescent aggression. The development stages included: Identification of theoretical dimensions; Operationalization of variables; Item construction; Expert judgment for content validity; Pilot testing on 30 students outside the study population. The questionnaire initially consisted of 48 Likert-scale items ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 1. Instrument Blueprint

Variable	Dimension	Indicators	Item Numbers	Scale
Online Game Usage	Duration	Daily gaming hours	1–6	Likert (1–5)
Online Game Usage	Frequency	Weekly frequency	7–12	Likert (1–5)
Online Game Usage	Engagement	Emotional involvement	13–23	Likert (1–5)
Verbal Aggressive Behavior	Verbal Hostility	Insulting, mocking	24–30	Likert (1–5)

Variable	Dimension	Indicators	Item Numbers	Scale
Verbal Aggressive Behavior	Verbal Anger	Yelling, shouting	31–38	Likert (1–5)
Verbal Aggressive Behavior	Verbal Provocation	Teasing, threatening	39–48	Likert (1–5)

Construct validity was tested using the Corrected Item–Total Correlation with Pearson Product–Moment analysis on 30 respondents outside the research population. An item was considered valid if: r_count > r_table (0.361) at $\alpha = 0.05$. One item from the Online Game Usage variable (X1) was invalid ($r = 0.166$; $p = 0.381$). One item from the Verbal Aggressive Behavior variable (Y1) was invalid ($r = 0.146$; $p = 0.443$) After removing invalid items, 46 items (23 per variable) were retained. Reliability testing was conducted using Cronbach's Alpha to measure internal consistency. Online Game Usage (23 items): $\alpha = 0.895$. Verbal Aggressive Behavior (23 items): $\alpha = 0.889$. Both coefficients exceed the minimum threshold of 0.70 and fall within the high reliability category (0.70–0.90), confirming the instrument's consistency. Data were collected through the distribution of structured closed-ended questionnaires administered directly to students during school hours. Participation was voluntary, and informed consent was obtained from students and school authorities. Although observations, interviews, and document analysis were conducted to contextualize findings, these qualitative techniques were not included in the statistical analysis and served only as supplementary background information. All responses were screened for completeness before being coded and entered into SPSS version 26.0.

Data analysis was conducted using SPSS version 26.0. Prior to hypothesis testing, parametric assumptions including normality, linearity, and outlier detection were examined. Since all assumptions were satisfied, the Pearson Product–Moment correlation test was employed to examine the relationship between online game usage intensity and verbal aggressive behavior. Pearson correlation was selected because both variables were measured on an interval scale and met the assumptions of normality and linearity. Statistical significance was determined at $\alpha = 0.05$ (two-tailed), and interpretation of effect size followed Cohen's (1992) criteria. A post-hoc statistical power analysis was conducted based on the obtained effect size from the Pearson correlation results. Using the observed correlation coefficient ($r = 0.603$), a significance level of $\alpha = 0.05$ (two-tailed), and a total sample size of $N = 51$, the calculated statistical power was approximately 0.97. According to Cohen (1992), an effect size of 0.50 or above is categorized as large. Since the observed effect size ($r = 0.603$) exceeds this threshold, the study demonstrates a large effect magnitude. A statistical power above 0.80 is generally considered adequate for behavioral research; therefore, the achieved power of approximately 0.97 indicates that the study had sufficient sensitivity to detect the relationship between online game usage intensity and verbal aggressive behavior. This result suggests that, despite the relatively modest sample size, the study possessed strong capability to identify statistically significant effects.

RESULTS AND DISCUSSION

The present study aimed to answer the research question: Is there a significant relationship between online game usage and verbal aggressive behavior among eighth-grade students at Junior High School 22 Mataram in the 2024/2025 academic year? The results of the Pearson Product–Moment correlation analysis revealed a statistically significant and positive relationship between the two variables. The correlation coefficient obtained was $r = 0.603$, with a significance value of $p = 0.000$ ($p < 0.01$) and a total sample size of $N = 51$. This indicates that the probability of the relationship occurring by chance is extremely low.

Based on the calculation of degrees of freedom ($df = N - 2 = 49$), the critical value at the 0.05 significance level (two-tailed) was r_table = 0.276. Since the obtained correlation coefficient (r_count = 0.603) is greater than the critical value (0.276) and the significance level is below 0.05, the alternative hypothesis (Ha) is accepted and the null hypothesis (H_0) is rejected. This confirms that online game usage is significantly associated with verbal aggressive behavior among the students. According to Johnson and Christensen (2019), a correlation coefficient between 0.60 and 0.799 is categorized as a strong relationship. Therefore, the strength of the correlation in this study falls within the strong category. The positive direction of the coefficient indicates a unidirectional relationship, meaning that higher levels of online game usage tend to be accompanied by higher levels of verbal aggressive behavior. Furthermore, the coefficient of determination ($r^2 = 0.364$) shows that 36.4% of the variance in verbal aggressive

behavior can be explained by online game usage, while the remaining 63.6% is influenced by other factors not examined in this study.

