



## CAN VIDEO GAMES IMPROVE THE ABILITY TO FOCUS?

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### YOUNG REVIEWERS:



ASHLEY

AGE: 15



DAVID

AGE: 12

Have you heard of ADHD? It stands for attention deficit hyperactivity disorder, a condition that makes focusing difficult. Under the right conditions, video games can be used to treat ADHD. People with ADHD often have a harder time completing tasks than people without ADHD. When playing a serious video game designed as a treatment, a person with ADHD can improve their ability to concentrate on completing a task. This works when video games are designed to reward the player after each success, because it trains the player's brain to focus on one task at a time. In this article, we will provide an overview of attention and ADHD, discuss the benefits and risks of video games, describe the features of serious games, and highlight the first video game that doctors prescribe to kids with ADHD.

## ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

A condition that makes it difficult for people to focus.

## INTRINSIC MOTIVATION

The ability to complete a task because of the desire to do so, not because of an external award.

## EXTRINSIC MOTIVATION

Doing something to be rewarded in some way.

## GENETIC

When referring to health conditions like ADHD, "genetic" means caused by the person's genes which were passed down to them by their parents.

## ACQUIRED

When referring to health conditions like ADHD, "acquired" means it was caused by some exposure, event, or injury rather than being passed down from the parents (as in genetic conditions).

## PROCRASTINATE

To avoid a task that needs to be done.

## ATTENTION AND ADHD

Dean notices that his friend Maurice is always playing one specific video game after school. Dean asks Maurice why he likes the game so much, and Maurice explains that it helps him focus better in class. These special types of video games have actually been recommended as a form of treatment for Maurice's **attention deficit hyperactivity disorder (ADHD)**!

What exactly is ADHD? People with ADHD have low levels of something called **intrinsic motivation**, which can be defined as the drive to complete a task because it is internally rewarding. You are intrinsically motivated if you find the task fun or enjoy the challenge. This contrasts with **extrinsic motivation**, which is being motivated by an outside source, like a sense of duty or a desire to get a prize for completing the task. For example, intrinsic motivation may cause someone to travel because they love exploring the world and connecting with others. On the other hand, extrinsic motivation may cause someone to travel because they must do so for work or they get paid to do it. A low level of intrinsic motivation causes people with ADHD to become bored quickly [1]. ADHD affects about 5% of kids, making it one of the most common conditions in young people [2].

There are two types of ADHD: **genetic** and **acquired**. Genetic ADHD is passed on from parents to their children, through the genes. Acquired ADHD happens as a result of an event or incident, such as a traumatic brain injury [2]. Like with Maurice, certain video games can be used to treat kids with ADHD. In this article, we will describe the scientific evidence related to the benefits and risks of video games, and discuss how games can be used to treat ADHD.

## THE BENEFITS OF VIDEO GAMES

Before we begin, let me ask you an important question: do you like Minecraft, The Legend of Zelda, Super Mario, or other video games? Many kids love video games, but a lot of parents think that video games are harmful and addictive. However, recent studies have shown that is not always the case! Video games can help people with ADHD train their brains to function better. Are you wondering how?

People with ADHD can have trouble concentrating on one task at a time, which is where video games come into play. Most video games are goal oriented: the player is given a task and then rewarded after the task is complete. This reward system helps kids improve their intrinsic motivation by directing their attention to accomplishing one task at a time. People with ADHD struggle with this and they are more likely to **procrastinate** and leave tasks unfinished [1, 3]. Video games help because many are designed to bring in new challenges that inspire

their players to keep going. It is important to note that not all video games can be treatments for ADHD (more on this later). For now, we want to emphasize that there is growing evidence of video games' positive effects, including how they can help increase a person's focus and attention span [1].

## THE RISK OF VIDEO GAMES

Kids with ADHD are at a higher risk of becoming **addicted** to video games...so there is some cause for parents' worries. Certain studies have shown a relationship between ADHD and video game addiction, but the extent of the relationship is not fully understood [3]. Video game addiction can impact physical health if players sit still for too long (as seen in [Figure 1](#)) [2]. For example, the desire to keep playing a video game on the couch all day could lead to a loss of interest in other things, like hanging out with friends at the playground. The good news is that people can get the benefits of video games while minimizing the risks, if they are intentional about how long they play for. It might be helpful for kids to set a timer when they start playing, to remind them it is time to switch to another activity like playing outside. The ability to work efficiently within certain blocks of time is a great skill to have and can be developed and practiced with good video game playing habits. Building time management and efficiency through video games may be especially helpful to people with ADHD since these are common problems in ADHD. Limiting video game time might sound hard, but doing so actually helps people to enjoy them more in the long run [3].

### ADDICTED

Unable to stop doing/taking something because of mental and or physical dependence.

### Figure 1

Playing video games for long periods of time, like 3 h or more, is not healthy and can lead to addiction.



Figure 1

## SERIOUS VIDEO GAMES

Serious games are any type of games (e.g., video games, board games) designed with a primary goal beyond just being fun to play. This includes games that work as treatments! What is the best serious video game to help with ADHD? Well, there is no one serious game that is the best. Rather, there are a bunch of games that have the right features to help with ADHD. For a serious game to be useful for ADHD, it must meet three requirements [3]. First, the game must be easy to understand. Second, the game must not be too hard to remember. Last but not least, each level must get a little harder (as shown in Figure 2). These three features keep players focused and involved for longer and longer. It is important for these games to be challenging, but not impossible—that way, players do not get frustrated and stop playing. If a video game has these characteristics, it can help train the brain to have a longer attention span!

