



Assessment and Treatment of Internet Gaming Disorder

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Published online: 10 February 2020

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Abstract

Among both youth and adults, video gaming is a rapidly growing recreational activity. The American Psychiatric Association and the World Health Organization have identified problematic video gaming behavior as a clinical concern in need of further research and have conceptualized this condition as a behavioral addiction. Empirically validated assessment tools may aid in case conceptualization, and cognitive-behavioral techniques have accrued some evidence supporting their efficacy when targeting internet gaming disorder. Clinicians should consider employing goal setting, behavior tracking, and functional analyses, and should consider increasing alternative pleasurable activities, incentivizing specific behavior changes, and integrating caregivers into treatment when working with adolescents.

Ravi is an eighteen-year-old male in the middle of the second semester of his freshman year in college. He has presented at the university counseling center reporting a reduced level of motivation to engage in his coursework. He was an eager and ardent student in his first semester. He was living on campus for the first semester, but after struggling to maintain his grades, he moved back home with his parents and now commutes to his classes. Recently, he reports struggling to wake up for class and has found little enjoyment in his schoolwork. During the first appointment, you discover that one of the few activities he regularly engages in is online video gaming. He plays a video game called *Fortnite* several hours each day. He usually plays until around 3:00 a.m., which interferes with his ability to wake up for his morning classes. He describes playing video games to escape school-based stress. He still views his schoolwork as important, but he is struggling to prioritize it over his video gaming behavior. He reports he has attempted to cut back on how often he plays, but has difficulty falling asleep because he thinks about the video game. His parents are frustrated with him and they frequently argue about his video gaming behavior. You noticed his mother sitting with him in the waiting room and how she looked to you hopefully when you met Ravi for the appointment. You suspect that his difficulty engaging in schoolwork is primarily due to his excessive gaming and have decided that it may be an appropriate target of treatment. How should you proceed?

Clinical Challenge

What Is Video Gaming?

Video gaming can be thought of as a category of behaviors. It includes an individual playing a video game, interacting with other individuals via a video gaming environment, and/or watching other individuals play video games. Watching other individuals play video games is an activity similar to watching a live broadcast of a sports event, and it is a popular recreational activity among video game players (Hamari & Sjöblom, 2017). An individual can engage in video gaming via different devices, such as laptops, desktop computers, cell phones, and video gaming consoles (e.g., Sony Playstation, Microsoft Xbox).

There are different but non-mutually exclusive genres of video games, such as those that are best described as simulation games, strategy games, action games, and role-playing games (Apperley, 2006). Although many video games have aspects of all genres, these games differ based on the in-game experiences and the goals of the video game player.

Simulation games are video games that are designed to give the player the experience of performing an activity, such as playing a sport or driving a car. One example is *Mario Kart Tour*, in which the players compete as characters in a vehicle racing game. Strategy games are games in which players aim to win via advantageous decision making. For example, *Words with Friends* is a game commonly played via cell phones in which players take turns playing a word game much like the traditional board game *Scrabble*.

Action games include games that require the player to be highly involved in the actions of the character in their game, such as the video gamer needing to press buttons in order to get characters to walk, look around, and perform other actions (e.g., fight enemy players). One type of action game is called a shooter game, in which the player controls a character's movements and uses weapons (e.g., guns, grenades) to attack enemy players. The game described in the clinical vignette, *Fortnite*, is an example of a popular third-person shooter game.

The last category of video games is role-playing games. Role-playing games are constructed to be much like an interactive fantasy story, in which the video gamer plays as a specific character with a narrative that progresses as the video gamer progresses through the game. One popular role-playing game is *Final Fantasy*, in which players take on the role of a protagonist as he travels around a fictional world completing tasks and collecting items that alter the gaming experience. For example, players can collect items that provide advantages over enemies and that make esthetic changes to their characters.

Video gaming is a popular and quickly growing recreational activity. In the United States (US), approximately 90% of adolescents play video games (Gentile, 2009; Entertainment Software Association, 2019). Rates of adult video game playing have substantially risen in the past few years. In 2015, 43% of US adults played video games; by 2019, the portion of adults playing internet games rose to 65% (ESA, 2019). The average age of a US gamer was approximately 33 years old and 54% were male. Seventy percent of families reported having a child who plays video games, and 57% of parents reported playing games with their child at least weekly.

