



GAMING'S EFFECTS ON YOUNG BRAINS

RISK FACTORS & VIDEO GAME DESIGN



Video gaming is the most popular leisure activity in the world. Billions of gamers enjoy the entertainment, challenge, and reward of video games.

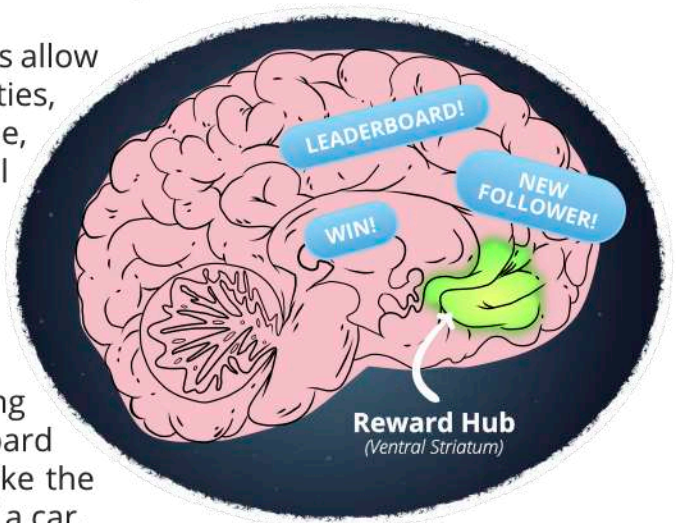
Video games are used to teach skills such as math, reading, and problem-solving, and so youth are often exposed to them early in their development. Most youth continue to game into adolescence and early adulthood.

WHY DO OUR BRAINS RESPOND SO STRONGLY TO VIDEO GAMES?

While most people enjoy video games, they are particularly attractive to youth and emerging adults. When you're young, your brain is programmed to seek out new experiences.

Gaming draws you in because it's new and exciting. Games allow you to explore different environments, create new identities, and try things you could never do in real life. For some, video games are a main pathway to social connection, skill building and self-confidence. Certain gamers can even get money and fame by hosting their own social media channels or competing in e-sports (e.g., on Twitch or YouTube).

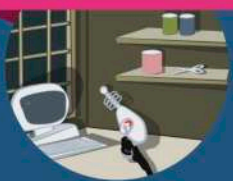
The reward network of the brain lights up for winning experiences including seeing your name on the leaderboard or getting 'followers' on your social media channel. It's like the rush of riding down a hill fast or flooring the gas pedal of a car.



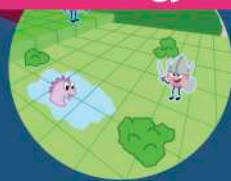
WHAT TYPES OF VIDEO GAMES ARE THERE?

Though Tetris and Minecraft are still some of the best-selling video games of all time*, there are many types of games on the market, including:

