

Refining Game Addiction Questionnaires: Evidence for a natural cut-off point?

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ABSTRACT

This paper presents data from a pilot study, which was designed to illuminate critical flaws in the currently used instruments used to measure the prevalence of *computer game addiction*. The study found that the prevalence rate could be set anywhere between 23% and 0,6% depending on how the data set is scored. Thus demonstrating how an arbitrarily set of cut-off point in prevalence studies can yield wildly varying prevalence rates. The data further show that making implicit assumptions about negative effects of playing behavior explicit drastically decreases the prevalence rate. Thus the data supported both the initial hypothesis that 1) prevalence rates can be determined very differently according to where the cut-off point is set, 2) employing a *monothetic* rather than a *polythetic* approach will further decrease the measured prevalence rate, and 3) that weeding out *highly engaged gamers* from *addicted gamers* by making implicit assumptions about negative effects explicit will cause prevalence rates to drop even further. Unexpectedly, the data from this modified questionnaire provides preliminary evidence for a natural cut-off point that clearly separates *addicted play* from *normal play*. Furthermore, the data highlights the problem that all items in these instruments are scored equally because some *symptoms* are common and others are rare.

Though limited by only featuring 172 participants, recruited from a single forum, with no way of knowing if and how the survey-link was spread, this study is unique in the field of prevalence studies of *computer game addiction* both in its design and its findings. The findings and conclusions need to be addressed by future research in the area.

Categories and Subject Descriptors

J.4. [Psychology]

General Terms

Measurement, Human Factors.

Keywords

Psychology, game addiction, excessive gaming, video game questionnaires, behavioral addictions.

1. INTRODUCTION

Problematic use of computer games goes by many names, the most common one being *game addiction*, other terms include, but are not limited to: e.g., pathological, disordered, obsessive or compulsive. The plethora of terms reflects the uncertainty that still exists of the ontology and etiology of the phenomenon. In previous work I have argued that the term carries clear connotations of cause and effect (i.e. that games cause addiction), which are not sufficiently supported by empirical and theoretical evidence [8]. Others, however, have proposed that *computer game addiction* be included in official diagnostic manuals [6]. This paper argues that if *computer game addiction* is to be included in such manuals it needs to be determined whether it exists as a separate state, distinct from other types of behavior. For the term to make sense I argue that addicted play needs to be separate from *normal play* not only in terms of time spent [9], or as an arbitrary point on a continuum, but as a qualitatively different state of being. The term *game addiction* needs to signify more than just a range on a continuum of engagement with games that range from *no engagement with games at all* to *highly addicted*. A relevant discussion in this regard is whether or not *game addiction* should be classified from a *monothetical* or *polythetical* paradigm, that is to say whether a person needs to endorse all or most components in order to belong to the class. This paper presents preliminary data from a pilot study with 172 participants, which was originally designed in order to demonstrate the range within game addiction prevalence could fall depending on how the data is analyzed and whether implicit assumptions behind questionnaire items are made explicit.

2. THE STUDY

The questionnaire employed in the survey was adapted to represent the seven commonly agreed upon facets of game addiction: *salience*, *mood modification*, *tolerance*, *withdrawal*, *conflict* and *relapse* [4] used by prominent researchers in the field [6, 7]. Statistically, the items used in these studies are all proven to load strongly on the construct *game addiction* through factor analysis. The questionnaire items survey several aspects of the players' relationship with games, however, they do not offer the respondent the possibility to discriminate between behaviors that are experienced as having negative consequences for their lives as such versus the ones that do not. Thus, it has been suggested that *high engagement* with games can be mistaken for *game addiction* [2]. To address this question as well as highlighting the arbitrary nature of the prevalence estimate, the items of previous studies [6, 7] were modified to take the subjective experience of negative consequences into account. The hypothesis being that, while *engaged* and *excessive* gamers undoubtedly resemble each other

on many levels, the experience of perceived negative consequences for their life would separate the two. The actual items was left unchanged, but instead of using a Likert-type scale ranging from *never, rarely, sometimes, often* to *very often* as the original studies [6, 7], this study gave three modified options: *No, Yes – and it has had a significant negative effect on my life* and *Yes – but it did not have a significant negative impact on my life*. The questionnaire was disseminated through *Daily Rush*, a Danish gamer forum. Thus, the respondents are likely far from representative of the population in general.

