



EDITORIAL

A brief update on disordered gaming

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Video gaming is a legitimate and commonly practiced leisure activity. Previous research has demonstrated many positive effects of healthy gaming (1,2); however, for a minority of players, gaming can become dysfunctional, leading to impairment that is harmful to their social, occupational, familial, educational, and psychological functioning (3). A primary way in which pathological gamers are negatively affected by their condition is through the investment of an excessive amount of time in this activity (often 8-12 hours per day) (4). Researchers and society in general have gradually become more interested in problems caused by the excessive use of video games (5). As with other addictions, in disordered gaming, diminished self-control may lead to continuation of the behavior even when it incurs negative consequences, including distress and functional impairment in various life domains (6). Again, not unlike in other addictions, cue-reactivity and craving may be increased and inhibitory control reduced, which can become key mechanisms of the disorder, particularly in the presence of specific gaming-related cues (6).

The latest (fifth) edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) included the term “Internet gaming disorder” (IGD) (7) and labeled IGD as a “condition that needs further research before being fully recognized and accepted as an independent disorder in subsequent revisions of the DSM” (8). Of the 9 criteria used in the DSM-5 (preoccupation with Internet games, withdrawal symptoms, tolerance, unsuccessful attempts to control

participation in Internet games, loss of interest in previous hobbies, continued excessive use of Internet games, deceiving family members, the use of Internet games to escape, and the loss of a significant relationship, job or education, or career opportunity), 7 are identical to those of gambling disorder and 5 to substance use disorder (9). More severe degrees of IGD involving problematic behavior displacing usual and expected social, work and/or educational, relationship, and family activities may result in academic failure, job loss, or marriage breakdown (10). For a diagnosis of disordered gaming, 5 or more of the 9 criteria must be met over a period of 12 months (7). In the DSM-5, IGD is characterized clinically by a “persistent and recurrent use of the Internet to engage in games, often with other players, leading to clinically significant impairment or distress” (7).

In 2016, “gaming disorder” was included as a behavioral addiction in the beta draft of the 11th edition of the International Classification of Diseases (ICD-11) (11) based on the realization that research had demonstrated the clinical significance of excessively playing video games, the related health burden, and the neurobiological similarities to other substance use disorders (12). More specifically, the beta draft of the ICD-11 defines gaming disorder as a pattern of persistent or recurrent online and/or offline gaming behavior manifested by 3 core diagnostic criteria: (1) impaired control over gaming participation (e.g., onset, frequency, intensity, duration, termination, context), (2) increasing priority given to gaming to the extent that it takes precedence over other life interests

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and daily activities, and (3) continuation or escalation of gaming despite the occurrence of negative consequences (11). The gaming behavior involved in gaming disorder may happen online or offline, and the clinical assessment covers a 12-month period (which may be reduced if all of the diagnostic requirements are met and symptoms are severe), determination of the severity of the condition and the effect on life domains and/or other broad areas of functioning (13). The World Health Organization (WHO) has proposed a number of exclusion criteria for a differential diagnosis of gaming disorder, including screening the patient for hazardous gaming and bipolar type I and type II disorders (13). On May 25, 2019, at the 72nd World Health Assembly, the WHO officially recognized disordered gaming as a mental health disorder (13).

While computer games began with quite simple foundations, they have vastly diversified, and today millions of dollars are spent on the development and updating of these games. The computer and video game industry enjoyed a record-breaking year in 2018 when video game sales exceeded a total of \$43.4 billion (14). Gaming is now one of the most common pastimes in highly developed societies for all social groups. The Entertainment Software Association recently published data indicating that approximately 65% of all adults in the United States of America (USA) regularly play video games, and about 75% of all households in the USA include at least 1 active gamer (14). Gamers in the USA use a variety of electronic devices for gaming, primarily smartphones (60%), personal computers (52%), and dedicated game consoles (49%) (14). A similar pattern of gaming has been observed in other highly developed countries. The Interactive Games and Entertainment Association reported that in Australia, around 67% of all residents play video games and 97% of all households with children own computer games (15).

