

PHENOMENON OF GAMING AND ITS RELATIONSHIP TO ANXIETY AND DEPRESSION

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DISCLOSURE

Carolyn Rubenstein, Ph.D. is a shareholder in eSports Now, a competitive video gaming organization, and advises the organization on infrastructure related to player mental health.

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**Have you played a video game in
the last month?**

Do you think Internet Gaming Disorder should be included as a diagnosis in the DSM-5?

Client is a 13 year old male who carries a diagnosis of ADHD and generalized anxiety disorder. He attends an alternative school on weekdays and plays Fortnite 10 hours per weekend day, stopping only for lunch when his mom forces him to eat. His mom prohibits video game use on school days, which the client complains about, but does not disobey. Do you consider his gaming usage to be:

- **Developmentally appropriate**
- **Concerning**
- **Indicative of a gaming addiction**

Client is an 18 year old high school graduate attending a community college and working part time. He plays video games 12-18 hours a day, often through the night. He was recently signed to a professional esports team after becoming the highest ranked player in a new game. He has struggled socially at different points in his life but has no clinical diagnosis. Do you consider this to be:

- **Developmentally appropriate**
- **Concerning**
- **Indicative of a gaming addiction**

Client is a 15 year old male who plays video games 10-12 hours on weekend days. Although he is not allowed to play games himself on weekdays, he watches other players on streaming services such as Twitch 3-4 hours a day after school. Would you consider his gaming behaviors to be:

- **Developmentally appropriate**
- **Concerning**
- **Indicative of a gaming addiction**

VIDEO





OVERVIEW

GAMING 101

- History of gaming
- Gaming stats
- Game genres and ratings

RESEARCH OVERVIEW

- Latest psychological research findings on gaming and its relationship with anxiety and depression

INTEGRATING GAMING INTO TREATMENT

- Case vignettes

DISCUSSION

- Implications for researchers and clinicians

BEYOND ADAA

- Resources

GAMING 101



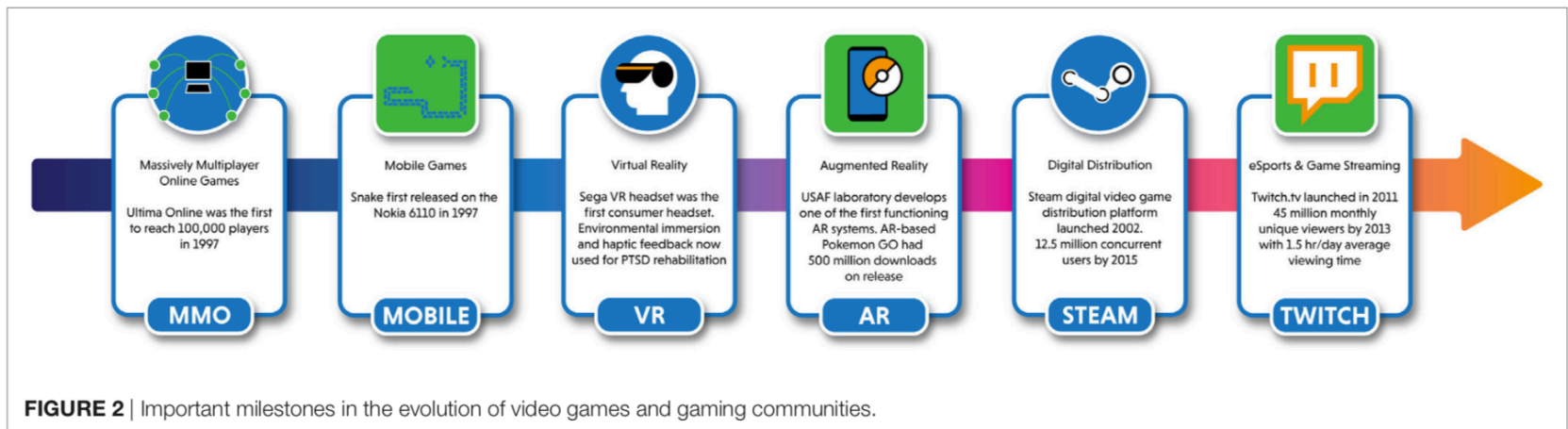
WHICH IS FORTNITE?



