
RESEARCH ARTICLE

The Moderating Role of Neuroticism in the Difference of Aggression Tendencies between Violent and Non-Violent Video Game Players among Gamers in Indonesia

Airell Bagus Patriatama & Rahkman Ardi*

Faculty of Psychology Airlangga University

ABSTRACT

The prevalence of violent video games in the daily lives of Indonesian active gamers has raised significant concerns regarding their potential impact on aggression tendencies. This study examines the relationship between video game type and aggression tendencies among active Indonesian gamers, with neuroticism serving as a potential moderator and weekly gameplay duration as a covariate. Guided by the General Aggression Model (GAM), this research adopted a quantitative comparative design. Data were collected from 236 active Indonesian gamers (playing ≥ 8 hours/week) via an online survey. Aggression tendency was measured using the Buss-Perry Aggression Questionnaire (BPAQ), and neuroticism was assessed using the Indonesian adaptation of the IPIP-BFM-50. Factorial ANCOVA was employed to test the hypotheses. The results revealed no significant differences in total aggression tendencies or their dimensions (physical aggression, verbal aggression, anger, and hostility) across the violent, non-violent, and mixed video game groups ($F(2, 227) = 0.280, p = .756$). Furthermore, neuroticism did not significantly moderate the relationship between video game type and aggression ($p > .05$). However, neuroticism showed a significant direct effect on aggression ($F(1, 227) = 115.757, p < .001$). These findings indicate that emotional stability is a more robust predictor of aggression than game content, highlighting the importance of targeting emotional regulation in psychological interventions.

Keywords: *Aggression Tendency, Neuroticism, Violent Video Games, Active Gamers, General Aggression Model.*

ABSTRAK

Prevalensi video game kekerasan dalam kehidupan sehari-hari gamer aktif di Indonesia telah menimbulkan kekhawatiran signifikan mengenai dampaknya terhadap kecenderungan agresi. Penelitian ini menguji hubungan antara jenis video game dan kecenderungan agresi di kalangan gamer aktif di Indonesia, dengan neurotisisme sebagai variabel moderator dan durasi bermain mingguan sebagai kovariat. Berpedoman pada General Aggression Model (GAM), penelitian ini menggunakan desain komparatif kuantitatif. Data dikumpulkan dari 236 gamer aktif di Indonesia (bermain ≥ 8 jam/minggu) melalui survei daring. Kecenderungan agresi diukur menggunakan Buss-Perry Aggression Questionnaire (BPAQ), dan neurotisisme diukur menggunakan adaptasi Indonesia dari IPIP-BFM-50. Factorial ANCOVA digunakan untuk menguji hipotesis penelitian. Hasil penelitian menunjukkan tidak adanya perbedaan yang signifikan dalam kecenderungan agresi secara keseluruhan maupun pada dimensi-dimensinya (agresi fisik, agresi verbal, kemarahan, dan permusuhan) di antara kelompok pemain video game kekerasan, non-kekerasan, dan campuran ($F(2, 227) = 0,280, p = 0,756$). Selain itu, neurotisisme tidak secara signifikan memoderasi hubungan antara jenis video game dan agresi ($p > 0,05$). Namun, neurotisisme menunjukkan pengaruh langsung yang signifikan terhadap agresi ($F(1, 227) = 115,757, p < 0,001$). Temuan ini mengindikasikan bahwa stabilitas emosional merupakan prediktor agresi yang lebih kuat dibandingkan konten video game itu sendiri, sehingga menekankan pentingnya intervensi psikologis

yang berfokus pada regulasi emosi.

Kata Kunci: *Kecenderungan Agresi, Neurotisme, Video Game Kekerasan, Gamer Aktif, General Aggression Mode*

INTRODUCTION

Video games have become one of the most popular forms of digital entertainment today, played by billions of people across different ages and backgrounds (Knezovic, 2026). Recent market reports show that the global gaming community has grown to over three billion active players, meaning that more than 80% of the world's population plays some form of video game (Newzoo, as reported by Crichton-Stuart, 2026). Indonesia is one of the largest and fastest-growing gaming markets in the world, ranking third globally in its total number of players, with recent national data showing that up to 95% of Indonesian internet users actively play video games (Dihni, 2022; Yonatan, 2026). Active Indonesian gamers spend an average of 8.7 hours per week playing, and the government, through the Ministry of Communication and Information (Kominfo), has established the Indonesia Game Rating System (IGRS) to classify game content (YouGov, 2023; Admin, 2022).