While most studies emphasize the risks and downsides of video gaming, there are also suggestions that the popularity of these games may indicate that they help address human needs emerging from modern culture in novel ways. If gaming satisfies people's basic needs, it cannot be categorically evaluated as bad or good (16). Rather, the features of individual games should be assessed from a motivational view, and gamers' reasons and motives for playing them should be explored, without judging them as helpful or dangerous.

Gaming also brings many players together in the real world. Today, gaming has become a major industry with

large congresses and tournaments attended by thousands of people (17). Gaming has become professionalized, and for a minuscule group of players, competitive gaming has become a career option (18,19). This novel type of professional video gaming has been termed esports (electronic sports). Esports include professional or amateur competitions organized in coordination with leagues or tournaments supported by commercial organizations (20). Esports is a new area in gaming culture that is gaining prominence and popularity in some video game communities, especially among adolescents and young adults (18). Games may be played individually or by teams and displayed on huge screens watched by thousands of people. For example, in the game titled "League of Legends," teams of 5 individuals compete using a set of more than 100 heroes and other features they can choose.

Currently, the new multiplayer online battle arena games are the most popular esports genre, though the real-time strategy and first-person shooter genres have also retained their popularity. A recent report found a 41.3% (up to \$696 million) growth of the global esports economy in 2017 and expected esports brand investment to double by 2020 (21). Esports spectators, an important element for esports competitions, are defined as individuals watching, supporting, and following professional esports content (22). Online streaming platforms such as Twitch and YouTube enable a large following for esports (18). The esports audience is estimated to have reached 385 million globally, with 45% consisting of active players, 23% viewing streams of esports, and 32% both playing games and viewing streamed events (21). Those who are engaged with esports may be more vulnerable to disordered gaming. A study conducted among both university students and gamers in Turkey found a prevalence rate of 0.96% for disordered gaming among the whole sample according to the APA framework, whereas the rate was 2.57% among esports players (23).

A number of studies have included esports in the framework of traditional sports (24). However, to gain recognized status as a sport, esports need to be accepted as such worldwide (25). As the popularity and attraction of esports increases, concerns have been expressed regarding not only the psychology of video gaming, but also the lack of physical activity and the sedentary nature of esports (25,26) and intensive, excessive participation in gaming (19).

With the growing interest in esports, new online gambling operators and opportunities for esports players to earn money have emerged. In addition to

existing online gambling operators adding esports betting options, new specialized esports betting sites have been launched. Bets can be placed on the team that is favored to win, as in professional sports, or on other predictions (e.g., who will win the first part played with a pistol in the Counter-Strike: Global Offensive game [Valve Corp., Bellevue, WA, USA and Hidden Path Entertainment, Bellevue, WA, USA]). Bets can be made for real money or with in-game items, such as skins, a weapon or other customizable equipment that does not impact gameplay (27).

One of the features of video games believed to be related with both disordered gaming and gambling is loot box engagement (28). A loot box is a virtual cache of randomized game items available for purchase in many video games; thus, players “gamble” for a chance item (28-30). In some games, loot boxes are provided to players as a reward for completing a designated stage, level, or any other specified in-game achievement; other games allow loot boxes to be purchased at will, and some games award loot boxes in what seems to be random fashion (31). In previous studies, nearly half of the participants reported that they had made a loot box purchase in the previous year (28,29). These individuals find rarer game items hedonically rewarding and motivating (32). Given the similarities found between loot box activity and gambling, there is a vivid debate as to whether this actually constitutes a form of gambling (32,33). Recent studies have evaluated the association between loot box purchase engagement and problematic gambling among adolescents (29,30,34,35) and adults (28,32,33). Brooks and Clark (36) suggested that there was a relationship between loot boxes and gambling. Loot box purchasing may help trigger the transition from recreational video gaming and online gambling to problematic engagement in video gaming and/or gambling (28). The legal status of this feature has even been questioned, indicating a potential requirement to regulate their use as gambling (30), and researchers have discussed ways to reduce the impacts of spending on loot boxes (29,33). In 2016, the Chinese government passed legislation that required game developers to disclose the odds of receiving certain items from loot boxes. In 2018, the Belgium Gambling Commission declared that loot boxes were in violation of gambling legislation (37). While some researchers suggest that setting limits to the sale of loot boxes might protect video gamers at risk of developing gambling problems (38), others suggest that this may not be sufficient on its own to stop players from overspending (39). A

cautious approach to public policy may be needed to set up adequate regulation of loot boxes (40).