HISTORY OF GAMING

Competitive gaming usually associated with the release of networked first person shooting games (Wagner, 2006)

- 1993 released game “Doom”
- 1997 several professional and semi-professional online gaming leagues formed [Cyberathlete Professional League]



HISTORY OF GAMING





id
SOFTWARE

id SOFTWARE, ©1993

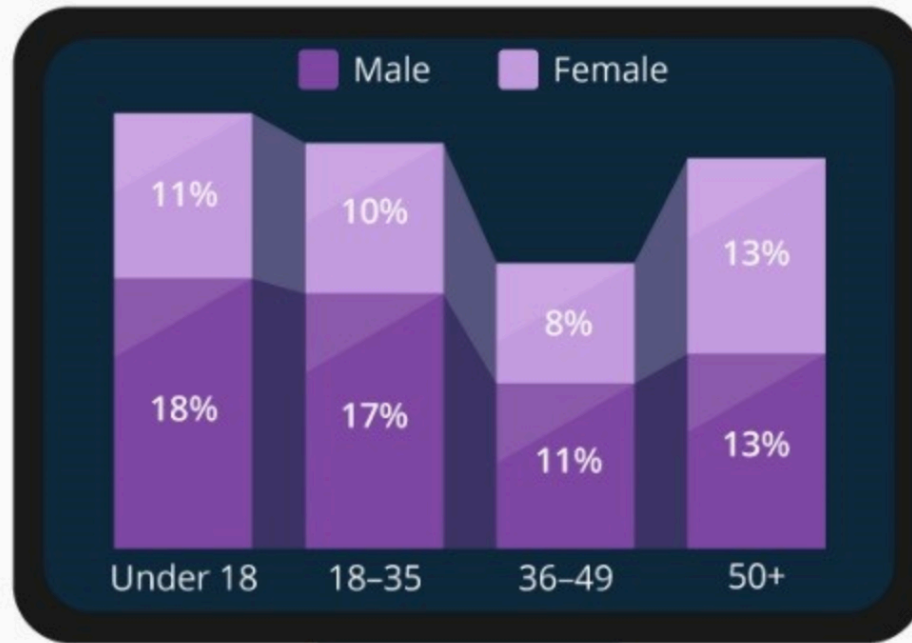


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STATS

Gaming Is Not a Question of Age or Gender

Age and gender breakdown of people playing computer and video games in the U.S. in 2017



The average female gamer is 37 years old.



The average male gamer is 33 years old.



STATS

- 43% of American adults say they play video games (Pew Research Center, 2017)
- Most American teens play video games (Pew Research Center, 2018)

Most teen boys and girls play video games

% of U.S. teens who say they ...



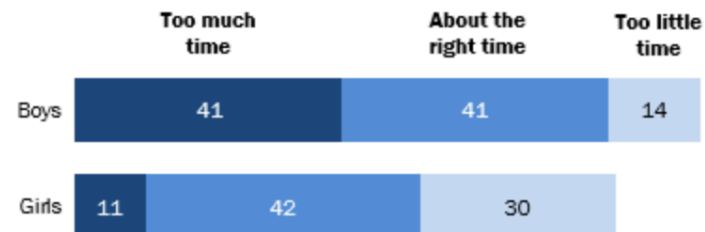
Source: Survey conducted March 7-April 10, 2018.

"Teens, Social Media & Technology 2018"