3. RESULTS

Two respondents were disqualified because they had failed to provide answers to one or more items. The remaining 170 valid responses are summarized and grouped according to number of *symptoms of game addiction*:

Number of symptoms of <i>game addiction</i>	Total number of respondents with X number of symptoms of <i>game addiction</i>	Number of respondents with X number of symptoms, which are experienced as a negative in their life
0	14	140
1	46	15
2	40	8
3	30	2
4	26	3
5	12	1
6	0	0
7	2	1
Total	170	170

4. DISCUSSION

The results of the survey support the initial hypothesis that the interpretation of the data can vary highly, depending on whether a *polythetic* or *monothetic* approach is adopted and the number of symptoms needed to qualify for a diagnosis within the former. Thus demonstrating the arbitrary nature of the prevalence rate. Hence, the estimate of *addiction* prevalence among the respondents can be set within the range of 23% to 0.6% of the sample. The results support the hypothesis that *highly engaged* gaming is easily, and mistakenly, labeled *addicted*. When scored according to a *monothetic* paradigm, addiction prevalence falls to 1,2% and further falls to 0,6% if self-reported negative consequences are set as a requirement.

The data also highlights the inherent problem in scoring each item the same because some items reflect experiences that are clearly more common than others and therefore are not as severe. As an example only 7% have had fights with others because of the time they have spent on gaming during the past 6 months. On the other hand, 83,2% report having spent much free time gaming during the past 6 months. It is therefore obviously problematic to score these two items equally within a *polythetic* paradigm when one is very rare and obviously problematic while the other is common and only potentially problematic.

Contrary to other studies [5] the data can be said to indicate a clear cut-off point of addiction. To my knowledge this would be the first to find such indications of a *natural cut-off point*, which

separates addicted play from *normal* play. Brown originally argued that *behavioral addictions* should be defined *monothetically* [1], following these lines this data could be argued to show that 82,4% of the sample are *normal* in that they experience no symptoms of addiction, 17,1% are *at risk* as they experience between 1 and 5 symptoms, no one are on the brink of addiction with 6 symptoms, whereas 0,6% are *addicted* as they endorse all 7 symptoms. However, due to the limited size of the sample and how it was drawn it would be presumptuous to conclude anything definitively. However, the paper does highlight the problem that cut-off points can be set according to the prevailing attitude in the scientific or public debate. In a data set this small there is a clear risk that just a couple of careless responses significantly skews the results. For this reason authors have suggested that it is important to identify problematic response sets [3].

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6. REFERENCES

- [1] Brown, I (1991). Gaming, gambling and other addictive play. In J. H. Kerr & M. J. Apter (Eds.), *Adult Play: A reversal theory approach*, 101-118. Amsterdam: Swets & Zeitlinger.
- [2] Charlton J. P. & Danforth I. D. 2007. Distinguishing addiction and high engagement in the context of online game playing. *Computers in Human Behavior*, 23(3), 1531-1548.
- [3] Faust, K. A., Faust, D., Baker, A. M., & Meyer, J. F. 2012. Refining Video Game Use Questionnaires for Research and Clinical Application: Detection of Problematic Response Sets. *International Journal of Mental Health and Addiction*, 10(6), 936-947.
- [4] Griffiths, M. 2005. A 'components' model of addiction within a biopsychosocial framework. *Journal of Substance Use*, 10(4), 191-197.
- [5] Hart, G. M., Johnson, B., Stamm, B., Angers, N., Robinson, A., Lally, T., & Fagley, W. H. 2009. Effects of video games on adolescents and adults. *CyberPsychology & Behavior*, 12(1), 63-65.
- [6] Lemmens, J. S., Valkenburg, P. M., & Peter, J. 2009. Development and validation of a game addiction scale for adolescents. *Media Psychology*, 12(1), 77-95.
- [7] Mentzoni, R. A., Brunborg, G. S., Molde, H., Myrseth, H., Skouerøe, K. J. M., Hetland, J., & Pallesen, S. 2011. Problematic video game use: estimated prevalence and associations with mental and physical health. *Cyberpsychology, Behavior, and Social Networking*, 14(10), 591-596.
- [8] Nielsen, R. K. L. & Aarseth, E. 2011. Game Addiction Triangulated: Media Panic or Health Problem – Who Can Tell? In *DiGRA Digital Library: Proceedings of DiGRA 2011 Conference: Think Design Play: Fifth international conference of the digital games research association (2011)* Utrecht University: Digital Games Research Association.
- [9] Wenzel, H. G., Bakken, I. J., Johansson, A., Götestam, K. G., & Øren, A. 2009. Excessive Computer Game Playing among Norwegian Adults: Self-Reported consequences of playing and association with mental health problems. *Psychological reports*, 105(3F), 1237-47.