COMPUTER GAMES AND THE PROBLEM OF CRUELTY

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Abstract: This scientific work examines the influence of computer games on the brain and human behavior in general. Considered, analyzed and criticized the thoughts of eminent foreign scientists and doctors about the influence of computer games on children and adults.
Key words: computer games, influence, impact, human brain, emotions, society

In our difficult, because of the pandemic times, more and more people turn their attention to games in their various forms. People are paying more attention to computer games because of their accessibility. But many people believe that it is detrimental to a person's mind and behavior in general. Therefore, it will be my job to understand this question in more detail and to form clear theses confirming or disputing it. And, in my opinion, the relevance of the topic is not at the bottom of other problems of the 21st century.

 Because of informational illiteracy the society believes everything it is told on TV, on the Internet or just in a personal conversation. Therefore, false, unsubstantiated information has already spread and taken root in our heads.

And to educate the masses about what's really true. And the truth is that although computer games affect the person and not always positively, but this is only a small part of the issue. And the effect of the games is more positive than negative. After all, we shouldn't forget that it mostly depends on the person playing. And that is why scientists have not yet come to a clear conclusion on this issue, although they incline their opinion more to the useful, well, at least a neutral, impact of computer games.

Purpose of research: Find valid judgments about the problem or lack thereof against the backdrop of computer games and their impact on people. Analyze the impact of computer games on society, the human brain and habits.   And also to investigate what influences children or adolescents succumb to when they play computer games.

Authors Denilson Brilliant T., Rui Nouchi, and Ryuta Kawashima in their paper "Does Video Gaming Have Impacts on the Brain: Evidence from a Systematic Review" write *"The systematic review has several conclusions related to beneficial effects of noncognitive-based video games. First, noncognitive-based video gaming can be used in all age categories as a means to improve the brain. However, effects on children remain unclear. Second, noncognitive-based video gaming affects both structural and functional aspects of the brain. Third, video gaming effects were observed after a minimum of 16 h of training. Fourth, some methodology criteria must be improved for better methodological quality. In conclusion, acute video gaming of a minimum of 16 h is beneficial for brain function and structure. However, video gaming effects on the brain area vary depending on the video game type"*[*Denilson T., Rui Nouchi, Kawashima, 2019*]. After reading this we can conclude that games in general are not harmful and their impact depends mostly on the person who plays and the amount of time a person spends playing. After all, the study says *"Change of the brain structure and function was observed after 16 h of video*

gaming. The total durations of video gaming were 16–90 h. However, the gaming intensity must be noted because the gaming intensity varied: 1.5–10.68 h per week. The different intensities might affect the change of cognitive function. Cognitive intervention studies demonstrated intensity effects on the cortical thickness of the brain"[*Denilson T., Rui Nouchi, Kawashima, 2019*a], which suggests that if you don't abuse the games, you can even improve your general health. Then again, if you play something that highly agitates the psyche, the effect will be almost entirely negative. But if we take only the negative side of the issue, then we may as well say that baby food is dangerous for children, because if they swallow it together with the jar, then, alas, even an ambulance will not help. So the only true way will be a considered and not hyperbolized play session, which in turn will only contribute to the development of both the child and the average adult.

What if a child does start playing a violent game? Then nothing will happen… Nowadays, people are already emotionally hardened, and if you do not abuse the amount of time in the game, it does not give a strong negative effect, although it is necessary to pay attention to such things as rating games. After all, if a child plays a game that was not intended for his age, then there is no blame the developers of the game. But where did such a criterion as "moral toughness" come from? Well as MD Claire McCarthy states in her article "Protecting children from the dangers of 'virtual violence'" writes that people are more aware of today's potential threats and the cruelty of the outside world in general. People can learn all the newest manifestations of humanity's cruelty and hatred through news, social media. networks and other media. McCarthy also writes that: *"The last comprehensive assessment of "screen" violence was done in 1998, and it found that the typical child will have seen 8,000 murders and 100,000 other acts of violence (including rape and assault) before middle school. That was 18 years ago, 7 years before YouTube began and 9 years before the first iPhone was released. Just think what those numbers are now"*[*McCarthy C., 2016*]. Which suggests that people, and children among them, nowadays have at their disposal a lot of negative and frankly cruel information, although no one raises the alarm, and in the direction of video games constantly flies a lot of accusations, with no solid evidence, about their negative impact on society. So we just have to think with our heads what really destroys our sanity and what just gives us emotional relief. Although games should not be abused. After all, only we can control ourselves and do what will ultimately be beneficial to us.

