

## Functional impairment matters in the screening and diagnosis of gaming disorder

### Commentary on: Scholars' open debate paper on the World Health Organization ICD-11 Gaming Disorder proposal (Aarseth et al.)

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This commentary responds to Aarseth et al.'s (in press) criticisms that the ICD-11 Gaming Disorder proposal would result in "moral panics around the harm of video gaming" and "the treatment of abundant false-positive cases." The ICD-11 Gaming Disorder avoids potential "overpathologizing" with its explicit reference to functional impairment caused by gaming and therefore improves upon a number of flawed previous approaches to identifying cases with suspected gaming-related harms. We contend that moral panics are more likely to occur and be exacerbated by misinformation and lack of understanding, rather than proceed from having a clear diagnostic system.

**Keywords:** Internet gaming disorder, ICD-11, IGD, gaming disorder, diagnosis, functional impairment

## INTRODUCTION

In recent years, there has been a growing recognition that online video gaming may become excessive and leads to functional impairments and psychological distress. The latest version (fifth edition) of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) includes Internet gaming disorder (IGD) in the "Emerging Measures and Models" section and the beta draft of the 11th revision of the International Classification of Diseases (ICD-11) includes gaming disorder in its section on "Disorders Due to Substance Use or Addictive Behaviours." In a recent position piece, Aarseth et al. (in press) criticized the description of gaming disorder prepared by World Health Organization (WHO) as a part of the development of the ICD-11, arguing that inclusion of "gaming disorders" in

such a classification would be premature. This commentary has been authored by a group of scholars who have participated in the meetings convened by WHO and held in response to the concerns of health professionals, public health experts, and scholars about the public health consequences, and the need for appropriate recognition of health conditions associated with overuse of video games. Our aim here is to critically respond to one of the arguments developed by Aarseth et al.; namely, that the ICD-11

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Gaming Disorder proposal would result in “moral panics around the harm of video gaming” and “the treatment of abundant false-positive cases.” This commentary does not address the question of whether gaming disorder should or not be classified as an addictive disorder, as this topic has been addressed in a separate commentary (Saunders et al., *in press*).

We agree with Aarseth et al. (*in press*) that overdiagnosis has been a concern in some cases, partly because gaming is a highly prevalent activity worldwide and it is not uncommon for frequent gaming to be reported by children and adolescents and/or their relatives. Those participating in the WHO meetings were cognizant of the popularity and normality of gaming in general, and the need for any new diagnosis related to gaming behavior to be able to differentiate normal from harmful or problematic use. Accordingly, this paper aims to respond to two propositions by Aarseth et al. (*in press*) with which we disagree, specifically that: (a) a diagnosis would pathologize normal gaming and (b) the creation of the ICD-11 Gaming Disorder classification would escalate moral panics about gaming.

#### DOES THE ICD-11 GAMING DISORDER PROPOSAL PATHOLOGIZE NORMAL GAMERS?

Legitimate concerns have been raised about the increase in the number of proposed behavioral addictions of questionable validity (e.g., work addiction, dance addiction, and tanning addiction; see Billieux, Schimmenti, Khazaal, Maurage, & Heeren, 2015, for a critical discussion). Some of these so-called addictions may have arisen from the publication of the DSM-5 criteria for IGD, as its nine criteria have been adapted to other behaviors (i.e., by replacing “gaming” with another activity) on the assumption that gaming is equivalent to other behaviors. However, the evidence base for several so-called behavioral “addictions” is notably of low quality, sometimes being reported by a single research team, and with there being no demand for clinical services. Research studies have too often applied simple confirmatory approaches and failed to consider other plausible explanations for overuse, such as underlying conditions (Billieux et al., 2015; van Rooij & Kardefelt-Winther, *in press*).

