

# Negative Social Impacts of Video Games

A Comprehensive Review

*Academic Research Report*

## Executive Summary

Video gaming has become one of the most prevalent forms of entertainment globally, with an estimated 3.4 billion individuals engaging in video gaming worldwide and the gaming industry generating billions in annual revenue [1]. While video games offer opportunities for cognitive enhancement, social connection, and entertainment, research increasingly documents significant negative social consequences that warrant careful consideration. This report examines the primary social harms associated with video game use, including addiction and compulsive gaming recognised by the World Health Organization as Gaming Disorder, violence and aggression, mental health deterioration, social isolation, gambling-like monetisation practices, sleep disruption, physical health concerns, and academic impacts. The report also examines the positive cognitive and therapeutic benefits of gaming to provide a balanced assessment.

## 1. Introduction

The video game industry has experienced extraordinary growth since the early 2000s, with the total number of video game players globally reaching 2.69 billion by the end of 2020 [2]. In the United States, 49% of all adults have played video games, though only 10% consider themselves 'gamers' [3]. The industry's revenues now outpace those of the film and online streaming industry combined [2]. Video gaming is now part of the daily lives of more than 75% of North American households [2].

With this unprecedented growth comes increasing concern about the potential negative consequences of excessive gaming. In 2019, the World Health Organization (WHO) officially recognised 'Gaming Disorder' as a mental health condition, which will be included in the International Classification of Diseases (ICD-11) [3]. This recognition reflects growing scientific evidence that video games can have serious negative impacts on players' physical, mental, and social well-being.

This comprehensive review synthesises current research on the negative social impacts of video gaming across multiple domains, drawing on peer-reviewed studies, meta-analyses, and systematic

reviews published primarily between 2020 and 2025. The report aims to provide policymakers, healthcare professionals, educators, and families with evidence-based information to inform decisions about gaming and intervention strategies.

## 2. Addiction and Compulsive Gaming

### 2.1 Prevalence and Definition

Video game addiction, also known as Gaming Disorder or Internet Gaming Disorder, is characterised by an excessive and compulsive engagement with video games that leads to significant negative consequences in various aspects of an individual's life [4]. The World Health Organization defines Gaming Disorder as a pattern of gaming behaviour characterised by impaired control over gaming, increasing priority given to gaming over other activities, and continuation or escalation of gaming despite negative consequences [5].

Global prevalence estimates vary depending on methodology, but research indicates that approximately 3–4% of gamers worldwide suffer from gaming disorder [3][6]. In a 2021 systematic review and meta-analysis, the global prevalence of gaming disorder was found to be 3.05%, meaning there could be as many as 60 million people suffering from gaming disorder globally [3]. More conservative estimates suggest that between 0.3% and 1% of the general population exhibit symptoms associated with gaming disorder [3].

The prevalence is particularly pronounced among youth, with 8.5% of children and teenagers under 18 around the world potentially addicted to gaming [3]. Among adolescents, video game addiction rates range from 4% to 20% depending on the assessment methods used [7]. The average age of a gaming addict is 24 years old, though addiction affects individuals across all age groups [1].

### 2.2 Neurobiological Mechanisms

Research demonstrates that video game addiction operates through neurobiological mechanisms similar to substance addiction. Video games produce the same neural circuitry caused by gambling and recreational drugs, with the constant stream of achievements, rewards, and progression triggering the brain's reward system [8]. Studies show that playing video games activates the brain's reward areas, triggering chemical reactions similar to those seen with drugs like cocaine [8].

Playing video games elevates dopamine levels to nearly double the normal resting levels [9]. Adolescents are particularly vulnerable to an unrelenting dopamine cycle created by endless gaming loops that involve seeking and anticipating rewards [8]. Research from 2024–2025 shows that this dopamine loop contributes to dopamine deficit states, where baseline dopamine drops, making everyday activities less rewarding and driving compulsive use [8].

A 2008 study of young people in MRI machines found that gaming activated the brain's reward areas in male subjects more than in females, suggesting that video games are physiologically more fulfilling for males [9]. This helps explain why men or people assigned male at birth are more likely to develop video game addiction than women, with research indicating that 75% to 90% of gaming addiction cases affect males, particularly ages 18–24 [10].

