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# An international consensus for assessing internet gaming disorder using the new DSM-5 approach

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## ABSTRACT

**Aims** For the first time, the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-5) introduces non-substance addictions as psychiatric diagnoses. The aims of this paper are to (i) present the main controversies surrounding the decision to include internet gaming disorder, but not internet addiction more globally, as a non-substance addiction in the research appendix of the DSM-5, and (ii) discuss the meaning behind the DSM-5 criteria for internet gaming disorder. The paper also proposes a common method for assessing internet gaming disorder. Although the need for common diagnostic criteria is not debated, the existence of multiple instruments reflect the divergence of opinions in the field regarding how best to diagnose this condition. **Methods** We convened international experts from European, North and South American, Asian and Australasian countries to discuss and achieve consensus about assessing internet gaming disorder as defined within DSM-5. **Results** We describe the intended meaning behind each of the nine DSM-5 criteria for internet gaming disorder and present a single item that best reflects each criterion, translated into the 10 main languages of countries in which research on this condition has been conducted. **Conclusions** Using results from this cross-cultural collaboration, we outline important research directions for understanding and assessing internet gaming disorder. As this field moves forward, it is critical that researchers and clinicians around the world begin to apply a common methodology; this report is the first to achieve an international consensus related to the assessment of internet gaming disorder.

**Keywords** Addiction, behavioral addiction, diagnosis, DSM-5, gaming, internet gaming.

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The *Diagnostic and Statistical Manual of Mental Disorders* (DSM) is a primary method for classifying psychiatric disorders. The fifth revision, DSM-5 [1], includes non-substance addictions for the first time. This paper addresses two contentious issues related to this change: (i) the inclusion of behavioral addictions generally, and internet gaming disorder specifically, in the DSM-5; and (ii) the intended meaning behind the DSM-5 internet gaming disorder criteria.

## CONTROVERSY A: THE DECISION TO INCLUDE NON-SUBSTANCE ADDICTIONS IN DSM-5

In preparation for the DSM-5, the American Psychiatric Association (APA) convened workgroups to recommend improvements for diagnosing psychiatric disorders and specifically asked the Substance Use Disorder Workgroup, comprised of 12 members including four authors of this

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paper, to consider 'behavioral addictions'. This is a highly controversial topic. Some argue that excessive behavior patterns are not well-aligned with substance use disorders, or object to the construct of 'addiction' as a medical condition (e.g. [2,3]). Others contend that excessive behavioral patterns can result in substantial impairments and deserve equal footing with other psychiatric disorders (e.g. [4]).

The DSM-5 Workgroup reviewed the literature on non-substance addictive behaviors, including gambling, internet gaming, internet use generally, work, shopping and exercise. They voted to move gambling disorder to the substance-related and addictive disorders section in DSM-5 because of its overlap with substance use disorders in terms of etiology, biology, comorbidity and treatment [5]. In terms of the other putative non-substance addictions, the DSM-5 Workgroup voted to include only one other condition—internet gaming disorder.

This decision was based upon the large number of studies of this condition and the severity of its consequences. The DSM-5 Workgroup reviewed more than 250 publications on this topic, also referred to as gaming or internet use disorder, gaming or internet addiction or dependence, pathological or problematic gaming, etc. Some reports demonstrated severe consequences, including seizures [6] and deaths [7,8], following lengthy periods of internet game-play lasting days without adequate sleep or food. Many studies came from Asia (e.g. [9–14]) and some from Europe [15–21], with relatively few from North America [22,23]. Most focused on youth or young adults [9–13,15,17,19–24], with only a handful including adults [16,25,26]. Some explicitly restricted study to gaming activities [9,16,17,19–23], but others included multiple forms of internet use [10,13–15]. Few studies compared different forms of internet activities, and those that did found that internet gaming appears to be distinct from other excessive online or electronic communication activities such as social media use, internet gambling (included under gambling disorder), pornography viewing, etc. with respect to prevalence rates, etiologies, characteristics of individuals participating in them and risks for harm [13,27,28]. Because of the distinguishing features and increased risks of clinically significant problems associated with gaming in particular, the Workgroup recommended the inclusion of only internet gaming disorder in Section 3 of the DSM-5.

With the exception of gambling and internet gaming, the DSM-5 Workgroup concluded that research on other behavioral addictions was relatively limited, the adverse consequences were less well documented or less reflective of clinically significant impairment or the behavior pattern was not well aligned with substance use disorders. Therefore, no other non-substance addictions are included in DSM-5. Although many researchers and clinicians in these fields are likely to disagree with this decision, the issues and criteria outlined below ultimately may guide the study of other conditions, with the explicit understanding that application of internet gaming criteria to other conditions is not appropriate unless the reliability and validity of the criteria, and thresholds for diagnosis, are independently established for other manifestations of internet use or other non-substance-related excessive behavioral patterns.