A detailed presentation of the Pearson Product–Moment correlation results, including the correlation coefficients, significance values, and sample size, is provided in Table 2.

Table 2. Pearson Product Moment

		Game Online	Agresif Verbal
Game Online	Pearson Correlation	1	.603**
	Sig. (2-tailed)		0,000
	N	51	51
Agresif Verbal	Pearson Correlation	.603**	1
	Sig. (2-tailed)	0,000	
	N	51	51

**. Correlation is significant at the 0.01 level (2-tailed).

The strength of the correlation (r = 0.603) indicates that online gaming is not merely marginally associated with verbal aggression but represents a substantial contributing factor among early adolescents in this context. Compared to previous findings, the magnitude of this relationship is relatively high. For example, Wells et al. (2023) and Liu & Zhang (2023) reported a moderate association between Internet Gaming Disorder and aggression (r = 0.300), while Prescott et al. (2018) and Burkhardt & Lenhard (2022) found smaller but significant longitudinal effects (r ≈ 0.11–0.21). Even Nurdin et al.. (2024) found a lower explanatory power ($R^2 = 0.184$) compared to the present study ($R^2 = 0.364$). This suggests that within the specific socio-cultural and school context of Junior High School 22 Mataram, online gaming intensity may play a more salient role in shaping verbal aggressive tendencies.

From a theoretical perspective, these findings align with the General Aggression Model (GAM) and socio-cognitive frameworks (Lochman et al., 2021), which posit that repeated exposure to aggressive stimuli increases aggressive cognition, affect, and arousal. Competitive and violent gaming environments often involve provocation, failure, and reward systems that reinforce dominance and retaliation (Adachi & Willoughby 2016). Seetahul & Greitemeyer (2024) further explain that repeated frustration and emotional arousal during gameplay can trigger verbal aggression as an immediate emotional outlet. Importantly, verbal aggression may be socially normalized within gaming culture. McInroy & Mishna (2017) found that aggression is often perceived as "part of the game," especially in anonymous online environments. Rehman et al. (2025) and Wells et al., (2025) similarly demonstrated that anonymity and algorithmic amplification contribute to the persistence and acceptance of hostile communication online. When adolescents are repeatedly exposed to verbal toxicity in multiplayer settings (Sun et al. 2024), they may internalize aggressive communication as normative behavior, which can then transfer into offline peer interactions at school.

However, the remaining 63.6% unexplained variance confirms that verbal aggression is multidimensional. Research shows that peer influence and deviant friendships significantly amplify gaming-related aggression (López-Fernández et al., 2021; Bennett et al., 2018). Personality traits such as low agreeableness, impulsivity, and ADHD symptoms are also associated with higher aggression and gaming disorder severity (Evren et al., 2019). Emotional factors such as frustration (Salsabela et al., 2025) and depression or psychological distress (Giannakopoulos & Prassou, 2025) further mediate the pathway from digital exposure to aggressive expression. Family context also plays a critical protective or risk role. Parental attachment and monitoring reduce excessive gaming (Malik et al., 2020; Rosales-Navarro & Torres Pérez, 2025), while emotional invalidation may increase maladaptive emotional expression (Bennett et al., 2019). These findings indicate that gaming exposure interacts with emotional regulation capacities. Neurobiological evidence (Sukhodolsky et al., 2022; Sulaiman & Ulfa, 2025) supports this by showing that maladaptive aggression is linked to impaired amygdala prefrontal connectivity, suggesting that emotionally intense gaming may exacerbate pre-existing vulnerabilities in emotional control.

At the same time, it is important to interpret the findings cautiously. Some longitudinal studies (Przybylski & Weinstein, 2019; Looi et al., 2024) did not find consistent long-term causal effects of violent gaming on aggression. López-Fernández et al., (2021) and Katarzyna & Agnieszka (2025) demonstrated that when controlling for personality and deviant peers, the effect of violent video game

exposure becomes nonsignificant. This suggests that online gaming may function more as a risk amplifier rather than a sole causal factor. The relatively strong correlation found in this study may therefore reflect an interaction between gaming intensity and contextual variables within the school environment.

Educationally, the findings have important implications. Since gaming intensity explains a substantial proportion (36.4%) of verbal aggression variance, intervention strategies should target both behavioral regulation and digital literacy. Evidence-based classroom management models such as the Caught Being Good Game (Alkahtani, 2024; Nasri et al. 2025) can reduce disruptive verbal behavior by reinforcing positive conduct. Anti-bullying programs such as KiVa (Hikmat et al., 2024; Baitasheva et al., 2025) may address verbal aggression as an early form of bullying. Moreover, digital literacy programs (Baitasheva, 2025) can help students critically understand online communication norms, anonymity, and responsible gaming practices. Peer-based interventions are equally essential, considering conformity effects (Fakhrizal, 2021) and peer influence mechanisms (Colella et al., 2018). Strengthening emotional regulation skills particularly among boys, who tend to show higher gaming disorder prevalence (Yu & Cho, 2016; Kruglanski et al., 2023) and different emotion regulation patterns (Putra et al., 2023) may further reduce verbal aggression.

