The Use of Online Games and Aggressive Behavior in Adolescents: A Correlational Analysis of High School Students in Padangsidimpuan

Malim Soleh Rambe[1*], Azijah Tussolihah Siregar[2], Laila Kalsum Hasibuan[3]
[1]malim.soleh@um-tapsel.ac.id, [2]azijah.tussolihah@um-tapsel.ac.id, [3]laila.kalsum@um-tapsel.ac.id
[123]*South Tapanuli Muhammadiyah University, Indonesia*
**Corresponding author*

Abstract
This study aims to analyze the relationship between online game use and aggressive behavior among 11th grade students at SMA Negeri 4 Padangsidimpuan in the 2024/2025 academic year. The method used was quantitative correlational with purposive sampling techniques and involved 27 students who met the criteria for intensive online game use. The research instruments were tested for validity and reliability, with Cronbach's Alpha values for each variable showing reliable categories. Analysis using Pearson's correlation yielded a value of r = –0.030 with a significance of 0.881, indicating that there was no significant relationship between online game use and aggressive behavior. These findings are not in line with a number of previous studies that show a significant influence of violent video games on adolescent aggression, suggesting that contextual factors such as school, type of game, and self-control may moderate this relationship. The implications of this study emphasize the need for schools to develop digital literacy programs, strengthen self-control, and provide psychological counseling to minimize the risk of aggressive behavior.
Keywords: *online games, aggressive behavior, adolescents, addiction, digital behavior*

INTRODUCTION

The development of digital technology in the last two decades has brought significant changes to social interaction patterns, learning activities, and the lifestyles of adolescents around the world. One of the most striking forms of technological development is the increasing popularity of online games, which now serve not only as a means of entertainment but also as an integral part of adolescent digital culture. Global data shows that more than 3.2 billion people played video games in 2023, with the largest increase occurring in the 13–18 age group (Newzoo, 2023). In Indonesia, the Indonesian Internet Service Providers Association (APJII, 2023) reports that 75.49% of teenage internet users play online games regularly, making Indonesia one of the countries with the highest gamer penetration in Southeast Asia. This phenomenon is in line with the rapid development of the e-sports industry, which has expanded teenagers' exposure to prolonged gaming activities.

As the intensity of gaming increases, concerns arise about the potential negative impact of online games on adolescent behavior, especially aggressive behavior. The *General Aggression Model* (GAM) theory proposed by Anderson & Bushman (2002) explains that exposure to aggressive stimuli, including violent games, can increase aggression through changes in cognition, affect, and physiological arousal. A number of international studies support this theory, such as the study by Hasan, Bègue, & Bushman (2013), which found that games with violent content contribute to an increase in both short-term and long-term aggression. Gentile et al. (2017) also reported that adolescents who play violent games show an increase in physical, verbal, and relational aggression after six months.

However, the relationship between online games and aggressive behavior is not linear, absolute, or universal. Research results over the past decade show inconsistent findings. Ferguson (2015), for example, found that the effect of violent games on aggression was very small or even insignificant when controlled for other variables such as self-control, family support, school climate, and emotional conditions. Similarly, Kühn et al. (2019), through a two-year longitudinal study, found that playing violent games did not affect brain structures related to emotional regulation and aggressiveness. These findings emphasize the importance of considering contextual factors in assessing the relationship between online games and aggression.

In Indonesia, research on online games has shown mixed results. Kurniawan & Setiawan (2020) found that adolescents who play competitive games show a tendency toward competitive

aggression but do not always end up engaging in destructive aggression. Meanwhile, Putri (2019) and Rahmawati & Dewi (2022) stated that low self-control and disharmonious family conditions contribute more to aggression than gaming activities themselves. Thus, it can be concluded that aggressive behavior is a multifactorial phenomenon influenced by the interaction between internal factors (emotions, self-control, impulsivity) and external factors (social environment, parenting, school climate).