## CONTROVERSY B: HOW TO ASSESS THE DSM-5 CRITERIA FOR INTERNET GAMING DISORDER

Although the DSM-5 Workgroup voted to include internet gaming disorder in the DSM-5, they readily determined that existing studies applied no standard diagnostic criteria to assess the condition (see also [29]). Some reports used criteria that parallel those for substance use disorders [30], others used versions of DSM-IV pathological gambling criteria [23,31] and still others adapted impulse control or other criteria [22,32,33]. Some studies considered that individuals had a 'disorder' when they endorsed one or a small number of criteria [11,34]; others required multiple or all criteria to be endorsed [14,16,25]. Thus, research on internet gaming disorder, while extensive, did not support specific diagnostic criteria. Depending on the criteria used and sample studied, prevalence rates range from less than 1% [16,26,35] to approximately 10% [9,20,23].

Table 1 outlines the nine DSM-5 internet gaming disorder criteria. They were derived in large part from another report [14] that used an iterative process to identify diagnostic criteria. The criteria were also chosen and worded to parallel some substance use and gambling disorder criteria, while considering that expression of internet gaming disorder may differ from these disorders. Table 1 also lists commonly utilized instruments for assessing problems with internet gaming [17,19,20,31,36–39] and denotes the DSM-5 criteria addressed in each instrument. Although many of the instruments tap some of the DSM-5 criteria, the instruments rarely assess a DSM-5 criterion in a similar manner. For example, pre-occupation has been assessed by items ranging from: 'Did you spend much free time on games?' to 'How often do you stay online until the last minute when you have to leave?' to 'How often do you look forward to your next internet session?' [17,38,39].

Psychiatric diagnosis relies most typically upon structured interviews, and the use of consistent wording can assist in more reliable assessment of each criterion and ultimately may be useful for screening purposes. To this

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**Table 1** Representation of internet gaming disorder criteria in existing assessment instruments and suggestions for phrasing.

| | | | *Instruments* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| *Criteria* | *Substance use disorder* | *Gambling disorder* | *GAS* | *PVGU* | *VGAS* | *POGQ* | *CIUS* | *CIAI* | *YIAS* | *CSAS* | *Suggested wording for intended meaning of criteria* |
| Pre-occupation | – | X | X | X | X | X | X | X | X | X | Do you spend a lot of time thinking about games even when you are not playing, or planning when you can play next? |
| Withdrawal | X | X | X | X | X | X | X | X | X | X | Do you feel restless, irritable, moody, angry, anxious or sad when attempting to cut down or stop gaming, or when you are unable to play? |
| Tolerance | X | X | X | X | X | X | – | – | X | X | Do you feel the need to play for increasing amounts of time, play more exciting games, or use more powerful equipment to get the same amount of excitement you used to get? |
| Reduce/stop | X | X | X | X | – | X | X | X | X | X | Do you feel that you should play less, but are unable to cut back on the amount of time you spend playing games? |
| Give up other activities | X | – | X | X | – | X | X | X | – | X | Do you lose interest in or reduce participation in other recreational activities (hobbies, meetings with friends) due to gaming? |
| Continue despite problems | X | – | X | X | X | X | ? | X | – | X | Do you continue to play games even though you are aware of negative consequences, such as not getting enough sleep, being late to school/work, spending too much money, having arguments with others, or neglecting important duties? |
| Deceive/cover up | – | X | X | X | X | X | – | X | X | – | Do you lie to family, friends or others about how much you game, or try to keep your family or friends from knowing how much you game? |
| Escape adverse moods | – | X | X | X | X | – | X | ? | X | – | Do you game to escape from or forget about personal problems, or to relieve uncomfortable feelings such as guilt, anxiety, helplessness or depression? |
| Risk/lose relationships/ opportunities | – | X | – | – | – | – | – | ? | X | – | Do you risk or lose significant relationships, or job, educational or career opportunities because of gaming? |

GAS = Game Addiction Scale [17]; PVGU = Pathological Video Game Use [36]; VGAS = Video Game Addiction Scale [20]; POGQ = Problematic Online Gaming Questionnaire [37]; CIUS = Compulsive Internet Use Scale [38]; CIAI = Chinese Internet Addiction Inventory [39]; YIAS = Young Internet Addiction Scale [31]; CSAS = Video Game Addiction Scale-II [19].