PEW RESEARCH CENTER

41% of teenage boys say they spend too much time playing video games

% of U.S. teens who say they spend ___ playing video games



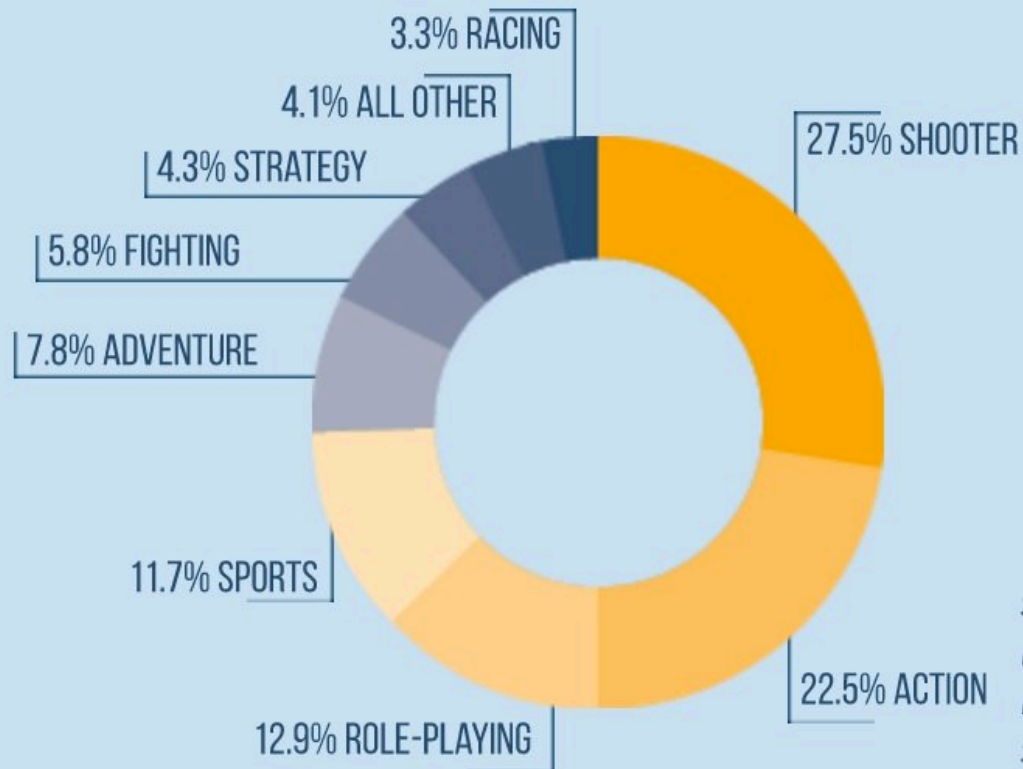
Note: Respondents who do not play video games are not shown.

Source: Survey conducted March 7-April 10, 2018.

PEW RESEARCH CENTER

VIDEO GAME GENRES

BEST SELLING VIDEO GAME SUPER GENRES OF 2016 BY UNITS SOLD



Source: The NPD Group/
Retail Tracking Service/
Digital Games Tracking
Service

VIDEO GAME RATINGS

Entertainment Software Rating Board (ESRB)

- Rating Categories
 - Suggest age appropriateness
- Content Descriptors
 - Indicate content that may have triggered a particular rating and/or may be of interest or concern
- Interactive Elements
 - Inform about interactive aspects (e.g., if users can interact, sharing of user location, if unrestricted internet access is provided)

RATING CATEGORIES



EARLY CHILDHOOD

Titles rated **EC - (Early Childhood)** have content that may be suitable for ages 3 and older. Contains no material that parents would find inappropriate.



EVERYONE

Titles rated **E (Everyone)** have content that may be suitable for ages 6 and older. Titles in this category may contain minimal cartoon, fantasy or mild violence and/or infrequent use of mild language.



EVERYONE 10+

Titles rated **E10+ (Everyone 10 and older)** have content that may be suitable for ages 10 and older. Titles in this category may contain more cartoon, fantasy or mild violence, mild language, and/or minimal suggestive themes.



TEEN

Titles rated **T (Teen)** have content that may be suitable for ages 13 and older. Titles in this category may contain violence, suggestive themes, crude humor, minimal blood and/or infrequent use of strong language.



MATURE

Titles rated **M (Mature)** have content that may be suitable for persons ages 17 and older. Titles in this category may contain intense violence, blood and gore, sexual content, and/or strong language.



ADULTS ONLY

Titles rated **AO (Adults Only)** have content that should only be played by persons 18 years and older. Titles in this category may include prolonged scenes of intense violence and/or graphic sexual content and nudity.



VIDEO GAME KIDS GOING CRAZY



NAVY YARD SHOOTER 'OBSESSED WITH VIOLENT VIDEO GAMES'
DRUDGE REPORT



RESEARCH FINDINGS

Aggression

- Many studies point to a correlation between exposure/playing violent video games and negative actions such as aggressive behaviors
- Time spent playing violent games associated with increases in aggression (Lemmens, Valkenburg, & Peter, 2011)
- Greater competitive video game play predicted higher levels of aggression over time, after controlling for previous levels of aggression (Adachi & Willoughby, 2016)





VIDEO GAME

Video game play is only **ONE RISK FACTOR** to consider



NAVY YARD SHOOTER 'OBSESSED WITH VIOLENT VIDEO GAMES'
DRUDGE REPORT



RESEARCH FINDINGS

Aggression

- Many risk factors for aggression:
poverty, abuse, psychological disorders, gang membership, drug use, media violence, inflated self-esteem
 - In order for a “normal” child to become seriously violent, s/he would need to have several of these risk factors present (Gentile & Sesma, 2003)
 - No single risk factor is typically strong enough to cause such an extreme behavior as a school shooting