Modern game engines create highly realistic, three-dimensional worlds that increase players' immersion, focus, and emotional reactivity during gameplay (Krcmar et al., 2010; Tamborini & Skalski, 2012). This immersive experience is especially prominent in competitive multiplayer environments, where violent games such as Tactical First-Person Shooters (FPS), Battle Royales, and Multiplayer Online Battle Arenas (MOBA) are among the most popular titles played by Indonesian gamers, sparking public debate about their psychological impact (Ghea & Pratama, 2023; Ohno, 2021). Historically, this debate has centered on whether playing violent games directly produces real-world aggression. Classic studies grounded in the General Aggression Model (GAM) concluded that violent game exposure is linked to more aggressive cognitions, angry emotions, and aggressive behaviors (Anderson & Bushman, 2002; Anderson & Dill, 2000), and biological research suggests that competitive, violent gameplay can raise cortisol and heart rate in ways that prime aggressive thought (Borrego-Ruiz & Borrego, 2025).

Concerns about toxic behavior and trash-talking in Indonesian online competitive games have prompted child advocacy groups to call for stricter regulation of combat-focused titles (Investor Daily, 2024; Admin, 2022). However, many media researchers argue that the direct link between game violence and real-world aggression is often overstated, and that this association weakens or disappears once other factors such as personality, family background, and the natural frustration of competitive play are controlled (Barrington & Ferguson, 2022; Adachi & Willoughby, 2010). To address these conflicting findings, contemporary research has moved toward multi-variable frameworks examining situational and personal factors together (Ying et al., 2023; Markey & Markey, 2010). This study therefore compares aggression tendencies across three player profiles: those who primarily play violent video games (VVG), non-violent video games (NVVG), and a mixed profile (Aleissa et al., 2022), drawn from a sample of emerging adults (ages 18–29), the developmental stage during which unstructured leisure time and independence from parental oversight make extensive gaming engagement especially likely (Arnett, 2000).

Aggression tendency, the central outcome of interest, is defined as a relatively stable, multidimensional disposition to respond to situations with harmful thoughts, feelings, and behavior, comprising behavioral components (physical and verbal aggression), an emotional component (anger), and a cognitive component (hostility) (Buss & Perry, 1992). Within personality research, neuroticism, characterized by emotional instability and high stress reactivity, is a strong predictor of both aggression and problematic gaming, as individuals high in neuroticism may lack the emotional regulation needed to cope with the frustration of competitive, violent games (Markey & Markey, 2010; Costa & McCrae, 1992a). At the same time, the Catalyst Model (CM) argues that aggression is primarily driven by genetics, temperament, and life stressors, with games acting only as a stylistic catalyst rather than a cause (Ferguson et al., 2008), implying that individual personality may matter more than game content itself. Studies must also separate the qualitative content of a game from the quantitative amount of time spent playing it, since a failure to control for weekly gameplay duration is a common limitation of prior research (Adachi & Willoughby, 2010).

To date, no study in Indonesia has directly compared violent, non-violent, and mixed-genre players while simultaneously controlling for weekly gameplay duration and testing the moderating role of neuroticism within a sample of emerging adult gamers (Mantiri, 2021; Surahman et al., 2022). Given

Indonesia's massive gaming population and its documented concerns over online toxicity, this represents a clear and consequential gap in the literature. This study therefore asks: (1) is there a significant difference in overall and dimensional aggression tendencies among Indonesian emerging-adult gamers who primarily play violent, non-violent, or mixed video games, controlling for weekly gameplay duration; and (2) does neuroticism significantly moderate the relationship between video game type and aggression tendency?

METHOD

Research Design

This study used a quantitative, comparative survey design (Neuman, 2014) to examine whether aggression tendencies differ across three groups of active gamers, those who primarily play violent video games, non-violent video games, or a mix of both, while treating weekly gameplay duration as a covariate and neuroticism as a moderator. The environment was not manipulated; instead, existing real-world gaming habits were assessed through a cross-sectional online survey.

