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# Are Video Games Designed to be Addictive?

Video games; are they a sport or is it a drug?

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**Abstract:** Problematic video game behaviour has been an increasing issue in the past decade with the increase of access to the Internet, mobile phones and of course, personal computers. Cases have been reported of aggressive behaviour, isolationism, escapism and even death when it comes to compulsive playing. But at the same time, video games are a possible career since massive tournaments are held annually with large prize pools from sponsors and from other users, across various games and genres. Is this pastime activity purposefully created to be addictive, in order to form a loyal target group of users that will stick around a game no matter what, or is it an activity that is so attractive to vulnerable users that it becomes a serious addiction? Are video games to be perceived as a relaxing activity with a possible career such as football or is it something to be more associated with the usage of drugs?

**Keywords:** Gaming Disorder, Tetris Effect

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## Introduction

The year of 2018 began with a bad shock for gamers worldwide, as their pastime activity has been included in the 11th draft Revision of the International Classification of Diseases (ICD-11) by the World Health Organization as a disorder (WHO, 2018). Debates have risen over this proposal, and arguments have been brought up against the Gaming Disorder with objections such as “low quality of the research base, the fact that the current operationalization leans too heavily on substance use and gambling criteria, and the lack of consensus on symptomatology and assessment of problematic gaming” (Aarseth, 2017).

Since their appearance in the early 50s in the form of arcade games in specialized arcade shops (La Viola, 2008), video games have largely developed, and have been far easier to access than before. Video games became a multi-platform form of entertainment, appealing to different user profiles, exploring various worlds and scenarios in the real or fictional world, and even advancing into becoming a medium for educational purposes.

However, with its rise into becoming a multimillion industry, has the goal of video games converted from creating a free time activity game to creating a low quality and recycled content falling under a money-making scheme? Many people, especially parents, have expressed many concerns that their children and their development are being targeted by companies, just so they can generate profit.

This paper observes behavioural patterns in gamers that cause them to remain engaged in a game for a long period of time, shortly, what causes gamers to game? What elements trigger a compulsive need to game? Who is more likely to become addicted; which profiles of users are more inclined to develop a gaming disorder?

## WHO’s proposal; is it a legitimate disorder?

The definition of addiction according to Merriam-Webster Dictionary is divided into two categories:

1. the quality or state of being *addicted*, which is being further on defined as:
  - a. having a compulsive physiological need for a habit forming substance;  
and
  - b. strongly inclined or compelled to do, use, or indulge in something repeatedly
2. compulsive need for and use of a habit-forming substance (such as heroin, nicotine, or alcohol) characterized by tolerance and by well-defined physiological symptoms upon withdrawal; broadly: persistent compulsive use of a substance known by the user to be harmful.

According to this definition, an addiction revolves around performing an action repeatedly and compulsively until it reaches a form of habit. However, performing an action repeatedly, such as on a daily basis, is not necessarily harmful, such as brushing your teeth, a routine action, which in return provides you with cleaner teeth, decrease in gum

inflammation etc. Some people can have an addictive relationship with their job position to an extent it overlaps their social activities, eating and sleeping patterns, which can even lead to serious mental issues. Addiction is a compulsive activity, which not only overlaps and prioritizes itself before daily activities, but it also harms the user. The term is mostly associated with drug and alcohol abuse, but does it have the same intensity as video game abuse? Is video gaming as harmful to the user as much as drug abuse is?

In January 2018, a Q&A article was released by The World Health Organization where the Gaming Disorder proposal is being discussed. (WHO, 2018) Four questions were being answered by the organization:

1. What is gaming disorder?
2. What is the International Classification of Diseases?
3. Why is gaming disorder being included in ICD-11?
4. Should all people who engage in gaming be concerned about developing gaming disorder?

In addition to the questions asked, the article was supported by a video commentary response on the issue by Dr Vladimir Poznyak, an expert of the Department of Mental Healthful and Substance Abuse of the World Health Organization.

Gaming disorder is identified as “an impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the occurrence of negative consequences.” (WHO, 2018).

At the end of the article, a crucial question was asked; should all people who engage in gaming be concerned about developing gaming disorder? Is compulsive gaming something that could affect everyone? Should users worry that this activity could affect their normal functioning? The World Health Organization doesn't give a definitive answer to that question, in the form of yes or no, but it does suggest careful observation of one's time spent on gaming. If a person games, their gaming time should be accommodated accordingly within their daily schedule, and not lead to exclusion to all other activities.

