

Competition and Violence: Unpacking the Dual Pathways of Video Game Effects on Adolescent Psychology and Behavior

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Abstract. This study examines the various ways that violent and competitive video games affect teenagers' behavior and mental health, emphasizing the psychological processes involved. Players are mostly influenced by competitive games through emotional channels; goal conflict and dissatisfaction can lead to rage, animosity, and emotional collapses like "tilt." Studies using survey, neurological, and longitudinal methods consistently demonstrate that competition creates peer cultures focused on rankings and performance and increases sensitivity to aggressive cues. Conversely, violent games use cognitive-learning pathways to impact players, normalizing violent attitudes, desensitizing empathy, and reinforcing aggressive scripts through frequent engagement, rewards, and identification with violent characters. Peer contagion and family strife can exacerbate these symptoms, which can spread socially. While both are important, comparative studies show that violent material has a greater and more direct impact on aggression than competition. The significance of developing emotional control for competitive play, creating safe and nurturing family situations to prevent violent influences, and promoting responsible game design are all highlighted by the practical consequences. The assessment comes to the conclusion that in order to steer parents, educators, legislators, and developers toward healthier gaming behaviors and better-informed future research, nuanced distinctions—rather than crude conclusions—are crucial.

Keywords: Competitive video games, violent video games, adolescents, aggression, emotional regulation

1. Introduction

Recently, video games are no longer just entertainment; they have become an integral part of the daily social and cultural lives of teenagers worldwide. With rapid social and technological development, concerns about gaming's potential effects on adolescents' mental health and behavior have increasingly drawn attention from parents, educators, and scholars. A wide concern is whether prolonged immersion in virtual worlds might negatively affect a generation still in its formative years. However, an important view that treats all games as the same category is no longer sufficient to deal with this issue [1]. A growing body of research now recognizes that different kinds of games—particularly those defined by core features of Competition and Violence—may influence adolescents through different psychological methods.

Distinguishing the effects of these two dominant game types carries substantial practical relevance. On one hand, the problems such as bullying online, emotional disorder (or "tilting"), and aggressive behavior are all frequently related to the experience of games. On the other hand, the positive potential of games to improve cognitive skills and cultivate teamwork has also been well-documented. Therefore, simply demonizing or idealizing video games offers little practical value. The core challenge for current research is persistently ambiguous: when violence and competition are disordered and mixed together in one game, which element truly generates its effects? Furthermore, the mechanisms through which they operate require clarification.

This paper systematically reviews the leading literature to analyze and compare the distinct effects of competitive and violent video games on adolescents' mental health (e.g., emotional states, stress levels) and behavior (e.g., aggression, prosocial tendencies). The objectives are three: the first is to clearly define the primary concepts of competitive and violent games; the second is to summarize the evidence regarding the impact of every kind on teens; finally, to integrate these findings into a more scientific perspective by comparing their mechanisms. This paper aims to provide more nuanced, evidence-based views for parents, educators, game developers, and policymakers. Additionally, this paper seeks to point a direction for future research.

2. Defining the core concepts

To accurately explore the different effects of these two game types, it is necessary to begin with clear conceptual definitions.

2.1. Competitive video games

The basis of competitive video games is their competitive structure, where players or teams only participate in fierce competition to achieve their goals [2]. In such games, one team's victory is based on the other team's defeat. The primary feature of this type is competition—the contest for scarce resources, just like victory, rankings, or higher scores—although the content of the game may not possess violence entirely. Sports and racing themes (e.g., FIFA, Need for Speed) or strategic duel games (e.g., StarCraft) are typical examples, illustrating that competition can exist independently of violent content. A study by Sun et al. shows that even a peaceful racing game can trigger aggressive emotions when played in competitive mode [3]. As a result, the competition only needs to create a conflict goal and the possibility for frustration, which serves as the primary criterion for defining this category.

2.2. Violent video games

However, the definition of a violent video game centers on its content and the player's actions. The core gameplay loop in these games involves intentionally harming other characters [4]. Several key features characterize this genre: players are typically active participants in, not just observers of, the violence; violent acts are often rewarded by the game's mechanics (e.g., points, progression); and players frequently develop a sense of identification with the violent characters they control. First-person shooters (e.g., Counter-Strike) and action-fighting games (e.g., Mortal Kombat) are archetypal examples, both widely played by adolescents and highly influential in shaping behavior. These games are mainly made with violent content. At the same time, it affects teenagers primarily through its mechanisms, just like social learning and making violence a habit.

