Video Gaming, Gaming Disorder and Internet Gaming Disorder: Clinical Considerations

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Overview

- How Might Gaming Be Considered Within a Framework of Addictive Behaviors?
- How Might Gaming Be Considered Among Other Forms of Internet Use?
- What Are the Boundaries Between Gaming and Other Potentially Addictive Behaviors Including Gambling and Pornography Use?
- How Do the DSM-5 and ICD-11 Consider Disordered Gaming?
- How Might We Use Current Knowledge to Help People with IGD?

What is Addiction?

- Addict (verb) - “to devote or give (oneself) habitually or compulsively”; from Latin *addicere* - bound to or enslaved
- Historical Shifts in Usage of Term
  - Sin or Moral Failing
  - Vice
  - Excessive Alcohol Use
  - Compulsive Drug Use

What is Addiction?

- Which Behaviors Are Addictive?
- Core Components of Addiction (Shaffer, 1999)
  - Continued Behavior Despite Adverse Consequences
  - Diminished or Lost Control
  - Compulsive Engagement
  - Craving or Urge State Component

Gambling Disorder in the DSM

- Classified as an Impulse-Control Disorder in DSM-III and DSM-IV
- Data Collected Over Decades Prompted the Re-Classification in DSM-5 to an Addictive Disorder
- Other Changes in DSM-5 Included Changes in Criteria and Thresholding Based on Existing Data Synthesized in Research Work Groups and Considered by Expert Committees (Potenza, 2006; Petry, 2006; Potenza et al., 2009)

A Changing Technological Landscape

- There Have Been Significant Changes in the Availability and Use of Technology Over the Past Decade
  - Computers, Smart Phones, TV (Streaming of Entertainment)
  - Digital Media - Gaming, Gambling, Shopping, Social Networking, and Other Behaviors
- Young Individuals (Adolescents, Young Adults) May be Particularly Facile with and Attached to Technologies

Possibilities and Conceptualizations

- With the Technological Changes Come Possible Benefits and Detriments
  - Texting - Rapid Communication Vs Unsafe (Driving)
  - Networking - Increased Connectedness Vs Privacy
- There Are Significant Individual Differences in the Patterns and Extent of Use of Technologies
- How Best to Define Excessive (Versus Healthy) Engagement is a Matter of Debate
  - Addiction/Mental Health Disorder Vs Problem Vs Normative Behavior Vs Cultural Phenomenon …

Difficult to Determine Public Health Impact of Excessive or Problematic Internet Use

- Different Definitions of Excessive and Problematic Internet Use (PIU)
- Different Definitions and Other Factors Have Led to Widely Variable Prevalence Estimates
- Prevalence of PIU in US Nationally Representative Adult Sample Estimated at 0.7%, with 13.7% Acknowledging At Least One Criterion (Aboujaoude et al, 2006)
- Higher Estimates of PIU (25% to 50%) Reported Amongst College Students (Fortson et al, 2007)
- Videogaming Addiction Reported in ~8% of Youth 8-18 Years in US National Sample (Gentile, 2009), with Lower International Estimates of IGD (Przybylski et al., 2017)

Internet Use in DSM-5 (and ICD-11)

- IGD Included in Section 3 (Future Research – Not For Clinical Use)
- Similar Criteria as For Gambling Disorder
- Non-gaming Forms of Internet Use (and Non-Internet-based Forms of Gaming) Currently Not Directly Addressed in DSM-5
- Current Focus of WHO

Petry and O´Brien, 2013

Diagnosing IGD in DSM-5

- IGD is Characterized by: “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 the individuals exhibiting five (or more) of the following in a 12-month period
- (a) Preoccupation with internet games. (The individual thinks about previous gaming activity or anticipates playing the next game; internet gaming becomes the dominant activity in daily life).
- Note: This disorder is distinct from internet gambling, which is included under gambling disorder.

Diagnosing IGD in DSM-5

- (b) Withdrawal symptoms when internet gaming is taken away (These symptoms are typically described as irritability, anxiety or sadness, but there are no physical signs of pharmacological withdrawal).
- (c) Tolerance – the need to spend increasing amounts of time engaged in internet games.
- (d) Unsuccessful attempts to control the participation in internet games.
- (e) Loss of interests in previous hobbies and entertainment as a result of, and with the exception of, internet games.