**Figure 2**

Important aspects of serious video games used to treat conditions like ADHD include being easy to understand and getting harder with each level.

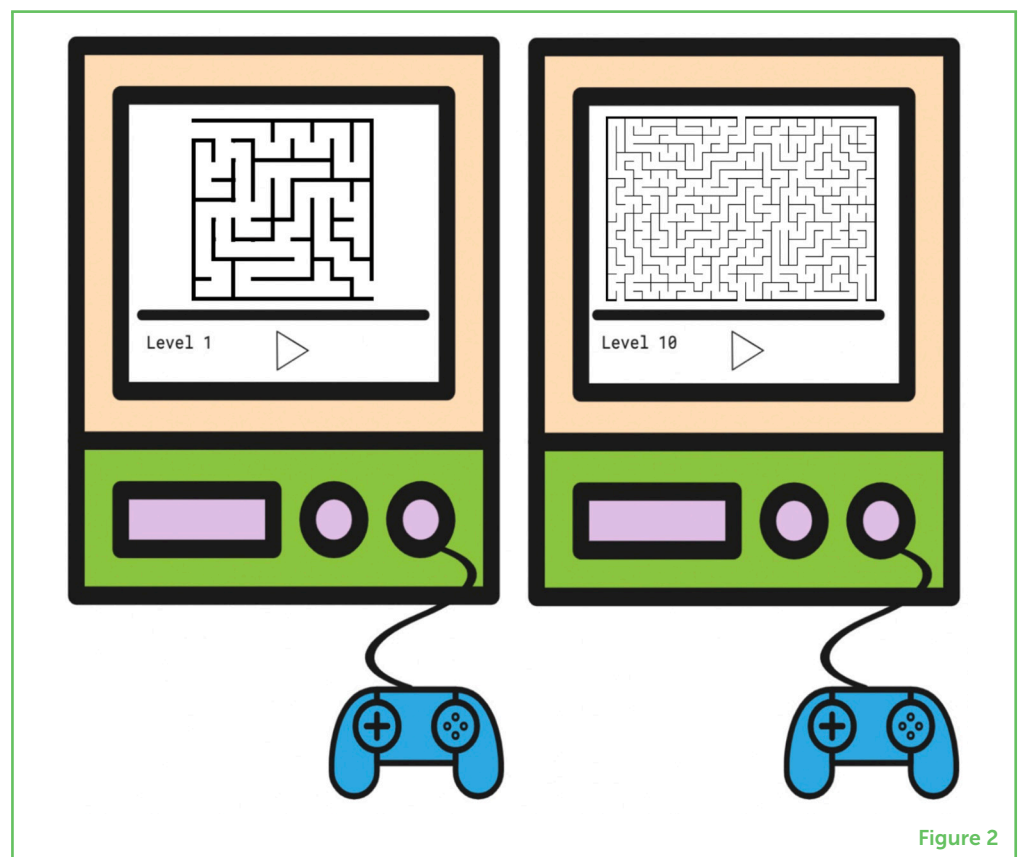


Figure 2

One serious video game that was developed with ADHD in mind is The Secret Trail of Moon (TSTM). In TSTM, there are mini-games that take place in the forest because virtual interaction with nature can also help people with ADHD [3, 4]. There are other video games being studied as possible ADHD therapies. For example, EndeavorRx was developed to improve the player's attention by encouraging them to accomplish the game's goals in a fun and engaging way. A group of 8–12-year-old patients with ADHD took a test that measured their



attention before they played EndeavorRx. After playing the game for 1 month, the patients did better on their second test, proving that playing this game helped patients improve their focus. The game was so effective at treating ADHD that EndeavorRx became a U.S. Food and Drug Administration (FDA)-approved video game for ADHD therapy in the United States, meaning that doctors can prescribe it to kids to help with attention span [4]. In the future, additional video games may have sufficient evidence to become FDA-approved therapies as well.

## CONCLUSION

As you can see, video games often have a bad reputation, but science is now showing that they may not be harmful and might even be better than a neutral way to pass time. Some video games can even be a form of ADHD treatment! Still, it is important to be careful with this method, as people with ADHD are more likely to become addicted to video games [2, 3]. Researchers are aware of this and are making video games specifically designed to treat ADHD, instead of repurposing existing games. With time and additional research to demonstrate their benefits, more video games may soon become used as proven ADHD treatments.

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## YOUNG REVIEWERS

### ASHLEY, AGE: 15

Ashley is a 15-year-old sophomore. She enjoys reading informative articles and playing with her two cats (Bean and Yuki) and dog (Lola).

### DAVID, AGE: 12

I am 12 years old and really like to read, to learn and to write. I also enjoy to listen to Hip-Hop music, to build legos, and to watch comedy and horror movies. I do not do many sports but I would love to learn martial arts, I used to swim and wrestle. I also try to collect comic books of every genre.

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I am an undergraduate student pursuing a major in international relations and global studies with a minor in Korean. I enjoy medical-related research and serving my community. I intend to pursue a medical career as a physician in the future. In my free time, I enjoy reading books and dancing!

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