



Full length article

Computer game misuse and addiction of adolescents in a clinically referred study sample

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ABSTRACT

Background: Actually it remains unclear whether specific psychiatric disorders, especially emotional disorders and attention deficit hyperactivity disorder (ADHD), may be meaningful in the pathogenesis of computer game misuse.

Objective: In this clinical study with adolescent psychiatric patients we expected a moderate to strong correlation between computer game misuse and emotional, conduct and peer problems, as well as symptoms of ADHD.

Method: 183 patients (14.9 ± 1.5 years) from a child and adolescent psychiatric clinic were assessed for computer game misuse or addiction using the CSV-S scale in order to distinguish between regular and excessive computer gaming. The Strengths and Difficulties Questionnaire (SDQ) was used to screen for actual emotional and behavioral difficulties.

Results: Within the patients' group with problematic computer gaming especially male patients with the highest addiction score spent significantly more time on computer gaming and presented more school performance problems as well as other comorbidities. Excessive gaming correlated significantly with conduct and emotional problems. No specific psychiatric disorders correlated to computer game misuse or addiction.

Conclusion: Misuse or addiction of computer games in psychiatric patients seems to be related to an increased rate of conduct and emotional problems but related specific psychiatric diagnoses could not be identified.

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1. Introduction

Internet and computer game addiction in adolescents has attracted increased interest in psychiatric research (Grüsser, Thalemann, & Griffiths, 2007; Yoo et al., 2004). However at present only a few meaningful studies exist regarding the key issue of comorbid or underlying psychiatric disorders. Higher rates of game addiction seem to exist for Attention-Deficit Hyperactivity Disorders (ADHD), major depressive disorder or social phobias (Bernardi & Pallanti, 2009; Bischof, Bischof, Meyer, John, & Rumpf, 2013; Choi et al., 2009; Ha et al., 2007; Ko, Yen, Chen, Yeh, & Yen, 2009; Morrison & Gore, 2010; Wei, Chen, Huang, & Bai, 2012; Yen, Ko,

Yen, Wu, & Yang, 2007; Wu et al., 2013). Comorbidity with other addictive disorders has also been reported (Yen et al., 2007).

Prevalence of computer game misuse and addiction in adolescents vary considerably because of the application of different diagnostic standards, heterogeneous study samples, age and gender specific variations of computer use as well as sociodemographic and geographic differences (Kuss, 2013). Prevalence estimations vary significantly and range from .2% in Germany (Festl, Scharkow, & Quandt, 2013) to 50% of Korean teens (Hur, 2006). According to a representative US-American study, 8% of children and adolescents between 8 and 18 years had been identified as problematic computer game users with marked differences between boys and girls. Boys' mean computer game time during the week was on average 16.4 h, whereas girls were gaming only 9.2 h. Computer game misuse was observed in 11.9% of boys, but only in 2.9% of girls (Gentile, 2009). In a representative German study

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assessing the presence of symptoms of addiction to computer games the prevalence was considerably lower: 3.5% of adolescents were at risk for addiction but only 1.5% were identified as being addicted. Another 10% of these gamers showed excessive computer game behavior (>4.5 h/day). Once again, male gamers were much more strongly affected (Baier & Rehbein, 2009).

Today it is not clear whether internet addiction represents a manifestation of an underlying psychiatric disorder or is an independent disease. This is especially important as internet addiction is related to numerous comorbid disorders. Therefore some researchers see computer game addiction as a symptom of another disorder especially anxiety or depression or consider it as impulse control disorder. Moreover there still exist no sufficient data concerning specific neurobiological study results as well as there is a lack of data regarding the course prognosis and temporal stability of the disorder inhibiting us to consider it as a discrete disease (Pies, 2009).

Though extensive research on Internet Gaming Addiction has been done in recent years it still has received the status “under consideration” for inclusion in DSM V. On the other hand research also demonstrates that symptoms characteristic for substance abuse disorders (preoccupation with games, loss of control, increased time spent with gaming as well as withdrawal symptoms) are also present in internet addiction defining it as behavioral addiction.

This article relies on the assumption that computer game addiction can be defined as a discrete diagnostic entity. Therefore we use standardized measure instruments based on the measurement of characteristic symptoms of addiction. The purpose of the present study was not to prove the theoretical construct of internet addiction disorder but to focus on the relationship between symptoms of computer game addiction and specific comorbid behavioral and emotional problems respectively disorders.