Currently, the world is adapting to the rapid global spread of the coronavirus disease 2019 (COVID-19). Uncertainty about the pandemic, news of deaths, restrictions on movement, economic problems, and other sources of worry can lead to nervousness, anxiety, or depression. The loss of routines of going to school, work, and other activities and isolation at home can have a significant effect, including diminished environmental control mechanisms. Since play may be used as a means of managing with psychological stress, psychiatrists should be aware of how much gaming may increase during the pandemic (41). The need for physical isolation to prevent the spread of COVID-19 has led to a large increase in participation in online games. Data from recent studies show that online game participation has increased in the USA, the volume of game downloads has reached a record level in Europe, and the live-streaming platforms YouTube Gaming and Twitch reported a 10% increase in viewership (41,42). During this period, it has also been noted there has been a marginal increase in online game user participation among females aged 25-35. Initiatives such as #PlayApartTogether, which encourages socialization and play to reduce stress while maintaining physical distancing efforts and is supported by the WHO, have been launched and can have positive results (42,43). Playing games is generally less harmful than many other potential behaviors used to deal with stress and negative emotions, such as alcohol and other substance abuse or overeating. But while playing games can be a healthy coping strategy for the majority, it can also pose risks for some susceptible individuals. Prolonged periods of social isolation and technology-based activity threaten to reinforce unhealthy lifestyle patterns and can lead to difficulties in re-adaptation when the crisis passes. Therefore, psychiatrists should suggest safe social interaction alternatives, especially for people at risk of gaming disorders. If outdoor and community activities involving social interaction are prohibited, programs encouraging indoor activities, such as board games or home exercise should be designed and provided (42-44). Other things that can be promoted include maintaining good sleep patterns, practicing good eating habits, engaging in secure social activities, connecting safely with family and friends, valuing spend time alone, organizing time and energy to achieve personal goals, and using relaxation and other stress-reduction techniques (42-44). Of course, if an individual cannot cope with the stress they are

experiencing or has problems related to playing games, it is necessary to seek professional help.

The inclusion of disordered gaming in diagnostic systems may reduce the public stigmatization of people who suffer with this problem and may encourage them to seek help. It may also increase the number of high-quality studies concerning the treatment of disordered gaming and may compel politicians to develop policies on the subject. There are risk factors that can lead to recreational gaming becoming a disorder. Considering that in-game features are among the most easily preventable risks, intervention concerning such features associated with gambling, such as loot boxes, is warranted. Griffiths and Pontes (45) have reported that members of the video game industry and researchers need to establish a cooperative relationship to encourage the use of significant social responsibility policies to provide adequate player protection and minimize harm. Finally, while gaming may be a healthy way of coping for most players, some may be at risk of gaming disorder and special attention should be given to these players, particularly during the current pandemic.