RESEARCH FINDINGS

Negative Associations

- Video game play may replace time that otherwise could be spent in more physical activity
 - More than 2 hours of video game play/day associated with insufficient physical activity (Trang et al., 2013)
- Impact on sleep
 - Video-game use before bedtime has been linked with poor sleep outcomes for adolescents; however, experimental evidence to support this link is sparse (Weaver, 2010)
 - Video-game playing can increase both physiologic arousal and cognitive alertness, with these phenomena shown to impair efforts to fall asleep (Ivarsson et al., 2009)

RESEARCH FINDINGS

Negative Associations

- Possible correlation with attention problems
 - More children with ADHD play video games than peers (Gentile et al., 2012)
- Gaming frequency associated with internalizing problems
 - Maladaptive coping partially mediated relationship b/w video game "addiction" and sx of depression and anxiety (Loton et al., 2016)
 - Gender and social context moderate relationship for older adolescents between playing video games and anxiety (Ohannessian, 2018)
- Adolescent heavy gamers had more depressive symptoms than normative gamers (Colder Carras et al., 2017)

RESEARCH FINDINGS

Positive Associations

- Puzzle video games can improve players' moods, promote relaxation, and reduce anxiety (Russoniello et al., 2009)
- Emotion regulation benefits
 - Games elicit positive and negative emotions
 - Game play promotes ability to flexibly and efficiently reappraise emotional experiences, teaching players the benefits of dealing with frustration and anxiety in adaptive ways
 - Less adaptive strategies (e.g., rumination) are not rewarded by video games (Granic, Lobel, & Engels, 2014)

RESEARCH FINDINGS

Positive Associations

- Adolescent boys and lower levels of anxiety (Ohannessian, 2018)
 - Social connectedness (playing video games with others)
- Augmented reality games (e.g., Pokémon GO) promote physical activity (Althoff et al, 2016)
- Online interactions and communities promote sense of connectedness and belonging

DISCUSSION

How do we determine healthy vs problematic video game usage?



ASSESSMENT

- Internet Gaming Disorder Scale-Short Form (IGDS-SF9; Pontes and Griffiths, 2015)
- Computer Engagement/Addiction Scale (CEAS; Charlton & Danforth, 2007)
- Technology Use Questionnaire (Ohannessian, 2009)
- Video game Addiction Test (VAT; van Rooij et al., 2012)
- Video Game Functional Assessment-Revised (VGFA-R; Buono et al., 2016)
- Video Game-Initial Questionnaire (VG-IQ; Feldmeier, 2017 in Beresin & Olson, 2019)
- Game Addiction Scale (Lemmens et al., 2009)

.... and many more assessments available

VIDEO GAME ADDICTION TEST

Item^a

How often ...

- 1 ... do you find it difficult to stop gaming
 - 2 ... do you continue to use the games, despite your intention to stop?
 - 3 ... do others (e.g., parents or friends) say you should spend less time on games?
 - 4 ... do you prefer to game instead of spending time with others (e.g., friends or parents)?
 - 5 ... do you not get enough sleep because of gaming?
 - 6 ... do you think about gaming, even when you're not online?
 - 7 ... do you look forward to the next time you can game?
 - 8 ... do you think you should be gaming less often?
 - 9 ... have you unsuccessfully tried to spend less time on gaming?
 - 10 ... do you feel restless, frustrated, or irritated when you cannot game?
 - 11 ... do you rush through your homework to play games?
 - 12 ... do you neglect to do your homework because you prefer to game?
 - 13 ... do you game because you are feeling down?
 - 14 ... do you game to forget about problems?
-

INTERNET GAMING DISORDER

- DSM-5: listed under “conditions for further study” which warrants more clinical research before formalizing it as a mental disorder
- Proposed as a behavioral addiction

Persistent and recurrent use of the internet to engage in games, often with other players, leading to clinically significant impairment or distress as indicated by five (or more) symptoms in a 12-month period

INTERNET GAMING DISORDER

Five (or more) symptoms within 12-month period

- Preoccupation with gaming
- Withdrawal symptoms when gaming is taken away or not possible (sadness, anxiety, irritability)
- Tolerance, the need to spend more time gaming to satisfy the urge
- Inability to reduce playing, unsuccessful attempts to quit gaming
- Giving up other activities, loss of interest in previously enjoyed activities due to gaming
- Continuing to game despite problems
- Deceiving family members or others about the amount of time spent on gaming
- The use of gaming to relieve negative moods, such as guilt or hopelessness
- Risk, having jeopardized or lost a job or relationship due to gaming

Source: American Psychiatric Association

PROBLEMATIC GAMING?

