



# The Mediating Role of Normative Beliefs about Aggression on the Relationship between Violent Digital Games and Students' Aggressive Behaviour

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**Abstract:** Many adolescents are exposed to violent content in digital games due to their widespread use. Aggression among students is becoming more common throughout the world, including in Jordan. In light of this, the study explored how exposure to violent digital games influences students' aggression. Normative beliefs about aggression (NBAA) are also discussed based on the prediction that this variable mediates the relationships between violent digital games and aggressive behaviour (AB). A cross-sectional study design with 347 randomly selected individuals from Jordanian schools was analysed using the Statistical Package for the Social Sciences to examine the relationships between variables. The results showed that NBAA and digital games were directly related to AB, and NBAA partially mediated the relationships between violent digital games and AB. This study concluded that violent content in digital games increased aggression. Furthermore, insights were provided into the mechanism behind the impacts of violent digital games on adolescent aggression and suggestions were offered to mitigate aggression.

**Keywords:** Aggressive Behaviour, Violent Digital Games, Normative Beliefs about Aggression, Adolescents, Jordan

## 1. Introduction

Media plays an essential role in our daily lives, shaping our perceptions and understandings of the world around us (Srivastava, Chaudhury, Bhat, & Mujawar, 2018). However, media violence has become increasingly prevalent (Bushman, Gollwitzer, & Cruz, 2015; Kaya & Ozdemir, 2020). Adolescents, in particular, are vulnerable to the rising violence depicted in media. Indeed, Scharrer (2022) found that adolescents worldwide frequently encounter violent content in movies, TV shows, and video games, which they consume regularly. Moreover, adolescents find entertainment media, especially video games, highly engaging and are regularly exposed to violent content as part of their daily routines. For instance, Rideout (2015) reported that children aged 8 to 12 engage with entertainment media for more than five hours daily, while teenagers aged 13 to 18 spend six to nine hours each day consuming such media.

The impact of media violence has gained significant attention from researchers (see Bushman and Anderson, 2015). However, assessing the impact of violent media, especially video games, on adolescents is a complex phenomenon. For instance, some studies suggest that media is responsible for aggressive behavior (AB) among adolescents (Bushman & Anderson, 2015; Scharrer, 2022), while other studies provide contradictory findings (e.g., Lindo et al., 2022). Excessive exposure to violence is found to be the main reason for learning aggression, fear, and desensitization to such content (Scharrer, 2022). Additionally, media significantly impacts viewers' social learning (Huesmann & Taylor, 2006).

Adolescents exhibit a keen interest in playing violent digital games (Teng et al., 2019). Generally, they are attracted to shooting and action games that satisfy their aggressive tendencies (Kirsh, 2003). Adolescence is a time when individuals start to develop and learn about aggression, often aligning it with violent media content. Moreover, adolescents are willing to take risks; thus, action-oriented video games with violent content provide an outlet for such risk-taking behaviors. Playing digital games has become an important leisure activity for adolescents; therefore, the impacts of playing digital games require further investigation (Caner & Evgin, 2021), especially in Jordan and other Arab nations (AlHazzaa et al., 2023).

Huesmann and Taylor (2006) found that media promotes emotional instability, misbehavior, and aggressive behavior among adolescents exposed to violent digital games. Instead, exposure to violent games serves as a source of imitation among adolescents (Zulfiqar, 2021). Moreover, celebrity endorsements reinforce violent media

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acts (Song, 2022). Aggressive behavior is a complex phenomenon influenced by many contributing factors. For instance, normative beliefs about aggression (NBAA) may affect aggressive behavior and mediate the connection between violent media exposure and aggressive behavior (Gentile, Li, Khoo, Prot, & Anderson, 2014).

Two factors contribute to the effect of violent media on adolescents. First, adolescents spend more time viewing TV and playing violent digital games and less time with friends and families (Srivastava et al., 2018; Yao et al., 2019). Second, video games are highly influential forms of mass media among adolescents (Shliakhovchuk & Muoz García, 2020; Yao, Zhou, Li, & Gao, 2019).