Okay, if video games don't create a strong positive or negative impact on both the body as a whole and society, then what do games do to our brains? Let's take it one step at a time. First of all, after reading a few first paragraphs from the paper "Video Games Affect the Brain—for Better and Worse" of Douglas A. Gentile: *"…In a press statement about the report that resulted from its deliberations, the parliament concluded that games could have "harmful effects on the minds of children." Reporting on this statement, however, the headline in the Guardian read, "Video games are good for children."*

Psychologists and neuroscientists conducting well-designed studies are beginning to shed light on the actual effects of video games. These studies show a clear trend: Games have many consequences in the brain, and most are not obvious—they happen at a level that overt behaviors do not immediately reflect. Because the effects are subtle, many people think video games are simply benign entertainment.

Research projects of variable strength have substantiated claims of both beneficial and harmful effects. Too often the discussion ends there in a "good" versus "evil" battle, reminiscent of the plots of the violent video games themselves"[*Douglas A. Gentile, 2009*]. Which tells us that not everything is as straightforward as it seemed before, although it's not as desolate as the tabloids tell us it is.

Of the many studies, Gentile identifies a few that are the most credible and directly show the essence of this issue. These include studies by the U.S. Department of Education. For example, the results of the study cited in Gentile's paper: *"Several types of studies provide evidence that video games that include "pro-social" content—situations in which characters help each other in nonviolent ways—increase such conduct outside of game play, too. In one study, 161 college students were randomly assigned to play one of several violent games, neutral games, or pro-social games (in which helpful behavior was required). After playing, the students completed a task in which they could either help or hurt another student. Those who had played the violent games were more hurtful to other students, whereas those who had played the pro-social games were more helpful"*[*Douglas A. Gentile, 2009*]. Or the result of an experiment on physicians that proved beneficial to the practice of medicine: *"A study involving 33 laparoscopic surgeons— doctors who conduct minimally invasive surgery by using a video camera to project the surgical target area onto a screen as they work—linked video game play to improved surgical skill, as measured in a standardized advanced-skill training program. In fact, the surgeons' amount of game time was a better predictor of advanced surgical skill in the training drills than their number of years in practice or number of real-life surgeries performed"*[*Douglas A. Gentile, 2009*]. Having analyzed the summary of useful information provided by Douglas in his article, we can draw some conclusions that everything is not so unambiguous and rosy here too, which in its turn signals that the results are not so unrealistic, although this is skepticism. But in general, although there is a correlation between repeated exposure to violent games and decreased sensitivity and increased aggressive behavior in the real world, it is not as significant as the relationship between abuse in the external environment and the subsequent projection of that abuse onto others. To summarize, I want to quote briefly the points made by Douglas in his work on the impact of games on society, body and mind:

- Amount: *"These correlations might begin with gamers' existing characteristics. For example, low-performing students are more likely to spend more time playing, which may give them a sense of mastery that eludes them at school. Nonetheless, every hour that a child spends on video games is not spent doing homework, reading, creating, or participating in other activities that might have more educational benefit. Longitudinal studies support the idea that children's school performance worsens as their gaming time increases.*

Furthermore, excessive video game play often reduces time for physical activity, which could account for the link between the amount of gaming and obesity. Movement games (such as Dance Dance Revolution and some Nintendo Wii games) may have the opposite effect, however"[*Douglas A. Gentile, 2009*]. This goes to show that games are a tool and how we use them is entirely up to us. After all, you can pick up a knife and slaughter every living thing within a kilometer radius, but no one does that, no matter how many hours a normal person would have a knife in his hand.

- Content: *"What a video game is about—its content—may determine what players take with them from the game to real life. Studies indicate not only that games that include educational content can improve related education skills, but also that games designed to help children manage chronic health problems (such as asthma or diabetes) are more effective than doctors' pamphlets in training children to recognize symptoms and to take their medications…*

Learning that results from video games may last only for the duration of the game, for a few minutes after play ceases or for the long term. Many content-focused studies, such as those in which children learn information about their health, also show that in-game learning can transfer to the real world in the long term.