3. The effects of competitive video games on adolescents

For a long time, the discussion of video games was almost entirely focused on violent content. However, a growing body of evidence demonstrates that competition itself is a powerful force, and it primarily influences players' psychology and behavior by motivating their emotions.

A study over 4 years by Adachi and Willoughby sheds significant light on the impact of competition [2]. The study explores over a thousand adolescents and young adults. Their innovative approach involved creating a "competitive video game" potential variable factor that included both non-violent (sports/racing) and violent (action/fighting) types. These findings illustrated that competitive playing methods were a significant factor in this aspect of increased teenagers' aggressive behavior. Even more revealing was the bidirectional feature of this relationship: playing competitive games increases aggressive behavior in the future, while adolescents who have a pre-existing aggressive tendency were also more attracted to these games. The potential mechanism was also identified that competition improves aggressive emotions, such as anger and hostility, which in turn translates into obvious aggressive behavior. This conclusion powerfully challenged the hypothesis. Teenagers' violent behavior is not only caused by playing violent video games, but also it is an independent and critical factor in motivating aggression.

While the longitudinal studies mapped the long-term trajectory, the electroencephalography (ERP) experiment by Sun et al. captured the neural features of playing competitive games [3]. In this study, many participants played a racing game, even though it isn't a violent video game in either a competitive or a solo mode. The results showed that even in the absence of violent images, as little as 15 minutes of competition was sufficient to increase adolescents' emotional aggression. The neurological evidence was crucial; the group that played competitive games showed a larger P300 amplitude in the parietal area of the brain when presented with aggressive words. The P300 component is closely linked to the allocation of cognitive resources, highlighting how competition sensitizes the brain to aggressive cues. It indicates that playing competitive games can make the brain highly sensitive to aggressive information and dedicate more attention to processing it. This neural sensitization is a significant factor in leading to aggressive behavior.

Besides aggression, the competitive factors test a player's ability to control their emotions. In a large-scale survey, Cregan et al. examined the concept of "tilt" (a state of emotional frustration that leads to a performance that is not as good as expected) [5]. They found that win-oriented players were more prone to emotional breakdowns and performance declines compared to those who played for enjoyment or self-improvement. This study identified the main risk factors for tilting, such as frequent weekly play and heightened anger, and the things that protect people from tilting (for example, having played for more years, using ways to deal with problems like "seeking distraction"). This clearly shows that strong feelings of competition can lead to people being emotionally aggressive, but being able to control their emotions can protect them.

These findings are demonstrated by other research. For instance, an experiment by Chen et al. found that competitive environments can cultivate aggressive emotion [6]. The phenomenon of 'trash talk'—derogatory remarks intended to provoke opponents—is common and has been linked to hostile emotions. Furthermore, a study of Waechter and Meschik showed that centered on performance, achievement, and rankings, often marginalizing those who fail to meet these standards [7]. It can lead to those teenagers who are regarded as "losers" suffering a sense of isolation.

To sum up, the body of research on competitive games summarizes in a clear conclusion: competition primarily impacts adolescents by provoking intense emotions and frustration. Whether through the long-term cultivation of aggressive affect or short-term neural sensitization, the core mechanism is a pathway driven emotionally. The intensity of one's competitive motivation and the

way this drive is expressed within a peer culture are key factors of its ultimate impact [2,3,5,7]. Despite employing a diverse array of methodologies—from longitudinal tracking to micro-level brainwave analysis, and from large-scale surveys to in-depth interviews—the conclusions are remarkably consistent, solidifying the central role of competition in video game effects research.

4. The effects of violent video games on adolescents

While competitive games exert their influence primarily through an emotional pathway, the impact of violent games is more rooted in cognitive and social learning mechanisms. The effects of violent games can even extend beyond the individual player, creating a "contagious" social phenomenon that spreads through peer networks.

A particularly worrying discovery comes from a study by Greitemeyer, which showed that violent gaming can have a "contagion effect" [8]. The study used something called an "ego-centered network analysis" to work out how a player's friends' violent gameplay could be a good predictor of how aggressive they themselves would be in the future. This was even after the researchers had taken into account how much time the player had spent playing games. The chain of transmission was identified: a friend plays violent games, which makes that friend more aggressive. This then has a knock-on effect on the participant, through social interaction, causing their aggression levels to rise as well. This is worrying because it suggests that the negative effects of violent games are not limited to the individual player. Instead, they can spread through social networks, affecting a wider group of friends, including those who do not play games.

