

USAGE OF VIOLENT VIDEO GAMES, BEHAVIOR AND COPING MECHANISM OF SCHOOL-GOING MID-ADOLESCENTS IN URBAN SCHOOLS OF A SOUTH INDIAN CITY: A CROSS-SECTIONAL STUDY

Srirameena Vasudevan¹, Megha Raveendran², Selvakumar Panneerselvam³, Rajmohan Thangavel⁴

Received : 04/10/2023
Received in revised form : 30/10/2023
Accepted : 10/11/2023

Keywords:

Video games, Aggressive behavior, Coping, School-going Mid-adolescents, Violent.

Corresponding Author:
Dr. Rajmohan Thangavel,
Email: rajmohandr@gmail.com

DOI: 10.47009/jamp.2023.5.6.103

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (6); 505-509



¹CRRI, Department of Pediatrics, Thanjavur Medical College, Thanjavur, Tamilnadu, India

²Assistant Professor, Department of Pediatrics, Thanjavur Medical College, Thanjavur, Tamilnadu, India

³Professor, Department of Pediatrics, Thanjavur Medical College, Thanjavur, Tamilnadu, India

⁴Senior Assistant Professor, Department of Pediatrics, Thanjavur Medical College, Thanjavur, Tamilnadu, India

Abstract

Background: In view of increasing incidents of violence involving youth worldwide, it is important to analyze various social factors that may contribute to or be associated with aggressive behaviour. The study aimed to assess the prevalence of violent video game (VVG) usage in school-going mid-adolescents and its association with aggressive behaviour and coping strategies. **Materials and Methods:** This cross-sectional study was conducted among 202 school-going mid-adolescents (14 to 16 years) from 2 randomly selected urban schools in southern India in November 2019. The questionnaires on video game usage, preference, aggression, and coping strategies measure various aspects of gaming behavior, including duration, frequency, and preferences. These questionnaires are scored using various scoring systems for data collection. **Result:** Of the total participants, 165 (87.5%) were VVG users, with males constituting a significantly higher proportion (74.5%, $\chi^2= 56.843$, $p<0.001$). VVG users showed higher engagement in bullying classmates ($\chi^2= 12.308$, $p =0.02$) as compared to non-violent video game (NVVG) users. However, no significant difference was observed between the two groups in terms of either the duration or the frequency of playing. While physical aggression was significantly higher in VVG users ($t= 2.635$, $p= 0.009$), no appreciable difference was observed in other domains of aggression. Most VVG users adopted distraction coping ($t= 4.228$, $p<0.0001$), while active coping was the strategy of choice in the NVVG group. **Conclusion:** The prevalence of VVG usage was 87.5% among school-going mid-adolescents using video games. VVG usage was significantly associated with physical aggression among adolescents. Also, distraction coping was the preferred coping strategy among VVG users.

INTRODUCTION

In today's times, with nearly unlimited internet access and minimal adult supervision, the consequences of electronic media exposure on adolescents' health, behaviour, social development and education are being extensively researched. Among these, research ascribing physical aggression and violence in adolescents and young adults to the usage of violent video games is of particular importance. Incidents of school shootings in the United States have frequently brought this concern to the fore. However, despite having the world's largest adolescent population of 253 million, there is very scarce research evidence regarding violent video games and their impact on adolescent behaviour in India.

Violent video games (VVG) are defined as those in which the range of options available to a player includes killing, maiming, dismembering or sexually assaulting an image of a human being and which lacks serious literary, artistic, political or scientific value for minors. Most VVGs are in the format of Massively Multiplayer Online Role-Playing Games (MMORPGs). MMORPGs are online games typically featuring a persistent open or virtual world (without boundaries as in structured gameplay) that permits interaction with several other players, often hundreds or thousands. The participants play as in-game characters and allies to defeat the opponent and gain rewards for advancements in the game. This feature of allowing numerous players around the globe to inhabit a single virtual realm simultaneously

remains the major reason for the popularity and widespread usage of MMORPGs.