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end, some European authors of this paper (F.R., J.L., H.-J.R., T.M., and G. Bischof) convened a group of international experts to recommend best methods of assessing the DSM-5 criteria, inviting four members of the DSM-5 Workgroup (N.P., G. Borges, M.A and C.O.) as well as clinicians and researchers in countries throughout the world (D.G., R.T., D.F., A.G.-I. and P.T.) to participate in the process. All individuals invited agreed to participate.

After reviewing and adapting items from existing instruments, the authors of this paper independently suggested items they felt best captured each criterion in full. They then discussed and voted on a pool of four to five items per criterion. For some criteria, substantial differences emerged in recommended content or wording of items. For example, some suggested that an item operationalizing adverse effects of gaming consist only of having 'fights or arguments with others', while the majority voted to include a more comprehensive list of negative consequences. After much discussion, 'being late to school/work' was determined to reflect the criterion related to continuing gaming despite adverse consequences, while receiving failing or substantially lower course grades because of excessive gaming was more consistent with the criterion related to losing important opportunities. Although the descriptions below may, on the surface, appear to be self-evident, the disparate manner in which these criteria have been assessed across instruments and investigators reflects the inherent controversy surrounding assessment of internet gaming disorder.

Table 1 shows the items that received the highest votes. Each item listed received a mean rating of 'good' to 'very good' (the highest rating) and was voted by the majority of authors as the item best reflecting that criterion. An Appendix includes translations of each item into Chinese, Japanese, Korean, Portuguese, German, Dutch, Spanish, Italian, French and Turkish.

To distinguish specific aspects of criteria, suggested items can be broken down, e.g. 'Do you spend a lot of time thinking about games even when you are not playing?' and 'Do you spend a lot of time planning when you can play next?'. The wording could also be adapted for specific populations by, for example, eliminating words such as 'employment' or 'jobs' when assessing school-aged children. The goal here, however, was to provide a single sentence that encompasses each of the DSM-5 criteria to standardize more appropriately the research in this field.

### Pre-occupation

Pre-occupation relates to spending substantial amounts of time thinking about an activity. This criterion parallels one used in substance use and gambling disorders and reflects the construct of 'cognitive salience' [40]. This criterion may overlap somewhat with that related to loss of interests in other hobbies (criterion 5), but pre-occupation is more a cognitive process, whereas loss of interests manifests as a more behavioral one [41]. Prior instruments incorporated items that address pre-occupation (Table 1), some of which included aspects related to remembering past games [20]. It can also relate to fantasizing about games (e.g. [39]) or when one can next play. Pre-occupation relates to being all-absorbed, but it should be distinguished from transient enthusiasm while playing. For this criterion to be met, the individual must be thinking about games not only while playing but also during times of non-play, with excessive thoughts about gaming occurring throughout the day. Table 1 shows suggested wording.

### Withdrawal

Withdrawal refers to symptoms that emerge when one is unable to engage in a behavior or is attempting to reduce or stop it. In many substance use disorders, withdrawal and tolerance are features of physiological dependence [40,42]. Although gambling and some substances do not induce physiological dependence, withdrawal symptoms can also be present in people with these disorders [43], and individuals with gaming problems report them as well [13,14]. As noted in Table 1, instruments have assessed withdrawal in the context of gaming, often using symptoms reflecting negative mood states (e.g. sad, anxious) and active symptoms (e.g. restless, irritable).

Withdrawal symptoms associated with gaming must be distinguished from emotions that arise in response to an external force preventing or stopping a gaming episode. If a parent abruptly disconnects the internet during a game, a child is likely to express extreme emotions. These abrupt emotional responses, however, are not withdrawal. Withdrawal refers to symptoms that arise when one is unable to initiate gaming, and/or when one is purposefully trying to stop gaming.

### Tolerance

Tolerance is characterized by an increasing dosage or amount of time spent in an activity to feel its desired effects. For gaming, desired effects usually relate to excitement. Tolerance is a criterion for substance use and gambling disorders, and it has been represented in most instruments evaluating internet gaming disorder, albeit in different contexts. For example, some instruments assess playing longer than intended, or feeling unable to stop once starting play [17,39]. Many individuals who play video games, including those without any problems, report playing longer than intended [16,24,44] or being

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unable to stop once they start [17]. However, these reactions can occur even the first time one plays, and therefore do not represent tolerance which, by definition, takes time and experience to develop. Table 1 shows the wording that the authors of this paper voted as best reflecting tolerance in the context of gaming. Tolerance refers to feeling the need to play games for longer periods of time to experience excitement; it may also involve the need for more exciting games or more powerful media equipment.