Participant

*Participants were recruited using purposive sampling and had to be (1) Indonesian citizens and (2) active gamers, defined as playing a minimum of 8 hours of video games per week. An a priori power analysis using G*Power (F-test, ANCOVA fixed effects; medium effect size $f = 0.25$; $\alpha = .05$; power = .95; numerator $df = 2$) indicated a minimum required sample of 251 participants. Data collection ran over six days (23–29 May 2026) via an online questionnaire hosted on Google Forms, yielding a final valid sample of 236 participants (VVG $n = 133$, 56.4%; Mixed $n = 59$, 25.0%; NVVG $n = 44$, 18.6%) after screening for the inclusion criteria. The sample was close to evenly split by gender (51.7% female, 48.3% male), largely drawn from Greater Jakarta (31.8%) and East Java (26.3%), predominantly students (57.2%), and reported an average weekly gameplay duration of 9.59 hours ($SD = 1.14$, range 8–11), confirming that all participants met the active-gamer inclusion threshold.*

Measures

Video game type was operationalized through a self-report screening item asking participants to identify their most frequently played genre, which was then manually coded into VVG (e.g., FPS, Battle Royale, Action-Adventure, Fighting), NVVG (e.g., sports, simulation, puzzle, strategy), or Mixed, following the violent-game definitions of Anderson et al. (2017). Weekly gameplay duration was self-reported in hours and entered as a continuous covariate. Aggression tendency was measured with the Indonesian-translated Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992), yielding a total score and four subscale scores (physical aggression, verbal aggression, anger, hostility); the scale showed excellent internal consistency in this sample (Cronbach's $\alpha = .918$). Neuroticism was measured using the Indonesian adaptation of the IPIP-BFM-50 (Akhtar & Azwar, 2019), scored under the label "Emotional Stability" and reverse-coded so that higher scores reflect higher neuroticism (Cronbach's $\alpha = .839$).

Data Analysis

Prior to hypothesis testing, descriptive statistics and classical assumption checks were conducted, including tests of normality (Kolmogorov–Smirnov), homogeneity of variance (Levene's test), and multicollinearity (VIF/tolerance). All assumptions were adequately met. Hypotheses were then tested using a factorial Analysis of Covariance (ANCOVA) with video game type as the between-subjects factor, weekly gameplay duration as a covariate, and neuroticism entered both as a main-effect predictor and as an interaction term (Game Type $\times$ Neuroticism) to test moderation. Tukey-corrected post hoc comparisons were used to probe any significant main effects, and the same factorial model was repeated separately for each of the four BPAQ dimensions as a supplementary, dimension-level analysis. Analyses were conducted using IBM SPSS Statistics 31 and Jamovi 2.6.26 for Windows

RESULTS

Descriptive analysis showed broadly similar aggression and neuroticism scores across the three groups. Mean total aggression was highest in the Mixed group ($M = 82.0$, $SD = 17.2$), followed closely by VVG ($M = 81.6$, $SD = 18.0$), and lowest in the NVVG group ($M = 76.8$, $SD = 15.8$). Mean neuroticism scores were likewise similar across groups (VVG $M = 31.7$, $SD = 7.72$; Mixed $M = 32.4$, $SD = 8.00$; NVVG $M = 31.2$, SD

= 7.62), suggesting comparable baseline emotional stability regardless of preferred game genre. Assumption checks confirmed that the data were suitable for ANCOVA: residuals did not depart significantly from normality (Kolmogorov-Smirnov $D = .041$, $p = .824$), error variances were equal across groups (Levene's $F(2, 233) = 0.123$, $p = .884$), and multicollinearity was negligible among all predictors (all $VIF \leq 1.02$).