The number of Jordanian youths who engage in video game playing is not well-documented. However, Hashem (2022) found that seven out of ten adolescents play video games in Jordan, with males engaging in violent video games at a higher rate than females. Jordan is now experiencing a surge in cases of violence and aggression among adolescents. Some research in Jordan has evaluated the relationship between violent media, like movies, and the aggressive behavior of secondary school students (Eneizat et al., 2023). Others have investigated the effects of video games in the Jordanian context but did not consider the role of NBAA for adolescents (e.g., Abu-Baker & Ayyd, 2018; Althnaibat et al., 2022). Therefore, Eneizat et al. (2023) and Raffee et al. (2021) suggest that more research is needed to focus on violence and aggression in secondary schools in Jordan.

Taking this into account, this research examines how exposure to violent digital games influences aggressive behavior among Jordanian secondary school students. Additionally, the present study investigates the mediating effect of NBAA on the association between violent digital games and aggressive behavior. Although many studies have examined the direct relationship between violent media content and aggressive behavior, the role of NBAA as a mediator has not been a focus in previous research, especially in the Jordanian context. The results of this study will enhance understanding of the potential mediating effects of NBAA between aggressive behavior and violent digital games in Jordanian culture.

## 2. Literature Review

### 2.1. The Conceptualization and Empirical Work

According to Bushman and Huesmann (2010), social psychology defines aggression as an act intended to cause harm to another person. This harm can manifest in different forms, such as physical injury, strained social ties, or hurt feelings. Furthermore, Anderson and Bushman (2018) define human aggression as any behavior aimed at another person with the immediate purpose of causing harm. Additionally, an offender's action must be motivated by the belief that the target will suffer harm as a result. In this study, aggressive behavior (AB) is defined as verbal and physical aggression, anger, and hostility.

### 2.2. Violent Digital Games and Aggressive Behaviour

Virtual games have become increasingly common since the appearance of the first video games in the 1970s (Kersten & Greitemeyer, 2022). Negative consequences of participating in violent digital games include increased AB (Kersten & Greitemeyer, 2022). The relationship between the AB of adolescents and video game violence has garnered significant interest in psychology research and is currently an emerging concern in media studies (Ferguson, San Miguel, & Hartley, 2009; Boxer, Groves, & Docherty, 2015). The General Aggression Model (GAM) suggests that playing violent digital games can have short- and long-term effects on individuals' aggressive actions and attitudes (Anderson & Bushman, 2018). Researchers such as Anderson et al. (2017), Gentile, Coyne, and Walsh (2011), and Martinez et al. (2013) concluded that playing violent digital games is a key predictor of AB. Experimental (Riva et al., 2017), longitudinal (Huesmann et al., 2003; Krahé & Möller, 2010), and meta-analytical (Bender, Plante, & Gentile, 2018) studies have shown that violent digital games influence an increase in AB.

Adolescents are exposed to significant psychological, verbal, and physical violence in the media (Üstunda & Doan, 2021). Exposure to violent digital games is one of the most effective predictors of adolescent AB (Khurana et al., 2019). Longitudinal research by Coyne (2016) found a link between violent digital games and physical aggression over time. Conversely, a recent study indicated that school fighting among students is not significantly affected by viewing violent content in the media (Wang, Liu, Chen, Chui, & Wang, 2022). Based on these contradictory findings in previous studies, this study assesses the relationship between the AB of secondary students and violent digital games in Jordanian schools.

### 2.3. Normative Beliefs concerning Aggression, Violent Digital Games, and Aggressive Behaviour

Normative beliefs are self-regulating beliefs about normal social behaviors (Huesmann & Guerra, 1997). These beliefs influence and are influenced by how events are mentally processed. Normative beliefs about aggression (NBAA) include evaluations of aggression's acceptability, which is a critical cognitive factor leading to adolescent AB. There are two categories of NBAA: general beliefs and retaliatory beliefs. The former refers to an overall perspective on aggression, while the latter expresses aggressive beliefs in challenging circumstances. The acceptability of AB reflected in NBAA influences the choice of AB.

Huesmann and Guerra (1997) and Wright and Li (2013) found that NBAA significantly contributes to adolescents' AB. Self-reported aggression and NBAA are highly associated (Shao & Wang, 2019). Adolescents'

general beliefs concerning aggression and specific beliefs about retaliation predict their actual AB, including non-physical and physical aggression (Padmanabhanunni & Gerhardt, 2019). Retaliatory NBAA may predict adolescents' retaliatory behavior (Burton, Florell, & Wygant, 2013; Shu & Luo, 2021). NBAA can anticipate verbal and physical aggression in adolescents (Lim & Ang, 2009). Over an extended period, there is a correlation between NBAA and adolescent AB (Choe, Lee, & Read, 2022).