### Unsuccessful attempts to stop or reduce

A persistent desire or unsuccessful attempts to stop or reduce is another criterion in diagnosing substance use and gambling disorders, as well as internet gaming disorder. As seen in Table 1, this criterion has been assessed in most gaming instruments. Inquiries about this criterion should focus not only on attempts to stop but also attempts to cut down or reduce gaming. Similarly, desiring to cease or cut back on a behavior, but being unable to do so, would reflect the criterion, because such desires presume that play has risen to a problematic level.

### Loss of interest in other hobbies or activities

In diagnosing substance use disorders, another criterion relates to marked reductions in other recreational activities. The substance use behaviors dominate, with a decline in other social and recreational activities. This construct has been referred to as 'behavioral salience', or narrowing of activities in favor of the addictive behavior. A method to address this criterion involves asking if individuals have lost interest in (or participate less often in) other activities or hobbies, including meeting with friends, because of gaming. Table 1 provides suggested wording.

### Excessive gaming despite problems

A substance use disorder criterion relates to continued use despite knowledge of a persistent physical or psychological problem associated with drug use. In the case of gaming, the individual continues to play even though he is aware of significant negative consequences of this behavior, which are more likely to be psychosocial than physical in nature. This construct has been represented in many internet gaming surveys (Table 1), but is often asked in different ways. Table 1 presents a comprehensive item reflecting the criterion, detailing some negative consequences such as being late to school/work, spending too much money, having arguments or neglecting important duties due to gaming. Gaming may adversely influence health (e.g. losing too much sleep), although implicit in the criterion is that the problems are persistent and significant. To fulfill the criterion, negative consequences must involve central areas of functioning, and effects of little clinical relevance should not be considered (e.g. neglecting household chores that do not cause difficulties). Social and developmental aspects should be considered because dysfunction will manifest differentially based on age (e.g. school, work, parents, partners).

Another criterion (criterion 9) relates to jeopardizing or actually losing important relationships or vocational/educational opportunities because of gaming. In distinguishing between the two criteria, the consequences need not be as severe to meet this criterion relative to criterion 9.

### Deception

This criterion, drawn from gambling disorder, refers to individuals lying to others about, or covering up the extent of, behaviors. Typically, deceit is directed towards family members, friends or other important people. Several instruments have inquired about concealing gaming, leading to the recommended wording in Table 1. The social environment should be considered in assessing this criterion. Adults living on their own may be less likely to lie about or hide gaming than a child living with parents. Nevertheless, gaming that has risen to a level such that the individual is hiding it from others implies that it has become problematic.

### Escape or relief from a negative mood

This criterion also parallels one used to diagnose gambling disorder. It relates to engaging in a behavior to escape from or relieve negative moods, such as helplessness, guilt, anxiety or depression. The problem behavior becomes a method to modify moods or cope with difficulties. This criterion can relate to playing games to escape from or forget about real-life problems or relieve negative emotional states, as noted in Table 1.

Gaming to escape adverse moods should be distinguished from gaming to avoid withdrawal symptoms (criterion 2). Because some withdrawal symptoms have overlap with adverse moods, the same symptoms and responses to them should not be reflected in both criteria. Importantly, this criterion is intended to refer to gaming in response to feelings of sadness, depression or anxiety that arise from personal situations largely unrelated to gaming.

### Jeopardized or lost a relationship, job or educational or career opportunity

This is one of the most severe symptoms associated with gambling disorder [45]. It refers to having actually lost, or nearly lost, an important relationship or opportunity

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related to schooling or employment due to the problem behavior (Table 1). It is intended to reflect more substantial issues than neglecting a homework assignment or being late for school or work due to gaming, behaviors more consistent with criterion 6. Arguments with parents about gaming usually do not rise to a level in which relationships are severed, but if a relationship is jeopardized due to gaming (e.g. arguments involving physical force or leaving home) then this criterion would be met. Similarly, if neglecting studies in order to game occurs to the extent that a much worse than usual overall course grade is achieved, courses are failed or the person drops out of school, then this criterion would be met.

