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“Addiction”**

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Lack of Consensus Among Scholars on the Issue of Video Game “Addiction.”

Abstract

Whether pathological video game overuse constitutes a distinct mental disorder remains an issue of controversy among scholars. Both empirical data and scholarly opinions differ regarding the status of pathological gaming and whether “addiction” is the best frame by which to understand video game use. The current study sought to examine the status of scholarly opinions in a survey of 214 scholars to examine their opinion of possible behavioral effects of games. Results indicated a variance of opinions. About 60.8% of scholars agreed pathological gaming could be a mental health problem, whereas 30.4% were skeptical. However, only 49.7% believed the DSM criteria for “internet gaming disorder” were valid, with slightly higher numbers, 56.5%, supporting the World Health Organization “gaming disorder” diagnosis. More scholars worried about both the DSM and WHO criteria over-pathologizing normal youth than weren’t worried about this. Scholars were likewise split over whether the DSM/WHO had **precipitated** moral panics over video games. Belief in pathological gaming was positively predicted by hostile attitudes toward children and negatively by participants’ experience with games. Overall results indicated continued significant disagreements among scholars related to pathological gaming. Claims of consensus are, at this juncture, likely premature.

Keywords: Video game addiction; Pathological gaming; Consensus; Video Games;

Addiction

Public Significance Statement: The issue of problematic gaming continues to be strenuously debated in the public sphere. Areas of agreement and disagreement were examined among scholars studying this issue. Results indicate that, at present, no clear consensus exists on problematic gaming, its diagnosis or involvement in moral panic.

Introduction

In 2018, the World Health Organization (WHO) announced its intention to include “gaming disorder” as an official diagnosis in the next International Classification of Diseases (ICD). Gaming disorder would make prolonged interference in other life activities due to gaming a mental health diagnosis, the first time a hobby or activity pursued primarily for pleasure, personal edification or relaxation could be classified as an illness. Other organizations were less supportive of the WHO’s initiative. The American Psychological Association and Psychological Society of Ireland’s respective media divisions released a joint statement opposing the WHO diagnosis (Society for Media Psychology and Special Interest Group in Media, Arts and Cyberpsychology, 2018). Likewise, scholarly reaction to the WHO’s gaming disorder classification was mixed. A large group of scholars wrote an open letter opposing the WHO’s diagnosis (Aarseth et al., 2017.) In response the journal published ten responses, sometimes overlapping in authorship (e.g. Griffiths, Kuss, Lopez-Fernandez, & Pontes, 2017; Saunders et al., 2017)ⁱ with a reply by the original authors (van Rooij et al., 2018). Such exchanges illustrate a lack of agreement among scholars on the issue of pathological gaming.

The situation is made more difficult by the existence of two variants of potential pathological gaming diagnoses. The WHO version, an official diagnosis, includes no clear symptoms aside from the interfering nature of gaming. Arguably, this may have been a good-faith reaction to criticism of symptoms listed by the American Psychiatric Association (APA)/Diagnostic and Statistical Manual (DSM) version to be covered momentarily. However, this also potentially leaves considerable flexibility for clinicians to use their own opinions as to what constitutes pathological gaming. The WHO version was also rendered more controversial

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due to WHO staff comments that they were under political pressure by “Asian countries” to create the diagnosis (see Bean, Nielsen, van Rooij & Ferguson, 2017).

By contrast the DSM version, called “internet gaming disorder” (IGD) lists 9 symptoms, of which 5 are required for diagnosis. It is important to note that the DSM’s IGD is classified as a condition for future study, not a formal diagnosis that can be assigned presently. All symptoms are analogous to those for substance abuse. However, criticism has suggested that, while many such symptoms work well for substance abuse, they are likely to produce false positives for gaming (Bean et al., 2017; Quandt, 2017). For example, using heroin or alcohol to alleviate stress or depression may be a legitimate sign of addiction, yet doing the same with video games is little different from the use of any other hobby. Whether gaming is more analogous to substance abuse, as some allege, or to an ordinary hobby, remains an issue of contention. Early results for the utility of the IGD diagnosis have, likewise, not been entirely promising. Some evidence suggests that IGD criteria do not distinguish those high in psychological or health problems, from those low (Przybylski & Weinstein & Murayama, 2017). Other evidence has suggested the IGD construct is unstable, often going away by itself without treatment (Rothmund, Klimmt, & Gollwitzer, in press; Scharkow, Festl, & Quandt, 2014). Given that IGD is a proposed condition for future study, it is not yet an official diagnosis and the APA may change or eliminate it based on research feedback.