What is arguably the most well-established behavioral addiction, gambling disorder, frequently co-occurs with other psychiatric disorders, so this should not be a reason for dismissing it as a diagnostic entity (Petry, Stinson, & Grant, 2005). The weak evidence base for some recently proposed conditions, however, is not directly relevant to the current global situation concerning problematic gaming. It was the view of participants in the WHO meetings (and numerous researchers and clinicians working in this field whose work was cited at this meeting) that the evidence base for a gaming disorder was sufficiently robust to warrant inclusion in classification systems of mental and behavioral disorders.

In this context, Aarseth et al. (*in press*) raise a valid point on the ease with which new disorders may be proposed using the criteria from existing disorders. The question of whether such practices may result in pathologizing normal behavior is a valid one, particularly, if the guiding criteria

are poor. One important way in which the proposed description of ICD-11 Gaming Disorder limits the risk of overdiagnosis is by its explicit reference to the presence of a gaming behavior pattern that results in functional impairment as a requirement for meeting criteria as a disorder. “Disorders due to addictive behaviours” are defined in the ICD-11 draft as “*recognizable and clinically significant syndromes associated with distress or interference with personal functions that develop as a result of repetitive rewarding behaviours other than the use of dependence-producing substances*,” and the “gaming disorder” is defined as a behavior pattern “*of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning*” (WHO, 2017). This approach is in line with recent proposals related to the diagnosis of behavioral addictions (Billieux et al., 2017; Kardefelt-Winther et al., *in press*) and consistent with the DSM-5 approach, which describes the need for clinically significant impairment or distress as a result of persistent or recurrent gaming, even though it is not listed in the nine potential inclusionary criteria (American Psychiatric Association, 2013). Ensuring that functional impairment is considered is an important diagnostic consideration that avoids one of the pitfalls of overdiagnosis common to polythetic approaches that have conservative thresholds. Applying the threshold-based “DSM-5 approach” to gaming and other behaviors without considering functional impairment may be a contributing factor to high prevalence rates recorded (e.g., in excess of 5%), as some studies may be counting cases of gamers, who report some symptoms of IGD but without associated functional impairment (Kardefelt-Winther et al., *in press*; van Rooij, Van Looy, & Billieux, *in press*). The proposed definition of gaming disorder in ICD-11 is well positioned, in our view, to accurately capture harmful or treatment-seeking cases of problem gaming.

Furthermore, the proposed ICD-11 description of gaming disorder does not rely on the presence of certain symptoms that have garnered mixed support in the literature. For example, some studies have found that some features of problematic gaming, such as “preoccupation” or “tolerance,” performed poorly in distinguishing between healthy and problematic patterns of gaming (Charlton & Danforth, 2007). In some cases, this may be due to the wording and interpretation of problem-gaming items (Kaptsis, King, Delfabbro, & Gradisar, 2016; King & Delfabbro, 2016). Criteria, such as preoccupation, may be an indicator of high involvement in gaming, and not a distinctive indicator of a disorder, because it is not necessarily associated with functional impairment (Kardefelt-Winther et al., *in press*). Overestimating prevalence may present real risks for overdiagnosis and unnecessary treatment, but we disagree with Aarseth et al. (*in press*) that the ICD-11 would contribute to this problem with respect to its proposed description of gaming disorder.

Accordingly, we believe that Aarseth et al. (*in press*) are overstating the danger of pathologization that they attribute to the ICD-11 Gaming Disorder proposal. It is our view that the proposed definition of gaming disorder in ICD-11 may improve the identification of cases with true gaming-related harms and reduce the likelihood of cases with some

low-risk features of problematic gaming symptoms being misclassified as disordered, although additional direct investigation of this possibility is warranted.

### WILL THE ICD-11 GAMING DISORDER PROPOSAL GENERATE MORAL PANICS?

The second proposition by Aarseth et al. (*in press*) is that inclusion of gaming disorder in the ICD-11 may create moral panics about gaming. It is our view that moral panics are more likely to occur and be exacerbated by misinformation and lack of understanding. The proposed ICD-11 description of gaming disorder represents a step forward by viewing disordered gaming with clarity and clinical relevance. It should also be considered that moral panics about media have existed for a long time and, in the context of video gaming, prior to any attempt to define excessive video gaming as a potential behavioral disorder.