REFERENCES

1. Connolly TM, Boyle EA, MacArthur E, Hainey T, Boyle JM. A systematic literature review of empirical evidence on computer games and serious games. *Comput Educ* 2012; 59:661-686.
2. Griffiths MD. The therapeutic and health benefits of playing video games. In: Attrill-Smith A, Fullwood C, Keep M, Kuss DJ (editors) *The Oxford Handbook of Cyberpsychology*. Oxford: Oxford University Press, 2019; 485-505.
3. Gentile DA, Choo H, Liau A, Sim T, Li D, Fung D, et al. Pathological video game use among youths: a two-year longitudinal study. *Pediatrics* 2011; 127:e319-29.
4. Baggio S, Dupuis M, Studer J, Spilka S, Daeppen JB, Simon O, et al. Reframing video gaming and internet use addiction: empirical cross-national comparison of heavy use over time and addiction scales among young users. *Addiction* 2016; 111:513-522.
5. Zajac K, Ginley MK, Chang R, Petry NM. Treatments for Internet gaming disorder and Internet addiction: A systematic review. *Psychol Addict Behav* 2017; 31:979-994.
6. Antons S, Brand M, Potenza MN. Neurobiology of cue-reactivity, craving, and inhibitory control in non-substance addictive behaviors. *J Neurol Sci* 2020; 415:116952.
7. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. Fifth ed., Arlington, VA: American Psychiatric Association, 2013.
8. Petry NM, O'Brien CP. Internet gaming disorder and the DSM-5. *Addiction* 2013; 108:1186-1187.
9. Petry NM, Rehbein F, Gentile DA, Lemmens JS, Rumpf HJ, Mößle T, et al. An international consensus for assessing internet gaming disorder using the new DSM-5 approach. *Addiction* 2014; 109:1399-1406.
10. Montag C, Schivinski B, Sariyska R, Kanne C, Demetrovics Z, Pontes HM. Psychopathological Symptoms and Gaming Motives in Disordered Gaming-A Psychometric Comparison between the WHO and APA Diagnostic Frameworks. *J Clin Med* 2019; 8:1691.
11. World Health Organization 2018. International classification of diseases, 11th Revision (ICD-11). ICD-11 Beta Draft: Gaming Disorder. www.who.int/classifications/icd/. Accessed 25 August, 2020.
12. Saunders JB, Hao W, Long J, King DL, Mann K, Fauth-Bühler M, et al. Gaming disorder: Its delineation as an important condition for diagnosis, management, and prevention. *J Behav Addict* 2017; 6:271-279.
13. World Health Organization. 6C51 Gaming disorder 2019. <https://www.who.int/features/qa/gaming-disorder/en/>. Accessed 5 September, 2020.
14. Entertainment Software Association. 2019 Essential Facts About the Computer and Video Game Industry 2019. <https://www.theesa.com/esa-research/2019-essential-facts-about-the-computer-and-video-game-industry/>. Accessed 5 September, 2020.
15. Interactive Games & Entertainment Association. Digital Australia 2018. Eveleigh, NSW: IGEA. <https://igea.net/2017/07/digital-australia-2018-da18/> Accessed 5 September, 2020.
16. Demetrovics Z, Urbán R, Nagygyörgy K, Farkas J, Zilahy D, Mervó B, et al. Why do you play? The development of the motives for online gaming questionnaire (MOGQ). *Behav Res Methods*. 2011; 43:814-825.
17. King D, Delfabbro P. Treatment for IGD: In King D, Delfabbro P (Editors). *Internet Gaming Disorder*. 1st ed., Theory, Assessment, Treatment, and Prevention Academic Press, 2019.
18. Bányai F, Griffiths MD, Király O, Demetrovics Z. The Psychology of Esports: A Systematic Literature Review. *J Gambl Stud* 2019; 35:351-365.
19. Griffiths M. The psychosocial impact of professional gambling, professional video gaming and eSports. *Casino & Gaming International* 2017; 28:59-63.
20. Hamari J, Sjöblom M. What is eSports and why do people watch it? *Internet Research* 2017; 27.
21. Newzoo. Global Esports Market Report 2017. <https://newzoo.com/insights/trend-reports/global-esports-market-report-2017-light/>. Accessed 5 September, 2020
22. Smith AC, Stewart B. The special features of sport: a critical revisit. *Sport Manage Rev* 2010; 13:1-13.
23. Evren C, Dalbudak E, Topcu M, Kutlu N, Evren B, Pontes HM. Psychometric validation of the Turkish nine-item Internet Gaming Disorder Scale-Short Form (IGDS9-SF). *Psychiatry Res* 2018; 265:349-354.
24. Hallmann K, Giel T. eSports – Competitive sports or recreational activity? *Sport Management Review* 2018; 21:14-20.