Additionally related to that, an another article was linked to the Q&A regarding gaming behaviour, one explaining the outcomes of excessive gaming, in terms of mental and physical health (WHO, 2018).

But why do people object to this proposal? The introductory paragraph stated that experts disapprove of WHO's proposal, due to a lack of evidence. The relationship between, present or developing, gaming disorder and addiction requires a behavioural analysis claim James and Tunney of the School of Psychology at the University of Nottingham (Aarseth, 2017). Not only that WHO's proposal has an absence of research, since a video game varies based on content, genre, online access, multiplayer options. Specific mechanics within a game can trigger behavioural addictions, which don't appear in all types of games. This leads to the presumption that the proposal is focusing on a specific game mechanic in a certain range of games, instead on focusing on all types of video game.

Other than a specific range of games being the founding concern regarding the Gaming Disorder proposal, the type of people that the content being delivered to is not specified. Can everybody be addicted?

## **User profiles, who tends to game? Gaming as a possible career path**

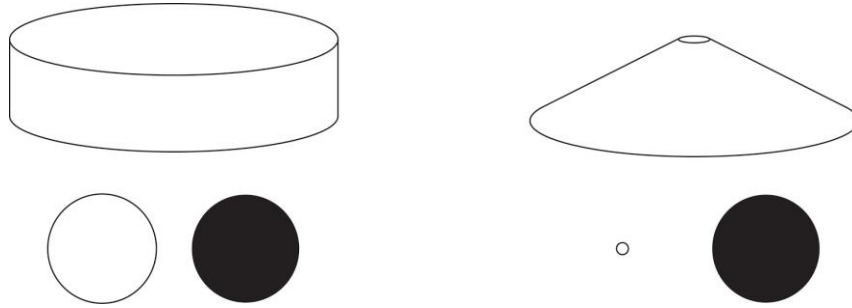
When it comes to career paths, many gamers have chosen the path of competitive gaming in tournaments and competitions for a large amount of money; either playing in a team as a football match or versus one opponent, in a similar fashion to tennis. For others (gamers), playing video games can be a routine action, for example playing a couple of rounds of Candy Crash Saga during the morning coffee, incorporated to fit alongside all daily activities, and be a guaranteed daily reward for managing to complete the more difficult tasks, but for others, gaming is an activity that overlaps all others.

In the previous section, it was discussed that gaming can be a free time activity for many people, and it's nothing to be particularly worried about. Petry suggests that over the last decade, research into "addictive technological behaviours" has substantially increased (Petry, 2006). Research has also demonstrated strong associations between addictive use of technology and comorbid psychiatric disorders (Andreassen, Billieux, Griffiths, Kuss, Demetrovics, Mazzoni, & Pallesen, 2016).

Providing an isolated, easily alternated environment gives users a free space, in which they can easily manoeuvre, explore and shape a persona based on their own interests and style. Video games insert users into such a space, where they break any physical limitations they have in the real world, thus allowing them to develop an image of themselves they can agree with (Gee, 2006). By being given such an opportunity, users can evade the not only the problems they have in the real world, but also be in an environment where their mental disorders, if present, can be put into a temporary rest. Therefore there is space and potential for developing addiction. Both anxiety and depression have been positively related to proneness to addictive technology use as claimed in a large-scale cross-sectional study exploring the relationship between addictive use of social media and video games and symptoms of psychiatric disorders (Holden, 2001; Andreassen, Billieux, Griffiths, Kuss, Demetrovics, Mazzoni, & Pallesen, 2016).

And here lies the question, are video games purposefully designed to be addictive? In addition to that, what makes video games addictive? Do designers, developers, and publishers design games in such a way that they cause addiction as a strategy for customer retention and customer growth?

Each genre of video games, MMORPG (Massive Multiplayer Online Role Playing Game), RTS (Real Time Strategy), MOBA (Massive Online Battle Arena), FPS/TPS (First/Third Person Shooter) and others have their leader games. How do people behave when it comes to different types of games? The answer is a double-sided coin. If the coin is the game, then one side is the way the game is "meant to be played", as proposed by the developers and as the mass of that game's community have chosen to accept it, and how the game is played by more "dedicated" users.