The factorial ANCOVA testing the first hypothesis revealed a non-significant main effect of video game type on total aggression tendency, $F(2, 227) = 0.280$, $p = .756$, $\eta^2p = .002$, indicating that game type accounted for less than 1% of the variance in aggression even after controlling for weekly gameplay duration. Tukey-corrected post hoc comparisons confirmed no significant pairwise differences between any of the three groups (all $p > .15$). Hypothesis 1 was therefore not supported. Testing the second hypothesis, the Game Type $\times$ Neuroticism interaction was also non-significant, $F(2, 227) = 0.919$, $p = .400$, $\eta^2p = .008$, as was the Game Type $\times$ Duration interaction, $F(2, 227) = 0.190$, $p = .827$, $\eta^2p = .002$, indicating that neither neuroticism nor gameplay duration conditioned the relationship between game type and aggression. Hypothesis 2 was therefore also not supported. In contrast, neuroticism showed a highly significant direct effect on total aggression, $F(1, 227) = 115.757$, $p < .001$, $\eta^2p = .338$, accounting for roughly 34% of the variance independent of game type, while weekly gameplay duration itself was not a significant predictor, $F(1, 227) = 2.046$, $p = .154$, $\eta^2p = .009$.

Supplementary dimension-level analyses across the four BPAQ subscales (physical aggression, verbal aggression, anger, and hostility) largely replicated this pattern. Game type did not significantly predict any dimension, although the effect approached significance for verbal aggression ($p = .075$) and hostility ($p = .063$). Weekly gameplay duration significantly predicted verbal aggression specifically, $F(1, 231) = 4.63$, $p = .032$, $\eta^2p = .020$, but not the other three dimensions. Neuroticism, by contrast, was a strong and significant predictor across all four dimensions, with the largest effects observed for hostility ($\eta^2p = .486$) and anger ($\eta^2p = .448$), followed by verbal aggression ($\eta^2p = .170$) and physical aggression ($\eta^2p = .092$).

DISCUSSION

This study examined whether aggression tendencies differ between Indonesian emerging-adult gamers who primarily play violent, non-violent, or mixed-genre games, and whether neuroticism moderates this relationship. Contrary to the first hypothesis, no significant differences in total or dimensional aggression tendency emerged across the three groups, even after controlling for weekly gameplay duration, a finding that contrasts with several prior studies linking violent game type to higher aggression (Borrego-Ruiz & Borrego, 2025; Lacko et al., 2024; Lase et al., 2025). It is, however, consistent with critical scholarship showing that the violent-game-aggression association weakens or disappears once individual differences such as personality are properly controlled (Barrington & Ferguson, 2022; Adachi & Willoughby, 2010). Methodologically, the naturalistic, self-reported nature of game-type classification, together with possible desensitization among habitual violent-game players and the relative homogeneity of an all-active-gamer sample, may have reduced the between-group variance needed to detect an effect.

The second hypothesis, that neuroticism would moderate the game type-aggression relationship, was likewise not supported: the interaction terms for both neuroticism and gameplay duration were non-significant. This is somewhat inconsistent with the General Aggression Model's proposition that person variables such as personality moderate the effects of situational inputs like violent media (Anderson & Bushman, 2002), and with prior work identifying neuroticism as a key moderator in this context (Markey & Markey, 2010; Ying et al., 2023). The absence of moderation may partly follow from the absence of a main effect for game type itself, and from the categorical operationalization of game type, which may have been too coarse to capture more nuanced dose-response relationships.

The most notable finding was the large, consistent, and independent effect of neuroticism on aggression across the total score and all four dimensions, particularly hostility and anger, the cognitive and emotional components of aggression most closely tied to emotional dysregulation and negative affectivity. This pattern strongly echoes prior findings that neuroticism predicts aggressive behavior among online gamers (Alvi et al., 2023; Kalsoom et al., 2022), predicts social aggression especially under

low social support (Quan et al., 2024), and correlates with aggressiveness among Indonesian Mobile Legends players specifically (Mantiri, 2021). From a General Aggression Model perspective, neuroticism functions as a stable person variable that primes hostile cognition and negative affect, lowering the threshold for aggressive responding independent of situational triggers such as game content or time spent playing.