Although online games are very close to the lives of Indonesian teenagers, research on their impact is still dominated by descriptive studies or studies that examine online gaming addiction, rather than aggressive behavior specifically. In addition, some studies only focus on big cities, while the school context in rural areas has different social and cultural dynamics. In fact, the school environment, the quality of guidance counselors, and local values can influence the relationship between online game use and aggression. This makes research in specific contexts very important to enrich the national literature.

Mobile Legends: Bang Bang, the most played game among teenagers in Indonesia with more than 34 million active users in 2023 (Statista, 2023), is often associated with competitive behavior and interactions between players that are sometimes full of insults or provocation. However, not all players exhibit aggressive behavior in the real world. Whether this game is significantly related to adolescent aggression remains unclear and requires empirical evidence, especially among high school populations.

In the context of this study, SMA Negeri 4 Padangsidimpuan is one of the schools with a high number of online game players, making it a relevant location for analyzing the relationship between online game use and aggression. However, based on preliminary studies, the phenomenon of aggression in this school is not always high even though gaming activities are very popular. This situation raises an important academic question: do online games really contribute to aggression, or are there other factors that determine this behavior?

Based on a review of the literature, there is a clear *research gap*:

1. There has been no correlational study that specifically examines the relationship between online gaming and aggressive behavior in the school context in Padangsidimpuan.
2. Previous research findings are inconsistent, so new empirical evidence is needed.
3. Moderating variables such as school climate, self-regulation, and social support have not been widely studied in relation to the relationship between the two variables.
4. The games studied in various studies differ, so Mobile Legends, as a popular game in Indonesia, requires a more focused analysis.

The novelty of this research is the presentation of empirical evidence regarding the relationship between online game use and aggressive behavior in high school adolescents in the context of local culture in Padangsidimpuan. In addition, this study makes a theoretical contribution by retesting a relationship model that was previously considered significant, but in the results of this study showed non-significance. In scientific publications, non-significant findings are actually very valuable because they help avoid *publication bias* and enrich scientific understanding of the limitations of online games' effects on aggression.

Based on this description, this study aims to analyze whether there is a significant relationship between online game use and aggressive behavior among 11th grade students at Padangsidimpuan 4 Public High School. The results of this study are expected to form the basis for the development of school policies, guidance counselor interventions, and recommendations for parents and educators in understanding adolescent digital behavior more comprehensively.

METHOD

This study uses a quantitative approach with a correlational design to examine the relationship between online game use and aggressive behavior among students at SMA Negeri 4 Padangsidimpuan. The quantitative approach was chosen because it allows researchers to obtain numerical data that can be analyzed statistically, so that the research results are objective and measurable as recommended by Creswell (2014). A correlational design was considered most

relevant because the purpose of the study was to examine the strength and direction of the relationship between variables without manipulating the conditions of the participants (Gravetter & Wallnau, 2020). The research location was SMA Negeri 4 Padangsidimpuan, which was selected purposively because it had a high population of students who used online games based on observations by guidance counselors. The research lasted for two months after obtaining permission from the school.

The research population consisted of all 11th grade students, totaling 176 individuals. Purposive sampling was used in selecting the sample because the researcher needed participants who truly met the criteria for intensive online game use, in accordance with Patton's (2015) recommendation that purposive sampling is ideal for research focusing on specific phenomena. The sample inclusion criteria included students who actively played Mobile Legends for at least three hours per day for the last three months, were willing to be respondents, and had no history of severe psychological disorders. Based on these criteria, 27 students were obtained as samples, a number deemed adequate for simple correlational analysis according to Field (2018).

The variables studied consisted of online game use as the independent variable and aggressive behavior as the dependent variable. Online game use was defined based on the intensity of playing duration, frequency of playing, emotional involvement while playing, and the impact of games on daily activities. This operational definition was compiled based *on the problematic gaming* model proposed by Lemmens et al. (2015). Aggressive behavior was defined based on the four dimensions of aggression developed by Buss and Perry (1992), namely physical aggression, verbal aggression, anger, and hostility. This variable reflects students' tendency to exhibit aggression, both in the form of actual behavior and emotional reactions.