Diagnosing IGD in DSM-5

- (f) Continued excessive use of internet games despite knowledge of psychosocial problems.
- (g) Has deceived family members, therapists or others regarding the amount of internet gaming.
- (h) Use of internet games to escape or relieve a negative mood (e.g., feelings of helplessness, guilt, anxiety).
- (i) Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of participation in internet games"

Diagnosing IGD in DSM-5

- The Proposed IGD Criteria Also State:
- "Note: Only nongambling internet games are included in this disorder. Use of the internet for required activities in a business or profession is not included, nor is the disorder intended to include other recreational or social internet use. Similarly, sexual internet sites are excluded."

Diagnosing IGD in DSM-5

- The Proposed IGD Criteria Further State:
- "The essential feature of internet gaming disorder is persistent and recurrent participation in computer gaming, particularly group games, for many hours. These games involve competition between groups of players (often in different global regions, so that duration of play is encouraged by the time-zone independence) participating in complex structured activities that include a significant aspect of social interactions during play. Team aspects appear to be a key motivation."

Diagnosing IGD in DSM-5

- Diagnosis Involves Meeting 5 of 9 Inclusionary Criteria
- Like Gambling Disorder, Inclusionary Criteria Target Tolerance, Withdrawal, Interference in Life, Unsuccessful Control, Preoccupation, Loss of Interests, Lying, Gaming to Escape, Continued Excessive Gaming Despite Problems
- Like with Gambling Disorder and SUDs, Severity Ranges from Mild to Severe
- Unlike SUDs (and Gambling Disorder), A More Stringent Threshold for Diagnosis Exists

Problematic Internet Use in Students

- Present in 4% of CT High School Students
  (3.5% of Boys; 4.5% of Girls)
  - PIU Defined By: 1) Irresistible Urge; 2) Growing Tension; and 3) Trying to Cut Back
- Boys Spent More Time on Internet; Girls More Likely to Think They Have a Problem
  - Similarities with Gambling (Desai et al 2005)
- More Common in Asian (7.9%) and Hispanic (6.1%) Youth
- PIU Associated with Substance Use (p=.001), Depression (p<.0001) and Aggression (p<.0001)

Liu et al, 2011

Problematic Gaming in Students

- Boys (76%) More Likely Than Girls (29%) to Game
- Gaming Linked to Lower Odds of Smoking in Boys
- Gaming Linked to Depression, Fights and Weapon Carrying in Girls
- Among Gamers, 4.9% Had Problematic Gaming (5.8% of Boys, 3% of Girls)
- Across Sexes, Correlates of Problematic Gaming Included Regular Tobacco Use, Drug Use, Depression and Getting into Serious Fights
- Future Studies Should Assess Gaming Types

Desai et al, 2010

Types of Problematic Internet Use: Gaming, Social Networking, Other

- Population-Based Studies (Rumpf et al, 2015)
- Three Groups: Gaming, Social Networking, or "Other" (e.g., Pornography Viewing, Shopping)
- Social Networking Predominantly Female (83.3%) as Compared to Gaming (20.0%) and "Other" (36.4%)
- "Other" Group Older and Gaming Group Reported More Hours on the Internet
- Psychological Characteristics Largely Similar Across Groups

Rumpf et al, 2015

Internet Gambling

- Adolescents Gambling on the Internet More Likely to Report Problem Gambling (Potenza et al, 2011)
- Poor Academic Performance and Heavy Alcohol Use More Strongly Associated with Gambling Problems Amongst Internet Gambling Group
- Gambling with Friends Less Strongly Associated with Gambling Problems Amongst Internet Gambling Group
- The Internet May Engage Youths in Risk Behaviors in Non-Traditional Fashions, Potentially Placing a Different Subset of Individuals at Elevated Risk

Potenza et al, 2011

Blurred Boundaries Between Gambling and Gaming: Daily Fantasy Sports, the Internet and Sports Gambling

- Daily Fantasy Sports Not Legally Defined as Gambling (Considered Skill)
- Daily Fantasy Sports Legalized in Most States
- Daily Fantasy Sports Companies May Benefit from Changes in Sports Gambling Laws
- The Internet May Provide Increased Access to Sports Gambling and Certain Types of Wagering (Live-Action) May Be Particularly Concerning