This state of affairs results in two areas of disagreement. First, whether pathological gaming exists. Second, if it exists, whether the WHO or DSM approach is more useful. Such debates have, not unexpectedly, been popularized in the news media and among the general public who are, contemporaneously, fascinated with the larger issues of technology addiction and screen use (Orben & Przybylski, in press).

Areas of Relative Agreement and Disagreement

There are probably few areas on which we might expect universal agreement among scholars. Nonetheless we identify a few upon which there appears to be, at very least, widespread agreement. We also note several areas of considerable contention among scholars. Understanding these areas of agreement and disagreement may help identify why consensus positions have been difficult to develop regarding pathological gaming. Naturally, definitions of pathological gaming itself differ between studies, scholars and methods of assessment (King et al., 2013). However, for the current study we define pathological gaming as gaming behaviors which are associated with (whether causal or not) clinical impairment in other areas of life functioning.

Areas of Agreement

Some People Overdo Gaming. Few scholars would argue that there are no examples whatsoever of individuals who are overdoing gaming. Scholars may differ in regards to what this means, but it is understood that some individuals, however small in number, experience circumstances in which gaming is supplanting other required life behaviors.

Pathological Gaming is Rare. Related to the first statement of agreement, individual studies often return a wide range of prevalence statistics for pathological gaming based on differences in surveys and samples. Most recent studies, however, suggest prevalence estimates ranging from less than 1% (Haagsma, Pieterse, & Peters, 2012; Mentzoni et al., 2011; Przybylski, Weinstein, & Murayama, 2017) through perhaps 3-4% (Desai, Krishnan-Sarin, Cavallo, & Potenza, 2010; see also Håkansson, Kenttä, & Åkesdotter, 2018). Although some studies certainly return higher numbers, evidence suggests that those with the most rigorous

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criteria tend to hover around 3% with slightly higher numbers for Asian samples (Ferguson, Coulson & Barnett, 2011).

Advocates for pathological gaming diagnoses have acknowledged that prevalence rates are quite low. Vladimir Poznyak, a representative of the WHO and advocate for “gaming disorder” acknowledged in news media that the prevalence of gaming disorder is “very low” (CBS Miami, 2018). Although some news media stories may suggest epidemics of pathological gaming, most scholars agree that data do not back up such claims. This does not disqualify pathological gaming diagnoses as other recognized mental health disorders such as schizophrenia or bipolar disorder are also very rare, effecting 1% or less of the population.

Pathological Gaming Typically Occurs with Other Disorders. Most scholars agree that the incidence of comorbidity between pathological gaming and other mental illnesses such as depression, anxiety, ADHD or autism spectrum disorders is quite high (Loton, Borkoles, Lubman, & Polman, 2016).

Pathological Gaming is Worthy of Study. Although scholars may differ in regards to the utility of the construct as a diagnosis, most scholars agree that research on pathological gaming is valuable. Further, scholars would likely agree that transparent, open science is particularly valuable.

Areas of Disagreement

Although there are clearly some basic issues on which most scholars agree, areas of disagreement are numerous. Below, we identify several, using question format to indicate disagreement.

Can Pathological Gaming be Compared to Substance Abuse? In the popular press and among clinics offering treatments for pathological gaming, it is not uncommon to find direct

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comparisons made between pathological gaming and substance abuse. For instance, one treatment center has insinuated pathological gaming may be “the next opioid epidemic” (Rae, 2018). Although scholars don’t control news media claims or claims of treatment clinics marketing to fears of technology addiction, the language of some scholars may fuel comparisons to substance abuse. For instance, Saunders et al. (2017) stated “Gaming disorder shares many features with addictions due to psychoactive substances and with gambling disorder, and functional neuroimaging shows that similar areas of the brain are activated.” Comments such as this are not uncommon throughout the literature on pathological gaming. They are typically based on comparisons between substance abuse and pathological gaming regarding symptom criteria and brain mechanisms such as dopaminergic mechanisms, although whether such comparisons are warranted is a matter of debate. Similarly, debate exists on whether symptoms such as tolerance or withdrawal can apply meaningfully to pathological gaming as they do substance abuse. Likewise, it may be best to avoid use of the WHO’s controversial “gaming disorder” label until clarity is reached regarding the validity of the label.