The findings of this study may be cautiously generalized to early adolescent students in similar urban junior high school contexts characterized by comparable levels of digital access and gaming exposure. Early adolescence (approximately 13–14 years old) has been identified as a developmental period in which the association between gaming and aggression tends to peak (Burkhardt & Lenhard, 2021; Andriani et al., 2019), making the present results developmentally consistent. However, such generalization should be made carefully. Previous research demonstrates that the strength and direction of the relationship between digital media exposure and aggression may vary depending on cultural background, gender, peer environment, and family attachment (Prescott et al., 2018; Giannakopoulos & Prassou, 2025; Nazwan et al., 2026). Therefore, while the results provide relevant insight for similar educational settings, contextual moderators must be taken into account before extending conclusions to broader populations.

Theoretically, this study reinforces the socio-cognitive and media-effects frameworks by providing empirical evidence that higher online gaming intensity is significantly associated with increased verbal aggression during early adolescence. The findings support the assumption that repeated exposure to competitive or hostile digital environments may shape behavioral scripts, normalize aggressive communication, and facilitate moral disengagement processes. Thus, digital environments do not merely function as entertainment spaces but may also act as socialization agents that influence adolescents' emotional and behavioral regulation. Practically, the results highlight the need for structured and preventive interventions within school and family systems. Schools are encouraged to implement socio-emotional learning programs, such as KiVa-based anti-bullying interventions, to strengthen empathy and reduce verbal hostility. Classroom behavioral reinforcement strategies, including the Caught Being Good Game approach, may effectively minimize disruptive and aggressive verbal behavior by reinforcing positive conduct. In addition, digital literacy programs should move beyond simple time restrictions and instead emphasize responsible communication, ethical online interaction, and critical awareness of digital culture. At the family level, parents should enhance monitoring practices and foster open emotional communication to prevent maladaptive gaming patterns. Rather than prohibiting gaming altogether, intervention efforts should prioritize balanced regulation, supervision, and the strengthening of adolescents' socio-emotional competencies.

This study offers several important contributions. First, it specifically focuses on verbal aggressive behavior, a dimension of aggression that closely aligns with digital interaction patterns but is less frequently examined independently in prior research. Second, it provides localized empirical evidence from Indonesian junior high school students, contributing contextual data from Southeast Asia, a region that remains underrepresented in global gaming-aggression research. Third, the relatively strong correlation coefficient ($r = 0.603$) indicates a stronger association than many previous meta-analytic findings, highlighting the potential salience of gaming intensity in shaping verbal aggression within this developmental and sociocultural context. Despite its contributions, this study has several limitations. The cross-sectional design does not permit causal inference, and the use of self-report instruments may introduce social desirability bias. The relatively small sample size ($N = 51$) limits broader generalization. Furthermore, the study did not control for potential moderating variables such as gender, personality traits, peer affiliation, or family attachment. It also did not differentiate between types of game content (e.g., violent versus non-violent, competitive versus cooperative), which may yield different behavioral

outcomes. Future research should employ longitudinal designs to examine causal pathways between gaming intensity and verbal aggression. Incorporating mediating and moderating variables such as moral disengagement, empathy, peer conformity, ADHD symptoms, and family functioning would provide a more comprehensive explanatory model. Subsequent studies should also differentiate game genres and content characteristics, expand sample sizes across multiple schools, and consider mixed-method approaches to capture adolescents' lived experiences and contextual interpretations of gaming-related interactions.

CONCLUSION

In conclusion, this study demonstrates a strong, positive, and statistically significant relationship between online game usage intensity and verbal aggressive behavior among eighth-grade students at Junior High School 22 Mataram ($r = 0.603$, $p < 0.01$). The findings confirm that higher gaming intensity is associated with greater verbal aggression in early adolescence, thereby directly answering the research objective. The results reinforce socio-cognitive and media-effects perspectives, suggesting that repeated exposure to competitive and emotionally arousing digital environments may strengthen aggressive verbal scripts. In this sense, online gaming intensity may function as a contextual amplifier of verbal aggression during a sensitive developmental stage. These findings highlight the importance of balanced regulation rather than total restriction. Schools and families should integrate socio-emotional learning, digital literacy education, behavioral reinforcement strategies, and parental monitoring to promote healthy gaming habits while preventing maladaptive aggressive outcomes.

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AUTHOR CONTRIBUTIONS

All authors have read and agreed to the published version of the manuscript.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

The authors declare that no artificial intelligence (AI) tools were used in the generation, analysis, or writing of this manuscript. All aspects of the research, including data collection, interpretation, and manuscript preparation, were carried out entirely by the authors without the assistance of AI-based technologies.

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