Additional Blurred Boundaries Between Gambling and Gaming

- Social Casino Games Do Not Involve Placing Bets & May Teach Youth How to Gamble (Kim et al., 2015)
- Micro-transactions During Social Casino Gaming Linked to Online Gambling Initiation and Participation (Kim et al., 2015)
- Competitive Gaming (eSports) May Involve Wagering (Both Skin Gambling and Actual Gambling)
- eSport and Sports Gamblers Differ on Sociodemographic and Behavioral Measures (Schwartz, 2017; Martinelli, 2017; Gainsbury et al., 2017)

Weapons, Gambling and Gaming

- Weapon-carrying Associated with More Permissive Gambling Attitudes, Perceived Parental Permissiveness Towards Gambling, More Family Gambling Concerns, ARPG, and Relatively Diminished Associations Between ARPG and Friend/Family/Adult Gambling (Zhai et al, 2019)
- Findings Suggest More Socially Isolated Gambling Links ARPG and Weapon-Carrying
- Similar Findings with Respect to Gaming Behaviors, Paricularly Among Youth with High Sensation-Seeking (Zhai et al., 2020)
- Findings Suggest Targeting Isolative and Sensation-Seeking Youth

Neurobiologies of Problematic Internet Use/Gaming

- Similarities and Differences Across Substance Use and Addictive Disorders (Yau et al, 2012)
  - Co-occurring Disorders, Core Features and Biological Features
- Adolescents with Risky/Problematic Internet Use (Versus Adolescents Without) Show Blunted EEG Measures of Reward Processing (Yau et al, 2015)

Pharmacotherapies and Neuromodulation for Gaming Disorder

- No FDA-Approved Indications for IGD
- Bupropion May Improve IGD and MDD, with the Latter Shorter Term (Han and Renshaw, 2015)
- Bupropion and Escitalopram May Each Improve IGD (Song et al., 2016)
- Bupropion May Decrease Impulsivity and Inattention in IGD (Song et al., 2016)
- TDCS to the DLPFC May Improve Regulation of Craving and Emotion in IGD (Wu et al., 2020)

ICD-11 and DSM-5

- Similarities and Differences Exist Between the International Classification of Diseases (ICD) and the Diagnostic and Statistical Manual (DSM)
- The ICD is Developed by the World Health Organization (WHO) and Thus Has a More Global Mandate than the DSM (Generated by the APA)
- The ICD Covers Physical and Mental Disorders Whereas the DSM Covers Psychiatric Conditions
- The ICD Considers Public Health Broadly and Considers More Fully Behaviors From a Public Health Perspective (Including Harmful or Hazardous Behaviors Not Meeting a Diagnostic Threshold) Whereas the DSM Focuses on Psychiatric Disorders

Will ICD-11 Harmonize with DSM-5?

- In ICD-10, Pathological Gambling is Classified as an Impulse Disorder and IGD is Not Included
- In the Setting of the Rationale for DSM Changes in Classification, Addictions Researchers Proposed Classifying Gambling Disorder Together with SUDs in ICD-11 (Faith-Buehler et al, 2017)
- This Approach Was Challenged, With Core Features of Addictions Being Described as Defining Impulse Disorders (Grant et al, 2014)
- Other Researchers (Shaffer, 1999; Mann et al, 2016) Have Countered That Continued Engagement in a Behavior Despite Adverse Consequences is Better Considered a Core Feature of Addictions

WHO-Related Workgroups

- Six Workgroup Meetings – Tokyo (2014), Seoul (2015), Hong Kong (2016), Istanbul (2017), Changsha (2018) and Abu Dhabi (2019)
- Meetings Have Focused on Internet Use and Behavioral Addictions

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The Internet and Pornography Use

- Availability, Accessibility, Affordability and Perceived Anonymity of Internet Pornography (Cooper et al, 2000)
- Proportion of 7-10 Year Old Children Viewing Pornography is Increasing (Gola et al., Submitted)
- Market for Underage Pornography May Promote Sexual Abuse
- Hardcore ("Gonzo") Pornography Has Become More Mainstream
- Data Suggest Recent Increases in Pornography-Related Erectile Dysfunction and Treatment-Seeking for Relationship Discord

CSB/HD as an Addiction?