Studies of games with violent content also tend to demonstrate transfer of learning to real-world situations. Studies in several countries, including one consisting of 1,595 children in Japan and the United States, suggest that children who play violent games become more aggressive in their daily lives (as reported by their peers or teachers, for example)"[*Douglas A. Gentile, 2009*]. Which suggests that the content of games is very important when considering their effects on the brain and the mind. Nevertheless, we should not forget that violent games with R-rating originally were not intended for children, so we can conclude that the games produced with children in the face of the target audience is a positive. As Douglas writes: *"The research question has shifted from whether game content transfers to nongame situations to how it does so. New studies are focusing on the cognitive and behavioral processes by which learning and transfer occur. Learning may transfer to other tasks as a result of fluid intelligence. This term refers to the ability to reason and to solve new problems independently of previously acquired knowledge. In one study, researchers had participants complete a game like computer training task. They found that training designed to improve working memory (the temporary storage and use of information) leads to a transfer to fluid intelligence. Moreover, the extent of the gain was related to the amount of training"*[*Douglas A. Gentile, 2009*]. That actually does not need any addition.

- Structure: *"Effective scanning allows the player to shift attention swiftly and automatically from the center of the screen to the periphery. Such visual attention is analogous to the type of skill that an air-traffic controller needs: the ability to scan all screen areas, to detect minute changes and to respond quickly… These games should improve a gamer's ability to get 3-D information from 2-D depth cues and use it in other contexts. Because navigating a virtual world requires players to maintain awareness of orientation and landmarks, these games also could improve way-finding skills and mental rotation skills…"*[3] From this we can conclude that the structure of the game and its content work together. And if you use this mechanism correctly, you can playfully develop certain skills, which in turn is more of a plus than a minus.

- Mechanics: *"We should anticipate that the mechanics of game play require gamers to hone particular motor skills, which may also transfer to related real-life situations. A game's mechanics relate to its structure. Movements of the controller change what a player sees on the screen, which in turn affects how the player uses the controller. This feedback loop is consistent with hand-eye coordination"*[*Douglas A. Gentile, 2009*]. Which in turn suggests that we can pump not only our cognitive functions, but also fine motor skills, or even our muscles, depending on the game and how we play it.

• Context: *"Finally, we should suppose that the social context of a game influences its effects on the brain and learning. Some games require cooperation and teamwork for success. For example, in some quests of the multiplayer online game World of Warcraft, players with different skills must work together to solve puzzles and to overcome barriers. Other games, such as the battle simulator Call of Duty, require real-time coordinated action. Games that involve teamwork may improve players' skills in cooperation and coordination…"*[*Douglas A. Gentile, 2009*] Which suggests that our social skills are just as involved in some games, and some can develop them to the level of a Wall Street knave. But we shouldn't forget about the downside. Teenagers, and even more so, children are very susceptible to peer influence, and if that influence is negative, then whether at school or at play, it will equally spoil the child's mental state. Which you can read about in Douglas's article: *"For example, playing violent games with a group of friends who provide social support for aggressive actions might yield greater increases in aggressive behaviors in other contexts than playing the same games by oneself"*[*Douglas A. Gentile, 2009*]. Luckily, though, it works the other way around, Ph.D. Gentile notes: *"Conversely, providing players with pro-social motives to help their friends might mitigate increases in aggressive behaviors"*[*Douglas A. Gentile, 2009*].

To conclude on this point, I would like to add that games are simply a powerful entertainment tool that can quench many of our daily, within reason, needs. As Douglas writes: *"With the exception of educational games, most video games' effects on brain and behavior are unintentional on the part of both the designers and the players. Nonetheless, research suggests that the effects are real. Video games are neither good nor bad. Rather, they are a powerful form of entertainment that does what good entertainment is supposed to do—it influences us"*[*Douglas A. Gentile, 2009*]. And I agree with his point of view on this matter.

But what, to draw conclusions based on the opinion of one expert? Of course not. I would like to present you with several studies on the effects of computer games on the child's brain. And I'd like to start with the work "Your child's brain on technology: video games" of Hank Pellissier.

In his article, he reveals a number of topics that have not been correctly disclosed by other internet laymen before. In his work, he presents us with a number of studies and comments on their cost-effectiveness from leading experts in brain research and from psychologists no less renowned in their circles. To describe the essence of her point of view, I will cite a couple of quotes from her, which not only coincide with my opinion on the matter, but also with a number of scientists who have done research on the subject. I think I'll start with this one: *"…Bavelier isn't an outlier, either: Italian, Polish, and Dutch researchers agree with her findings. In a 2013 study, for example, researchers found that FPS game participants showed a more flexible mindset and faster reaction time than non-gamers.*

But wait: are these types of visual-spatial skills useful to anyone other than future assassins? Yes. Many bloodless vocations — including engineering, mathematics, natural sciences, economic forecasting, architecture, art, and design — require the eye-hand intelligence that video games develop…" [*Pellissier, 2014*] From which we can conclude that Douglas or Nouchi, for example, are not alone in thinking this way. And this is not just a superficial opinion, but the result of long and not one-time research.