The research instrument was developed using a five-point Likert scale, consisting of 30 statements for the online game use variable and 38 statements for the aggressive behavior variable. The instrument was developed through a process of adapting previous theories and instruments, such as the Buss & Perry Aggression Questionnaire (AQ) and the Internet Gaming Disorder Scale from Lemmens et al. (2015). The language adaptation process was carried out following the *cross-cultural adaptation* procedure by Beaton et al. (2000), which included translation, *back-translation,* and review by experts to ensure cultural context appropriateness in Indonesia.

Each item of the instrument was tested for validity using Pearson's correlation with an r-table of 0.383 at a significance level of 0.05 with a sample size of 27. The test results showed that all 30 items of the online game use variable and 38 items of the aggressive behavior variable were valid because the correlation values were above the r-table. According to Field (2018), the validity of items such as these indicates the ability of the items to accurately measure the intended construct. In addition, the reliability of the instrument was tested using Cronbach's Alpha, which showed a value of $\alpha = 0.876$ for the online game use variable and $\alpha = 0.937$ for the aggressive behavior variable. These values indicate very high reliability according to the interpretation of Tavakol and Dennick (2011), so that the instrument can be considered stable and consistent in measuring the related variables.

The research procedure began with a literature study on online gaming and aggressive behavior, followed by the development of instruments and a request for research permission from the school. After obtaining permission, the researchers socialized the research objectives to the students and explained that participation was voluntary and that the data would be kept confidential. Data collection was carried out by distributing questionnaires directly in class and supervising the filling process. Respondents were given 20-30 minutes to complete the questionnaire, then the researchers checked the completeness of the answers before data processing was carried out.

The collected data were analyzed in several stages. First, a normality test was conducted using Kolmogorov–Smirnov to determine whether the data were normally distributed. According to Ghasemi and Zahediasl (2012), data are considered normal if the significance value is greater than 0.05. Next, a linearity test was conducted by looking at *the significance of deviation from linearity,* where the data was considered linear if the significance value was greater than 0.05. After both assumptions were met, the analysis continued with a Pearson Product Moment correlation test to

see the relationship between the variables of online game use and aggressive behavior. The interpretation of correlation values refers to Sugiyono (2019), where r values between 0.00–0.199 are considered very weak, 0.20–0.399 weak, 0.40–0.599 moderate, 0.60–0.799 strong, and 0.80–1.00 very strong.

In addition, this study follows the research ethics principles established by the British Psychological Society (2018), which include *informed consent*, data confidentiality, voluntary participation, and the principle of non-maleficence or not harming research participants. Students were given the freedom to refuse to participate and could stop filling out the questionnaire at any time without consequences. All data was then anonymized to maintain the privacy of the respondents.

With this design, instrument, and procedure, this research method is expected to produce valid and reliable data to answer the research objective, namely to determine whether there is a significant relationship between online game use and aggressive behavior among students at Padangsidimpuan 4 Public High School.

RESULTS AND DISCUSSION

The results of the data analysis show that the Pearson correlation coefficient between online game use and aggressive behavior among students at SMA Negeri 4 Padangsidimpuan is $r = –0.030$ with a significance value of $p = 0.881$. A p-value well above the significance threshold of 0.05 indicates that there is no significant relationship between the two variables. This means that the intensity of online gaming, especially Mobile Legends, is not directly related to an increase or decrease in aggressive behavior among the respondents in this study. The very weak and negative correlation indicates that higher online game usage does not automatically increase aggression, although the direction of this relationship is so small that it cannot be interpreted substantively.