Several limitations qualify these conclusions. The cross-sectional design precludes causal inference regarding the direction of the neuroticism–aggression relationship. Reliance on self-report measures introduces potential response bias and social desirability effects. Game-type classification relied on manually coded, open-ended self-reports rather than standardized rating systems, introducing some subjectivity, and the unequal group sizes (VVG 56.4%, Mixed 25.0%, NVVG 18.6%), together with a final sample slightly below the a priori target of 251, may have reduced statistical power to detect small effects of game type. Finally, the study did not capture within-category variation in game intensity, competitiveness, or social context of play, which may independently shape aggression tendencies.

CONCLUSION

Among 236 active Indonesian gamers, aggression tendency did not differ significantly between players of violent, non-violent, or mixed-genre video games, at either the total-score or dimensional level, and neuroticism did not significantly moderate this relationship. These findings align with critical perspectives that question a direct causal role for violent game content once individual differences are accounted for (Barrington & Ferguson, 2022; Adachi & Willoughby, 2010). The most robust and consistent finding across all analyses was the strong independent effect of neuroticism on aggression, particularly its anger and hostility dimensions, underscoring that who a person is emotionally may matter more for aggressive tendencies than what games they play. Future research should adopt longitudinal designs to clarify the direction of the neuroticism–aggression relationship, use more continuous and objective indicators of game exposure, pursue more balanced group sizes (particularly a larger NVVG group), and examine additional moderators such as social support and competitive orientation. Practically, these findings suggest that interventions for aggressive or toxic behavior among gamers, whether delivered by mental health practitioners or embedded in community moderation systems, should prioritize emotional regulation and neuroticism-related risk over assumptions about game content alone

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REFERENCES

- Adachi, P. J., & Willoughby, T. (2010). The effect of violent video games on aggression: Is it more than just the violence? *Aggression and Violent Behavior*, 16(1), 55–62.
<https://doi.org/10.1016/j.avb.2010.12.002>
- Addo, P. C., Fang, J., Kulbo, N. B., Gumah, B., Dagadu, J. C., & Li, L. (2021). Violent video games and aggression among young adults: the moderating effects of adverse environmental factors. *Cyberpsychology Behavior and Social Networking*, 24(1), 17–23.
<https://doi.org/10.1089/cyber.2020.0018>
- Akhtar, H., & Azwar, S. (2019). Indonesian Adaptation and Psychometric Properties Evaluation of the Big