Anderson and Bushman (2018) postulated the General Aggression Model (GAM), which considers the influence of individual and environmental factors ranging from biological to cultural effects on AB, to explain how violent media influences AB. The outcomes of the appraisal and decision-making processes and internal emotions such as aggressive thoughts, increased physiological arousal, and angry sentiments are potential mediating factors (automatic and controlled). Exposure to violent media, such as violent digital games, can enhance AB by raising hostile assessments and influencing all three internal state pathways (Anderson & Bushman, 2018).

However, the association between AB and violent media is complex. While there is disagreement about whether violent media influence AB, several variables, including NBAA, have been studied regarding the association between AB and exposure to violent video games (Anderson & Bushman, 2018). Different types of individuals seek different media content and are impacted by it in various ways.

As a result, children and adolescents with strong tendencies toward aggression may be particularly drawn to violent media, including video games, possibly because these games justify their behaviors (Huesmann, Eron, & Dubow, 2002; Huesmann & Taylor, 2006). Additionally, they may be more susceptible to this exposure than other children and adolescents. For instance, children may identify more with violent personalities and view violence as more acceptable and normative (Huesmann & Taylor, 2006).

Children who frequently play violent digital games tend to exhibit more AB. Ruh Linder and Werner (2012) found that the acceptability of AB was positively correlated with children's reports of exposure to relationally violent media. This finding implies that the effects of media violence on attitudes and beliefs are specific to the subtype of AB viewed. In other words, media consumption containing violent content uniquely anticipates NBAA (Ruh Linder & Werner, 2012). According to social cognitive theory (Bandura, 1989), violent media helps adolescents learn through observation. They may replicate the actor's AB and change how they perceive and comprehend aggression as a result (Bandura, 1989). Therefore, NBAA can potentially mediate the association between violent media content and adolescent AB (Anderson et al., 2017; Shao & Wang, 2019; Gentile et al., 2014).

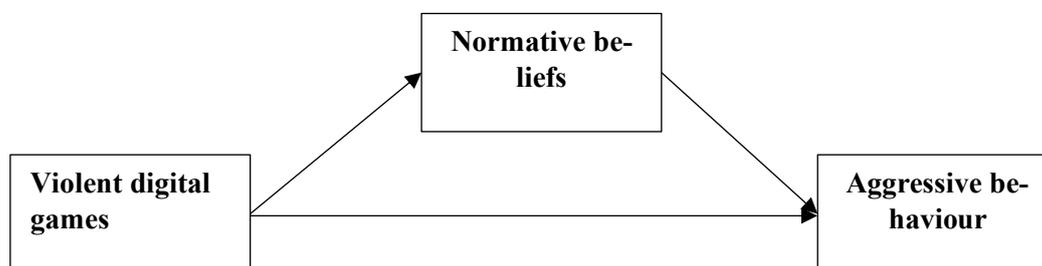
The following three hypotheses were posited in light of the discussion above:

*H1: Violent digital games are associated with students' aggressive behavior.*

*H2: Normative beliefs about aggression are associated with students' aggressive behavior.*

*H3: Normative beliefs about aggression have a mediating role in the relationship between violent digital games and students' aggressive behavior.*

The ideas and discussions above led to the creation of the framework for the current study, which posits that violent content in media, especially digital games, leads to the AB of secondary students in Jordan. In this study, exposure to violent digital games is the independent variable. The dependent variable is AB. NBAA is suggested to mediate the link between the independent and dependent variables, as shown in Figure 1.



**Figure 1.** Research Framework

#### 2.4. The Social Cognitive Theory

Social cognitive theory can explain how media violence leads to the development of adolescent aggressive behavior (AB) (Bandura, 2001) and serves as the theoretical underpinning for this study. Normative beliefs can be considered via social cognitive theory as a potential mediator of the association between AB and media exposure. This theory assumes that individuals may learn behavioral responses by viewing models in their surroundings in the short term (Bandura, 2009). Moreover, children can imitate models in the media or individuals in their environment. According to this theory, imitation of others' behaviors is more likely to occur through observation, whether through the environment or media (Bandura, 2009).

Social cognitive theory posits that cognitive processes and functions, like normative beliefs, are crucial in explaining human behavior, including AB (Kanz, 2016). The theory also recognizes that violent content in media is a potentially effective learning environment (Kanz, 2016). Therefore, this theory is essential in the current study because it provides a vital perspective for interpreting the study variables clearly and in-depth.