25. Van Hilvoorde I, Pot N. Embodiment and fundamental motor skills in eSports. *Sport, Ethics and Philosophy* 2016; 10:14–27.
26. Van Hilvoorde I. Sport and play in a digital world. *Sport, Ethics and Philosophy* 2016; 10:1-4.
27. King DL. Online gaming and gambling in children and adolescents-Normalising gambling in cyber places: a review of the literature. Victorian Responsible Gambling Foundation, Melbourne, 2018. file:///C:/Users/pc/Downloads/Online-gaming-and-gambling-in-children-and-adolescents_.pdf Accessed 5 September, 2020.
28. Li W, Mills D, Nower L. The relationship of loot box purchases to problem video gaming and problem gambling. *Addict Behav* 2019; 97:27-34.
29. Kristiansen S, Severin MC. Loot box engagement and problem gambling among adolescent gamers: Findings from a national survey. *Addict Behav* 2020; 103:106254.
30. Zendle D, Cairns P. Loot boxes are again linked to problem gambling: Results of a replication study. *PLoS One* 2019; 14:e0213194.
31. Macey J, Hamari J. The Games We Play: Relationships between game genre, business model and loot box opening. GamiFIN Conference 2019, Levi, Finland, April 8-10, 2019; 193-204.
32. Larche CJ, Chini K, Lee C, Dixon MJ, Fernandes M. Rare loot box rewards trigger larger arousal and reward responses, and greater urge to open more loot boxes. *J Gambl Stud* 2019 doi: 10.1007/s10899-019-09913-5
33. Drummond A, Sauer JD, Ferguson CJ, Hall LC. The relationship between problem gambling, excessive gaming, psychological distress and spending on loot boxes in Aotearoa New Zealand, Australia, and the United States-A cross-national survey. *PLoS One* 2020; 15:e0230378.
34. Zendle D. Problem gamblers spend less money when loot boxes are removed from a game: a before and after study of Heroes of the Storm. *PeerJ* 2019; 7:e7700.
35. Zendle D, Meyer R, Over H. Adolescents and loot boxes: links with problem gambling and motivations for purchase. *R Soc Open Sci* 2019; 6:190049.
36. Brooks GA, Clark L. Associations between loot box use, problematic gaming and gambling, and gambling-related cognitions. *Addict Behav* 2019; 96:26-34.
37. King DL, Delfabbro PH. The concept of “harm” in Internet gaming disorder. *J Behav Addict.* 2018; 7:562-564.
38. Drummond A, Sauer JD, Hall LC. Loot box limit-setting: a potential policy to protect video game users with gambling problems? *Addiction* 2019; 114:935-936.
39. King DL, Delfabbro PH. Predatory monetization schemes in video games (e.g. ‘loot boxes’) and internet gaming disorder. *Addiction* 2018; 113:1967-1969.
40. McCaffrey M. A cautious approach to public policy and loot box regulation. *Addict Behav* 2020; 102:106136.
41. Ko CH, Yen JY. Impact of COVID-19 on gaming disorder: Monitoring and prevention. *J Behav Addict* 2020; 9:187-189.
42. King DL, Delfabbro PH, Billieux J, Potenza MN. Problematic online gaming and the COVID-19 pandemic. *J Behav Addict* 2020; 9:184-186.
43. Amin KP, Griffiths MD, Dsouza DD. Online Gaming During the COVID-19 Pandemic in India: Strategies for Work-Life Balance. *Int J Ment Health Addict* 2020:1-7 doi: 10.1007/s11469-020-00358-1
44. Király O, Potenza MN, Stein DJ, King DL, Hodgins DC, Saunders JB, et al. Preventing problematic internet use during the COVID-19 pandemic: Consensus guidance. *Compr Psychiatry* 2020; 100:152180.
45. Griffiths MD, Pontes HM. The future of Gaming Disorder research and player protection: What role should the video gaming industry and researchers play? *Int J Ment Health Addict* 2020; 18:784-790.