-
- Five Personality inventory: IPIP-BFM-50. *Jurnal Psikologi*, 46(1), 32.
<https://doi.org/10.22146/jpsi.33571>
- Aleissa, M. A., Alenezi, S., Saleheen, H. N., Talib, S. R. B., Khan, A. H., Altassan, S. A., & Alyahya, A. S. (2022). The Association between Video Game Type and Aggressive Behaviors in Saudi Youth: A Pilot Study. *Behavioral Sciences*, 12(8), 289. <https://doi.org/10.3390/bs12080289>
- Allen, J. J., Anderson, C. A., & Bushman, B. J. (2018). The general aggression model. *Current Opinion in Psychology*, 19, 75–80. <https://doi.org/10.1016/j.copsyc.2017.03.034>
- Altın, M. (2025). Digital game addiction, anger and aggression among university students. *Physical Education of Students*, 29(1), 39–48. <https://doi.org/10.15561/20755279.2025.0104>
- Alvi, S. M., Asghar, S., & Alvi, S. Y. (2023). Relationship between Personality Traits and Aggression among Online Video Gamers. *Journal of Management Practices Humanities and Social Sciences*, 7(2). <https://doi.org/10.33152/jmphss-7.2.4>
- Amor, L. B., & Mchedlidze, N. (2025). Emotion Suppression and Aggressive Behavior: Frustration Tolerance as a Mediator in Young Adults. 7(2), 163–171. <https://doi.org/10.61838/kman.jarac.7.2.19>
- Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, 53(1), 27–51. <https://doi.org/10.1146/annurev.psych.53.100901.135231>
- Anderson, C. A., Bushman, B. J., Bartholow, B. D., Cantor, J., Christakis, D., Coyne, S. M., Donnerstein, E., Brockmyer, J. F., Gentile, D. A., Green, C. S., Huesmann, R., Hummer, T., Krahé, B., Strasburger, V. C., Warburton, W., Wilson, B. J., & Ybarra, M. (2017). Screen violence and youth behavior. *PEDIATRICS*, 140(Supplement_2), S142–S147. <https://doi.org/10.1542/peds.2016-1758t>
- Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology*, 78(4), 772–790. <https://doi.org/10.1037/0022-3514.78.4.772>
- APA Task Force on Violent Media. (2015). Technical Report on the review of the Violent Video Game Literature. <https://www.apa.org/pi/families/review-video-games.pdf>
- APAC gamers lead the globe on most time spent gaming per week: YouGov. (2023, April 5). <https://yougov.com/reports/45510-apac-gamers-lead-globe-most-time-spent-gaming-week>
- Barrington, G., & Ferguson, C. J. (2022). Stress and violence in video games: Their influence on aggression. *Trends in Psychology*, 30(3), 497–512. <https://doi.org/10.1007/s43076-022-00141-2>
- Bartholow, B. D., & Anderson, C. A. (2002). Effects of violent video games on aggressive behavior: Potential sex differences. *Journal of Experimental Social Psychology*, 38(3), 283–290. <https://doi.org/10.1006/jesp.2001.1502>
- Berkowitz, L. (1989a). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin*, 106(1), 59–73. <https://doi.org/10.1037/0033-2909.106.1.59>
- Borrego-Ruiz, A., & Borrego, J. J. (2025). Adolescent Aggression: A narrative review on the potential impact of violent video games. *Psychology International*, 7(1), 12. <https://doi.org/10.3390/psycholint7010012>
- Bowlby, J. & The Tavistock Institute of Human Relations. (1973). Attachment and Loss: Volume II: Separation Anxiety and Anger. BASIC BOOKS.
- Bushman, B., & O'Brien, E. (2016). Aggression. In Elsevier eBooks. <https://doi.org/10.1016/b978-0-12-809324-5.06310-0>
- Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology*, 63(3), 452–459. <https://doi.org/10.1037/0022-3514.63.3.452>
- Crichton-Stuart, E. (2026, March 31). Lebih dari 80% Orang Bermain Game Secara Global. GAMES.GG. <https://games.gg/id/news/lebih-dari-80-orang-bermain-game-secara-global/>
- Dewi, I. D. A. D. P., & Kyranides, M. N. (2022). Physical, verbal, and relational aggression: The role of Anger Management Strategies. *Journal of Aggression Maltreatment & Trauma*, 31(1), 65–82. <https://doi.org/10.1080/10926771.2021.1994495>
- Dihni, V. A. (2022, February 16). Jumlah Gamers Indonesia Terbanyak Ketiga di Dunia. Katadata. <https://databoks.katadata.co.id/teknologi-telekomunikasi/statistik/950b8ba78451f97/jumlah-gamers-indonesia-terbanyak-ketiga-di-dunia>
- Dollard, J., Miller, N. E., Doob, L. W., Mowrer, O. H., & Sears, R. R. (1939). Frustration and aggression. Yale University Press. <https://doi.org/10.1037/10022-000>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. (2009). Statistical power analyses using G*Power 3.1: Tests