What Is Internet Gaming Disorder?

Internet gaming disorder (IGD) appears in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as a condition in need of future research before being considered for inclusion as an official diagnosis (American Psychiatric Association, 2013). The word “internet” was included in the title of the proposed condition in order to ensure it was clearly differentiated from gambling disorder, especially when abbreviated or named aloud, and to recognize that clinically significant problems with gaming are more often associated with internet-based gaming than offline video game playing (Lemmens & Hendriks, 2016). Still, “Internet gaming” is meant to inclusively describe any video game playing, whether this play be online (i.e., connected to the internet) or offline (i.e., able to be played without being connected to the internet; Petry et al., 2018). It is important to note that IGD is not a specifier of gambling disorder. Despite the similarity in name and associated symptoms, it is instead a different condition, similar to how alcohol use

disorder and cocaine use disorder are related but separate conditions in the DSM-5.

The DSM-5 lists the following nine criteria to characterize IGD, which were modeled on the criteria used to diagnose substance use disorders and gambling disorder as a behavioral addiction: preoccupation with gaming; tolerance of gaming behavior; difficulty controlling gaming behavior; withdrawal; gaming to avoid negative mood states; loss of interest in non-gaming activities; continuing to game despite negative outcomes; lying about extent of gaming behavior; and risking or losing a significant relationship, job, or vocational or educational opportunity because of gaming. The presence of five or more criteria over a period of 12 months was proposed as sufficient to warrant the diagnosis. Like the other addiction-related diagnoses in the DSM-5, these criteria must also be associated with either significant impairment or distress (i.e., either the presence of distress or impairment would be sufficient).

Some researchers have argued that the DSM-5 criteria for IGD have the potential to overpathologize some individuals' video gaming behavior (Billieux et al., 2019). Because functional impairment is an optional but not necessary criterion in order to receive a DSM-based diagnosis, an individual who engages in high amounts of video gaming behavior could be diagnosed with IGD without experiencing significant functional impairment (Bean, 2019).

The World Health Organization (WHO) published a different set of criteria for the assessment of “gaming disorder” as part of the eleventh edition of the International Classification of Diseases (ICD-11). Based on the ICD-11, an individual can be diagnosed with gaming disorder if they experience the following: (1) impaired control over the behavior; (2) increased priority given to video gaming related activities to the extent that it takes precedence over other life interests and daily activities; and (3) continued gaming behavior despite negative consequences, which must be associated with significant impairment in personal, familial, social, and/or other important areas of functioning (World Health Organization, 2018). Thus, the key differentiating factor between the DSM-5 and ICD-11 framework is that significant impairment is required in the ICD-11 framework, but optional in the DSM-5 framework. There is empirical evidence to suggest that the ICD-11 framework captures a more severe population than does the DSM-5 framework (Jo et al., 2019).

Prevalence of IGD

Prevalence rate estimates of IGD have been hindered by two main factors. As previously described, the debate surrounding how to best conceptualize the disorder has resulted in a lack of agreed upon criteria to use in order to define the phenomena (Bean, 2019). The second barrier to understanding the prevalence of the disorder is a lack of empirically validated

assessment tools (Petry et al., 2018). With those limitations in mind, estimates of the prevalence of IGD and similar conditions (e.g., gaming disorder) range from 0.3% to 4.9%, although most studies have found estimates below 2.0% (Petry et al., 2018). The condition appears more prevalent among males compared to females, and more prevalent among adolescents compared to adults (Wittek et al., 2016).

Assessment Considerations

Many measures, with varying degrees of psychometric support, have been used in research on gaming disorders (Petry et al., 2018). Empirically validated assessment tools specific to gaming disorders are sparse. Additionally, the measures with psychometric support have been primarily evaluated in only one or two languages, possibly limiting generalizability to individuals speaking alternative languages. Clinicians interested in utilizing assessment instruments to aid in their case conceptualization and treatment progress monitoring may employ self-report questionnaires, structured clinical interviews, and clinician-guided timeline followback approaches, with the caveat that the empirical base surrounding these techniques is only now developing. There are also several mental health problems likely to co-occur with IGD, and clinicians should consider assessing for those as well.