## RECOMMENDATIONS

The wording in Table 1 represents the authors' votes related to the intended meaning behind the internet gaming disorder criteria proposed in the DSM-5. Others have assessed aspects of these criteria differently, and may not agree with the suggestions herein. Section 3 of the DSM-5 is designed to stimulate further research, and for internet gaming disorder research is needed foremost to determine if these nine criteria represent defining features of the condition and if the suggested wording is appropriate. Similarly to other psychiatric disorders, no gold standard exists by which to classify the condition and, typically, independent clinical interviews or treatment-seeking behavior is used as a validator. Some studies have found that particular criteria may not add to diagnostic accuracy. For example, Tao *et al.* [14] found that the deception criterion was not useful in distinguishing those with a significant gaming problem from those without and recommended its removal. In contrast, Gentile [23,46] found that a deception item did add to diagnostic accuracy, but that an item tapping gaming to escape from bad feelings was very frequently endorsed and not useful in distinguishing problems. Further studies are needed to determine if each of the nine proposed criteria add meaningfully to diagnosis.

In addition to ascertaining if each of these criteria is unique and important in classifying internet gaming disorder, the optimal threshold for diagnosis must be determined. The proposed cut-point of five criteria was conservatively chosen in the DSM-5, because low thresholds will inflate diagnoses and result in classifying individuals who have not suffered significant clinical impairment. Overdiagnosis holds the potential to undermine the importance and significance of true psychiatric disorders, especially in the context of 'behavioral addictions' [4]. When the criteria applied reflect clinically significant symptoms, however, a lower cut-point may classify people with a true disorder more accurately, as appears to be the case with substance use and gambling disorders [45,47].

Research is also needed to evaluate the reliability and validity of the specific items, particularly in the context of creating screening instruments for unique populations. Other wording than that suggested in Table 1 may gauge the criteria more accurately or may be understood more readily. To simplify the language or to determine specific problems or consequences related to gaming, the all-inclusive items in Table 1 may be best broken into discrete components; affirmative responses to any one emotion, aspect or problem related to that criterion would reflect meeting it. For younger children, parental versions may need to be developed, focusing upon behavioral aspects. Instruments are needed that gauge the criteria simply and expeditiously, but comprehensively.

Establishing the psychometric properties of instruments assessing these nine criteria should begin using a cross-cultural perspective. The disorder may manifest differently across cultures, and a greater understanding of cultural differences in its expression is needed. Nevertheless, criteria should be valid across cultures. Similarly, the criteria should be valid across gender and age groups, ranging from primary-age children to teenagers and young adults as well as older adults. Although differences in consequences experienced may vary based on gender and age, females as well as males, and children as well as adults, develop problems with gaming, and diagnostic criteria should be applicable regardless of gender and age, even if response patterns to specific criteria differ.

The frequencies with which symptoms occur for a criterion to be met also require study. The DSM-5 proposes a past-year time-frame for diagnosis, but within a 1-year period a single occurrence of some symptoms may be sufficient to meet the criterion (i.e. jeopardize or lose a significant relationship or vocational opportunity); others may need to occur repeatedly for the criterion to be endorsed (e.g. pre-occupation, attempts to reduce or stop).

Once the optimal criteria, frequencies of symptoms, threshold for diagnosis and reliable and valid questionnaires are established, epidemiological surveys, drawing from representative samples spanning youth to older adults in countries around the world, need to ascertain prevalence rates. An understanding of the natural course of the disorder is paramount, because if symptoms often subside within a short time-frame and do not occur again, the condition might not reach clinical significance. Research related to comorbidities with other psychiatric conditions and assessment of biological features will assist in determining if internet gaming disorder is an independent disorder or aligned more closely to

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other disorders. Additionally, its potential overlap with substance use and gambling disorders requires greater study to determine if internet gaming disorder is best represented as a 'behavioral addiction' or under another rubric.

Although many issues remain to be addressed, this paper provides a clear direction for researchers and clinicians. The authors of this paper voted that the wording and meanings outlined above best reflect the DSM-5 criteria for internet gaming disorder, but achieving consensus in theory is simpler than applying it in practice. Preferences for particular instruments, or even the inclusion or exclusion of specific DSM-5 criteria, are bound to impact researchers' and clinicians' assessment of these constructs. Nevertheless, to treat and ultimately prevent or reduce problems with internet gaming, the field needs to converge to ensure that all are referring to a similar behavioral syndrome. This international consensus is the first to provide such a perspective.

### Declaration of interests

No authors report any financial conflicts of interest associated with the paper. Drs Petry, Auriacombe, Borges and O'Brien served on the American Psychiatric Association Workgroup for Substance Use and Related Disorders for the DSM-5. The views and opinions expressed in this paper are those of the authors and should not be construed to represent the views of any sponsoring organizations, agencies or governments.

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## Supporting information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

**Appendix S1** Translations of the criterion items for internet gaming disorder.

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