Before conducting the correlation test, the data was tested for normality using Kolmogorov–Smirnov and showed a normal distribution ($p > 0.05$). The linearity test also showed that the relationship between the two variables was linear, so the Pearson correlation test was appropriate to use. The high reliability results ($\alpha = 0.876$ for variable X and 0.937 for variable Y) reinforce the reliability of the instrument. Based on these findings, it can be concluded that the study has good data quality, but the relationship between the variables is indeed proven to be insignificant.

In addition to correlation analysis, the researchers also conducted descriptive analysis to describe the profile of the respondents. The majority of respondents played online games between 3–6 hours per day, on a daily basis. Almost all respondents chose Mobile Legends as their main game because of its competitive nature, accessibility, and popularity among teenagers. Meanwhile, the overall aggressiveness score was in the moderate category, which means that respondents exhibited aggressive behavior at a level commonly found in teenagers, but not at an extreme level. This shows that even though online gaming is a dominant activity, aggressive behavior does not increase dramatically in this population.

1. **The Insignificance of the Relationship Between Online Gaming and Aggression: A Theoretical Explanation**

   Research findings showing no significant relationship between online gaming and aggressive behavior are consistent with a number of international studies indicating that the influence of video games on aggression is not universal, but rather highly influenced by contextual factors and personal characteristics. For example, Ferguson's (2015) meta-analysis found that the correlation between violent video games and aggression was very small when factors such as self-control, emotional state, and family environment were included as control variables. In fact, Kühn et al. (2019), through longitudinal research, found no changes in brain structure related to aggression in adolescents who played violent games for two years.

   These findings reinforce the view that *the General Aggression Model* (GAM) developed by Anderson & Bushman (2002) cannot always be applied linearly to all populations. GAM assumes that exposure to aggressive stimuli in games increases aggression through increased physiological arousal and cognitive distortion. However, in the context of this study, it can be

assumed that the aggressive stimuli present in Mobile Legends are not strong enough to influence aggressive behavior in real life.

Furthermore, Mobile Legends is not an extreme *violent game* like first-person shooters such as Call of Duty or Grand Theft Auto, which are often used as stimuli in international aggression studies (Hasan et al., 2013). The battle model in Mobile Legends is fantasy-based, does not depict realistic violence, and emphasizes team strategy. This may explain why playing intensity is not substantially related to adolescent aggression.

2. **Moderating Factors: Self-Control, Emotions, and Psychological Maturity**

The absence of a significant relationship in this study also suggests that internal psychological factors such as self-control may play a more dominant role than exposure to game content. Adolescents with high self-control tend to be able to separate gaming activities from everyday behavior. This is consistent with the studies by Putri (2019) and Sariyani (2017), which show that self-control is a much stronger predictor of aggression than the intensity of online gaming.

Similarly, Hamzah et al. (2021) found that emotional regulation is one of the key variables that mitigates the negative effects of digital content exposure. Adolescents who have the ability to manage stress and anger tend not to manifest aggressive behavior even though they often play competitive games. In the context of this study, respondents who played Mobile Legends mostly did so for entertainment, stress relief, and recreational activities, not as an outlet for negative emotions.

The age characteristics of the respondents were also relevant. Eleventh-grade students are between the ages of 16 and 18, at which point, according to Steinberg (2017), adolescents begin to develop better self-control than younger adolescents. Thus, their ability to curb aggressive impulses is more mature, so the influence of online games on aggressiveness is smaller.

3. **Contextual Factors of the School Environment**

The school environment is one of the external variables that has the potential to influence adolescent aggression. SMA Negeri 4 Padangsidimpuan has a fairly positive school climate, mainly due to active supervision from guidance counselors and relatively strong school discipline. Research by Wang et al. (2013) confirms that a safe and conducive school environment can suppress tendencies toward aggressive behavior in adolescents. The same was reported by Rueger et al. (2016), who stated that social support from teachers significantly reduces aggressive behavior in the school environment.