There is a clear concern among members of the community, parents, and players of online games themselves when gaming becomes excessive. Having scientifically justifiable definitions of gaming disorder is essential for understanding these conditions and for guiding treatment. An example of what can happen when people jump to conclusions is the “boot camp” approach in East Asia, where such camps were introduced to address parental and other social fears about gaming several years prior to the recognition of disordered gaming such as IGD in the DSM-5 (Koo, Wati, Lee, & Oh, 2011).

Several outpatient treatment centers dedicated to the treatment of Internet- and gaming-related disorders have now opened in Asia and Europe. They have done so in response to an increasing treatment-seeking demand, which has existed prior to the inclusion of IGD in the DSM-5. An attempt to link classification systems to moral panic, therefore, appears tenuous. We believe that having a clear diagnostic classification is more likely to calm potential panics because it will clarify what type of gaming patterns are of clinical relevance and public concern. Finally, we would argue that moral panic is often driven by mainstream media with its tendency to sensationalize current affairs, rather than any such panic originating within the academic community.

It is also our view that an appropriate level of public concern and awareness (as opposed to panic) related to excessive gaming and gaming disorder may be helpful. Individuals with gaming disorder and their families, for example, may benefit from the knowledge that gaming disorder is recognized as a legitimate health condition associated with distress and functional impairment and that there are appropriate intervention measures to assist them. Dismissing problematic gaming as an artifact or consequence of moral panic is, in our view, a potentially reckless and invalidating position to assume, if it results in individuals with genuine need whose concerns go unrecognized and untreated as they might not be eligible for clinical care.

The participants at the WHO meetings unanimously agreed that excessive video gaming may lead to functional impairment, such as significant deficits in personal, family,

social, educational, occupational, or other important areas of functioning. There is an increasing number of published reports documenting treatment-seeking cases with functional impairment (e.g., Beutel, Hoch, Wölfling, & Müller, 2010; Müller et al., 2017; Ren, Li, Zhang, Liu, & Tao, 2014; Sakuma et al., 2017; Thorens et al., 2014; van Rooij, Schoenmakers, & van de Mheen, 2017). We note that these reports are not limited to East Asian countries, such as China, South Korea, or Japan, which imply that it should not be assumed that gaming disorder is primarily driven by particular cultural or lifestyle factors characterizing Asian countries. Furthermore, longitudinal studies support the notion that functional impairment (e.g., reduced grades and onset of psychopathological symptoms) may be caused by prolonged excessive use of video games (Gentile et al., 2011). There are also several documented treatment-seeking cases in published studies that exclude cases with comorbidities (Han, Hwang, & Renshaw, 2010; Kim, Han, Lee, & Renshaw, 2012; Li & Wang, 2013), further indicating that gaming disorder may present as the primary issue in need of intervention.

### CONCLUSION

This paper has commented on concerns raised by Aarseth et al. (*in press*) with respect to the conceptualization of gaming disorder in the ICD-11 draft proposal. While some of their concerns are an appropriate critique of past methodological approaches, we consider the ICD-11 Gaming Disorder proposal, with its important emphasis on functional impairment as a core criterion, to be an advancement in the field of disordered gaming. We disagree with the claims that the ICD-11 will contribute to overdiagnosis and generate moral panics related to gaming. We acknowledge Aarseth et al.’s valuable point on the essential need to recognize gaming as a normal and healthy activity for most people, but disagree with them that the gaming community at large will detrimentally be affected by a new diagnosis system that recognizes its most vulnerable members. As the field continues to progress, it is necessary that those in the field measure their concerns appropriately against the available empirical evidence. While we acknowledge that the literature in this growing field has numerous “growing pains” (i.e., limitations and gaps in knowledge that warrant critical attention), the best available evidence supports the need for a diagnostic entity of gaming disorder to guide intervention services for affected individuals.