### 3. Methodology

#### 3.1. Participants

The questionnaire was presented to the responsible committee at the Ministry of Education in Jordan for approval to conduct this research. After reviewing the proposal, the committee granted approval. Consequently, all respondents were high school students from government schools, with ages ranging from 12 to 18 years. Students from each identified school were selected using simple random sampling. Subsequently, the questionnaires were sent to the selected schools. Out of 510 distributed questionnaires, 347 were returned, resulting in a response rate of 68%, which is considered acceptable for data analysis.

#### 3.2. Instrumentations

##### 3.2.1. Violent digital games

The researchers used the Video Game Questionnaire developed by Anderson and Dill (2000) to measure exposure to violent digital games. Respondents were asked to name their five favourite digital games and rate, on a seven-point scale, how frequently they played those games and how violent the content and images were (1, respondents rarely play digital games without violent content or images; 7, respondents often play digital games with much violent content and many violent images). The score of violent digital game exposure can be calculated as follows: score of violent pictures + score of violent content in the game  $\times$  use frequency / 5. This questionnaire demonstrates good content validity and high internal consistency reliability (Shao & Wang, 2019). In the present research, Cronbach's alpha for the scale is 0.85.

##### 3.2.2. Aggression Questionnaire

The items used for aggression have been adapted from Buss and Perry (1992) which included 29 items and four dimensions—anger, hostility, physical aggression, and verbal aggression. A 5-point Likert scale was used (1 =strongly agree and 5 =strongly disagree). With a Cronbach's alpha  $\alpha$  of 0.89, the aggression questionnaire version demonstrated strong construct validity and internal consistency reliability. The version utilised for this research had a Cronbach's alpha of 0.81.

##### 3.2.3. Normative Beliefs about Aggression (NBAA)

The "Normative Beliefs about Aggression" (NBAA) has been evaluated by using an instrument developed by Huesmann and Guerra (1997) comprising 20 items, 12 of which are related to retaliation and 8 of which are related to general aggression belief. Its internal consistency coefficient is 0.86. A 5-point Likert scale (1=strongly agree to 5=strongly disagree) was used. A high score indicates a high degree of NBAA. In this study, the measurement of NBAA included 20 items for the two dimensions. The Cronbach's alpha was 0.85.

### 4. Data Analysis

IBM SPSS Statistics 26 was utilised for statistical analysis. First of all, common method bias was tested via the Harman single-factor test (exploratory factor analysis). Secondly, all variables were subjected to Person correlation analysis and descriptive statistics. Third, the mediating effects of NBAA on the association between violent digital games and AB were investigated using the PROCESS macro (Hayes, 2013) for SPSS (Model 4). The bootstrapping approach has been applied based on 5000 bootstrapping samples, to determine if mediating effects were significant. If the 95% bias-corrected confidence intervals (CI) were not zero, the impact was considered significant (Hayes, 2013).

### 5. Findings

#### 5.1. Participants Characteristics

Many adolescents were between the ages of 16 and 17 and in the 11th and 10th grades, and 158 (45.5%) were females, and 189 (54.4%) were males. Of the respondents, 38.6% played digital games daily, and 36.3% played between two and three hours each day. The findings also showed that 35.9% of respondents preferred playing digital games by themselves weekly.

#### 5.2. Descriptive Analysis

Table 3 shows the mean values and standard deviations (SD) of the variables under examination. The mean and SD for AB were 2.23 and 0.665, respectively. Violent digital games had a mean of 2.11 and an SD of 0.648. The mean for NBAA was 2.26, and the SD was 0.739. The variance inflation factors (VIFs) in all factors were less than 10, which led to the retention of all variables in the regression analysis (Neter et al. 1985).

**Table 1:** Construct Descriptive Statistics

Constructs	Mean	Std. Deviation
AB	2.2354	.66573
Violent digital games	2.1152	.64819
NBAA	2.2637	.73941

Source: Calculated by the author

### 5.3. Hypothesis Results

#### 5.3.1. Pearson Correlation

Pearson correlation tested Hypotheses 1 and 2. The results concerning Hypothesis 1 showed that a positive and significant relationship existed between the AB of students and exposure to violent digital games, and thus, H1 is accepted. The bond strength was medium (0.516). As for Hypothesis 2, a positive significant association was present between NBAA and the AB of students; therefore, hypothesis 2 is accepted. The bond strength was small (0.313). Table 2 presents a summary of the results.