Some epidemiological studies have demonstrated a fairly consistent positive association between VVG usage and aggression in real-world contexts among adolescents.^[1,2] The positive correlations have also been extended to more serious forms of aggression, such as antisocial and delinquent behaviour.^[3] VVG usage has also been linked with sadism, showing bidirectional influence and reinforcement.^[4] Meta-analyses have concluded that VVG exposure is positively associated with aggressive behaviour, aggressive thoughts, and hostility and negatively associated with prosocial behaviour.^[5] Some studies have suggested that specific VVG characteristics like competitiveness have a much larger impact on furthering aggressive behaviour than the violent content itself.^[6] The intensity of game playing, which includes frequency and duration, has also been found to correlate with the degree of aggression.^[7] On the contrary, a study argues that once the "file-drawer" bias or publication bias was eliminated, no positive association could be established between VVG usage and aggressive behaviour.^[8] There also exists the notion that violent arousal by VVGs has a relatively positive effect on children's development, especially self-regulation and thinking.^[9]

Theoretically, video games seem to possess the ability to both promote and suppress aggressive tendencies. There are several different schools of thought. Social learning theory hypothesizes that playing aggressive video games stimulates aggressive behaviour by imitation. Conversely, the Catharsis theory conjectures that playing aggressive video games would have a relaxing effect by channelling latent aggression and, therefore, exert an advantageous effect on behaviour, preventing overt outbursts.^[10] The General Aggression Model (GAM) is the most influential in relating aggression and violent media usage.^[11] In brief, GAM asserts that violent media exposure desensitizes the youth to violence because it projects fearful content ensconced with positive emotional content. After repeated exposure, the violent imagery becomes normalized because of the psychological and physiological reductions in the response to violence. This sets into motion a variety of cognitive and affective consequences, including decreased perception of injury severity, reduced attention to violent events, decreased sympathy for victims of violence, and decreased negative attitudes towards violence, among others. GAM further explains the operation of multiple levels of violence-related factors on the individual, including general societal factors through schools, peers, and family and the reiteration of aggressive conduct that will influence one's future social behaviour as well.^[12] Similar to GAM, studies have proposed that VVG-induced aggressive behaviour is triggered when victimizers perceive the victim to be less human. Playing VVG is associated with dehumanization in intergroup and interpersonal contexts.^[13]

In contrast to GAM, the Catalyst Model (CM) states that genetic predisposition can lead to an aggressive temperament, likely producing violent behaviour during environmental strain. The environmental factors are considered to act as catalysts for violent acts in individuals with a violence-prone personality. The CM also suggests that exposure to violent video games is not an antecedent variable of aggressive behaviour but a catalyst influencing its presentation.^[14]

Adolescents are motivated to play video games for entertainment, challenge seeking, emotional coping, need for achievement and escaping to virtuality to fulfil their unsatiated needs.^[15] Among these, coping with life's daily stressors remains a primary motive. Excessive video game play has been found to correlate with maladaptive coping behaviour substantially. Those with emotion-focused coping showed a higher tendency to use video games for recovery than those with problem-focused coping.^[16] It has also been claimed that VVG users resort to avoidance coping,^[17] which is considered less adaptive in developmental terms than problem-focused coping.

This study is aimed at understanding the possible link between violent video gaming and adverse behavioural traits such as aggression in mid-adolescent Indians in an urban setting and the coping strategies employed by them.

MATERIALS AND METHODS

This cross-sectional study was conducted among 202 school-going mid-adolescents (14 to 16 years) from 2 randomly selected urban schools in southern India in November 2019.

Inclusion Criteria

Adolescents who played video games (VG) and were not under treatment for any behavioural disorders were included.

Exclusion Criteria

Students who submitted questionnaires with incomplete data were excluded.

Based on the study conducted by Milani L et al. (2015),^[17] with the prevalence of VVG usage being 33.5%, and considering a 95% confidence level, absolute precision of 10%, design effect of 1.5, non-response of 20%, the sample size of 165 was computed. Ethics approval was obtained from the Institutional Ethics Committee.

The "loco parentis" of the students were approached for permission. Written informed consent from the parents and student assent were obtained, after which the study subjects were approached in clusters grade-wise (9th and 10th grade). A set of 4 self-reported questionnaires in English were distributed among all participants, and data were collected anonymously. The video game usage questionnaire,^[18] is an 11-item questionnaire that gathers information regarding the average duration of each playing session, the average duration of play per day, the average duration of play

per week, preference for multiplayer online games, and preference for playing video games over real-life interactions. The video game preference questionnaire,^[19] is a 20-item questionnaire that investigates the preferences and contents of the five most frequently played video games.