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## REFERENCES

- Aarseth, E., Bean, A. M., Boonen, H., Carras, M. C., Coulson, M., Das, D., Deleuze, J., Dunkels, E., Edman, J., Ferguson, C. J., Haagsma, M. C., Bergmark, K. H., Hussain, Z., Jansz, J., Kardefelt-Winther, D., Kutner, L., Markey, P., Nielsen, R. K. L., Prause, N., Przybylski, A., Quandt, T., Schimmenti, A., Starcevic, V., Stutman, G., Van Looy, J., & van Rooij, A. (in press). Scholars' open debate paper on the World Health Organization ICD-11 Gaming Disorder proposal. *Journal of Behavioral Addictions*. Advance online publication. doi:10.1556/2006.5.2016.008
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). Arlington, VA: American Psychiatric Association.
- Beutel, M. E., Hoch, C., Wölfling, K., & Müller, K. W. (2010). Clinical characteristics of computer game and Internet addiction in persons seeking treatment in an outpatient clinic for computer game addiction. *Zeitschrift für Psychosomatische Medizin und Psychotherapie*, 57, 77–90. doi:10.13109/zptm.2011.57.1.77
- Billieux, J., Blaszczynski, A., Colder Carras, M., Edman, J., Heeren, A., Kardefelt-Winther, D., Khazaal, Y., Maurage, P., Schimmenti, A., & van Rooij, A. J. (2017). Behavioral Addiction: Open definition development. Retrieved from <http://doi.org/10.17605/OSF.IO/Q2VVA>
- Billieux, J., Schimmenti, A., Khazaal, Y., Maurage, P., & Heeren, A. (2015). Are we overpathologizing everyday life? A tenable blueprint for behavioral addiction research. *Journal of Behavioral Addictions*, 4, 119–123. doi:10.1556/2006.4.2015.009
- Charlton, J., & Danforth, I. (2007). Distinguishing addiction and high engagement in the context of online game playing. *Computers in Human Behavior*, 23, 1531–1548. doi:10.1016/j.chb.2005.07.002
- Gentile, D., Choo, H., Liau, A., Sim, T., Li, D., Fung, D., & Khoo, A. (2011). Pathological video game use among youths: A two-year longitudinal study. *Pediatrics*, 127(2), e319–e329. doi:10.1542/peds.2010-1353
- Han, D. H., Hwang, J. W., & Renshaw, P. F. (2010). Bupropion sustained release treatment decreases craving for video games and cue-induced brain activity in patients with Internet video game addiction. *Environmental and Clinical Psychopharmacology*, 18, 297–304. doi:10.1037/a0020023
- Kaptsis, D., King, D. L., Delfabbro, P. H., & Gradisar, M. (2016). Withdrawal symptoms in Internet gaming disorder: A systematic review. *Clinical Psychology Review*, 43, 58–66. doi:10.1016/j.cpr.2015.11.006
- Kardefelt-Winther, D., Heeren, A., Schimmenti, A., van Rooij, A., Maurage, P., Carras, M., Edman, J., Blaszczynski, A., Khazaal, Y., & Billieux, J. (in press). How can we conceptualize behavioral addiction without pathologizing common behaviors? *Addiction*. doi:10.1111/add.13763
- Kim, S. M., Han, D. H., Lee, Y. S., & Renshaw, P. F. (2012). Combined cognitive behavioral therapy and bupropion for the treatment of problematic on-line game play in adolescents with major depressive disorder. *Computers in Human Behavior*, 28, 1954–1959. doi:10.1016/j.chb.2012.05.015
- King, D. L., & Delfabbro, P. H. (2016). Defining tolerance in Internet gaming disorder: Isn't it time? *Addiction*, 111, 2064–2065. doi:10.1111/add.13448
- Koo, C., Wati, Y., Lee, C. C., & Oh, H. Y. (2011). Internet-addicted kids and South Korean government efforts: Boot-camp case. *Cyberpsychology, Behavior, and Social Networking*, 14, 391–394. doi:10.1089/cyber.2009.0331
- Li, H., & Wang, S. (2013). The role of cognitive distortion in online game addiction among Chinese adolescents. *Children and Youth Services Review*, 35, 1468–1475. doi:10.1016/j.childyouth.2013.05.021
- Müller, K. W., Dreier, M., Duven, E., Giral, S., Beutel, M. E., & Wölfling, K. (2017). Adding clinical validity to the statistical power of large-scale epidemiological surveys on Internet addiction in adolescence: A combined approach to investigate psychopathology and development-specific personality traits associated with Internet addiction. *Journal of Clinical Psychiatry*, 78, e244–e251. doi:10.4088/JCP.15m10447
- Petry, N. M., Stinson, F. S., & Grant, B. F. (2005). Comorbidity of DSM-IV pathological gambling and other psychiatric disorders: Results from the National Epidemiological Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, 66, 564–574.
- Ren, C.-Y., Li, H., Zhang, Y., Liu, C.-Y., & Tao, R. (2014). Study of the relationship between personality traits and game genre in hospitalized Internet gaming addicts. *Chinese Journal of Drug Dependence*, 23(2), 144–148.
- Sakuma, H., Mihara, S., Nakayama, H., Miura, K., Kitayuguchi, T., Maezono, M., Hashimoto, T., & Higuchi, S. (2017). Treatment with the Self-Discovery Camp (SDiC) improves Internet gaming disorder. *Addictive Behaviors*, 64, 357–362. doi:10.1016/j.addbeh.2016.06.013
- Saunders, J. B., Hao, W., Long, J., King, D. L., Mann, K., Fauth-Bühler, M., Rumpf, H. J., Bowden-Jones, H., Rahimi-Movaghar, A., Chung, T., Chan, E., Bahar, N., Achab, S., Lee, H. K., Potenza, M. N., Petry, N. M., Spritzer, D., Ambekar, A., Derevensky, J., Griffiths, M. D., Pontes, H. M., Kuss, D., Higuchi, S., Mihara, S., Assangangkornchai, S., Sharma, M., El Kashef, A., Ip, M., Farrell, M., Scafato, E., Carragher, N., & Pozynak, V. (in press). Gaming disorder: Its delineation as an important condition for diagnosis, management and prevention. *Journal of Behavioral Addictions*.
- Thorens, G., Achab, S., Billieux, J., Khazaal, Y., Khan, R., Pivin, E., Gupta, V., & Zullino, D. (2014). Characteristics and treatment response of self-identified problematic Internet users in a behavioral addiction outpatient clinic. *Journal of Behavioral Addictions*, 3, 78–81. doi:10.1556/JBA.3.2014.008