As well as this spreading of ideas between friends, the family environment also has a big effect on this. In a study of Chinese teenagers, Shao and Wang found that playing violent games can indirectly make people more aggressive by encouraging them to think that being aggressive is the right thing to do [9]. However, this cognitive pathway does not operate uniformly across all individuals. The family environment has a big effect on this. For teenagers from families where there is not much conflict, this indirect effect was very small. However, for individuals from high-conflict families, the effect of violent games on their aggressive beliefs was much stronger. This research clearly shows that families can protect teenagers from the negative effects of violent media.

Comparing violence and competition directly, which factor is proven to be more effective? A study by Chen et al. provided an answer [6]. They compared many kinds of content and concluded that violence is a more powerful motivation for aggression than competitive factors. Furthermore, their study highlighted the importance of individual differences. For example, the effect of violent video games' content was stronger among adolescents who possess a high "social comparison inclination" (a tendency to compare oneself with others). It suggests that violent content is a particularly dangerous catalyst for teenagers who especially focus on their status and how they measure up to others.

These findings align with a broader research consensus. A review by Bushman et al. concludes that a vast number of meta-analyses have largely confirmed a causal link between violent games and aggression [4]. The core mechanisms include desensitization (becoming numb to violence and feeling less empathy for victims) and the learning of aggressive scripts (internalizing violence as a default problem-solving strategy). Adding to these concerns, a longitudinal study by Kim et al. revealed that aggression linked to violent games may contribute to pathological gaming over time [10]: aggression, potentially fueled by violent games, serves as a pathway to more severe "pathological gaming," with the erosion of self-control being a key component of this vicious cycle.

In conclusion, research on violent video games reveals a multi-layered picture, demonstrating both direct and indirect pathways of influence. Their effects are not only direct but are realized

through the reshaping of a player's core cognitions (beliefs, scripts) and social-emotional responses (desensitization) [4,9]. This process does not occur in a vacuum; it is profoundly moderated by external factors like social networks (peer contagion) and the family environment (parental buffering) [8,9]. Finally, when compared directly with competition, violent content appears to play a more primary role in eliciting aggression, especially among adolescents with specific personality traits [6].

5. Discussion and suggestions

This section synthesizes the findings from the reviewed literature to draw overarching conclusions and provide targeted suggestions. It first summarizes the distinct psychological mechanisms of competitive and violent games, then offers practical implications for various stakeholders, and finally outlines promising directions for future research.

5.1. Conclusion of current research

Concluding the findings from the literature can obtain a result that a clear distinction emerges between the effects of competitive games and violent video games on adolescents. The differences primarily focus on their core drivers and their psychological mechanisms.

First, in terms of the current studies, violence is a more direct and powerful factor causing aggression than competition. The comparison by Chen et al. provides powerful proof for this result [6]. It reinforces the principle of the General Aggression Model (GAM), namely, exposure to violent content is a process of learning and activating aggressive knowledge.

Second, the most fundamental difference lies in their core psychological pathways. Competitive games primarily operate through a pathway of emotional frustration. The core is the conflict of goals inherent in competition, the threat of failure, and the resulting "aggressive emotion," such as anger and hostility [2]. When competitive motivation is intense, this emotional expression will deteriorate into "tilt," severely impacting mental well-being and performance [5]. This competitive spirit also fosters a peer culture that emphasizes better performance and achievement, which can lead those who have poor performance to suffer mental or physical attacks from others [7].

In contrast, the mechanism of violent video games functions mainly through a "cognitive-learning pathway." In this way, the core process involves players learning and internalizing violence as an acceptable and normal behavior through active participation and attain in-game rewards. This leads to the formation of "aggressive scripts" and "normative beliefs" [4,9]. At the same time, repeated exposure to such content leads to 'desensitization,' meaning reduced concern for others' pain and diminished empathy.

Finally, the moderating factors for each type also show different aspects. The impact of competitive games is significantly moderated by an individual's skills of emotional control [5]. However, the effects of violent games are profoundly influenced by factors from external social environments, such as the family environment [9] and social media [8].