However, other scholars have noted that considerable distinctions exist between pathological gaming and substance abuse. For instance, the symptom criteria for substance abuse do not appear to translate well to pathological gaming issues (Przybylski, Weinstein & Murayama, 2017). Discussions of dopaminergic centers of the brain have been criticized as misleading given differences both in the activation (Markey & Ferguson, 2017; Koeppe et al., 1998), location of dopaminergic activation in pathological gaming compared to substance abuse (Vousooghi et al., 2015) as well as differences in more general brain structure involvement (e.g. He, Turel & Bechara, 2017; Turel et al., 2014). This has created debate about whether comparisons between pathological gaming and substance abuse have utility or merely misinform.

Does Pathological Gaming Exist as a Stand-Alone Disorder? Although many scholars agree that pathological gaming symptoms are comorbid with other mental health conditions, one area of serious contention is whether pathological gaming is itself a disorder or merely a symptom of other, underlying mental health conditions. Some scholars argue that the evidence is robust enough that it warrants a standalone diagnosis (Griffiths et al., 2017; Saunders et al., 2017.) Others have noted that other mental health conditions such as depression or ADHD tend to temporally precede pathological gaming symptoms (e.g. Ferguson & Ceranoglu, 2014). Other results have suggested that symptoms of pathological gaming, in and of themselves, do not distinguish clinical from non-clinical samples (Colder Carras, & Kardefelt-Winther, 2018; Przybylski & Weinstein, 2017). Other research has indicated that excessive gaming is used as a coping mechanism for mental health issues, not a disorder in and of itself (Kardefelt-Winther, 2014). As such, scholars differ on whether pathological gaming is best considered a stand-alone disorder (Zajac, Ginley, Chang, & Petry, 2017) or merely a symptom for other, underlying mental illnesses (Kardefelt-Winther, 2015). These debates extend into treatment and whether treatment focused on pathological gaming may both pathologize healthy gamers and misidentify treatment goals away from underlying disorders such as depression or anxiety (Bean, 2018; Nielsen, 2017).

Are Games Worth Singling Out for a Mental Health Disorder? One area of contention is that, aside from gambling, gaming is the only interest or hobby singled out for a specific diagnosis. This is despite the case that there is considerable research on other behavioral overuse issues such as eating, sex, shopping, work, exercise and even dancing (e.g. Maraz et al., 2015). Critics suggest that, if the concern is maximizing treatment options for patients, certainly these other behavioral overuse conditions also warrant a disorder and a broader behavioral

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overuse category which could apply to any overdone behavior, might have had more conceptual integrity. However, other evidence has suggested that behavioral overuse conditions, as a whole, tend to be transient and resolve naturally without the need for therapy for most individuals, calling into question whether this category of disorders is clinically useful (Konkolý Thege, Woodin, Hodgins, & Williams, 2015).

Could Pathological Gaming Diagnoses Have Unintended Negative Consequences

Some scholars have suggested that pathological gaming diagnoses might have unintended negative consequences. As noted above these might include pathologizing normal gamers, but also misdirecting therapy onto a symptom rather than a cause. Other scholars have noted that the diagnoses might increase traffic to exploitative treatment centers or promote intrusive government policies with limited effectiveness (van Rooij & Kardefelt-Winther, 2017). Indeed, some evidence now suggests that policy directed at reducing youth on-line gaming has little impact on mental health or sleep (Lee, Kim & Hong, in press).

All of these issues are contentious and the subject of heated, arguably at times even ad-hominem exchanges. Nonetheless, it is worth exploring where scholars have disagreements on pathological gaming and how we can understand these disagreements.

Past Surveys of Scholars

Although not focused specifically on the issue of pathological gaming, several past studies have examined both clinician and scholarly attitudes toward video games (Bushman, Gollwitzer & Cruz, 2015; Ferguson, 2015; Ferguson & Colwell, 2017; Quandt et al., 2017). All indicated that significant disagreements exist among clinicians and scholars regarding their attitudes about the harmfulness of games, although the Bushman et al. (2015) paper received criticism for exaggerating the strength of evidence for a consensus (Etchells & Chambers, 2014;

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Ivory et al., 2015.) Most of this prior research examined the impact of games on aggression, documenting divergent views on this matter. In particular, evidence suggests that older scholars, those with less gaming experience and those with more negative attitudes about youth are more likely to believe games are harmful, mirroring similar trends in the general public (Przybylski, 2014).