Or, for example, this one: *"Two visual-spatial skills — attention and mental rotation ability — are more developed in males than females. This provides boys, many researchers believe, with an edge in mathematics and engineering. Want your girl to catch up? A surprising study from University of Toronto suggests that "only 10 hours of training with an action video game" decreased or eliminated the female disadvantage"*[*Pellissier, 2014*]. Which suggests that even the perceived "disadvantage" of girls, although the way and speed of thinking is not very gender dependent, can be eliminated, well at least reduced simply by playing video games with active gameplay.

What about the incredible rate of personality deterioration, the child becoming more violent and angry? Yes, such a problem does exist, but not on the scale that older research suggests. For example, the work of Michele L Ybarra, L Rowell Huesmann, Josephine D Korchmaros, Sari L Reisner, or Craig A. Anderson suggests a clear and very rapid increase in teen violence and a decrease in empathy among teens, not to mention the connection with computer game violence and the statistics of teens sneaking weapons into educational institutions. While there is some truth to this, you shouldn't be so blind to believe it all, because as Pellissier writes: *"… But researchers disagree. Psychologist Christopher J. Ferguson of Stetson University believes data in studies linking video games and violence have been improperly analyzed. He contends that this research ignores important social factors — such as mental health status and family environment — that can trigger violence, while pinning all the blame on gaming. His prolific research supports his conclusion that factors like depression, antisocial personality traits, exposure to violence in the family, and the influence of peers are far more likely to trigger aggressive behavior than gaming"*[*Pellissier, 2014*]. And what about the obvious health hazards? Deteriorating vision or distracted attention are not such imaginary problems. Yeah, I totally agree. But the blame lies solely on the computer itself, or rather its screen, not on some video game with blood and guts. Moreover, if you read for a long time in a bad light, the vision can also deteriorate, and it does not even play a role the genre of the book or its content. Pellissier has very intelligently pointed this out as well: *"Will video games ruin vision, destroy attention spans, and eviscerate impulse control?*

In fact, the opposite is true, according to brain scientist Bavelier. She cites abundant evidence that tech toys train brains to see better. Video games also don't lead to distractibility, she asserts; au contraire, they can improve attention. The 2013 Italian, Polish, and Dutch study also observed that gamers' impulse control was undamaged by the hobby" [4]. Although the idea did not belong to him, it was he who brought it to the masses in his article.

As for alternatives to gory video games, there are even more of them than gory ones. All kinds of turn-based strategies or "real-time strategy" (RTS), which though about the conquest and similar conquest activities, but a lot of other aspects combined with this grain of brutality makes quite a safe product for the psyche, which draws as much mindless shooters. And if you want something else, Christopher Ferguson, a world-renowned psychologist, advises LEGO video games and Europa Universalis, which is also listed in Hank's article.

To sum up I can say that Hank's article is a good one to get acquainted with the problem of violence in children and teenagers in general, as well as he offers

some interesting compromises that children will accept without much sacrifice and thereby satisfy parents' concerns.

As I said before, I have more than one or two sources in stock. So I'd like to seamlessly move on to the article "How video games affect the brain" by Hannah Nichols. In her study, she refers to the research of Marc Palaus, who in turn, as the first author of the review says: *" Games have sometimes been praised or demonized, often without real data backing up those claims. Moreover, gaming is a popular activity, so everyone seems to have strong opinions on the topic"*[Nichols H., 2017]. As Hannah writes: *"Results of the studies indicate that playing video games not only changes how our brains perform but also their structure.*

For example, video game use is known to affect attention. The studies included in the review show that video game players display improvements in several types of attention, including sustained attention and selective attention. Furthermore, the regions of the brain that play a role in attention are more efficient in gamers compared with non-gamers, and they require less activation to stay focused on demanding tasks.

Evidence also demonstrates that playing video games increases the size and competence of parts of the brain responsible for visuospatial skills – a person's ability to identify visual and spatial relationships among objects. In long-term gamers and individuals who had volunteered to follow a video game training plan, the right hippocampus was enlarged"[Nichols H., 2017]. Which suggests that although a person does have improvement in some skills, it's all for a reason. In some cases, the games were addictive for people. In such people, a number of changes have been made in the neural reward system, which in turn affects a person's daily life. Even so, Palaus writes that the brain's response from exposure to video games has yet to be fully researched and video games have both positive and negative aspects, much like any form of entertainment in the world.