Assessing IGD Severity

Two self-report questionnaires have begun to accrue evidence supporting their reliability and validity as measurements of IGD symptom severity. The first is modeled off the DSM-5 criteria for IGD, the Internet Gaming Disorder Scale – Short Form (IGDS9-SF; Pontes & Griffiths, 2015). This nine-item measure uses a 5-point Likert scale (*never to very often*) to rate IGD symptom severity, with total scores ranging from 9 to 45. It correlates strongly with other measures of IGD severity and moderately with frequency of video game play. Internal consistencies ranging from .87–.88 have been observed. No specific cut-off score has been empirically validated to detect IGD.

The second self-report questionnaire designed to assess for IGD symptom severity is the Gaming Disorder Test (GDT; Pontes et al., 2019), which is a measure based on the ICD-11 framework for gaming disorder. There are four items on this measure, each using a 5-point Likert scale, with total scores ranging from 4 to 20. This measure correlates with the previously described IGDS9-SF at approximately $r = .83$. It performs comparably across British and Chinese samples. Like with the IGDS9-SF, no specific cut-off score has been empirically validated to detect IGD.

There has also been one structured clinical interview published with promising psychometric properties: the Structured Clinical Interview for Internet Gaming Disorder (SCI-IGD;

Koo et al., 2017). The SCI-IGD is a 12-item interview that was validated in a sample of Korean adolescents. The initial validation study demonstrated that the SCI-IGD correlated strongly with other measures of IGD severity, clinicians' diagnostic impressions, and measures of mood, anxiety, attentional, and conduct disorders. It was reliable as evidenced by strong test-retest correlations over a 1-month period. To our knowledge, no investigations into the psychometric properties of the SCI-IGD outside of this sample of Korean adolescents have been published.

Assessing Video Gaming Behavior

In addition to assessing symptom severity, it is important to assess for the frequency and intensity of video gaming behaviors as a way to track treatment progress. The timeline followback (TLFB) was originally created to assess for alcohol use (Sobell & Sobell, 2008), but also has been used to assess for other forms of substance use (Robinson et al., 2014) and gambling-related behaviors (Pfund & Ginley, 2019; Weinstock et al., 2004). It may also be a useful approach for the assessment of video gaming behavior.

The TLFB method involves clients completing a calendar of their addictive behavior. There is a standard induction procedure where the therapist will first instruct the client to mark “anchoring” or “key” days (e.g., birthdays, holidays, days they were paid, and other special occasions). These anchors are used as memory aids to record the frequency and intensity of video game behavior. It can be completed by both the individual playing video games or a collateral reporter.

When administering the TLFB, it is important to gather multiple data points. Clinicians may be interested in frequency of gameplay (e.g., how many days per week), how many hours per day they game, how many hours of sleep they are getting on gaming days and non-gaming days, and how much time they spend watching others play video games or consuming media in relation to video games (e.g., watching online streams). A client can be involved in a discussion of determining what data they feel might be most helpful to track to best capture their individual pattern of play. Helpful “anchor points” to note during the induction stage may be the release dates of new games or new game content.

A concern with the TLFB is that some gaming clients have difficulty thinking about their own frequency and intensity of play because they lose track of time while playing or because they may be attempting to conceal the extent of their gaming. For young adolescent clients, the concept of time may be too abstract for them to fully understand the time spent on gaming-related activities. In any of these instances, it may be helpful to enlist a collateral reporter to complete the TLFB in addition to the client. Clinicians can then use these collateral reports so they better understand the extent of video game play and necessary targets for treatment. These

collateral reports may also be used to gently probe the client about possible discrepancies between two reports and, in turn, help them gain a more realistic understanding of their own gaming behavior.

Co-Occurring Conditions

Individuals who present with IGD may experience comorbid conditions. A number of gambling-like opportunities exist in video games (Brooks & Clark, 2019; Li et al., 2019). Thus, screening for gambling problems may be appropriate. One brief screening instrument that can be used is the Brief Biosocial Gambling Screen (Gebauer et al., 2010; Pfund & Ginley, 2019). Individuals who engage in problematic levels of video gaming are also at an increased risk for depression, anxiety, substance abuse, attentional difficulties, and low school performance (Van Rooij et al., 2014; Koo et al., 2017). Clinicians should therefore consider screening for these conditions in addition to using their preferred screening method.