The issue of a relationship between negative attitudes toward youth and negative attitudes toward video games seen in some studies (e.g. Ferguson, 2015; Ferguson & Colwell, 2017) is an interesting one. Attitudes toward youth is a complex issue and these investigations of the construct are admittedly rudimentary. However, these do offer some tantalizing clues that concerns about video games and other technology may be part of a larger, intergenerational struggle to which neither clinicians nor scholars are immune.

Little research has examined pathological gaming specifically. One qualitative study of gamers and clinicians suggested these groups tend to view pre-existing mental illness and social circumstances as predictors of pathological gaming (Kneer et al., 2014). But, to date, no assessment has looked at scholarly opinions of pathological gaming diagnoses.

With this in mind, we sought to address this gap with a survey of scholarly opinions regarding pathological gaming among scholars who study the behavioral impact of games. We sought to examine simple levels of agreement regarding the utility of the pathological gaming construct as well as support for both the IGD and gaming disorder diagnoses. Further we sought to examine if prior findings related to the impact of age, gaming experience and attitudes toward youth and their impact on attitudes toward video games would replicate regarding the issue of pathological gaming.

Methods

Participants

Participants were 214 international scholars who have studied the impact of video games on behavior. The sample was 57.5% male, 40.2% female with the remainder reporting other/nonbinary or declining to say. Regarding country of origin, 32.7% were from the United States, 11.7% were from Germany, 7.0% were from the United Kingdom, and 18.7% were from other European countries. For other countries 8.8% were from Asia, primarily China and South Korea, 1.9% were from Africa or the Middle East, and 1.9% from South America. Canada and Australia were each represented by 3.7%, Mexico by 0.9% and “other” represented 8.4%. Mean age of the sample was 37.98 ($SD = 10.35$). Regarding disciplines, psychology was most represented (40.7%), followed by games studies (17.3%) and psychiatry/medicine (15.4%) and Communication (8.4%). Smaller numbers reported neuroscience, criminology or “other.” One third of the sample (32.9%) did not play video games at all. Mean number of game hours per week was 5.36 ($SD = 7.41$).

The online survey initially logged 371 hits. Of these 41 were false starts, meaning no actual responses were logged to the questions. Instructions in the survey noted that it was limited to scholars involved in games research. One question asked whether respondents considered themselves knowledgeable about research on pathological gaming. The responses of 65 individuals who indicated they were not were removed from the dataset. There also were 4 reliability check items both for non-attention and for mischievous responding (see Przybylski, 2016). Non-attention items asked for particular responses (e.g. Please mark this item as “4”) whereas mischievous response items were for impossible answers (e.g. “Most pet dogs have three heads and a serpent for a tail.”) Failure to correctly respond to any of these items resulted in the elimination of the participant from the dataset resulting in the final tally of 214.

Measures

There were two primary outcome measures for the study. These included a 12-item scale measuring attitudes supportive of pathological gaming as a diagnosis. All items were Likert-scale and developed from a pool items initially created by Quandt et al. (2015) to measure more general attitudes toward video games. Sample items include “Video game addiction constitutes a public health crisis” and “There’s better evidence that video games are addictive compared to other behaviors such as sex, food, exercise, shopping, dancing, etc.” Coefficient alpha for the current sample was .95

Also included was another 12-item scale based on similar questions measuring skepticism regarding pathological gaming as a diagnosis. Sample items include “Fears of video game addiction have been exaggerated by news media” and “Research on video game addiction needs to be improved in quality.” Coefficient alpha for the current sample was .94. This scale correlated highly and inversely with the previous scale ($r = -.865$) suggesting a high degree of conceptual overlap. Analyzing the two scales separately or combined did not significantly change the results described below. Thus, our original analysis plan of analyzing the scales separately was maintained.

Six individual items specifically inquired regarding attitudes toward the DSM and WHO versions of pathological gaming diagnoses. Descriptive results for these questions will be provided in the results section.

A final five-item measures considered negative attitudes toward youth. This item was developed by Ferguson (2015). Items considered the degree to which respondents considered youth to be narcissistic, violent, have behavior problems, be less likely to volunteer, and less empathic than in prior generations. Coefficient alpha for this sample was .666. This reliability

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was lower than we'd hoped, probably because it taps into several related issues. Eliminating items from the scale did not substantially affect the reliability nor the final results, thus it was retained in current form.