Shooter



Strategy



Sports



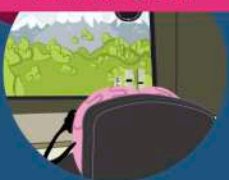
Roleplaying



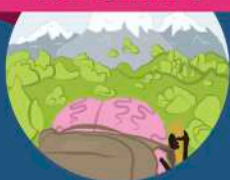
Puzzle



Simulator



Adventure



Fighting



Point & Click



Platformer



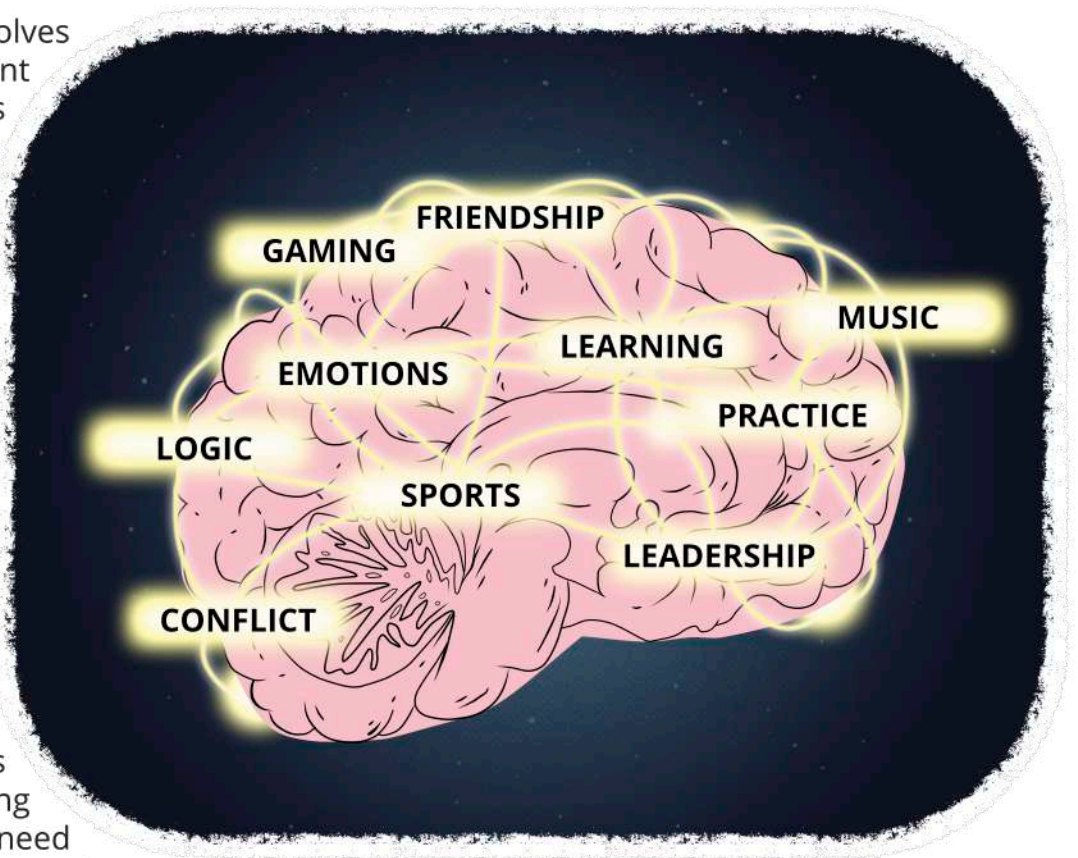
* For more details on the types of games and references, see the Brain Connections Gaming Primer on our website.

THE BRAIN GROWS WITH ALL KINDS OF EXPERIENCES

The brain's architecture evolves by exposure to different situations. These experiences build pathways - starting with simple connections at first and then complex networks. As you grow, the connections between different brain areas become more efficient. During the brain's pruning - or fine-tuning - process, it really responds to exciting, challenging, and complex experiences.

Gaming is only one of those experiences, but you need many others to build your brain's network of circuits which will give you the strong and flexible foundation you need to take on the world. These experiences

can include friendships, learning, sports, managing conflicts, leadership, practicing a skill, coping with emotions, music, movement, problem-solving, and dealing with the unknown.



HOOKS AND HARMS

As much as games are fun and appealing, they also have risks and some people are more vulnerable.

Experiences such as conflict, loneliness, anxiety, attention deficit-hyperactivity disorder (ADHD), mood and emotional issues, checking social media a lot, poor school performance, low self-esteem, bullying,

and long hours gaming have all been identified as factors that make someone more likely to develop a gaming problem. Factors that could protect people from harm include social supports, good peer relationships, as well as school engagement and self-control.

Aside from these personal vulnerabilities, the games, themselves are designed to keep you playing and wanting more.



TIME HOOKS

It's easy to spend a lot of time gaming. Getting absorbed or immersed in gaming is called 'flow'. Flow is a trance-like state where you become super focused on the game, get into extreme levels of play, lose track of time, and disconnect from your feelings, needs and life outside the game. Flow happens in gambling, too. People lose track of the money and time they spend on gambling and the consequences, including debt, conflict, missed opportunities, only feel real afterwards.