- for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149–1160. <https://doi.org/10.3758/brm.41.4.1149>
- Ghea, Y., & Pratama, A. P. (2023). Video Game Preferences and Their Impact: Aggression and Sexualization Exposures among Indonesian Millennials. *Jurnal Sosiologi*, 22(2), 256–265. <https://doi.org/10.5614/sostek.itbj.2023.22.2.11>
- Goldberg, L. R. (1990). An alternative "description of personality": The Big-Five factor structure. *Journal of Personality and Social Psychology*, 59(6), 1216–1229. <https://doi.org/10.1037/0022-3514.59.6.1216>
- Greitemeyer, T. (2019). The contagious impact of playing violent video games on aggression: Longitudinal evidence. *Aggressive Behavior*, 45(6), 635–642. <https://doi.org/10.1002/ab.21857>
- Greitemeyer, T. (2022). The dark and bright side of video game consumption: Effects of violent and prosocial video games. *Current Opinion in Psychology*, 46, 101326. <https://doi.org/10.1016/j.copsyc.2022.101326>
- Greitemeyer, T., & Mügge, D. O. (2014). Video games do affect social outcomes. *Personality and Social Psychology Bulletin*, 40(5), 578–589. <https://doi.org/10.1177/0146167213520459>
- Guo, Y. (2025). Gender differences in the relationship between big five personality traits and aggression among physical education students. *Scientific Reports*, 15(1), 8122. <https://doi.org/10.1038/s41598-025-93038-w>
- Hammad, M. A., & Al-Shahrani, H. F. (2024). Impulsivity and aggression as risk factors for internet gaming disorder among university students. *Scientific Reports*, 14(1), 3712. <https://doi.org/10.1038/s41598-024-53807-5>
- Hartmann, T., Krakowiak, K. M., & Tsay-Vogel, M. (2014). How violent video games communicate violence: A literature review and content analysis of moral disengagement factors. *Communication Monographs*, 81(3), 310–332. <https://doi.org/10.1080/03637751.2014.922206>
- Kalsoom, U., Cheema, I. U., Ahmad, Z., & Bibi, B. (2022). Personality Traits as Predictor of Aggressive Behavior in Pubg Gamers. A Comparison between Agreeableness and Neuroticism. *Jahan-e-Tahqeeq*, 5(2), 204–209.
- Kemenkominfo Bisa Blokir game yang sarat kekerasan. (2024, April 17). *Investor.id*. <https://investor.id/business/359268/kemenkominfo-bisa-blokir-game-yang-sarat-kekerasan>
- Kennedy, L. (2025). Explaining youth aggression: A situational model of peer influence. *European Journal of Criminology*, 22(2), 172–203. <https://doi.org/10.1177/14773708241272526>
- Kersten, R., & Greitemeyer, T. (2024). Human aggression in everyday life: An empirical test of the general aggression model. *British Journal of Social Psychology*, 63(3), 1091–1111. <https://doi.org/10.1111/bjso.12718>
- Knezovic, A. (2026, January 12). 200+ Mobile Gaming Market Statistics [2026 Report]. Udonis Mobile Marketing Agency. <https://www.blog.udonis.co/mobile-marketing/mobile-games/mobile-gaming-statistics>
- Kominfo dukung pengembangan industri game, siapkan Indonesia Game Rating System. (2022, October 18). *fin.co.id*. <https://fin.co.id/2022/10/18/kominfo-dukung-pengembangan-industri-game-siapkan-indonesia-game-rating-system>
- Krcmar, M., Farrar, K., & McGloin, R. (2010). The effects of video game realism on attention, retention and aggressive outcomes. *Computers in Human Behavior*, 27(1), 432–439. <https://doi.org/10.1016/j.chb.2010.09.005>
- Lacko, D., Machackova, H., & Smahel, D. (2024). Does violence in video games impact aggression and empathy? A longitudinal study of Czech adolescents to differentiate within- and between-person effects. *Computers in Human Behavior*, 159, 108341. <https://doi.org/10.1016/j.chb.2024.108341>
- Lase, H. Y., Istiani, H. G., & Shifa, N. A. (2025). Intensitas Bermain Game Online Mobile Legends Berhubungan dengan Perilaku Agresif pada Mahasiswa Sarjana Keperawatan Universitas Indonesia Maju.
- Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development*, 66–104.
- Mantiri, N. S. (2021). Hubungan antara kepribadian neuroticism dengan agresivitas pada mahasiswa pengguna Mobile Legends (Undergraduate thesis, Universitas Gunadarma). Universitas Gunadarma Repository.
- Muarifah, A., Mashar, R., Hashim, I. H. M., Rofiah, N. H., & Oktaviani, F. (2022). Aggression in Adolescents:

- The role of Mother-Child attachment and Self-Esteem. *Behavioral Sciences*, 12(5), 147. <https://doi.org/10.3390/bs12050147>
- Nasri, W. O. L. A., Handayani, P. G., Susiati, S., Tobing, C. M. H., Fajri, N., Brescia, R., & Syahputra, Y. (2025). The effect of exposure to violent video games on students' aggressive tendencies. *Bulletin of Counseling and Psychotherapy*, 7(3). <https://doi.org/10.51214/002025071612000>
- Nelson, L. J., & Padilla-Walker, L. M. (2013). Flourishing and floundering in emerging adult college students. *Emerging Adulthood*, 1(1), 67–78. <https://doi.org/10.1177/2167696812470938>
- Neuman, W. L. (2014). *Social research methods: Qualitative and quantitative approaches* (7th ed.). Pearson Education Limited.
- Ohno, S. (2021). The link between battle royale games and aggressive feelings, addiction, and sense of underachievement: Exploring eSports-related genres. *International Journal of Mental Health and Addiction*, 20(3), 1873–1881. <https://doi.org/10.1007/s11469-021-00488-0>
- Olejarnik, S. Z., & Romano, D. (2023). Is playing violent video games a risk factor for aggressive behaviour? Adding narcissism, self-esteem and PEGI ratings to the debate. *Frontiers in Psychology*, 14, 1155807. <https://doi.org/10.3389/fpsyg.2023.1155807>
- Przybylski, A. K., Ryan, R. M., & Rigby, C. S. (2009). The motivating role of violence in video games. *Personality and Social Psychology Bulletin*, 35(2), 243–259. <https://doi.org/10.1177/0146167208327216>
- Quan, F., Gou, Y., Gao, Y., Yu, X., & Wei, B. (2024). The relationship between neuroticism and social aggression: a moderated mediation model. *BMC Psychology*, 12(1), 443. <https://doi.org/10.1186/s40359-024-01938-9>
- Raharjo, D. B., Saragih, S., & Haque, S. A. U. (2024). Agresivitas verbal pada pemain Mobile Legend: Bagaimana peran intensitas bermain? *INNER: Journal of Psychological Research*, 3(4), 506–514. <https://aksiologi.org/index.php/inner>
- Scott E. Maxwell & Harold D. Delaney (2004). *Designing experiments and analyzing data: A model comparison perspective* (2nd ed.). Lawrence Erlbaum Associates.
- Sestir, M. A., & Bartholow, B. D. (2010). Violent and nonviolent video games produce opposing effects on aggressive and prosocial outcomes. *Journal of Experimental Social Psychology*, 46(6), 934–942. <https://doi.org/10.1016/j.jesp.2010.06.005>
- Siregar, F. M. O., Yudanagara, B. B. H., & Fakultas Psikologi Universitas Airlangga. (2025). Pengaruh Online Disinhibition Effect terhadap Toxic Behavior pada Pemain Multiplayer Online Battle Arena Game. *Artikel Penelitian*.
- Stockdale, L., & Coyne, S. M. (2017). Video game addiction in emerging adulthood: Cross-sectional evidence of pathology in video game addicts as compared to matched healthy controls. *Journal of Affective Disorders*, 225, 265–272. <https://doi.org/10.1016/j.jad.2017.08.045>
- Sun, J., Hao, J., & Liu, Y. (2023). Short-term effects of competitive video games on aggression: An event-related potential study. *Brain Sciences*, 13(6), 904. <https://doi.org/10.3390/brainsci13060904>
- Surahman, E., Lukman, L., & Nurdin, M. N. H. (2022). Neuroticism dan kecanduan pada game multiplayer online battle arena. *Cognicia*, 10(2), 126–131. <https://doi.org/10.22219/cognicia.v10i2.22424>
- Tamborini, R., & Skalski, P. (2012). The role of presence in the experience of electronic games. In *Playing video games* (pp. 263–281). Routledge.
- Ward, M. R. (2010). Video games and adolescent fighting. *The Journal of Law and Economics*, 53(3), 611–628. <https://doi.org/10.1086/605509>
- Yao, M., Zhou, Y., Li, J., & Gao, X. (2019). Violent video games exposure and aggression: The role of moral disengagement, anger, hostility, and disinhibition. *Aggressive Behavior*, 45(6), 662–670. <https://doi.org/10.1002/ab.21860>
- Yonatan, A. Z. (2026, June 2). 95% pengguna internet Indonesia bermain video games. *GoodStats*. <https://goodstats.id/article/95-pengguna-internet-indonesia-bermain-video-games-82uYx>