Sides of video gaming (white: how it's meant to be played, black: excessive gaming, and ratio between players behaving accordingly)

According to various sources and based on studies in different countries, the percentage of gamers that have issues with excessive gaming varies between 4% and 10% (Bresnahan, 2016) (Seok, DaCosta, 2012) (Gentile, 2011). This information varies based on a country's development and access to computers and the Internet. Unfortunately, most of these studies are conducted on high school students, since they are undergoing behavioural and psychological changes due to puberty, and they develop behavioural patterns, which will determine their character and personality later on in their lives. Still, these numbers cannot be far off when it comes to adults.

| Game  | Genre   | Regular gaming benefits   | Excessive gaming behaviour  |
|---|---|---|---|
| <b>Fortnite: Battle Royale</b> - Epic Games                     | Cooperative sandbox survival                          | Improved hand-eye coordination, improved in-game social interaction, improved teamwork, strategic and efficient thinking, ability to maintain a role, entertainment, minimal time commitment, leisure activity. | Family quarrels, highly addictive, excessive in-game spending for cosmetic items (Yin-Poole, 2018) (Bresnahan, 2016)  |
| <b>Dota 2</b> - Valve/<br><b>League of Legends</b> - Riot Games | MOBA (Massive Online Battle Arena)                    |   | Inability to control aggressive tendencies, destructive behaviour, excessive in-game spending for cosmetic items (and tactical advantage in League of Legends) (Tonner, 2018) |
| <b>World Of Warcraft</b> - Blizzard Entertainment               | MMORPG (Massive Multiplayer Online Role Playing Game) |   | Exclusion of other activities, binge gaming, inability for social interaction, even reported death cases (BBC, 2005)  |
| <b>StarCraft</b> - Blizzard Entertainment                       | RTS (Real-time Strategy)                              |   |   |

A table depicting most common negative behavioural occurring patterns in compulsive gaming based on different genres and environments

In order to have a better understanding on the subject matter, it's important to investigate the development and rise of video games, and also present a short story about a game that currently is one of the most highly paid and awarded e-sport, Dota 2.

Even though they have appeared in the early 50s, videogames didn't receive much popularity until the 70s and 80s as arcade games and arcade shops rose to fame (LaViola, 2008). Since then, the gaming culture has rapidly increased, stretching among various types of platforms, target audiences, etc. Video games have managed to become a uniting activity of people worldwide with annual gaming events, conventions, and competitions. Only last year, there have been 3918 tournaments registered with 17 062 active players in 109 different video games, accumulating a total prize pool of over \$113 million (E-sports earning, 2017). Just Dota 2 held 158 tournaments with a total prize pool of \$38,027,445.20, with just *The International 2017* having \$24,687,919.00 by itself. 18 teams competed with a total number of 90 players, just the winning team walked out of the tournament with \$10,862,683.00, whereas the rest of the funds were distributed accordingly among all other teams.

The funds were raised by the Dota 2 community through the purchasing of the *Compendium*, an in-game item that granted players cosmetic items, unique quests to play, specific game modes etc. (Dota 2, 2018). Ever since its creation, Dota 2 has remained a free-to-play game, a game that is free to download, and players are not given an advantage over others if they choose to pay, unlike freemium games. But how did it become so popular?

In 2003, *Defence of the Ancients* appeared as a moderator within *Warcraft III: Reign of Chaos*, a real-time strategy game developed by *Blizzard Entertainment* (Blizzard Entertainment, 2018) and created by a designer under the pseudonym Eul. As further developments progressed, the design role was transferred to a different person, once more presenting himself under a pseudonym, IceFrog. Forums and community websites rose in the process, where users who had *Warcraft III* could download the mod and play through servers against each other. By 2009, as the mod had experienced a user decline as other standalone games in the MOBA genre began to appear with improved graphics and more dynamic gameplay, DotA had over 1.5 million registered users and one million unique monthly visits on the DotA All Stars website (Nair, 2009).

## Social and Mobile Gaming

Gaming has developed from a single-game per console to the same game on multiple consoles, allowing the users to access the game from different devices just by accessing their user account (Egenfeldt-Nielsen, Smith, & Tosca, 2013). This phenomenon became popular with the rise of Facebook, when social games began to appear such as FarmVille where players were given a virtual farm that they had to maintain with the help of other users. The game reached the peak of its popularity with its release in 2009 with a total of 83.76 million monthly active users (Takahashi, 2011). The game maintained a high position on the list of most played games on Facebook for a time period of two years with proper updates, holiday events and bonuses, until it began to experience its downfall. Despite its multiplatform possibilities, the game soon became replaced with Android and iOS games like Angry Birds and Candy Crash Saga. The Zynga social model became replaced with freemium mobile games. Even though the model worked well for a certain of period of time, while people were getting to know the Facebook plat-

form, at some point the interest level drops due to the short time influence of the Tetris Effect.