Excessive Gaming

Reflects behavior that is disproportionate but **not necessarily problematic**

Pathological Gaming

Persistent inability to control excessive gaming habits **despite associated social or emotional problems** (Lemmens et al., 2009)

- Loss of control, compulsion, continued use despite negative consequences
- Male adolescents most likely group to show signs (Ha et al., 2007)

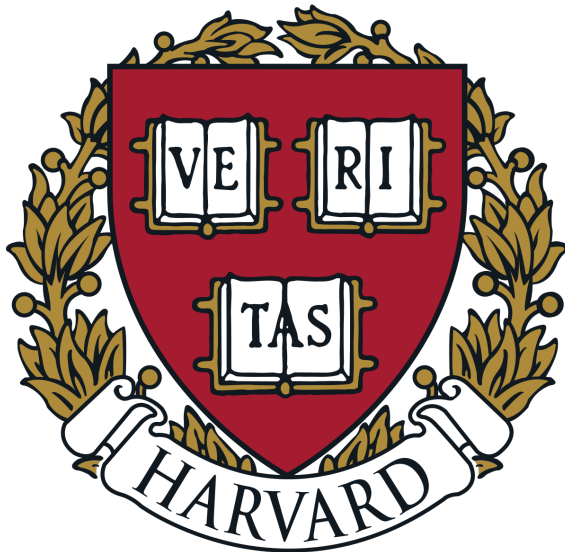
PROBLEMATIC GAMING?

Questions to informally assess:

- Do you spend all day thinking about a game?
- Do you say you are not going to play video games but still end up playing them?
- Do you set a limit for the amount of video games you will play, but consistently exceed this limit?
- Has your physical health experienced sig consequences due to video gaming? (e.g., weight gain/loss, neglecting to exercise)
- Has your social life experienced negative consequences due to gaming? (e.g., losing friends, avoid seeing friends so you can play video games)
- Do you feel that you can't stop playing video games because you can't control your own behavior?
- Have you played games to forget about real life?
- Do you have fights with others (e.g., family) over your time spent on games?

CASE VIGNETTE

“I’m afraid my son won’t get into Harvard because he plays Fortnite”



CASE VIGNETTE

“My husband plays video games instead of taking care of our baby”



VIDEO GAME- INITIAL QUESTIONNAIRE

Name: _____ Age: ____ Gender ____ Date: _____

CHECK THE TYPES OF VIDEOGAMES YOU PLAY (see examples)

- | | | |
|--------------------------|-----------------------------|--------------------------------------------------------------------|
| <input type="checkbox"/> | Shooting games | (Call of Duty, Battlefield, Overwatch, Fortnite, Grand Theft Auto) |
| <input type="checkbox"/> | Building/User created | (Minecraft, Robloks) |
| <input type="checkbox"/> | Action/adventure/platformer | (Lego Star Wars, Sonic, Super Mario, Skylanders) |
| <input type="checkbox"/> | Strategy/MOBA | (Starcraft, League of Legends) |
| <input type="checkbox"/> | Sports | (Madden, FIFA, NBA2K, MLB2k, etc) |
| <input type="checkbox"/> | Racing | (Forza, Need for Speed, Mario Kart) |
| <input type="checkbox"/> | Fighting/Martial Arts | (Street Fighter, Mortal Kombat, Super Smash Bros., Injustice) |
| <input type="checkbox"/> | Single-Player RPG/Fantasy | (Elder Scrolls, Dragon Age, Pokemon) |
| <input type="checkbox"/> | Mobile Games | (Angry Birds, Clash of Clans, Pokemon Go) |
| <input type="checkbox"/> | Open World/Sand Box Games | (Exploration (Minecraft, Terraria) |
| <input type="checkbox"/> | Sci-fi/Space/Futuristic | (Mass Effect, Destiny) |
| <input type="checkbox"/> | MMORPG | (World of Warcraft) |
| <input type="checkbox"/> | Horror Games | (Resident Evil, Friday the 13 th) |
| <input type="checkbox"/> | Puzzle | (Tetris, Candy Crush) |
| <input type="checkbox"/> | Other game types _____ | |