### 2.3 Gaming Patterns and Time Investment

In 2024, approximately 3.4 billion individuals engaged in video gaming over the past six months [1]. Among those with addiction, gaming patterns are substantial. Research comparing addicted and non-addicted adolescents found that those meeting disorder criteria averaged approximately 5 hours daily gaming, while non-addicted peers played around 3 hours [11]. Among adults, individuals at risk for gaming disorder averaged 42 hours weekly compared to 24 to 26 hours for those not at risk [11].

A 2024 survey of United States teenagers revealed that 85% report playing video games, with 41% engaging daily [11]. The average smartphone user checks their device 58 times per day, with each check potentially reinforcing dopamine-driven behaviour patterns [8].

## 2.4 Consequences of Gaming Addiction

Video game addiction has been associated with various negative outcomes including depression, anxiety, loneliness, somatisation, reduced quality of life, and poor academic achievement [12]. Approximately 40% of users report feeling anxious without access to gaming [1]. Among U.S. teens, a striking 70% of those who use video games for over five hours daily report feeling anxious when disconnected [1].

Behavioural changes due to gaming addiction are significant, with 64% of users reporting feelings of stress or anxiety after logging off [1]. Individuals might use gaming as a means to disconnect from stressors, which can hinder personal growth, problem-solving skills, and the development of effective coping mechanisms in the face of real-life difficulties [13].

## 3. Violence and Aggression

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### 3.1 Meta-Analytic Evidence

The relationship between violent video games and aggressive behaviour has been extensively studied and remains one of the most debated topics in gaming research. A 2018 meta-analysis pooled data from 24 studies with over 17,000 participants and found that violent video game play was significantly related to subsequent aggression [14]. Using both fixed and random effects models, the study found effect sizes of  $\beta = 0.113$  and  $\beta = 0.106$  respectively [14]. When all available covariates were included, the effect remained significant with  $\beta = 0.080$  and  $\beta = 0.078$  [14].

The meta-analysis tracked physical aggression among users of violent video games for periods ranging from three months to four years. Examples of physical aggression included incidents such as hitting someone or being sent to the school principal's office for fighting, and were based on reports from children, parents, teachers, and peers [15]. No evidence of publication bias was found [14].

Research demonstrates that violent video game play is associated with increased aggression, aggressive cognition, and aggressive affect, as well as decreased empathy for victims of violence and prosocial behaviour [16]. A 2024 narrative review examining adolescent aggression found that exposure to violent video games may promote moral disengagement and reinforce aggressive behaviour through rewarding violent actions, potentially leading to real-life aggression [17].

### 3.2 Mechanisms of Effect

According to the General Aggression Model (GAM), playing violent video games increases aggressive cognition and affect, which in turn results in behavioural aggression [18]. Person and situation variables may affect a person's internal state, consisting of cognition, affect, and arousal, which then affects how events are perceived and interpreted [18].

Research has established that moral disengagement is not only a powerful predictor of aggression but also a product of violent video game exposure [19]. Longitudinal research indicates that frequent exposure to violent video games in early sessions can predict higher levels of moral disengagement in later sessions [19].

### 3.3 Contradictory Evidence

It is important to note that research on violent video games and aggression has produced mixed results, and some studies have found no significant associations. A 2024 longitudinal study of Czech adolescents found no evidence at the within-person level for the desensitisation effect of violent video games on empathy and aggression [20].

A large study of 1,004 British adolescent participants found that violent video game engagement was not associated with adolescents' aggressive behaviour [21]. Despite these contradictory findings, meta-analyses generally support the existence of a small but significant relationship between violent video game play and aggressive behaviour [14][15].

## 4. Mental Health Impacts

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### 4.1 Depression and Anxiety

Research demonstrates complex relationships between video gaming and mental health outcomes, particularly depression and anxiety. Previous research has linked the symptoms of Internet Gaming Disorder to symptoms of depression and anxiety among college students [22]. A 2024 study found that depression and anxiety acted as moderators of the relationship between gaming time and gaming disorder risk, possibly by amplifying the gratification of playing games and thus contributing to the development of gaming disorder [23].

A study with 304 adolescents aged 12–18 years old found that computer game addiction has effects on anxiety and depression, with social support acting as a mediating factor [24]. Each additional hour of playing video games increased the chance of having moderate or above symptoms of depression, anxiety, and stress among rural Chinese adolescents [25].