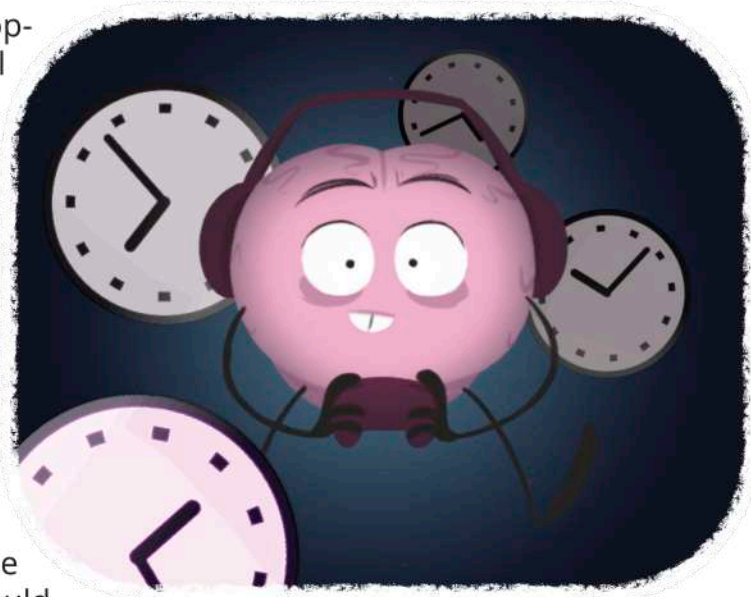
It's the top-down control network in your brain that is responsible for putting on the brakes and shifting your focus where it needs to go next. But, in the brains of youth and emerging adults, connections

between the top-down control network and the reward network are still fine-tuning.

That's why it can be hard to stop or draw your attention away from the game; you may not even see why you should.

The outside world doesn't feel all that important. In the game, you are a legend. You have control. That's hard to beat in the real world.

If you try to break the gaming flow, it can be uncomfortable,



like being pulled out of a dream. You might feel irritable or sad. Anxiety flares as you face what's been piling up in the real world. It's hard to interact with people face-to-face - it feels simpler to escape back into the game.

MONEY HOOKS

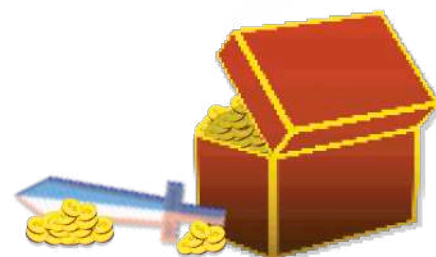
Certain games make it difficult to progress unless you pay money to improve your play. Loot boxes and other microtransactions can unlock skills, weapons, characters, or

equipment. But it's a gamble since you don't always know what you're going to get for your money, and you can easily end up spending more than you can afford. These kinds of in-game purchases are linked to the development of gaming and gambling problems.

As another example, gamers often invest in cosmetics (such as skins) to customize their avatars. However, acquiring skins - especially rare ones - can cost a lot of

time and money, and there is the risk of losing them when servers shut down, games are de-listed, or games have permadeath (i.e., the character, instead of being respawned, is considered dead and cannot be used anymore).

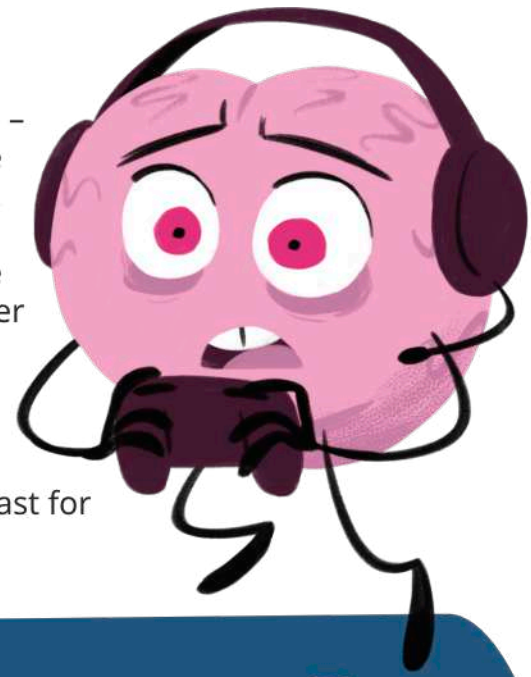
Games represent a significant early entry point to gambling for young people, which is a cause for concern.