In the present study we focused on the relationship between computer game misuse/addiction and problematic social behavior as well as emotional problems in a clinically referred population of patients with various psychiatric diseases. We took into account computer game addiction scores and time spent on computer gaming as well as different clinical descriptors, e.g. medication status and psychosocial treatment undergone. Special emphasis was placed on psychiatric diagnoses, especially ADHD, due to its high proportion in the study sample.

Our main hypotheses were as follows:

1. A clinical diagnosis of ADHD, depression or anxiety disorder or any other diagnosis according to ICD 10 criteria would be significantly related to computer game misuse or addiction.
2. Covariables, such as age, sex, psychosocial or medical treatment, school performance problems and gaming time were expected to be significantly related to the presence or extent of computer game addiction.
3. We expected a moderate to strong correlation between computer game misuse or addiction as measured by the CSV-S addiction rating scale and behavioral problems as measured by five subscales of the Strengths and Difficulties Questionnaire (SDQ) – assessing emotional problems, conduct problems, hyperactivity, peer problems and prosocial behavior.

2. Methods

2.1. Sample participants

Study participants with various psychiatric disorders were recruited from the out- and inpatient child and adolescent

psychiatric service of the University of Cologne and screened for symptoms of computer game misuse or addiction.

Informed parental consent as well as consent of the child was obtained from all study participants and the participation in the study was voluntary. No addressed patient or parent refused their participation and data acquisition was not anonymized. A full data set from 183 patients could be revealed. Inclusion criteria was age between 13 and 18 years, exclusion criteria were comorbid substance abuse and subaverage intelligence $IQ < 85$. The study was approved by the Medical Ethical Committee of the University of Cologne.

2.2. Measures

In order to assess addictive computer gaming habits we used a validated instrument, the CSV-S (Skala zum Computerspielverhalten) (Wölfling, Müller, & Beutel, 2011), a questionnaire with sound psychometric properties for distinguishing between regular and excessive computer gaming in two independent samples ($n = 1710$) of German-speaking juveniles aged between 13 and 18 years. Wölfling et al. (2011) published a validation study upon the CSV-S, which is based on a questionnaire from Thalemann, Albrecht, Thalemann, and Grüsser (2004), called CSVK, a measure of children's computer gaming behavior. Wölfling et al. (2011) selected such items which are supposed to be specific for aspects of addiction and added others, concerning patterns of use and regulation of emotions.

Out of 14 questions relevant for the diagnosis of addictive computer gaming, a total score of between 0 and 27 points was calculated and out of Wölfling's cut-offs a differentiation between average, excessive and addictive game users resulted. Relying on a previously performed validation study (Yen, Ko, Yen, Chang, & Cheng, 2009) the mean of the assessment sample was 1.5 ($SD = 2.7$) and a difference of 2 standard deviations above the mean was defined as a substantial deviation resulting in a cut-off of 7 for addictive gaming behavior. Users being within one standard deviation above the mean were classified as excessive users (cut-off 4 points).

In order to obtain a more distinct differentiation from the group of patients presenting excessive or addictive computer gaming we grouped them into three categories at their 33%-percentiles: low addiction, medium addiction and high addiction, a strategy that has already been performed in a recent study of a Canadian psychiatric sample of adolescents (Baer, Bogusz, & Green, 2011).

We compared the patients' answers of our study sample on the standardized CVS-S questionnaire with results achieved in the general population by the same instrument (Wölfling et al., 2011). Our clinical study population was recruited from the urban region of Cologne whereas Wölfling et al. (2011) analyzed a sample of 1710 participants which was supposed to be representative for the general population of children and adolescents.

The SDQ is a short assessment instrument which addresses positive and negative behavioral attributes of children and adolescents and generates scores for clinically relevant aspects (Mathai, Anderson, & Bourne, 2003). For the purpose of this study we used the German version of the SDQ for parents and children. Multi-informant SDQ (parents, teachers; 4–16 years) and older children (11–16 years) have a specificity of 80% and a sensitivity of 85% for correctly identifying psychiatric diagnoses (Goodman, Ford, Corbin, & Meltzer, 2004). It has been shown to correlate substantially with more established indices of childhood psychopathology such as the Achenbach (Achenbach, Howell, Quay, & Conners, 1991) questionnaire (Goodman, 1997, 1999), to discriminate well between children with and without psychopathology (Goodman, 1997, 2001; Goodman, Meltzer, & Bailey, 2003), to be effective in screening for

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