- van Rooij, A. J., & Kardefelt-Winther, D. (in press). Lost in the chaos: Flawed literature should not generate new disorders. *Journal of Behavioral Addictions*. doi:[10.1556/2006.6.2017.015](https://doi.org/10.1556/2006.6.2017.015)
- van Rooij, A. J., Schoenmakers, T. M., & van de Mheen, D. (2017). Clinical validation of the C-VAT 2.0 assessment tool for gaming disorder: A sensitivity analysis of the proposed DSM-5 criteria and the clinical characteristics of young patients with 'video game addiction'. *Addictive Behaviors*, 64, 269–274. doi:[10.1016/j.addbeh.2015.10.018](https://doi.org/10.1016/j.addbeh.2015.10.018)
- van Rooij, A. J., Van Looy, J., & Billieux, J. (in press). Internet Gaming Disorder as a formative construct: Implications for conceptualization and measurement. *Psychiatry and Clinical Neurosciences*. doi:[10.1111/pcn.12404](https://doi.org/10.1111/pcn.12404)
- World Health Organization [WHO]. (2017). ICD-11 Beta Draft. Mental, behavioural or neurodevelopmental disorders. Available at <http://apps.who.int/classifications/icd11/browse/f/en#/http%3a%2f%2fid.who.int%2fcd%2fentity%2f499894965> (accessed on April 07, 2017).