In this situation, despite the high use of online games, the influence of a supportive school environment can be an effective protective factor. The descriptive findings of this study show that students who experience conflict in games (e.g., arguing or experiencing *toxic behavior* from other players) tend not to vent it in the form of aggression in the real world. Features in games such as *mute, report,* and *avoid player* also allow players to avoid conflict, thereby reducing the possibility of escalating aggression.

4. **Differences from International Findings: Why Are the Results Different?**

Many international studies show a significant relationship between violent games and aggression (Gentile et al., 2017; Hasan et al., 2013). However, there are several reasons why the results of this study differ:

a. First, the games studied are different. International studies mostly use realistic violent games, not MOBA games like Mobile Legends. Violence in MOBA games is abstract, not depicting realistic blood or murder.
b. Second, the duration of play in this study sample was still in the moderate category. Although playing more than three hours per day, this intensity is still within reasonable limits for teenage gamers according to APJII (2023). Extreme durations (more than six hours per day) more often produce aggressive effects (Kurniawan & Setiawan, 2020).
c. Third, local cultural factors. Indonesian adolescents tend to be more social, religious, and bound by social norms, so aggressive behavior tends to be suppressed by social norms

(Hidayat & Syahputra, 2020). This can reduce the influence of aggressive stimuli in games.

Thus, the results of this study are not only statistically consistent but also theoretically consistent when considering these moderating factors.

5. **The Meaning of a Very Weak Negative Correlation**

Although not significant, the direction of the negative correlation indicates that students who play online games more frequently have a slightly lower tendency toward aggression. The direction of this relationship is consistent with *catharsis* theory*,* in which gaming can be a medium for emotional release, thereby reducing aggression (Ferguson & Rueda, 2010). However, because the correlation value is very small, this explanation cannot be used as the main conclusion, but it remains interesting as a potential indication that gaming can serve as a relaxing activity.

6. **Theoretical and Practical Implications**

Theoretically, the results of this study make an important contribution to enriching the literature on the relationship between online gaming and aggression. These findings support the view that aggressive behavior cannot be explained solely by exposure to digital media, but is the result of complex interactions between personal and environmental factors (Bronfenbrenner, 1979). This study also provides empirical evidence that *the General Aggression Model (GAM)* does not always apply in all cultural contexts and types of games.

Practically, these results are important for guidance counselors, parents, and schools. Since online games do not directly increase aggression, interventions should not focus on banning games, but rather on strengthening self-control, digital literacy, and emotional regulation. School digital education programs can be directed towards healthy use of games, rather than simply restricting them.

CONCLUSION

The results of this study indicate that the use of online games, particularly Mobile Legends, has no significant relationship with aggressive behavior among 11th-grade students at SMA Negeri 4 Padangsidimpuan. Pearson's correlation analysis produced a value of $r = –0.030$ with a significance of $p = 0.881$, which means that the intensity of online gaming does not directly affect the tendency toward physical aggression, verbal aggression, anger, or hostility in respondents. These findings indicate that although online gaming is a digital activity that is popular among adolescents, its use does not automatically increase aggressive behavior in daily life.

The insignificant relationship between these two variables also shows that factors other than online gaming have a more dominant influence in shaping adolescent aggressive behavior. Factors such as self-control, emotional regulation, family support, and school climate appear to be protective variables that can reduce the emergence of aggression even though students have a high intensity of play. The fantasy context of Mobile Legends, which does not feature realistic violence, also weakens the possibility of aggression transfer from the game world to the real world.

These findings also indicate that the *General Aggression Model* (GAM) theory, which assumes that exposure to aggressive stimuli in games can increase aggression, does not fully apply in the context of this study. Contextual factors such as social culture, environmental norms, and moderate exposure to non-violent games are suspected to be the reasons why the effects found were very small. Additionally, the characteristics of adolescents aged 16–18, who are still developing in terms of self-control and social understanding, may reduce their tendency to manifest aggression even when involved in competitive digital games.