Because data were gathered via questionnaires common method bias may have affected the findings. Before performing data analysis, Harman's single-factor test was employed to assess common method bias. The findings showed that the first factor accounted for 11.01% of the variation, which was much less than 40% of the critical value, and that the eigenvalues of 44.1 unrotated factors were larger than 1. Therefore, no indication of common method bias existed. As demonstrated in Table 2, exposure to violent digital games showed significant positive associations with NBAA and aggression; NBAA is significantly and positively associated with aggression. NBAA revealed a significant positive relationship with aggression.

**Table 2:** Pearson Correlation

		AB	Digital games	NBAA
AB	Pearson Correlation	1	.516**	.313**
	Sig. (2-tailed)		.000	.000
Digital games	Pearson Correlation	.516**	1	.268**
	Sig. (2-tailed)	.000		.000
NBAA	Pearson Correlation	.313**	.268**	1
	Sig. (2-tailed)	.000	.000	

Source: Calculated by the author. Note: \*\*. Correlation is significant at the 0.01 level (2-tailed).

#### 5.3.2. Mediating Analysis

Hypothesis 2 was tested using the SPSS bootstrap technique. Based on the test results, zero was not fall between the lower and upper bounds of the 95% confidence interval. The indirect effect (IE=.057) was statically significant: 95%CI= (.017, .110). As a result, Hypothesis 3, which posited that NBAA would mediate the association between violent digital games and adolescent aggression, was supported. Thus, the NBAA played a mediating role in exposure to violent digital games and aggression.

**Table 3:** Normative Beliefs about Aggression Mediated the Effects of Violent Digital Games on Aggression

Path	$\beta$	T	95% CI
Digital games → AB	0.58	9.460***	(0.46, 0.71)
<b>Direct effect</b>			
Digital games → AB	0.53	8.397***	(0.406, 0.655)
Digital games → NBAA	0.32	4.370***	(0.16, 0.46)
NBAA → AB	0.17	3.378***	(0.075, 0.283)
<b>Indirect effect</b>	<b>ab</b>	<b>SE</b>	<b>95% CI</b>
Digital games → NBAA → AB	0.057	0.021	(0.017, 0.110)

Source: Calculated by the author. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

## 6. Discussion

The results of this research found a significant positive link between playing violent digital games and adolescent AB, which aligned with the results of several other studies (Anderson et al., 2008; Greitemeyer & Mugge, 2014; Kersten & Greitemeyer, 2022). Kaya and Ozdemir (2020) confirmed that the media is a significant indicator of the increase in AB among individuals, especially adolescents. A study conducted on a group of adolescents in diverse regions of Australia, China, and the United States revealed that exposure to media violence in films, video games, and television was positively associated with AB among adolescents (Anderson et al., 2017).

The findings of current studies indicated consistency in the results across cultures. These consistent results support the GAM's explanation of violent content's impact on games on adolescent AB. Adolescents exposed to violent digital games can acquire, replicate, and reinforce cognitive structures related to aggression, such as aggressive expectations and beliefs, AB scripts, aggressive perceptual schemas, aggressive expectancy schemas, and

aggressive desensitisation based on the GAM (Bushman & Anderson, 2018; Anderson & Carnagey, 2014). Consequently, aggressive personality traits are encouraged, raising the likelihood of acts of aggression. This study's Hypothesis 1 is confirmed and supported by the GAM.

This study's results indicated that NBAA significantly impacts why students and adolescents engage in AB. This finding aligns with many previous studies, such as Hilvert-Bruce and Neill (2020) and Zhu, Chu, Zhang, and Li (2020). These beliefs shape an individual's perceptions and attitudes about the cultural and social acceptance of AB and violence and thus influence individuals' violent behaviour. Also, if individuals' NBAA support the idea that AB is an effective and acceptable means of resolving problems between individuals, then there will likely be a tendency to commit violence and AB in many situations. Accepting and normalising aggression is likely to increase tolerance for negative behaviours such as violence and aggression. This study's Hypothesis 2 is confirmed and supported by the GAM.

In line with Hypothesis H3, the findings demonstrated that NBAA partially mediated the association between adolescent AB and exposure to violent digital games, as previously demonstrated. On the one hand, violent digital game exposure can directly predict AB of adolescents; on the other hand, NBAA has indirect effects on aggression. In addition, this finding suggests that adolescents who use digital games frequently have higher levels of NBAA, leading to increased AB.