The survey also included demographic questions and a question about hours spent gaming, as well as the reliability questions described above. All questions were intermixed in the survey, aside from the demographic questions which came first.

Procedure

The survey was created online via Qualtrics software. Recruitment was snowball in nature with postings about the survey being made to relevant listserves, social media and other outlets related to media psychology, media research and game studies. These generally included social sites sponsored by media psychology related groups such as the Society for Media and Technology, games studies and other related fields for the International Communication Association, European Communication Research and Education Association and similar sites.

Results

Table 1 presents descriptive results for several key questions, including overall belief in pathological gaming as a disorder, as well as six questions related to support for the DSM and WHO diagnoses specifically. We also included a few other question responses that involved perceptions of potential unintended harm caused by the new diagnostic categories. A full table of questions with response frequencies is available upon request. Results indicate a split between scholars on the general issue of pathological gaming at a roughly 2-to-1 ratio. More scholars supported the possibility of such a diagnosis than were skeptical of it, although divisions clearly remain. Support for the specific diagnostic systems was reduced however, particularly for the DSM-5 IGD diagnosis.

These results suggest that, although there is no consensus among scholars, more scholars support some kind of pathological gaming possibility than are skeptical of it. Conversely, concern among scholars about the ramifications of these disorders was likewise common. Bare majorities worried that both the DSM-5 and WHO/ICD systems for pathological gaming had high false positive potential. Scholars were about evenly split regarding whether pathological gaming diagnoses might do harm. Likewise, more scholars worried about the potential role of moral panic in pathological gaming diagnoses than did not.

[Insert Table 1 about here]

Table 2 presents basic information on the variables included in the regression equations. Particularly of note, evidence suggests a normal distribution for the key dependent variables, thus meeting assumptions for use in OLS regression (Ryu, 2011). Game experience demonstrated a positive skew, given the high proportion of non-gamers in the sample, however, OLS regression is generally robust to non-normality in predictor variables. A square root transformation of game experience removed the skew and kurtosis, but did not substantially change the results otherwise. As such, the original untransformed variable is reported. Table 3 presents a correlation matrix of the variables included in the regression equations.

[Insert Table 2 about here]

[Insert Table 3 about here]

Regarding what factors might influence scholars' accepting attitudes toward pathological gaming, an OLS regression was run with pairwise deletion for missing data. In most cases, missing data were single item responses. Average scale score calculation limited the impact of most missing data, but 7 (3.3 %) respondents did not report on their game play experience. Predictor variables included age, gender, hours spent gaming and negative attitudes toward

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youth. Multicollinearity was not an issue with the highest VIF of 1.11. The overall model was statistically significant [$R = .622$, $R^2_{adj} = .374$, $F(4,187) = 29.543$ $p < .001$]. Experience with games ($\beta = -.283$) and negative attitudes toward youth ($\beta = .479$) predicted attitudes supportive of pathological gaming diagnoses. These results are presented in Table 4.

[Insert Table 4 about here]

Regarding what factors might influence scholars' skeptical attitudes toward pathological gaming, an OLS regression was run with pairwise deletion for missing data. Predictor variables included age, gender, hours spent gaming and negative attitudes toward youth. Multicollinearity was not an issue with the highest VIF of 1.12. The overall model was statistically significant [$R = .574$, $R^2_{adj} = .315$, $F(4,187) = 22.977$ $p < .001$]. Skeptical attitudes toward pathological gaming were the inverse of supportive beliefs, being predicted by experience with games ($\beta = .305$) and inversely by negative attitudes toward youth ($\beta = -.408$). These results are presented in Table 5.

[Insert Table 5 about here]

Discussion

Whether pathological gaming warrants a stand-alone diagnosis based on current evidence remains an issue of significant controversy. Nonetheless, some scholars claim a "consensus" exists in support of such diagnoses (e.g. Petry et al., 2014) whereas other scholars have claimed no such consensus exists (e.g. Aarseth et al., 2017). Our results suggest that it is likely premature to claim that a consensus among scholars exists on the issue. The data presented in Table 1 would appear to provide evidence that the majority of scholars who are familiar with the research on gaming believe that some form of pathological gaming does exist, and that it can be classified as a mental illness. In addition, for both the DSM and WHO/ICD smaller majorities or

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pluralities supported the validity of these diagnoses. However, it should be noted that a large minority of Scholars take the opposite view, and so there is no evidence of overwhelming consensus. Also, somewhat paradoxically, more scholars than not are worried that “normal” children could mistakenly be classified as suffering from pathological gaming under these classification systems. This would seem to suggest a majority of scholars worry over the reliability and validity of the diagnoses in both the DSM and WHO variants. The finding that there is an almost even split between scholars over whether or not diagnoses will do more harm good adds to this confusion, as does the finding on moral panic. How can one account for these conflicting findings?