Parallel to the development of social media, was the improvement of mobile technology, which was primarily meant to connect people outside of their homes, but since communication and connection has been redefined by social media, and now phones are multimedia devices with countless possibilities. This made it easier for people to compete with one another, regardless they are present at home or not.

Users, who played games with the Zynga model, didn't experience a strong effect once they exited the game, unlike Candy Crush Saga for example. Candy Crush, developed by King Digital Entertainment, entered the market through Facebook in 2012. The free-to-play game allows everybody to download the game, proceed for free, but pay to break certain limitations the game has. The puzzle match-three game is an updated and monetized version of Bejeweled (Gabebe, 2014), a browser game with a high rate of users influenced by the Tetris Effect (GameCentral, 2014). By taking a simple and easy-to-learn game, King Digital managed to release a game that targets a wide audience, which doesn't have to have a specific set of tools (such as a console), in order to play a game at any moment. But, unlike the original game they added a life system. If a player loses a level, he loses a life, which replenishes every 30 minutes or if you spend the in-game currency that you have purchased with real money. This restriction, not only kept the players playing, but it brought King Digital a revenue of \$7.6 Billion Dollars from micro-transactions from less than 30% of Candy Crush players (Clifford, 2014)(Toren, 2013).

Mobile games implement simple interfaces, which are meant to be easily used by a large target audience with the only prerequisite of owning a mobile phone.

## **The Tetris Effect; issues in excessive gaming**

The most played game up to this day is Tetris, a game developed in 1984. The reason why the game is so popular with no chance of being toppled down the leader board any time soon, is due to its simplicity and the effect that occurs caused by playing the game for a longer period of time. Users that devote themselves for a long period of time in playing Tetris have experienced the Tetris Syndrome / Effect, an effect that causes people to involuntarily visualize shapes, patterns, and even experience dreams related to the game pattern (Earling, 2008). Similarly to seeing a bright yellow highlighted text on a screen and once looking away towards a white wall there is a yellowish rectangular blob in the middle of one's vision.

The falling of the tetrominoes from the top of the screen and the correct placement at the bottom creates a satisfying feeling of completing something. The game is simple, yet challenging and it increases brain activity and focus, training it into performing more efficiently during the game the more it's played (Haier, 2009). Moderate playing can increase cognitive thinking, critical thinking, reasoning and processing, but it can result into an involuntary visualization of the game, similarly to compulsive solving of Rubik's Cube. The Tetris Effect has been compared to the effects of coding on a mental level, and has been even described by mathematicians who dream of equations, sequences, etc. such as Srinivasa Ramanujan.

Many video games have been known to cause a similar effect, but not with the same level of intensity, therefore the effect lasts for a short time period and some game companies aim to re-ignite that effect by releasing more and more content. Gamers have experienced specific events occurring in their everyday lives that they have seen in video games, such as markers, score tables, in-game tips, background music, in-game sounds, but also the rewards, such as points, mini games, prizes for completing the weekly challenge etc. (Richter, Raban, & Rafaeli, 2015). Depending on the user and depending on the game, the Tetris effect can occur and it can affect the way people do things in their actual lives.

The performing of an action repeatedly, not just during gaming, can lead to involuntary actions even when away from them. Some computer users, mostly people who are handy when it comes to using keyboard shortcuts have found themselves attempting to press Ctrl + Z when wanting to undo an action such as writing the wrong word on paper (Terdiman, 2005). Unified commands, which work in multiple platforms and are subject to being often times used, have been known to cause those involuntary actions.

Based on a large scale study regarding the addictive use of social media and video games, it is far more likely for males to develop an addiction towards video games, whereas females are more likely to have a similar relation with social media (Andreasen, 2016). Aside from the gender based associations, many users who are prone to developing an addiction have had or are undergoing traumatic events or mental health issues. Users with social anxiety are more likely to get involved in social media, since their inability of social interaction and fear of being judged and negatively evaluated by others (Richards, 2013) By being able to manipulate the way other people perceive them, anxious users are able to forge an identity they are comfortable with, which others accept.