This result aligns with other studies like Shao and Wang (2019). Aleissa et al. (2022) and Sun and Sun (2021) found that playing violent digital games increased the likelihood of having higher levels of NBAA, and Huesmann and Guerra (1997) and Shao and Wang (2019) found a positive correlation between NBAA and AB. In this context, individuals can easily grow emotionally apathetic to the negative effects of AB and acclimated to it when they are exposed to too many violent digital games. Furthermore, exposure can induce people to accept that using violence to solve problems is a good idea, which can strengthen NBAA and increase the likelihood of using AB in response to specific situational cues. Several investigations (Gentile et al., 2014; Anderson et al., 2017; Huesmann et al., 2017) support this conclusion. Similar to Hypothesis 1 and 2, the GAM are used to validate Hypothesis 3.

Social learning theory supports this current study's results, which assume that violent media content is among the key sources of aggression. Individuals have numerous opportunities to see a wide range of violent tendencies in media (Bandura, 1978). The media present a scenario of violent events to the viewers, who enable them to imitate these scenes and act violently (Bandura, 1978). Their social environment, the main marker of behaviours, can influence human behaviours (Petraitis, Flay, & Miller, 1995). Although numerous studies have investigated the connection between exposure to violent content and aggression, this study's findings are distinctive because they concentrate on media violence effects in developing nations, particularly Jordan, a developing nation, as opposed to earlier studies that examined violent digital games in developed nations.

## 7. Recommendations and Suggestions for Future Studies

The research presents a thorough understanding of the important variables affecting the AB of secondary students. It also explains the mediating role of NBAA in the relationship between violent digital games and the AB of secondary school students in Jordan. It can serve as a basis for further research in this field, especially in the Jordanian context. Future research on the link between violent digital games and AB will be useful from the study's findings. Additionally, the current study revealed that AB is not just a problem among secondary school students. Therefore, future research should examine AB in both primary schools and universities in Jordan. In addition, the current study was conducted on one type of media, so future studies should concentrate on different types of media, including violent content on television and films. Moreover, qualitative studies such as interviews will be important methods to understand the phenomenon of violence in depth. Thus, future research should pay attention to such methods.

## 8. Limitations

Like any other study in the field of violence, this study has some limitations. First, the sample size only represents students from Jordanian schools. Violent media impacts on adolescent AB may be better identified by employing a large sample size of adolescents from different cities and age groups, on a larger scale to validate the study's findings, a cross-national study would be more effective in future research. Secondly, since the focus of this study was on violent digital games, it excluded other violent media like TV, songs and online or digital games. These areas also have significant effects on the AB of adolescents, and their mechanisms of influence and joint influence require further investigation. Third, the self-report approach was used in this study. It would be beneficial to use reports from parents or teachers to assess exposure to violent digital games and aggression to increase the study's efficacy. Fourth, other moderating and mediating factors could have existed. The association between violent digital games and AB may be mediated or moderated by a person's emotions, personality traits, school climate, and social circles, in addition to normative attitudes about aggression. Although a mediation model between violent digital games and AB was constructed in this study, more mediation or moderation would be beneficial for future research.

## 9. Conclusion

The present research demonstrated that there is a positive relationship between exposure to violent digital games and AB of students (adolescents). Furthermore, a mediating effect of NBAA on violent digital game playing and AB of adolescents has also been checked in this study. The present study's purpose was to better understand adolescent AB through the use of a quantitative approach, which includes questionnaires for data collection. Besides, adding to the literature on adolescent AB, the current study offered insights into the mechanisms behind the impact of violent digital games on adolescent AB and offered suggestions for mitigating aggression. First, considering the strong correlation between exposure to violent content in digital games and the AB of adolescents, relevant government agencies, policymakers, and NGOs ought to keep refining the digital games grading system. In the meantime, parents should keep an eye on the content of digital games that their adolescents play, as well as the amount of time they spend playing and watching, and limit their exposure to violent content. Second, the mediating role of NBAA could encourage people to recognise reasonable solutions to violent problems and experience the hurtful effects of AB by enabling adolescents to differentiate between media violence and reality objectively. This ability would assist adolescents in altering NBAA, forming a correct and proper understanding of right and wrong, and reducing the incidences of aggression.

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