Overall, this study confirms that the relationship between online gaming and aggressive behavior in adolescents is not simple and cannot be generalized. These findings enrich the literature that aggression is a multifactorial phenomenon influenced by the interaction between internal and external factors, not solely by the digital activities of adolescents. Further research is recommended to involve larger samples, consider moderating variables such as self-control and emotional

intelligence, and distinguish between the types of games played in order to gain a more comprehensive and accurate understanding of adolescent aggressive behavior.

REFERENCES

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*(1), 27–51.

APJII. (2023). *APJII Internet Survey Report 2023*. Indonesian Internet Service Providers Association.

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine, 25*(24), 3186–3191.

Bronfenbrenner, U. (1979). *The ecology of human development*. Harvard University Press.

Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology, 63*(3), 452–459.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.

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, 10*(5), 646–666.

Ferguson, C. J., & Rueda, S. M. (2010). The Hitman study: Violent video game exposure effects on aggressive behavior, hostile feelings, and depression. *European Psychologist, 15*(2), 99–108.

Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th ed.). SAGE.

Gentile, D. A., Coyne, S., & Walsh, D. A. (2017). Media violence, physical aggression, and relational aggression in school-aged children: A short-term longitudinal study. *Aggressive Behavior, 43*(3), 255–267.

Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *International Journal of Endocrinology and Metabolism, 10*(2), 486–489.

Gravetter, F. J., & Wallnau, L. B. (2020). *Statistics for the behavioral sciences* (11th ed.). Cengage Learning.

Hamzah, A., Rahman, M. T., & Shamsuddin, N. (2021). Emotional regulation and adolescent aggression: A systematic review. *Journal of Adolescence, 89*, 104–119.

Hasan, Y., Bègue, L., & Bushman, B. J. (2013). Violent video games stress people out and make them more aggressive. *Journal of Experimental Social Psychology, 49*(2), 224–227.

Hidayat, D., & Syahputra, A. (2020). Social norms and youth behavior in Indonesian schools. *Jurnal Psikologi Sosial, 18*(1), 55–66.

Kühn, S., Kugler, D. T., Schmalen, K., Weichenberger, M., Witt, C., & Gallinat, J. (2019). Does playing violent video games cause aggression? A 2-year longitudinal study. *Molecular Psychiatry, 24*, 1220–1234.

Kurniawan, A., & Setiawan, R. (2020). Online gaming, competitive behavior, and aggression among Indonesian adolescents. *Psychology and Education Journal, 57*(9), 211–221.

Lemmens, J. S., Valkenburg, P. M., & Gentile, D. A. (2015). The Internet Gaming Disorder Scale. *Psychological Assessment, 27*(2), 567–582.

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). SAGE Publications.

Putri, A. R. (2019). Self-control as a predictor of aggression in adolescents. *Journal of Clinical Psychology and Mental Health, 8*(1), 34–42.

Rahmawati, D., & Dewi, F. (2022). Family environment and adolescent aggression in the digital era. *Journal of Developmental Psychology, 10*(2), 112–121.

Rueger, S. Y., Malecki, C. K., & Demaray, M. K. (2016). Relationship between multiple sources of perceived social support and psychological and academic adjustment in early adolescence. *Journal of Youth and Adolescence, 45*(3), 524–539.

Sariyani, N. (2017). Self-control and aggression among senior high school students. *Journal of Applied Psychology, 5*(2), 89–97.

Statista. (2023). *Number of Mobile Legends: Bang Bang active users in Indonesia*.

Steinberg, L. (2017). *Adolescence* (11th ed.). McGraw-Hill Education.
Sugiyono. (2019). *Quantitative, qualitative, and R&D research methods*. Alfabeta.
Wang, C., Berry, B., & Swearer, S. M. (2013). The critical role of school climate in effective bullying prevention. *Theory Into Practice, 52*(4), 296–302.