OTHER ACTIVITIES

- | | | | |
|--------------------------|-----------------------|--------------------------|----------------|
| <input type="checkbox"/> | Anime _____ | <input type="checkbox"/> | Music _____ |
| <input type="checkbox"/> | Cartoons _____ | <input type="checkbox"/> | Art _____ |
| <input type="checkbox"/> | TV shows/Movies _____ | <input type="checkbox"/> | Religion _____ |
| <input type="checkbox"/> | Fantasy/Fiction _____ | <input type="checkbox"/> | Clubs _____ |
| <input type="checkbox"/> | Sports _____ | <input type="checkbox"/> | Other _____ |

FAVORITE GAMES (or other activities if you don't play video games)

- 1) What is the first game you played? _____
- 2) What is your favorite game now? _____
- 3) What do you like best about it? _____

FAVORITE CHARACTER

- 1) Who is your favorite character? _____
- 2) What do you like best about him/her? _____

VIDEO GAME- INITIAL QUESTIONNAIRE

SOCIALVIDEO GAMEPLAY (check all that apply)

1) What is your favorite way to play?

- By myself
- With friends in person
- With friends online
- With family
- Other

2) How do you contact friends to play?

- I don't
- Text message
- In-game messaging
- Phone call
- Other Social Media

3) Where do you play the most?

- My Bed or Room
- Family/Living Room
- Other

4) How do your game skills compare to others?

- Much worse
- Worse
- Same
- Better
- Much better

5) How often do you have problems/conflicts playing with others?

- Always
- Frequently
- Rarely
- Never

6) Sometimes my play gets in the way of:

- Sleep
- School
- Homework
- Friends/Family

7) On social media:

- I I don't use social media at all
- I watch/follow certain games only
- I share my game progress/achievements
- I make comments/discuss games
- I play with multiple screens

8) Do you feel safe playing or on internet?

- Never
- Sometimes
- Usually
- Always

9) Does the internet feel more comfortable than real life?

- Always
- Usually
- Sometimes
- Never

THERAPEUTIC APPLICATIONS

- Playing video games together
 - Purposeful engagement
- Practicing new social skills and then generalizing into real world (graded approach)
 - Immersive experience
 - Teamwork and social interactions
- Gamer-avatar relationship (Burleigh et al., 2018)

COMMERCIAL VIDEO GAMES AS THERAPY

TABLE 1 | Selected studies of video games and health outcomes.

VGTx health function	Condition or population	Game/system identified	Reference
Assessment and monitoring	Physical activity	Pokémon GO	Althoff et al. (7)
	Cognitive status in elderly	FreeCell	Jimison et al. (8)
Cognitive distraction	Anxiety, nausea in chemotherapy	Participant's choice of 25 games	Redd et al. (9)
	Preoperative anxiety	Choice of 10 games on hand-held system	Patel et al. (10)
	Fibromyalgia pain	Sports games played with Nintendo Wii, Playstation 3, and Microsoft Kinect	Mortensen et al. (11)
Mental health	Depression	Bejeweled 2, Peggle, Bookworm Adventures	Russoniello et al. (12)
	Posttraumatic stress disorder	"Realistic military-themed FPS games"	Elliott et al. (13)
	Improvement of positive symptoms in schizophrenia	Internet games (gambling, role-playing, strategy, shooter)	Han et al. (14)

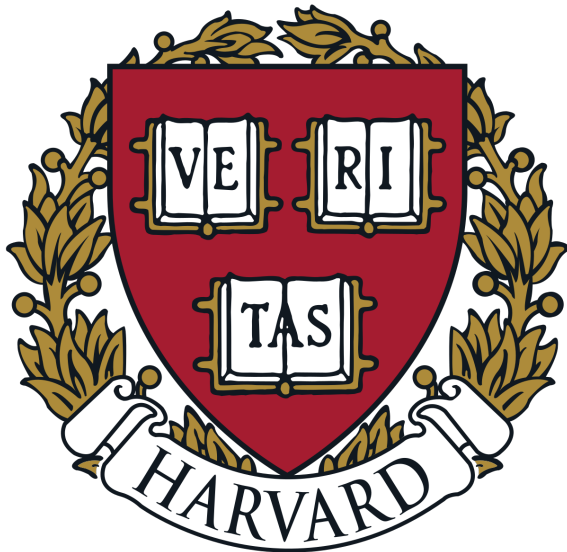
Colder Carras et al. (2018). Commercial video games as therapy: A new research agenda to unlock the potential of a global pastime. *Frontiers in Psychiatry*, 8(300).