Hannah goes on to show research results in her article that speaks directly to the benefits of video games for adults. Which in no way contradicts the points of view given by the experts above.

And as a conclusion of my thought in general I would like to describe the study of a group of scientists in the article *" Effects of computer gaming on cognition, brain structure, and function: a critical reflection on existing literature"*. Simone Kühn, Jürgen Gallinat u Anna Mascherek admitted:*" Based on the discussion of the results and studies above, we conclude that inferences will continue to alternate between the general notion of an effect of video gaming on cognition and related brain structure and function, and the inability to make specific recommendations in the field of specific therapeutic use or detailed analyses of underlying mechanisms, structures, and processes in the brain. Although disappointing for some, for the sake of accuracy, to date there seems to be no other option than being specific"*[Kühn S., Gallinat J., Mascherek A., 2019]. And as they go on to write, there is no accurate, unified view of how games affect health. There are only hypotheses based on observations taken from studies. But there is no precise, procedurally proven opinion. *"Put that way, the need for standardized research protocols and theoretical frameworks against which hypotheses can be tested becomes clearly evident, analogous to the idea that a statement like "diseases can be cured" as a guiding principle for specific medical treatment of a specific disease in a specific group of patients*

could never be sufficient. A first important step was undertaken by Green and colleagues, aimed at establishing methodological guidelines for interventions for cognitive enhancement"[*Kühn S., Gallinat J., Mascherek A., 2019*], — write Simone Kühn, Jürgen Gallinat и Anna Mascherek. But despite this and the fact that medical benefits are traceable but not documented, the benefits of video games cannot be denied. In fact, the study goes on to say: *"…we would like to draw attention to the fact that, besides criticizing the lack of knowledge concerning the underlying mechanisms, we state that video gaming has beneficial effects on cognition that are reflected in brain structure and function. However, even this must be considered differentially and with caution until underlying mechanisms are truly and causally understood. Cognition, nevertheless, is only one aspect of well-being that needs to be considered when looking at 'the big picture'"* [*Kühn S., Gallinat J., Mascherek A., 2019*].

Taking these words as a basis, we can conclude that in this question even after so much time and with so many studies and experiments, the answer is still not as clear as we would like it to be. Although, thanks to research, we cannot say that computer games are pure evil that kills the personality, human health, and humanity as a whole.

The conclusion is inescapable. Imposing labels on games by illiterate adults unnecessarily destroys their reputation and thus devalues the work of more than one person. In addition, it gives a reason to treat 'gamers' as waste material that cannot give anything useful to society. Thereby inviting them to the very cruelty them speak of in his judgments.

Conclusions:

1.   This paper investigated the impact of video games on humans and the evocation of cruelty through playing them.

2.   It has been found that the same games affect people differently. It all depends on the person's personality and emotional state. So in this case, you can't jump to conclusions.

3.   It was found that video games help in the development of sparsely used areas of the brain, thereby increasing the overall level of gray matter wellbeing.

4.   Video games have been found to have a strong but temporary impact on young people. And most of the influence depends not on the type of game or its genre, but on the company in which teenagers play, or rather on the influence of this company on the person.

5.   It has been found that games can harm people with disabilities (with different types of disabilities). But this harm is caused by games indirectly. Especially since, for the most part, gaming is harmful to the categories of people to whom it is prohibited. It's the same with kids who become more aggressive by playing games, not for their age group. Thus it is already the direct fault of the guardians of these or those types of people for allowing people to play games for which clear warnings are written in the disclaimer.

6.   Considering all of the above, we can say that games are a double-edged sword. And how mankind will use it depends only on them. After all, doctors have repeatedly documented the phenomenon that games have influenced patients in such a way that they were recovered, or in some groups who fell ill with certain diseases, there was a healing process.

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Зубанич Михайло
КОМП'ЮТЕРНІ ІГРИ ТА ПРОБЛЕМА ЖОРСТОСТІ

Анотація: У цій науковій роботі досліджується вплив комп'ютерних ігор на поведінку людини. Розглядаються і піддаються аналізу та критиці думки іменитих зарубіжних вчених та докторів щодо впливу комп'ютерних ігор на дітей та дорослих.
Ключові слова: комп'ютерні ігри, вплив, вплив, мозок людини, емоції, суспільство

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