As with other issues, such as beliefs about violent video game effects, attitudes toward pathological gaming were predicted by scholars’ own experience with games as well as by hostile attitudes toward youth themselves. These observations may help us to understand why scholars may look at the same pool of evidence and come to very different conclusions about what that evidence means. Issues such as “myside bias” (Stanovich, West, & Toplak, 2013) tend to impact scholars as well as the general public and issues such as age or experience with games are known to relate to attitudes toward video games in the general public (Przybylski, 2014). With video game experience this can, naturally, cut both ways with more experienced players defensive about their hobby and less experienced individuals suspicious about technology they don’t use or fully appreciate (Kneer, Munko, Glock, & Bente, 2012). The relationship between hostility toward youth and concerns about pathological gaming are harder to fully explain, although they may be understood as part of generational struggles over culture and technology.

The WHO diagnosis has just one symptom ‘prolonged interference in other life activities’. It is difficult to know what this actually means since there is no operational definition,

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or measure, of this symptom. This arguably can become a case of ‘beauty is in the eye of the beholder’. A concerned parent or clinician may view a child’s gaming activities as abnormal, whereas other parents or clinicians view the same behavior as completely normal. Arguably, it’s possible that a parent may learn of the WHO diagnosis, begin arguing with their child vehemently over the child’s gaming, then rationalize that arguing as “interference.” In such cases, such a vague diagnosis could prove tautological, in effect publicizing the diagnosis creates the situations by which it is diagnosed. The DSM version is more detailed, with nine criteria, and this would suggest that it is more developed and rigorous, but is it? As with the WHO diagnosis, there are no operational definitions, or measures of the criteria. For example, at which point can game play be said to be a ‘preoccupation or obsession’? What exactly are ‘withdrawal symptoms’, and how are they defined or measured? This makes judgements, as has been pointed out, likely to have a high level of subjectivity. Many of the symptoms, having been taken from substance abuse, do not appear to work well with gaming (Przybylski & Weinstein, 2017). Scholars appear concerned that many players do meet the proposed DSM criteria but can still function well in normal life, and so the expressed fears over kids being mistakenly pathologized.

We express the concerns that claims of “consensus” at this point carry many risks. Primarily among them is that such claims are likely to polarize scholars with differing views. More skeptical scholars may feel bullied, neglected or insulted by such claims which may serve only to promote more tension within the field rather than unity. By contrast, it may be helpful for scholars to work together as well as with groups such as the WHO and American Psychiatric Association to reach beyond supportive scholars and include more skeptical scholars in discussions revolving around the proposed diagnoses related to gaming. Similarly, it may be helpful for scholars to reach out to gamers themselves to achieve a fuller understanding of the

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working of games. In many circumstances it is likely that decisions about whether gaming can constitute a mental health condition for some individuals are being made by individuals who don't have a deep experience with games themselves.

It is also natural that groups such as the WHO might attempt to achieve and emphasize consensus. However, it's not clear that such a position is desirable. An argument to consensus is a logical fallacy and most scientific consensus positions are eventually overturned by new data. By failing to solicit more skeptical views and prematurely claim consensus, groups such as the WHO may stifle scientific debate, creativity and divergent data and actually put themselves in a weaker rather than a stronger scientific position.

Limitations and Future Directions

As with any study, ours has limitations that are worth noting. First, as a correlational study, no causal attributions can be made. Second, ours is not a random sample and it is always possible that sampling error can influence some results. Third, a majority of respondents came from North America and Europe which does not allow for a full examination of regional differences in attitudes toward pathological gaming. For instance, scholarly views in Asian countries, several of which are enacting government efforts related to pathological technology use, may differ from those in Europe and North America. The underrepresentation of Asian scholars in the survey prevents us from examining differences between Asian and European/American scholars regarding their views of pathological gaming. Lastly, the scale for negative attitudes toward youth was less reliable than hoped. However, as this would normally truncate effect sizes, this still appears to be a variable worth considering. Future research could examine different components of this construct which, although overlapping, may nonetheless be diffuse.