The Buss and Perry aggression questionnaire,^[20] is a 29-item, four-factor instrument designed to measure physical aggression, verbal aggression, anger, and hostility on a 5-point Likert scale. The items under each factor are weighted in importance and summed for a total score ranging from 29 to 145. Children's coping strategies checklist – revised I,^[21] contains 54 items to be described on a 4-point Likert scale. The item scores are summed under 4-sub-scales of coping: active, avoidance, distraction, and support-seeking coping. As mentioned above, the final scores of the questionnaires were generated by employing the respective scoring systems for the collected data.

Statistical Analysis

Data were entered into MS Excel and analyzed using SPSS trial version 20. Data were expressed as mean (SD) for continuous parametric values, n (%) for categorical values, and median (IQR) for continuous non-parametric values. The relationship between the categorical variables was tested using bivariate analyses (Chi-square test for categorical data, Mann Whitney "U" test, or unpaired T test for continuous variables). $p < 0.05$ was considered statistically significant.

RESULTS

A total of 202 participants (boys 62.37%) aged 14 – 16 years studying 9th and 10th grade (day-scholars 91.6%) were included in the study. Among them, 138 (68.3%) owned a specific VG machine (personal computer, mobile phone, VG console) and played for an average of 11.66 hours per week (SD=8.72). Regarding their choice of the five most frequently played VGs, 139(68.8%) chose VVGs as their first preference, and for as many as 165 (81.7%), VVG was one of their top 5 preferences. MMPORGs were selected by 134 (66.3%). The mean score for

aggression in the study population was 85.66 (SD=11.81), which includes physical aggression 26.17 (SD=5.21), verbal aggression 15.02 (SD=3.73), anger 20.02 (SD=4.20) and hostility 24.44 (SD=4.89). Various risk factors of aggression (family discipline, peers, peer fighting, teachers, engagement in aggressive TV programs) were equally distributed between the groups except for engagement in bullying classmates (64.9% vs. 35.1%, $\chi^2 = 12.308$, $p=0.02$), which was found to be significantly higher in VVG users.

The prevalent coping strategies were a distraction (50.50%), followed by support seeking (21.78%), active (19.80%), and avoidance (7.92%). Figure 1 depicts the grouping of participants into VVG and non-VVG (NVVG) users.

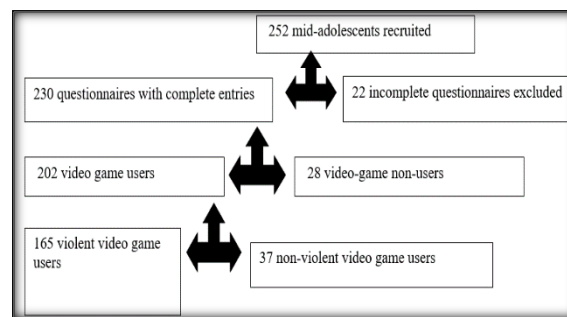


Figure 1: Flow of recruitment and selection of groups

[Table 1] compares the demographic characteristics and residential patterns between the two groups. The significant male preponderance in VVG usage is evident [boys vs. girls - 74.5 % vs. 8.1%, $\chi^2 = 56.843$, $p=0.001$].

[Table 2] shows that a statistically significant number of VVG users owned VG consoles compared to NVVG users (71.5% vs. 54.1%, $\chi^2 = 4.257$, $p=0.049$). Similarly, the preference for MMPORGs was higher among VVG users than NVVG users (74.4% vs. 21.6%, $\chi^2 = 40.557$, $p<0.001$). No significant differences were found in the duration of play per week, per day, or years of playing among the two groups.