Treatment of IGD

To date, psychological treatments for IGD are considered “experimental” (as opposed to “probably efficacious” or “well-established”) based on Chambless and Hollon’s (1998) criteria for empirically supported treatments (Zajac et al., 2017). The experimental nature of these treatments has primarily been due to a number of identified methodological concerns, such as small sample sizes, lack of randomization, and the lack of control groups (King et al., 2017; Zajac et al., 2019). However,

there is currently some promise for the use of cognitive-behavioral therapy (CBT) to treat IGD (Petry, 2019; Stevens et al., 2019; Winkler et al., 2013). A recent meta-analysis found that CBT reduced IGD symptoms as well as comorbid symptoms of anxiety and depression at posttreatment (Stevens et al., 2019).

Monitoring Gaming Time

Accurate tracking of video gaming behavior on a daily basis is a crucial early task of treatment. Not only will this inform goal setting and treatment progress, but it will also provide the client with insight into their own level of engagement, and potentially highlight patterns in their play, which will be useful when identifying antecedents and consequences to play (Petry, 2019). Clients can work on their own or with a collateral (e.g., a caregiver, friend) to track several data points related to the frequency and intensity of their play (see above, “Assessing Video Gaming Behavior”).

Clinicians should consider some specific details of gaming when monitoring for it during treatment. One starting point might be asking the client to list activities related to gaming (e.g., the names of games played, websites related to games browsed, videos/livestreams on games watched). From these listed activities, clinicians could then guide the client in populating a calendar of gaming-related activities and the duration that the client engaged in each activity. Figure 1 displays an example of how a client might monitor their gaming time.

In the clinical vignette, Ravi presented as struggling with an online game called *Fortnite*. Clinicians might begin with asking about what gaming activities Ravi engaged in related to *Fortnite* and then transition into asking about activities

January 2020							
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Date				1	2	3	4
				Watched Fortnite stream (1 - 3 PM) Played Fortnite (3 PM - 10 PM)	Played Fortnite (5 - 9 PM)	Played Fortnite (5 PM - 2 AM)	Played Fortnite (1 PM - 2 AM)
Special Day?				New Year's Day			
Date	5	6	7	8	9	10	11
	Played Fortnite (5-9PM)	Played Fortnite (5 - 9 PM)	Played Fortnite (5-9 PM)	Read Fortnite forum (2-230 PM) Played Fortnite (5-9 PM)		Played World of Warcraft (5 PM-2 AM)	Played World of Warcraft (5-8 PM) Played Fortnite (8 PM-2 AM)
Special Day?							
Date	12	13	14	15	16	17	18
			Watched Fortnite stream (1-2 PM)	Played Fortnite (5-9 PM)	Played Fortnite (5-9 PM)	Played Fortnite (5-9 PM)	Played Fortnite (5-9 PM)
Special Day?							

Fig. 1 Timeline Followback Calendar

related to other games. It may be helpful to instruct Ravi to track his gaming activities on a regular basis and to access his video gaming history via the video gaming platform, much like accessing a browser history. Alternatively, a daily behavior tracking worksheet could be completed that tracks what hours of the day Ravi was playing video games, engaging in other behaviors, as well as other relevant occasions, such as sleep and wake time.

Setting Limits for Gaming Time

Clinicians should initially ask the client to articulate their desired level of gaming. Similar to CBT for other addictive behaviors, clinicians conducting CBT for IGD might offer the choice to abstain or moderate/limit video gaming.

There are many reasons why an individual may prefer to set a moderation goal for their video gaming behavior instead of an abstinence goal. Indeed, video gaming itself may have many healthy benefits for individuals, such as allowing individuals to practice problem-solving and social skills (Petry, 2019). However, it is important for clinicians to understand the function of video gaming, such as in the context of comorbid psychological conditions. For example, clients with comorbid depression may use video gaming as a form of behavioral activation or as a form of escape from other problems (e.g., verbal altercations at home). Additionally, for clients with comorbid social anxiety or autism spectrum disorder, video gaming may serve as an opportunity to engage with others in a less intimidating environment than in-person settings. All of the ways in which video gaming is both beneficial and less beneficial to the client should be considered when identifying a target level of video gaming behavior. Findings from the literature on the treatment of other behavioral addictions, such as gambling disorder, support the idea that both abstinence and moderation goals are viable routes to recovery and that neither is superior to the other regarding treatment outcome (Stea et al., 2015).