Depressed users, on the other hand, are far more likely to be vulnerable to become addicted to video games. All types of depression create a disinterest in overall “normal” activities (Hall-Flavin, 2017) and its effect can last for a short period of time or it can last for years, if improperly handled. Withdrawal from social situations is understandable, and depressed people do need time to recover. Video games provide control of a fictional situation in an isolated environment. This escapism from the real world can become far more comfortable than bearing a burden and recovery can be difficult. Once a person adapts into the environment they can control, meet people online with whom they have interaction and exchange, the return to the real world where those bad experiences have occurred can be difficult. Yet, escapism is not a phenomenon that has occurred with the appearance of video games. Even before they have appeared, troubled people have been finding ways to escape their reality by mentally delving into something abstract such as literature, daydreaming, drugs; as well as physically by going away to a another physical location.

## **Board gaming, a viable replacement? Open questions and conclusion**

Board gaming has a similar development approach to video games. Board gamers highly value games with a replayability value, a term coined based on how many times a



game can be played with different scenarios and a different end. When it comes to designing a board game, designers aim to develop a product, that not only will reserve a spot on peoples' shelves, but also it will be a worthwhile experience worth the cost of development and distribution. Video games aim to achieve the same thing; however the accessibility and awareness of video games make them a lot more popular in comparison to board games. Additionally, board games encourage users to interact, whereas video gamers may not be able to perform such an activity due to the fact that they are more comfortable in an environment where there are no other peers present.

The answer to the title question is no. Video games are not exclusively designed to be addictive. Primarily video game designers and developers aim to share an experience, deliver a story, create a pastime activity that could provide users with a temporary boost of dopamine. As discussed, dopamine, which is very closely related to the reward centre, is produced when people are doing certain activities that end up making them satisfied and/or happy. Similar effects are seen when users are using social media, perform various sport activities or when even doing drugs. Video games and social media are providing a stable amount of daily intake of dopamine, which is very easy to access and not very demanding to perform.

Video games give users an audio-visual representation of a world they don't live in, actions don't have permanent consequences, real-life physics don't apply, where actions and tasks are straightforward, and rewards are guaranteed once completed. The granting of a safe environment gives players provide a safe environment for you where you're not really concerned with the long term effects of their actions. Gamers are given a more streamline experience where they only focus on what needs to be done, that could be the mission or rewards. At the same time they don't stop mid-game to pay their bills or go to school or go to work in the game. They don't have so many tasks in the virtual world, but the feeling of accomplishing something is far greater than in the real world. Additionally, the game success is presented to other players therefore you are receiving higher importance, whereas in the real world self-boasting and bragging are considered self-centred traits that people avoid. Yet, people want their actions to be acknowledged and presented to others that one has successfully completed, for example, eaten lunch, achieved 10 000 footsteps, ran 10 kilometres, managed to have a 50 day working streak without calling a sick day etc.

Having a reward system in real life could work great, in order to motivate people to become better versions of them, however at some point it will be doing the opposite. Instead of boosting people, it will start downgrading them, creating an obsessive relationship with that system. We will aim to reach the achievement, at the cost of our well-being and the impossibility of reaching a state of wellness. Such socially constructed systems have been presented across many shows and movies, like Black Mirror.

Going back to the answer why video games are not designed to be exclusively addictive is connected to the acquiring of an audience. Large scale games with a huge audience create an increase of demand. More content, more characters, more of everything. This calls upon more frequent updates, in order to have customer retention. By performing numerous actions to have a certain retention, companies are surpassing the point of keeping their current customers and are entering the phase of gaining more and more new users. Once that is surpassed, the game is no longer an experience or a fun time, it's a business that needs to be fed.

But companies are striking back. A joined website between Activision (Destiny, Call Of Duty), Blizzard Entertainment (StarCraft, World Of Warcraft) and King Digital Entertainment (Candy Crash Saga) is offering consulting and help users who believe they need it. The three companies, whose games have received a huge audience and with it a large amount of media attention regarding the addictive nature of their games, have decided to collaborate with the White House of the United States of America to help users cope with their traumatic events, help them recognize an addiction in development and even talk to them about their problems (ActivisionBlizzard, 2018).

Not only do they aim to help and educate possible addicts, but also they offer help on identifying an addict to others, such as worried parents. This shows awareness within companies of their users and the possible issues that have led them to develop an addiction within their games. In addition to aiming to fight addiction through focusing on mental health, Blizzard Entertainment is also fighting causes that could lead to possible traumatic experiences such as breast cancer. By playing Overwatch and by purchasing a Pink skin for the character Mercy (Blizzard, 2018), players contribute to cancer research charities. This not only breaks the boundary of gender based stereotypes towards female players, but it also creates awareness in male players towards their female counterparts.

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