Table 1: Comparison of baseline characteristics between the violent and non-violent video-game user groups in the study population

Parameters		Violent video game users (n=165)	Non-violent video game users (n=37)	P value
Gender	Male	123 (74.5)	3 (8.1)	<0.001*
	Female	42 (25.5)	34 (91.9)	
Grade	Ninth	82 (49.7)	23 (62.2)	0.204(NS)
	Tenth	83 (50.3)	14 (37.8)	
Living pattern	Day scholar	149 (90.3)	36 (97.3)	0.321(NS)
	Hosteller	16 (9.7)	1 (2.7)	
Mean age in years		14.38 (0.53)	14.3 (0.46)	0.375 (NS)

Table 2: Comparison of the frequency distribution of various factors related to video game playing between the study population's violent and non-violent video game user groups.

Parameters		Violent video game users (n=165)	Non-violent video game users (n=37)	P value
Owning a video game console	Yes	118 (71.5)	20 (54.1)	0.049*
	No	47 (28.5)	17 (45.9)	
Considering self as a gamer	Yes	96 (58.2)	16 (43.2)	0.104 (NS)
	No	69 (41.8)	21 (56.8)	

Preference of playing video games over interaction with others	Yes	46(27.9)	6 (16.2)	0.220 (NS)
	Sometimes	3(1.8)	0(0)	
	No	116 (70.3)	31 (83.8)	
Preference for multiplayer online games	Yes	126 (76.4)	8 (21.6)	<0.001*
	No	39 (23.6)	29 (78.4)	
Feeling socially awkward	Yes	50 (30.3)	8 (21.6)	0.323 (NS)
	No	115 (69.7)	29 (78.4)	

Table 3: Comparison of various domains and total aggression score between the violent and non-violent video-game users in the study

Parameters	Violent video game users (n=165)	Non-violent video game users (n=37)	P value
Physical aggression	26.62 (5.14)	24.16 (5.09)	0.009*
Verbal aggression	14.98 (3.69)	15.18 (3.94)	0.768 (NS)
Anger	20.06(4.17)	19.83 (4.38)	0.766 (NS)
Hostility	24.52(4.84)	24.10 (5.17)	0.664 (NS)
Total aggression	86.20 (11.37)	83.29 (13.54)	0.177 (NS)

Table 4: Comparison of various types of coping mechanisms between the violent and non-violent game users in this study

Parameters	Violent video game users (n=165)	Non-violent video game users (n=37)	P value
Active coping	2.78(0.41)	2.79 (0.46)	0.889 (NS)
Distraction coping	3.04(0.58)	2.58(0.66)	<0.001*
Avoidance coping	2.53 (0.42)	2.50 (0.45)	0.716 (NS)
Support-seeking coping	2.69(0.60)	2.60 (0.57)	0.420 (NS)

Aggression scores were comparable between the groups except for physical aggression, which was higher among VVG users ($t=2.635$, $p=0.009$) [Table 3]. VVG users showed significantly higher scores on distraction coping ($t=4.228$, $p<0.001$), as depicted in [Table 4]. While distraction coping (56.36%) was the predominant coping strategy in VVG users, it was active coping (29.73%) in NVVG users.

DISCUSSION

This cross-sectional study revealed several patterns and correlates of Violent Video Game (VVG) usage among school-going mid-adolescents in urban schools in a South Indian city. The study also provided insights into the association between violent media exposure and behavioural outcomes, which has far-reaching implications, from child rearing and parenting at an individual level to schooling and policy making at the community level. Our study showed a high prevalence of VVG usage among the selected study sample of adolescents, showing that video games with violent content are quite popular among adolescents aged 14 to 19. Male preponderance was evident among VVG users, corroborating previous studies, including Olson et al.^[22] The subjective rating of the violent content of VGs was through a self-reported questionnaire. The validity and reliability of user ratings of VGs have been well established in the previous study by Busching et al.^[23]

Regarding the duration of play, no significant difference in video-game-related screen time was observed between the two groups. The data from our study could indicate that the content and degree of violence, rather than the duration of play, is more contributive to behaviour change among adolescents, though this requires further targeted research. Owning a video game console emerged as the

prevailing trend among VVG users. VVG users also preferred engagement in MMPORGs, a significant difference from non-VVG users. Total scores relating to aggression were found to be comparable between the two groups of video game users. However, the scores for physical aggression were significantly higher among VVG users, and this indicates that VVG use could be a potential risk factor for physical aggression among adolescents.