5.2. Implications and suggestions

Based on these conclusions, there are more targeted recommendations for various stakeholders.

5.2.1. For parents and educators

From totally forbidding to approving conditionally: For parents, only banning playing games is a useless method. A more effective approach is for parents to cultivate healthy gaming habits and foster a supportive family environment. The research by Shao and Wang demonstrates that a strong family is the most effective method to counter the negative effects of violent video games [9].

Fostering emotional regulation skills: For adolescents who like playing competitive games, the focus should emphasize recognizing early signs of frustration and practicing coping techniques. It includes teaching them how to recognize the early signals of "tilt" and take advantage of effective strategies, such as taking a break to engage in another activity ("seeking distraction"), to actively deal with their own frustration [5].

Promoting the quality of social media: Engage in discussions about game content. Helping adolescents distinguish between virtual actions and real-world consequences, and critically reject the "trash talk" culture in gaming. It can effectively prevent the normalization of aggressive beliefs.

5.2.2. For the game industry and game developers

Optimizing the design of competitive mechanisms: When game developers design competitive games, they should consider how to reduce the negative frustration from intense competition. It involves implementing a more accurate mechanism of matching teammates and designing systems that reward sportsmanship rather than just reward victory.

Strengthening community regulation: Game platforms must take a more effective role in managing negative behaviors within their communities. For example, platforms can employ AI-based moderation tools and proactive reporting systems to manage negative behaviors. As the study by Waechter and Meschik shows, harassment has become normalized among young game players [7]. Platforms cannot just rely on players' feedback; they must use technology to actively identify and intervene in toxic behaviors.

5.3. Future research directions

While existing research has yielded some significant insights, several aspects are still worth deeper exploration:

Deeply exploring their functional differences: Future studies need to explore deeply their differences. For example, distinguishing between different types of competition (e.g., individual vs. team-based) and different forms of violence (e.g., cartoonish vs. realistic) may reveal different outcomes. Furthermore, using more scientific methods like ERP can provide more objective insights into the underlying neural mechanisms [3].

Investigating the impact of advanced technologies: With the rise of virtual reality (VR), augmented reality (AR), and fMRI can provide more objective insights into the level of immersion and realism in games, has reached unprecedented heights. Governments warrant an investigation into whether such technologies amplify the effects of violence and competition. It is imperative for future research to explore whether the effects of violence and competition are enhanced in this new technological background [4].

Exploring protective factors and positive outcomes: Beyond focusing on negative impacts, future research should also dedicate more effort to protective factors and positive outcomes. For instance, how can competitive games be used to build resilience? How do cooperative games foster teamwork

behavior? Acknowledging these positive aspects will help make a more balanced and constructive approach to take advantage of games as a learning medium.

6. Conclusion

This review of the literature seeks to clarify the distinct effects of competitive and violent video games on the mental health and behavior of adolescents. The core conclusion is that while both types can be linked to aggression, the driving forces, psychological mechanisms, and contextual factors behind their influence are different.

In summary, violent video games emerge as a more direct and powerful instigator of aggression. They operate primarily through a "cognitive-learning" pathway, where social learning, reward systems, and role-playing lead adolescents to internalize violence as an acceptable belief and behavioral script, while also desensitizing them to real-world violence. This impact is not only profound but can also spread through social networks, creating a contagion effect among peers.

In contrast, the influence of competitive games is largely driven by an "affective-frustration" pathway. The outcome of competition is directly tied to a player's emotional experience, where a strong desire to win and the frustration of defeat are key triggers for anger, hostility, and even emotional dysregulation ("tilt"). This dynamic also fosters a peer culture centered on performance and rankings, which can aggravate social pressure and verbal conflict.

The recommendations sourced from these findings move beyond a simple "limit gaming" method. The findings emphasize that fostering a positive family environment is crucial for buffering the impact of violent content, while developing emotional regulation skills is central to managing the pressures of competition. For the gaming industry, the responsibility lies in designing more thoughtful competitive experiences, acknowledging their broader social responsibility and actively governing their communities.

Ultimately, the study of video game effects must transcend a binary "good versus bad" debate and enter an era of more nuanced analysis. By distinguishing the core features of different games and understanding their unique psychological mechanisms, scholars can provide evidence-based guidance for education and policy and more effectively guide adolescents to navigate the increasingly digital world in a healthy and positive manner. This is not only the significance of the present research but also the direction for future exploration.

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