- Questions Have Been Raised Regarding CSB Classification as an Addiction (Kor et al, 2013; Kraus et al, 2016)
- Early Neurobiological Findings Suggested Similarities (Kraus et al, 2015; Kraus et al, 2016)
- Similarities with Respect to Interventions Also Exist with Respect to 12-Step Approaches and Preliminary Pharmacological Interventions (Kraus et al., 2015; Gola and Potenza, 2016)

Hypersexual Disorder: Proposed HD DSM-5 criteria (Kafka, 2010; Reid, 2012)

- Recurrent Intense Sexual Fantasies, Urges or Behaviors and 4 of the Following:
- Excessive Time Spent
- Response to Dysphoric Mood
- Response to Stress
- Repeated Unsuccessful Attempts to Control
- Physical or Emotional Harm
- Clinically Significant Distress or impairment in Function / Role
- Specify if: Masturbation, Pornography, Sexual Behavior with Consenting Adults, Cybersex, Telephone Sex and Strip Clubs

Sexual Addiction (Carnes, 2001)

- 3 of the Following:
- Failure to Resist Impulses
- Longer than Intended
- Repeated Unsuccessful Attempts to Control
- Excessive Time Spent
- Preoccupation
- Impairment in Function / Role
- Continued Despite Impairment
- Escalation to Achieve Effect
- Giving Up or Limiting Social, Occupational or Recreational Activities
- Distress, Anxiety or Restlessness if Unable to Engage in Behavior

A Clinical Need for Identifying and Treating CSBD and PPU

- Problematic Pornography Use (PPU) Has Been Associated with Craving, Poor Self-Control, Impairment in Social, Occupational and Relational Domains, and Negative Reinforcement Motivations (Kraus et al, 2016; Kraus and Rosenberg, 2014)
- PPU Also Associated with Psychopathology, Poor Self-Esteem and Poor Attachment (Kor et al, 2014)
- PPU Frequently Cited (81%) As a Behavior Among Individuals Seeking Treatment for Hypersexual Behaviors (Reid et al, 2012)

Who Is Interested in Treatment?

- Among Male Viewers of Pornography, 14.3% Reported a Current Interest in Seeking Treatment for Use of Pornography (Kraus et al., 2016)
- Treatment-Interested Viewers were More Likely to Spend More Time Viewing Pornography and Exhibit Hypersexuality (Kraus et al., 2016)

Kraus et al., 2016

Combined Treatment of PPU

- PPU-Focused CBT Treatment Associated with Decreased Pornography Viewing But Increased Craving
- Naltrexone Addition Associated with Decreases in Craving and Persistence in Decreased Use

Kraus et al., AJP, 2015

Predicting Outcome

- Among Subjects Receiving Active Drug (n=214) in Two Placebo-Controlled Trials of Naltrexone and Nalmefene, The Factor Most Strongly Associated with Outcome was a Family History of Alcoholism (OR=1.74; p=0.006)
- Among Subjects Receiving Higher Doses of Active Drug, Gambling Urges Were Associated with Treatment Outcome (OR=5.86; p<0.05)
- Among Those Receiving Placebo (n=70), Response Was Most Strongly Associated with Younger Age (OR=0.70; p=0.01)

Source: Grant et al, 2008

What Are the Current Neurobiological Data?

“Thus, existing data suggest its [CSBD’s] classification may be better suited as a behavioral addiction rather than an impulse-control disorder.”