However, as noted by Gentile et al,^[24] "Exposure to violent media is not the only risk factor for aggression, not even the most important one, but it is one important risk factor." The potentially compounding effects of multiple social and individual factors need separate pointed research with several controls to generate meaningful outcomes. Our study also throws light on the coping practices of video game users. It was found that VVG users resort to distraction coping, while non-VVG users prefer active coping. According to the study by Wood et al,^[25] distraction or emotion-focused coping is considered less adaptive in cognitive terms than other coping methods. VVG users resort to playing violent games to keep themselves distracted from daily stressors. They also choose violence as a means of venting out their frustration at things out of their control. VVGs, especially MMPORGs, are said to have inbuilt reinforcement techniques that keep the players detached from the real world. This makes them unable to cope with failure and stress, which can ultimately be expressed as aggression. However, VVG usage has not been confirmed as the only adopted distraction mode and requires further research.

This study has certain limitations. A relatively small number of school students were assessed in this study, that too, only in urban settings of a single city. A much larger sample of teenagers from different backgrounds and different countries, with different

lifestyles and normative beliefs regarding aggression, needs to be studied to establish the correlation between VVG exposure and aggression. Problems associated with self-reporting questionnaires have already been discussed. The issues of under-reporting and false reporting cannot be comprehensively ruled out. Subjective differences in perception of violence and the extent and nature of violence can influence outcomes. Studies wherein a third party, like teachers, parents or trained psychologists, get to assess the aggression among teenagers are more likely to provide an objective assessment of the teenager's behaviour. This study also does not exclude exposure to violence through other media like television, newspapers and the Internet. Adolescents are also likely to be influenced by these mass media wherein violent content is available without significant censure. Domestic violence, corporal punishments at school, social uprisings, violent demonstrations, social media events, wars, etc., are other events that may disturb the teenage mind and precipitate aggressive behaviour. All these confounding factors cannot comprehensively be excluded from such studies, though the bias may be decreased by appropriate sample selection, e.g., excluding children who report domestic violence. The results should be interpreted with caution because of being unable to control still more variables mediating the risk of aggression, like parental involvement in VG usage, general personality traits, individual level of cognitive development, etc. Further, adequately powered longitudinal studies may elucidate the attribution of VVGs to adverse behavioural traits and hence clear the scepticism regarding violent video game usage.

CONCLUSION

This study seems to validate and confirm the general results of international literature in an urban Indian setting. Male preponderance was evident in violent video game usage. The study also found a significantly positive correlation between exposure to VVG and physical aggression among adolescents. Also, the use of distraction coping mechanisms among VVG users was established.