Research found that young people who played more than two hours of violent games every day had more depression symptoms than those who played non-violent games [26]. Furthermore, social anxiety and excessive gaming sometimes go hand in hand, with young people with social anxiety being more likely to play video games in a problematic way [26].

### 4.2 Positive Mental Health Benefits

It is important to note that video games can also have positive effects on mental health when used appropriately. Research has shown that video games designed as mental health interventions can be helpful tools in improving the mental well-being of children and teens with anxiety, depression, and ADHD [28]. A Johns Hopkins Children's Centre review found that video games designed for

patients with ADHD and depression provided a modest reduction in symptoms [28].

However, these positive effects appear to depend heavily on moderation and the type of game played. The benefits can quickly become negative when gaming becomes excessive or compulsive, leading to what researchers term 'problematic gaming behaviour' [12].

## 5. Social Isolation and Reduced Face-to-Face Interaction

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### 5.1 Displacement of Real-World Connections

While video games can facilitate online social interactions, research suggests they may paradoxically contribute to social isolation by displacing meaningful in-person interactions. The toll of social isolation includes outcomes like depression, anxiety, and cognitive decline, and concerns exist that excessive use of virtual reality and gaming would take away from genuine social interaction and prevent interpersonal relationships [31].

Prolonged use of video games would isolate a person from reality, negatively affecting personality traits such as extraversion and openness that are crucial to handle real world situations [31]. Gaming can lead to a decrease in face-to-face interactions and an overall decrease in meaningful relationships, as well as a decrease in empathy and an increase in isolation [32].

### 5.2 Impact on Socially Isolated Individuals

Research demonstrates that engagement in gaming by socially isolated users with low self-esteem can result in negative effects on their well-being, with high levels of involvement negatively affecting well-being through mechanisms involving depression [34]. If young people spend more time gaming than engaging in face-to-face interactions, this can fuel social anxiety and cause them to feel more comfortable playing video games rather than socialising in person [26].

A population engrossed in virtual realities may witness a decline in social cohesion, empathy, and effective communication, with risk that individuals may neglect physical health and self-care as they immerse themselves in virtual pursuits [13].

## 6. Loot Boxes and Gambling-Like Mechanics

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### 6.1 Definition and Prevalence

Loot boxes are items in video games that can be paid for with real-world money but contain randomised contents whose value is uncertain at the point of purchase [35]. They are a popular form of microtransaction now included within video games to obtain money from players, upon which game developers are increasingly reliant as a revenue stream [35]. Recent research suggests that the majority of top-grossing mobile games on both Apple and Android devices now contain loot boxes [35].

The loot box industry is predicted to have generated up to \$30 billion in 2018 alone and is projected to reach \$50 billion in revenue by 2022 [36]. Content analysis found that 90 of the 100 highest-grossing iPhone games contained paid loot boxes [37]. More than 70 percent of desktop play sessions now take place in a game that is monetised through loot boxes [35].

## 6.2 Link to Problem Gambling

Loot boxes have been described as 'psychologically akin' to gambling as individuals stake money on the uncertain outcome of a future event in the hope of receiving something of greater value [35]. Research demonstrates strong associations between loot box purchasing and problem gambling. A large-scale survey found that 45.9% of loot box users met the criteria for problem gambling [38].

A survey of 16- to 18-year-olds ( $n = 1,155$ ) found evidence for a link between loot box spending and problem gambling of moderate to large magnitude ( $\eta^2 = 0.120$ ). The link was stronger than relationships previously observed in adults [41]. Notably, loot box purchase had a stronger relationship with problem gambling than many other forms of gambling, including playing slot machines or online betting [42].

A person who had purchased a loot box in the last 12 months had a prevalence rate of 3.66 for presenting Internet Gaming Disorder, and a prevalence rate of 4.85 for presenting Online Gambling Disorder [39].

## 6.3 Regulatory Concerns

The Gambling Commission in the UK has said that the Gambling Act 2005 does not cover loot boxes and that it therefore cannot use any of its regulatory powers to take action [43]. However, the Commission has expressed concern about the blurring of the line between video gaming and gambling [43].