Stark et al, 2018

Attention Bias in CSB/PPU

- Men with CSB as Compared to Those Without Show Greater Attentional Bias to Sexually Explicit Cues During Early Latency Stimuli on a Dot Probe Task (Mechelmans et al, 2014)
- Attentional Biases to Erotic Cues Also Seen in Male and Female College Students and Linked to PPU-Severity (Sklenarik, et al. 2019, 2020)
- Findings Similar to Those in Substance Addictions

Disorders Due to Addictive Behaviors – Gambling Disorder

- "Disorders Due to Addictive Behaviors" Included in the Section of "Disorders Due to Substance Use or Addictive Behaviors" in ICD-11, Consistent with DSM-5 Approach
- Gambling Disorder (Replacing Pathological Gambling) Included, with 6C50 Code
- Specifiers for Gambling Disorder Include "Predominantly Offline" (6C50.0) and "Predominantly Online" (6C50.1) Subtypes, With "Unspecified" (6C50.Z) Descriptor Also Included
- Exclusion Criteria Include Hazardous Gambling or Betting and Bipolar Disorders Types I and II

Gambling Disorder – ICD-11

- "Gambling disorder is characterized by a pattern of persistent or recurrent gambling behaviour, which may be online (i.e., over the internet) or offline, manifested by:
- impaired control over gambling (e.g., onset, frequency, intensity, duration, termination, context);
- increasing priority given to gambling to the extent that gambling takes precedence over other life interests and daily activities; and
- continuation or escalation of gambling despite the occurrence of negative consequences."

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Gambling Disorder – ICD-11

- "The behaviour pattern is of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning."
- "The pattern of gambling behaviour may be continuous or episodic and recurrent. The gambling behaviour and other features are normally evident over a period of at least 12 months in order for a diagnosis to be assigned, although the required duration may be shortened if all diagnostic requirements are met and symptoms are severe."

Hazardous Gambling or Betting

- "Hazardous gambling and betting refers to a pattern of gambling and betting that appreciably increases the risk of harmful physical or mental health consequences to the individual or to others around this individual. The increased risk may be from the frequency of gambling or betting, from the amount of time spent on these activities or the context of gambling and betting, from the neglect of other activities and priorities, from risky behaviours associated with gambling and betting or its context, from the adverse consequences of gambling and betting, or from the combination of these. The pattern of gambling and betting often persists in spite of awareness of increased risk of harm to the individual or to others."

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Hazardous Gambling & Gambling Disorder

- The Two Entities are Exclusionary for One Another (i.e., Someone with Hazardous Gambling Cannot Be Simultaneously Have Gambling Disorder and Vice-Versa)
- The Designations for Hazardous Gambling or Betting May Cover Online or Offline Behaviors, Although This Is Not Specifically Mentioned
- Hazardous Designations May Be Particularly Helpful for Public Health Efforts

Disorders Due to Addictive Behaviors – Gaming Disorder

- Gaming Disorder Included, with 6C50 Code
- Specifiers for Gaming Disorder Include “Predominantly Offline” (6C51.0) and “Predominantly Online” (6C51.1) Subtypes, With “Unspecified” (6C51.Z) Descriptor Also Included
- Exclusion Criteria Include Hazardous Gaming and Bipolar Disorders Types I and II

Gaming Disorder

- "Gaming disorder is manifested by a persistent or recurrent gaming behavior (i.e., "digital gaming" or "video-gaming") that is characterized by an impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes increasing precedence over other interests and daily activities and continuation of gaming despite the occurrence of negative consequences. The behavior pattern is of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning. These features and the underlying pattern of gaming are normally evident over a period of at least 12 months in order for a diagnosis to be assigned, although the required duration may be shortened if all diagnostic requirements are met and symptoms are severe."

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Hazardous Gaming in ICD-11

- "Hazardous gaming refers to a pattern of gaming, either online or offline, that appreciably increases the risk of harmful physical or mental health consequences to the individual or to others around this individual. The increased risk may be from the frequency of gaming, from the amount of time spent on these activities, from the neglect of other activities and priorities, from risky behaviors associated with gaming or its context, from the adverse consequences of gaming, or from the combination of these. The pattern of gaming often persists in spite of awareness of increased risk of harm to the individual or to others."

CSB Disorder in ICD-11

"Compulsive sexual behaviour disorder is characterized by a persistent pattern of failure to control intense, repetitive sexual impulses or urges. For example, engaging in repetitive sexual activities has become a central focus of the person's life to the point of neglecting health and personal care or other interests, activities and responsibilities, the person has made unsuccessful attempts to control or significantly reduce sexual behaviours, the person continues to engage in repetitive sexual behaviour despite adverse consequences, or the person continues to engage in repetitive sexual behaviour even when the individual derives little or no satisfaction from it."