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VGTx health function	Condition or population	Game/system identified	Reference
Neurological rehabilitation	Attention deficit disorder	Car racing games, skateboarding games, or adventure games	Pope and Palsson (15),
		Super Breakout	Larose et al. (16)
	Minimal brain damage, attention problems	Stroke	Wii Sports, PlayStation EyeToy games
Prevention	Intrusive memories from trauma	Tetris	Iyadurai et al. (18)
Psychotherapy	Assessment of clinical presentation	Various, including Lego Star Wars II	Ceranoglu (19)
	Rapport and treatment	Super Mario Bros., Jeopardy, (The Legend of) Zelda	Gardner (20)
Social skills training	Autism	Pacman	Gaylord-Ross et al. (21)
	Autism	Guitar Hero	Blum-Dimaya et al. (22)

CASE VIGNETTE

“I’m afraid my son won’t get into Harvard because he plays Fortnite”



CASE VIGNETTE

“My husband plays video games instead of taking care of our baby”



CASE EXAMPLES



RESOURCES: *GENERAL*

- Entertainment Software Rating Board: <http://www.esrb.org/>
- Arizona State University Center for Games & Impact—
Impact Guides for players, parents and teachers to better understand and communicate with kids about popular games (e.g., Minecraft, Sims) [also have a newbie section!]
<https://gamesandimpact.org/impact-guides/>
- Common Sense Media Video Game Reviews (by age):
<https://www.commonsensemedia.org/game-reviews>

RESOURCES: *TREATMENT*

- **reSTART** treatment center (Seattle) with specific treatment track for problematic video gaming
- **Rise Gaming Recovery** (created by ex-competitive gamers in California)



RESOURCES: *RESEARCH*

- **Mark D. Griffiths, Ph.D.:** Distinguished Professor of Behavioural Addiction and Director of the International Gaming Research Unit in the Psychology Department at Nottingham Trent University (UK)
- **Tony van Rooij, Ph.D.:** Project lead for Gaming, Gambling, and Media Literacy at Trimbos-Instituut
- **Douglas Gentile, Ph.D.:** Director of Media Research Lab at Iowa State University
- **Cheryl Olson, Sc.D.:** Co-founded the Center for Mental Health and Media at Mass General
- **Andrew Przybylski, Ph.D.:** Director of Research at Oxford Internet Institute at University of Oxford

REFERENCES

→ See PDF (uploaded to ADA A app) for full reference list (or contact us!)