There may be multiple ways to adjust the desired level of play, such as limiting the total number of hours engaged in any gaming activities or the number of hours engaged in specific gaming-related activities. Another strategy might be to limit the number of various games played. For Ravi, an appropriate goal may be simply restricting play to certain hours of the day in order to improve the number of hours per night he is able to sleep. As treatment progresses, it may become clear whether this time-of-day goal is adequate in order to address the impairment he experiences related to his video gaming, or if a reduction in the frequency and intensity of play may be more appropriate. Ravi may also consider limiting the number of games that he plays. If he plays both *Fortnite* and *Final Fantasy*, he could choose to restrict his gaming to one of those games.

Understanding Patterns of Play

If video gaming behavior is reliably tracked, certain patterns of behavior may become clear. For example, it may be that an individual tends to play mostly on the weekends or mostly when at friends' houses. Increases in gaming intensity may be associated with the release of new games or game content (Petry, 2019). Much like when treating other addictions, even substance use disorders, understanding patterns of behavioral engagement may provide insight regarding common triggers for play and may highlight the short-term and long-term consequences of engagement (Pfund & Ginley, 2019).

In the clinical vignette, Ravi was described as typically playing video games late at night, which caused him to get less sleep, which in turn became a barrier to him attending his college classes. For him, tracking the time of day he was gaming would be equally as important as tracking the total number of hours spent gaming. In doing so, clinicians might learn that Ravi increases his video game play when new gaming content is released or that he decreases his video game play when there is an upcoming exam.

These patterns may also result in better understanding the function of a client's video gaming. Clinicians might ask follow-up questions on what the client enjoys most about gaming, or how gaming helps them navigate difficult situations in their everyday life. For example, a client might describe gaming every night after work as a way to stay connected with friends from college and escape the loneliness of isolation in a new city for a new job. The conceptualization of that client would differ from the client who games because of the rush it brings when she cannot engage in other highly stimulating activities she also enjoys such as gambling or casual sex.

Increasing Pleasurable Activities

Aspects of behavioral activation that are commonly in the toolbox of a cognitive behavioral therapist can be tailored to assist in behavior change with an individual wanting to change their video gaming behavior. Following (or concurrent with) the tracking of video gaming behavior, therapists can collaborate with the client in identifying a list of activities they enjoy and would be willing to engage in in lieu of playing video games. Clients should be encouraged to identify things they used to enjoy before they were gaming excessively. Care must be taken to ensure the range of identified activities includes options that are readily available to the client during their typical times of problematic play. So for Ravi who often does most of his playing at night and who is living at home, thinking creatively about things he would like to do at night without disturbing his parents would be imperative. A great goal for clients is to think of activities that do not only allow them to pass time, but that are also in line with their values.

Clients presenting with problematic video game play often find considerable difficulty generating activities they find as pleasurable and as accessible as video gaming. Reduction in video game play can also directly reduce opportunities for socialization with friends made through games. Generating a large list of activities, challenging the client to consider new activities they would be willing to try at least once, and working to ensure some activities include a social component are imperative. Clients may need to be reminded of their motivations for changing behavior as they work through the challenges of identifying activities that are “good enough” and are consistent with their treatment. It may be helpful to initiate an honest conversation with the client acknowledging that other activities may not provide the same enjoyment as gaming, recognizing their strength around making the difficult change, and highlighting the positive differences that may result from change.

Therapists can also work with their clients to schedule specific pleasurable activities for times when the client may be at particularly high risk for excessive video gaming (e.g., when a new game is coming out). Therapists can then check in with clients each session about how successful they were at substituting their scheduled pleasurable activity for video game play during a high-risk time as well as adding and subtracting candidate pleasurable activities from the running list.