REFERENCES

- Gentile DA, Lynch PJ, Linder JR, Walsh DA. The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. *J Adolesc* 2004;27:5–22. <https://doi.org/10.1016/j.adolescence.2003.10.002>.
- Krahé B, Möller I. Playing violent electronic games, hostile attributional style, and aggression-related norms in German adolescents. *J Adolesc* 2004;27:53–69. <https://doi.org/10.1016/j.adolescence.2003.10.006>.
- DeLisi M, Vaughn MG, Gentile DA, Anderson CA, Shook JJ. Violent video games, delinquency, and youth violence: New evidence. *Youth Violence Juv Justice* 2013;11:132–42. <https://doi.org/10.1177/1541204012460874>.
- Greitemeyer T, Sagioglou C. The longitudinal relationship between everyday sadism and the amount of violent video game play. *Pers Individ Dif* 2017;104:238–42. <https://doi.org/10.1016/j.paid.2016.08.021>.
- Anderson CA, Shibuya A, Ihori N, Swing EL, Bushman BJ, Sakamoto A, et al. Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychol Bull* 2010;136:151–73. <https://doi.org/10.1037/a0018251>.
- Adachi PJ, Willoughby T. The effect of violent video games on aggression: Is it more than just the violence? *Aggress Violent Behav* 2011;16:55–62. <https://doi.org/10.1016/j.avb.2010.12.002>.
- Wallenius M, Punamäki R-L, Rimpelä A. Digital game playing and direct and indirect aggression in early adolescence: The roles of age, social intelligence, and parent-child communication. *J Youth Adolesc* 2007;36:325–36. <https://doi.org/10.1007/s10964-006-9151-5>.
- Ferguson CJ. Evidence for publication bias in video game violence effects literature: A meta-analytic review. *Aggress Violent Behav* 2007;12:470–82. <https://doi.org/10.1016/j.avb.2007.01.001>.
- Agina AM, Tennyson RD. Towards understanding the positive effect of playing violent video games on children's development. *Procedia Soc Behav Sci* 2012;69:780–9. <https://doi.org/10.1016/j.sbspro.2012.11.473>.
- Feshbach S. The catharsis hypothesis, aggressive drive, and the reduction of aggression. *Aggress Behav* 1984;10:91–101. [https://doi.org/10.1002/1098-2337\(1984\)10:2<91::aid-ab2480100203>3.0.co;2-7](https://doi.org/10.1002/1098-2337(1984)10:2<91::aid-ab2480100203>3.0.co;2-7).
- Anderson CA, Bushman BJ. Human aggression. *Annu Rev Psychol* 2002;53:27–51. <https://doi.org/10.1146/annurev.psych.53.100901.135231>.
- Anderson, Craig & Carnagey, Nicholas. The social psychology of good and evil. New York: Guilford Publications; 2004, Chapter 8, Violent evil and the general aggression model; 2004 p.168-92.
- Greitemeyer T, McLatchie N. Denying humanness to others: A newly discovered mechanism by which violent video games increase aggressive behavior. *Psychol Sci* 2011;22:659–65. <https://doi.org/10.1177/0956797611403320>.
- Ferguson CJ, Rueda SM, Cruz AM, Ferguson DE, Fritz S, Smith SM. Violent video games and aggression: Causal relationship or byproduct of family violence and intrinsic violence motivation? *Crim Justice Behav* 2008;35:311–32. <https://doi.org/10.1177/0093854807311719>.
- Wan C-S, Chiou W-B. Why are adolescents addicted to online gaming? An interview study in Taiwan. *Cyberpsychol Behav* 2006;9:762–6. <https://doi.org/10.1089/cpb.2006.9.762>.
- Reinecke L. Games and recovery: The use of video and computer games to recuperate from stress and strain. *J Media Psychol* 2009;21:126–42. <https://doi.org/10.1027/1864-1105.21.3.126>.
- Milani L, Camisasca E, Caravita SCS, Ionio C, Miragoli S, Di Blasio P. Violent video games and children's aggressive behaviors: An Italian study. *SAGE Open* 2015;5:215824401559942. <https://doi.org/10.1177/2158244015599428>.
- Tolchinsky A. The development of a self-report questionnaire to measure problematic video game play and its relationship to other psychological phenomena. Eastern Michigan University; 2013. <https://commons.emich.edu/theses/555/>.
- Center KE. Testing ratings of violent video games: how well do they measure up? <https://doi.org/10.31274/etd-180810-4231>.
- Buss AH, Perry M. The aggression questionnaire. *J Pers Soc Psychol* 1992;63:452–9. <https://doi.org/10.1037/0022-3514.63.3.452>.
- Ayers TA, Sandler IN. Manual for the Children's Coping Strategies Checklist & How I coped under pressure. <https://scales.arabpsychology.com/s/childrens-coping-strategies-checklist-ccsc/>.
- Olson CK, Kutner LA, Warner DE, Almerigi JB, Baer L, Nicholi AM II, et al. Factors correlated with violent video game use by adolescent boys and girls. *J Adolesc Health* 2007;41:77–83. <https://doi.org/10.1016/j.jadohealth.2007.01.001>.
- Busching R, Gentile DA, Krahé B, Möller I, Khoo A, Walsh DA, et al. Testing the reliability and validity of different measures of violent video game use in the United States, Singapore, and Germany. *Psychol. Pop. Media Cult.* 2015;4:97. <https://doi.org/10.1037/ppm0000004>.
- Gentile DA, Bushman BJ. Reassessing media violence effects using a risk and resilience approach to understanding aggression. *Psychol. Pop. Media Cult.* 2012;1:138. <https://doi.org/10.1037/a0028481>.
- Wood RTA, Griffiths MD. A qualitative investigation of problem gambling as an escape-based coping strategy. *Psychol Psychother* 2007;80:107–25. <https://doi.org/10.1348/147608306x107881>.