Some jurisdictions have taken regulatory action: Belgium has banned the use of loot boxes within some video games; gambling authorities in the Netherlands have ruled that some loot boxes constitute unlicensed games of chance; and China has required that the odds of winning be displayed to consumers [35]. In the United States, multiple bills have been introduced but not yet passed [36].

# 7. Sleep Disruption

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## 7.1 Effects on Sleep Quality and Quantity

Studies have confirmed that people who spend a lot of time gaming tend to get less sleep and experience lower sleep quality [45]. A systematic review found that problematic gaming behaviour is associated with shorter sleep duration, poorer sleep quality, delayed sleep phase, and problems initiating or maintaining sleep [46]. Significant overall effects were found for sleep duration ( $g = -0.238$ ), poor sleep quality ( $OR = 2.02$ ), and daytime sleepiness ( $OR = 1.57$ ) [46].

Research shows that gaming volume is significantly and negatively related to fatigue, insomnia, bedtime and rise time in adults [47]. These effects were greater when the time of videogaming exceeds 60 minutes per day [47]. A 2024 systematic review found that addiction to video game playing is linked to negative effects on sleep quality and timing, including delayed sleep onset [48]. However, the review also found that habitual (max 7 hours/week) and casual gaming are not associated with negative consequences on sleep [48].

## 7.2 Mechanisms of Sleep Disruption

Video games can stimulate the brain and increase emotional and physiological arousal, which can be really disruptive to the natural sleep cycle [49]. Blue light exposure from screens can suppress melatonin, disrupting natural sleep-wake cycles [49]. Studies show that using blue light-emitting devices within an hour before bed is associated with impaired sleep quality and duration [49].

Research also finds that video games are generally a night-time activity, which means players are more likely to push off bedtime for extra playing time [49]. A study found that gamers delayed going to bed 36% of the nights they played video games, with the average delay in bedtime on nights spent gaming being 101 minutes [50].

### 7.3 Impact on Youth

Children who play a lot of video games are prone to delaying their bedtime and having trouble falling asleep [45]. A study of 17 teenagers who played either 50 minutes or 150 minutes of violent video games before bed found that those who played for 150 minutes took an average of 39 minutes to fall asleep, and they woke up repeatedly through the night, reducing their sleep by about 27 minutes [51]. Those who played for 50 minutes saw little disruption in sleep [51].

## 8. Physical Health Concerns

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### 8.1 Sedentary Behaviour and Obesity

Prolonged gameplay without adequate physical activity increases the risk of obesity, type 2 diabetes, and cardiovascular diseases [53]. Research has shown associations between physical inactivity, prolonged sedentary time, and increased screen time with elevated risk for developing chronic health conditions [54]. Adult video game players have a higher likelihood of developing chronic health conditions due to the sedentary nature of game play compounding with other daily sedentary behaviours [54].

A 2024 study found that adult video game players in the United States reported an average of 51.14 hours per week sitting while at work, at home, while doing course work, and during leisure time [54]. Non-active video gaming as a sedentary behaviour increases the risk of developing metabolic syndrome [56].

### 8.2 Musculoskeletal Problems

Prolonged gameplay increases the risk of musculoskeletal problems such as tendonitis, carpal tunnel syndrome, and sciatica [53]. Research on esports athletes has demonstrated that this group is at risk for muscle weakness, vision fatigue, poor sleep, and nutritional deficits [54]. The most common musculoskeletal condition among gamers was herniated disc [54].

### 8.3 Vision Problems

Extended screen time is a common concern associated with video game use. Prolonged exposure to screens may contribute to eye strain, discomfort, and potential long-term effects on vision health [58]. Practising the 20-20-20 rule (looking at something 20 feet away for 20 seconds every 20 minutes) and ensuring proper lighting can help alleviate these concerns [58].

## 9. Positive Cognitive and Therapeutic Benefits

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## 9.1 Cognitive Enhancement

Despite the numerous negative impacts documented in this report, it is important to acknowledge that video games, when used appropriately, can offer significant cognitive benefits. Commercial video games have been found to be positively associated with cognitive functions such as attention, problem-solving skills, memory, and spatial reasoning [59].

A meta-analysis of action video games revealed that the positive influence extends to various cognitive functions, including working memory, selective attention, and processing speed [60]. Regular gamers outperform non-gamers in tasks that require rapid decision-making and visuospatial reasoning [60]. Short-term gaming interventions support cognitive improvement: as little as 10 hours of playing an action game can improve spatial attention in naive players [60].