Integrating Parents or Supportive Others into Treatment

An individual’s problematic video gaming rarely occurs in isolation and clients often present as Ravi did, with a concerned significant other or family member in the waiting room. Thus, one possible concern about video gaming is how it impairs an important relationship. Integrating parents and/or supportive others into video gaming treatment can be a powerful tool for change. Of course, for individuals such as Ravi who are over the age of 18, the decision to involve a parent or supportive other should be made in collaboration with the client.

When integrating a concerned supportive other into treatment, caution must be taken to first carefully assess the communication style between the client and their supportive others around video gaming. Often, by the time treatment has been sought, communication around gaming may have become problematic. Communication may have become angry and aggressive with supportive others making threats about a need to stop gaming or yelling or punishing for excessive gaming. On the flip side, communication around gaming in some families looks more like ignoring problematic play in the hopes that the client will simply grow out of it, enabling continued risky gaming behavior by bailing the client out of credit card debt incurred by gaming, or making excuses like “they are just playing video games, not drinking excessively or using drugs.” Further, the client themselves has often been directly

lying about or concealing the extent of their game play for a long time, making initial conversations about the scope of the problem particularly frightening.

Regardless of the specifics of the maladaptive communication around gaming, the client and their concerned supportive others will need to agree to adopt new styles of communication around gaming. Psychoeducation around passive, aggressive, and assertive communication may be a helpful start. Identifying specific maladaptive patterns of interaction and working with both the client and their concerned supportive others to devise specific alternative responses can be particularly helpful. Once a pair is confident in what they can say, clients can be assigned homework of identifying maladaptive communication and practicing alternative responses.

How this intervention on communication might look for Ravi in our case vignette would be to first determine what his parents are saying or doing that makes them appear frustrated with him. Ravi can then coach his mother how to assertively express her concerns to Ravi in a way that is specific and supportive. Additionally, Ravi may need support from the clinician to find the words to explain to his parents the extent of his troubles with gaming and how they can help.

In addition to directly working to change the dynamic around how gaming is responded to in the client’s life, parents and supportive others can be particularly helpful for creating accountability for meaningful change in problematic video gaming behavior. Accountability can take many forms, from helping the client keep up with tracking of gaming time through periodic check ins to having the client develop a list of goals or a gaming reduction contract that their supportive others can also sign. Family members can help a client plan alternative activity in lieu of video game play, such as asking their child to go for a walk with them after dinner instead of going straight to the computer.

A major consideration for the treatment of problematic video gaming is the large body of literature on the treatment of addictive disorders that has found contingency management treatment the most efficacious treatment for reduction in substance use (Dutra et al., 2008). During contingency management treatment, a client is directly incentivized for objective reductions in behavior, most often in the form of a cash payout for a negative urine drug screen. In the case of problematic video gaming, the objective verification of use is not always easily accomplished in the clinic as reports of time spent video gaming may be largely self-report. Enlisting a family member to verify video game play at set times and provide rewards for not engaging in the problematic behavior can be significantly more objective. Rewards can also be delivered by a parent immediately after engagement in the desired behavior. Incentives can be customized to something that works and is desired by both the client and their concerned supportive other. Ravi may have particular concerns about playing video games too much during spring break when he has lots of free

time. He and his mother could agree that for each day he does not play during the week, she will make him one of his favorite meals for dinner as a reward. Rewards can also be designed so that instead of directly reinforcing engagement in the desired behavior (e.g., not gaming), they reward things that are incompatible with gaming. An example of this would be Ravi's mom could offer to buy his movie ticket if he proposes to go to the movies on a night where he is particularly stressed and at risk for excessive game play.

Five Tips to Remember

Video gameplay occurs in the complex array of behaviors that constitute one's daily activities. Excessive video gaming often disrupts the mix of these activities. Restoring balance among daily activities is often one of the goals of treatment. When working with individuals experiencing behavioral problems that result from excessive gameplay, several key points are important to remember.

- 1) Monitor gameplay with a daily log or online history.
- 2) Analyze the gameplay data for patterns of the times of playing.
- 3) Set limits on the amount of daily gaming.
- 4) Establish a set of other pleasurable activities that can be substituted for gameplay.
- 5) Involve others in monitoring gameplay and supporting engagement in alternative pleasurable activities.

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