Regarding future directions, one thing that stood out for us was the need to refocus research on transparent, preregistered designs. Scholars differed in their views regarding whether pathological gaming diagnoses would promote or stifle good research, but it is clear that diagnostic systems would benefit from a thorough and rigorous evaluation. Some early research (e.g. Przybylski & Weinstein, 2017) has suggested caution may be warranted regarding the DSM IGD diagnosis in particular, but more data is certainly needed.

Conclusions

Given significant differences of opinion in the field, we don't anticipate a true consensus on pathological gaming in the near future. Indeed, support may wax and wane as more data becomes available. In the meantime, we encourage scholars to find ways to dialogue across differences, form adversarial collaborations and more generally exchange views rather than increasingly retreat to "camps" supportive or not supportive of pathological gaming disorder diagnoses. This may, however, also require patience on the part of organizations such as the WHO to wait for more data before formalizing pathological gaming diagnoses.

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Table 1: Descriptive Results for Individual Questions Related to Pathological Gaming

Question	% Agree	% Disagree
“Video game addiction” is a real mental illness.	60.8	30.4
The DSM-5 criteria for Internet Gaming Disorder are reliable and valid.	49.7	36.7
The WHO/ICD Gaming Disorder diagnosis is a valid mental health condition.	56.5	33.1%
Official DSM/ICD video game addiction diagnoses will likely result in better research.	60.9	28.1
I am worried that kids who are essentially okay may be pathologized under the DSM-5 criteria for internet gaming disorder.	51.1	37.1
I am worried that kids who are essentially okay may be pathologized under the WHO criteria for gaming disorder.	54.9	36.0
Fears of video game addiction have been exaggerated by professional groups like the American Psychiatric Association (DSM-5) and World Health Organization (ICD).	37.5	50.0
I am concerned video game addiction diagnoses may do more harm than good.	43.5	47.7
I am concerned that video game addiction diagnoses may be used by some authoritarian governments to reduce free speech rights.	35.5	50.4
Concerns about video game addiction are due to a moral panic over new technology.	46.7	40.2

Note: Agree includes those responding “definitely true” and “probably true”. Disagree includes those responding “definitely false” and “probably false.” Those who neither agreed nor disagreed are not included in the numbers. These collapsed categories were only used for the presentation of results in this table.

Table 2: Descriptive Statistics for Continuous Variables Included in Regression Equations

Variable	Mean	SD	Kurtosis	Skew
Age	37.98	10.35	-.268	.601
Game Experience	5.36	7.41	6.836	2.134
Negative Attitudes Toward Youth	15.15	3.26	-.014	-.145
Supportive Attitudes	2.77	1.06	-1.289	.125
Skeptical Attitudes	2.83	1.08	-1.260	.212

Note: Values of Kurtosis between -2/+2 are generally considered acceptable (Ryu, 2011).

Table 3: Correlation Matrix Between Variables Included in the Regression Analyses

	Age	Female	Game Exp	NegAttYouth	SupportAtt	SkepticalAtt
Age	1.00	-.219**	-.208**	.153*	.187**	.180*
Gender		1.00	.016	.028	.011	.049
Game Experience			1.00	-.220**	-.400**	.404**
Negative Attitudes Toward Youth				1.00	.550**	-.481**
Supportive Attitudes					1.00	-.865**
Skeptical Attitudes						1.00

* $p < .05$ ** $p < .01$

Table 4: Regression Results for Attitudes Supportive of Pathological Gaming Diagnoses

Predictor	Standardized Regression Coef.	t-score	p-value
Age	.058	.963	.337
Gender (female)	.015	.251	.802
Game Experience (hours)	-.283	-4.737	<.001
Negative Attitudes Toward Youth	.479	8.090	<.001

Table 5: Regression Results for Attitudes Skeptical of Pathological Gaming Diagnoses

Predictor	Standardized Regression Coef.	t-score	p-value
Age	-.044	.691	.490
Gender (female)	.046	.752	.453
Game Experience (hours)	.305	4.880	<.001
Negative Attitudes Toward Youth	-.408	-6.600	<.001

Footnotes

¹The editor who handled the exchange for the journal was himself an advisor to the WHO working group on gaming disorder and contributed to articles supporting the WHO and critical of skeptics. Arguably this may have been a conflict of interest.