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2

References

- Adachi, P. J., & Willoughby, T. (2016). The longitudinal association between competitive video game play and aggression among adolescents and young adults. *Child Development, 87*(6), 1877-1892. doi: 10.1111/cdev.12556
- Althoff, T., White, R. W., & Horvitz, E. (2016). Influence of Pokémon Go on physical activity: Study and implications. *Journal of Medical Internet Research, 18*(12), e315. doi: 10.2196/jmir.6759
- Buono, F. D., Upton, T. D., Griffiths, M. D., Sprong, M. E., & Bordieri, J. (2016). Demonstrating the validity of the Video Game Functional Assessment-Revised (VGFA-R). *Computers in Human Behavior, 54*, 501-510.
- Burleigh, T. L., Stavropoulos, V., Liew, L. W., Adams, B.L., & Griffiths, M. D. (2018). Depression, internet gaming disorder, and the moderating effect of the gamer-avatar relationship: An exploratory longitudinal study. *International Journal of Mental Health and Addiction, 16*(1), 102-124.
- Charlton, J. P., & Danforth, I. D. W. (2007). Distinguishing addiction and high engagement in the context of online game playing. *Computers in Human Behavior, 23*(3), 1531-1548.
- Colder Carras, M., van Rooij, A. J., Spruijt-Metz, D., Kvedar, J., Griffiths, M. D., Carabas, Y., & Labrique, A. (2018). Commercial video games as therapy: A new research agenda to unlock the potential of a global pastime. *Frontiers in Psychiatry, 8*(300). doi: 10.3389/fpsy.2017.00300
- Colder Carras, M., van Rooij, A. J., van de Mheen, D., Musci, R., Xue, Q., & Mendelson, T. (2017). Video gaming in a hyperconnected world: A cross-sectional study of heavy gaming, problematic gaming symptoms, and online socializing in adolescents. *Computers in Human Behavior, 68*, 472-479. doi: 10.1016/j.chb.2016.11.060 0747-5632/
- Feldmeier, M. (2017). The Video Game Initial Questionnaire (VG-IQ). In E. V. Beresin & C. K. Olson (Eds.). (2019). *Child and Adolescent Psychiatry and the Media*. St. Louis, MO: Elsevier.
- Gentile, D. A., & Sesma, A. (2003). Developmental approaches to understanding media effects on individuals. In D. A. Gentile (Ed.), *Advances in applied developmental psychology. Media violence and children: A complete guide for parents and professionals* (pp. 19-37). Westport, CT: Praeger Publishers/Greenwood Publishing Group.
- Gentile, D. A., Swing, E. L., Lim, C. G., & Khoo, A. (2012). Video game playing, attention problems, and impulsiveness: Evidence of bi-directional causality. *Psychology of Popular Media Culture, 1*, 62-70.
- Granic, I., Lobel, A., & Engels, R. C. M. E. (2014). The benefits of playing video games. *American Psychologist, 69*(1), 66-78. doi: 10.1037/a0034857
- Ha, J. H., Kim, S. Y., Bae, S. C., Kim, H., Sim, M., Lyoo, I. K., & Cho, S. C. (2007). Depression and internet addiction in adolescents. *Psychopathology, 40*(6), 424-430. doi: 10.1159/000107426
- Ivarsson, M., Anderson, M., Akerstedt, T., & Lindblad, F. (2009) Playing a violent television game affects heart rate variability. *Acta Paediatrica, 98*(1), 166-72. doi: 10.1111/j.1651-2227.2008.01096.x
- Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a Game Addiction Scale for Adolescents. *Media Psychology, 12*(1), 77-95. doi: 10.1080/15213260802669458
- Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2010). The effects of pathological gaming on aggressive behavior. *Journal of Youth and Adolescence, 40*(1), 38-47.
- Loton, D., Borkoles, E., Lubman, D., Polman, R. (2016). Video game addiction, engagement and symptoms of stress, depression and anxiety: the mediating role of coping. *International Journal of Mental Health & Addiction (14)*, 565-578. doi: 10.1007/s11469-015-9578-6
- Ohanessian, C. M. (2009). Media use and adolescent psychological adjustment: An examination of gender differences. *Journal of Child and Family Studies, 18*(5), 582-594.
- Ohanessian, C. M. (2018). Video game play and anxiety during late adolescence: The moderating effects of gender and social context. *Journal of Affective Disorders, 226*, 216-219.
- Pontes, H. M., & Griffiths, M. D. (2015). Measuring DSM-5 internet gaming disorder: Development and validation of a short psychometric scale. *Computers in Human Behavior, 45*, 137-143.
- Pontes, H. M., & Griffiths, M. D. (2016). The development and psychometric properties of the Internet Disorder Scale - Short Form (IDS9-SF). *Addicta: The Turkish Journal on Addictions, 3*, 1-16. doi: 10.15805/addicta.2016.3.0102
- Russoniello C. V., O'Brien K., Parks J. M. (2009). The effectiveness of casual video games in improving mood and decreasing stress. *Journal of CyberTherapy and Rehabilitation, 2*(1), 53-66.
- Smith, S. L., & Donnerstein, E. (1998). Harmful effects of exposure to media violence: Learning of aggression, emotional desensitization, and fear. In R. G. Geen & E. Donnerstein (Eds.), *Human aggression: Theories, research, and implications for social policy* (pp. 167-202). San Diego, CA: Academic Press.
- Trang, N. H. H. D., Hong, T. K., van der Ploeg, H. P., Hardy, L. L., Kelly, P. J., & Dibley, M. J. (2013). Longitudinal sedentary behavior changes in adolescents in Ho Chi Minh City. *American Journal of Preventive Medicine, 44*(3), 223-230. doi: 10.1016/j.amjpre.2012.10.021
- van Rooij, A. J., Schoenmakers, T. M., van den Eijnden, R. J., Vermulst, A. A., van de Mheen, D. (2012). Video game addiction test: Validity and psychometric characteristics. *Cyberpsychology, Behavior, and Social Networking, 15*(9), 507-511.
- Wagner, M. (2006). On the scientific relevance of eSports. In Arreymbi, J., Clinicy, V.A., Droegehorn, O.L., Joann, S., Ashu, M.G., Ware, J.A., Zabir, S., & Arabnia, H.R. (Eds.). (2006). *Proceedings of the 2006 International Conference on Internet Computing and Conference on Computer Game Development*. Las Vegas, NV: CSREA Press.
- Weaver, E., Gradirar, M., Dohnt, H., Lovato, N., Douglas, P. (2010). The effect of presleep video-game playing on adolescent sleep. *Journal of Clinical Sleep Medicine, 6*(2), 184-189.

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**GAME
OVER**

THANKS FOR PLAYING