WHEN GAMING BECOMES A PROBLEM

By the time gaming becomes a problem, it's like you're in a cave – never looking out. The longer you're in the cave, the scarier the outside can feel. You lose perspective and skills for day-to-day living. Your urge to game is strong and your mood can worsen when you aren't gaming, to the point of depression. But, even when you are gaming, your mood can suffer, especially if you are losing or other gamers humiliate or harass you.

The World Health Organization (WHO) has a category in their International Classification of Diseases (ICD) called 'gaming disorder'. The diagnosis is given when these harms are severe and last for at least a year.



SIGNS OF A GAMING PROBLEM

Preoccupation with video games

e.g., constantly thinking or dreaming about gaming



Prioritizing gaming over other activities

e.g., decreased interest in school, work, other responsibilities, or hobbies



Losing Control

e.g., frequent gaming "binges," playing at every opportunity; uncontrolled spending on games, accessories, micro-transactions, etc.



Deception

e.g., lying to yourself and others about play frequency, time or money spent, and/or stealing money or credit card information



Continuing (Despite social problems)

e.g., negative changes to self-care like poor sleep / nutrition / hygiene, conflict with others, etc.



Escape

e.g., distorted perception of time when playing, playing to escape problems



Withdrawal

e.g., becoming irritable, anxious, or depressed when game time is limited



Harm

to relationships, work, education, or significant career opportunities



CONNECT WITH THE WORLD OUTSIDE

The good news is that the brain is always changing as it takes shape with different experiences. It helps to get out of the cave, exploring and connecting with the world around you. When you take regular breaks from gaming and stay away from games that have caused problems for you, you can have more control, recognize when urges take over and have the strength and ability to walk away when you need to.

Taking care of your brain in this way will help your brain to take care of you.



WAYS TO REDUCE THE HARM

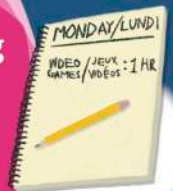


Turn Off Devices
at a certain time every night; don't take tech with you to bed

Connect
with friends and loved ones outside of gaming
e.g. try a tech-free meal together, a new hobby, or take a walk together

Use a Daily Log

i.e., to write down your thoughts and emotions while playing and not playing



Set Limits
about the number of hours you want to play, on how much money you want to spend, and use an alarm to remind you

Try Offline Activities

i.e., Instead read a book, go for a walk, build a puzzle, make some art, play music, etc.



Set Priorities

i.e., homework or responsibilities before gaming



Self-Care

i.e., eat healthy meals away from the screen, take care of hygiene, get enough rest and sleep



Speak
to a healthcare provider or counsellor about your concerns



Play Games
that haven't caused problems for you in the past



ACTIVITY:

1. Why are loot boxes in games risky?

- a. Loot boxes are a form of gambling
- b. You could lose a lot of money over time
- c. They're linked to gambling and gaming problems
- d. All of the above

2. Which of the following IGD criteria for gaming disorder is reflected in this statement:

You tell people that you're not gaming when you are, and you aren't honest about the amount of time and money you spend gaming.

- a. Withdrawal
- b. Losing control
- c. Deception.
- d. Escape

3. Which brain processes occur as the brain is developing?

- a. Building connections and pruning
- b. Elongating and truncating
- c. Bottom-up Control and Top-Down Reward
- d. None of the above

ANSWERS: 1. ALL OF THE ABOVE, 2. ESCAPE, 3. BUILDING CONNECTIONS AND PRUNING

GOING FURTHER:

4. How would you know that gaming or gambling has become a problem for you?

5. How has gaming or gambling changed your values and how you spend your time?

6. In your life, what are some ways you can reduce gaming or gambling harms?

TAKE HOME MESSAGE

Our brains like video games because they are fun and rewarding. Developing brains need lots of experiences to grow and become efficient. Games are but one of those experiences. Some people are more vulnerable to gaming problems. Also, games are designed to keep you playing. You can easily end up spending more money and time than you can afford, especially when there are gambling features in the game. *If you notice the signs of a gaming or gambling problem, it's important to take a step back, reach out for support and give your brain a break by engaging in experiences outside the game.*



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