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CSB Disorder in ICD-11

- "The pattern of repetitive sexual behaviour is evident over a period of at least 12 months and causes marked distress or significant impairment in personal, family, social, educational, occupational or other important areas of functioning. Distress that is entirely related to moral judgments and disapproval about sexual impulses, urges or behaviours is not sufficient to meet this requirement."

Gaming During COVID-19

- Gaming has increased during COVID-19
  - Verizon reporting 75% increase in gaming
  - Fortnite 70% increase in Italy
  - Steam reports record-high 20 million users
  - 10% increase in viewership on Twitch
- The extent to which these increases may be healthy or not warrants further investigation

King et al, 2020, ***J Behav Addict***

WHO and Gaming During COVID-19

- Gaming industry promotional campaigns (#PlayTogetherApart) state gaming may increase socializing and reduce stress
- World Health Organization (WHO) seemingly expressed initial support
- Subsequent WHO mental health guidances (#HealthyAtHome – Mental Health) recommend balanced gaming

King et al, 2020, ***J Behav Addict***

Shorter- Vs. Longer-term Impacts

- Unclear presently whether gaming behaviors that may be stress-reducing or socially promoting during COVID-19 may be beneficial over time
- Disruptions in school, work may create unstructured time permitting more gaming
- The extent to which patterns of heavier gaming may become instantiated and difficult-to-break habits warrants more study

King et al, 2020, ***J Behav Addict***

Gambling During COVID-19

- COVID-19-related stress (personal, financial) may promote gambling as has been seen in prior financial crises
- Some gambling may decrease during COVID-19 related to closing of land-based casinos, cessation of sporting events
- Gambling on amateur sports has seen increases in preliminary reports

Håkansson et al, 2020, ***J Addict Med***

Gambling During COVID-19

- Other forms of online gambling may increase
- Online casino gambling is available and has been linked to high indebtedness and gambling problems (Håkansson & Widinghoff, 2020)
- In a preliminary study, individuals in treatment for gambling problems report significant anxiety (46%) and depression (27%), with 12% reporting worsening gambling
- Stakeholders should work together to promote health

Håkansson et al, 2020, ***J Addict Med***

COVID-19 & Pornography Use

- Pornhub reports an increase in pornography early (in March up 11%) during the COVID-19 pandemic with further increases later (in April up 22%)
- Some increases may relate to confinement, decreased casual sex opportunities, stress, or other factors
- Promotion of pornography use during COVID-19 conducted directly by making premium services free during the pandemic

Mestre-Bach et al, 2020

COVID-19 & Pornography Use

- Searches for coronavirus-related pornography tallied over 9 million by mid/late March, 2020
- Timing of increases in pornography most prominent at 1am – 3am across jurisdictions; also around noon
- Patterns raise questions about unhealthy use with respect to sleep behaviors and motivations
- Other increase in viewing around mid-day which may reflect school- or work-related changes or other factors

Mass Council/Evergreen, 11/16/20

Mestre-Bach et al, 2020

COST Guidance

- Given these and other considerations, COST members have generated a consensus guidance regarding internet use during the COVID-19 pandemic
- Specific recommendations exist regarding general ways to promote health and specific ways to use the internet in healthy fashions

Kiraly et al, 2020, ***Comp Psychiatry***

COST General Recommendations

- Daily routine
- Healthy sleep, exercise, fluids and personal hygiene
- Relaxation
- Social activities
- Family and personal time and space
- Staying abreast of health information

Kiraly et al, 2020, ***Comp Psychiatry***

COST Specific Recommendations

- Self-monitor and regulate screen time
- Monitoring children's behavior
- Consider using digital well-being apps
- Consider using analogue technical tools
- Maintain contact with friends and relatives
- Seek help as needed

Kiraly et al, 2020, ***Comp Psychiatry***

Conclusions & Future Directions

- DSM-5 and ICD-11 Have Considered Gaming Disorders
- Gambling and Gaming Behaviors Have Been Converging
- COVID-19 Has Impacted Gaming and other Behaviors Performed on the Internet
- Additional Research is Needed to Understand Health Impacts of Gaming and Gaming Disorder in the Current Environment and to Prevent Harms and Promote Health, Including Through Improved Treatments

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