Longitudinally, adolescents who often play strategy video games show improved problem-solving skills over time, which may enhance their academic performance [60]. Children who played strategic role-playing games were found to have improved problem-solving skills and benefited from increased creativity regardless of the type of game they played [62].

## 9.2 Therapeutic Applications

Video games are increasingly being explored as therapeutic tools for various conditions. A Johns Hopkins Children's Centre review found that video games designed as mental health interventions can be helpful tools in improving the mental well-being of children and teens with anxiety, depression, and ADHD [28]. Games like EndeavorRx, SPARX, and MindLight demonstrate promising outcomes in managing symptoms of ADHD, anxiety, and depression in youth [60].

Video games enable children with autism spectrum disorder to learn social skills and acquire new competencies in a controlled environment where stressors from the real world are absent [60]. Research suggests that gaming may benefit people with attention disorders, and video games can also help with trauma recovery, acting as distractions from pain and psychological trauma [29].

## 9.3 Social Benefits

Multiplayer and online games are good for virtual social interaction, providing low-stakes environments for testing talking to and fostering relationships with new people [29]. Playing video games together with family can improve relationships with family members [64]. Online multiplayer gaming fosters social connections, allowing individuals to interact with friends and communities [58].

However, it is crucial to balance these positive aspects with awareness of the risks. The benefits of gaming are most pronounced when gaming is moderate, balanced with other activities, and involves age-appropriate content. Excessive or unstructured gaming is associated with risks, including attention difficulties, sleep disruption, reduced academic performance, and displacement of physical or social activities [60].

## 10. Conclusions and Recommendations

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The evidence demonstrates that while video games offer opportunities for cognitive enhancement, social connection, and therapeutic intervention, they also present substantial negative social consequences that require urgent attention. Key areas of concern include:

- Widespread addiction affecting approximately 3–4% of gamers globally, with the World Health Organization officially recognising Gaming Disorder as a mental health condition, driven by dopamine-based reward systems that mirror those of gambling and substance addiction.
- Violence and aggression, with meta-analytic evidence showing small but consistent effects of violent video game play on aggressive behaviour, particularly through mechanisms of moral disengagement.
- Mental health deterioration including depression and anxiety, particularly among adolescents and young adults, though effects vary considerably based on gaming patterns and individual vulnerabilities.
- Social isolation resulting from displacement of face-to-face interactions and overdependence on virtual environments, particularly affecting individuals with pre-existing social difficulties.
- Gambling-like mechanics through loot boxes affecting approximately 30% of players, with strong associations to problem gambling particularly among adolescents, yet largely unregulated in most jurisdictions.
- Sleep disruption with meta-analytic evidence showing associations with shorter sleep duration, poorer sleep quality, and delayed sleep timing, particularly when gaming exceeds 60 minutes before bedtime.
- Physical health concerns including obesity, musculoskeletal problems, and vision issues due to prolonged sedentary behaviour, with adult gamers averaging over 50 hours per week of sedentary time.
- Positive cognitive and therapeutic benefits including enhanced attention, problem-solving, and spatial reasoning, particularly when gaming is moderate and age-appropriate.

As video gaming continues to evolve and achieve wider adoption, stakeholders must work collaboratively to implement evidence-based interventions:

### For policymakers and regulators:

- Establish clear legal frameworks for gaming industry accountability including regulation of loot boxes and gambling-like mechanics.
- Implement comprehensive time-limit guidelines for different age groups.
- Mandate transparency in monetisation practices and recognise Gaming Disorder in healthcare systems.

### For technology companies:

- Redesign platform features to reduce addictive qualities through ethical game design.
- Implement robust parental controls and time management tools.
- Provide clear disclosure of loot box odds and mechanics.

- Invest in research on long-term health impacts.

**For healthcare professionals:**

- Screen for gaming disorder in routine assessments.
- Develop evidence-based treatment protocols.
- Provide family counselling on healthy gaming habits.

**For families:**

- Set consistent time limits (recommended maximum of 1–2 hours per day for children).
- Maintain device-free zones and times, especially bedrooms and mealtimes.
- Monitor gaming content for age-appropriateness.
- Encourage balanced activities including physical exercise and face-to-face social interaction.
- Model healthy technology use.

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