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Towards classification criteria for internet gaming disorder: Debunking differences between addiction and high engagement in a German sample of World of Warcraft players

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ABSTRACT

Background: More evidence is needed for diagnostic criteria of Internet Gaming Disorder (IGD) before it can be included as a disorder, according to DSM-V. Some studies suggest differences between an addicted and highly engaged online-gaming behavior. The current pilot study investigates differences between engagement and addiction in a German sample of high-level players of World of Warcraft. *Methods:* 577 participants (mean age 24.38 years; 77.1% male) from German speaking areas (Germany, Austria, Switzerland) participated in our online-study with an adapted version of the "Asheron's call" questionnaire (covering six addiction criteria including salience, euphoria, tolerance), the Internet Addiction Scale (ISS-20; covering criteria like tolerance and withdrawal symptoms), a quality-of-life questionnaire (WHOQOL-BREF), an Immersion Tendency Questionnaire and a brief personality questionnaire. *Results:* 93.6% are high-level player (level 85); only 3.1% are addicted to the internet (ISS-20). Addicted gamers play 30.7 h per week compared to engaged players (20.9 h), have higher scores in the immersion questionnaire and lower scores in all quality-of-life dimensions. *Conclusions:* Our results suggest that criteria like cognitive salience, tolerance and euphoria are not suitable for IGD. Further research studies should address criteria to differ between high engagement and addiction for a clinically adequate measurement of IGD.

1. Introduction

In general, addiction includes cognitive and behavioral symptoms, such as loss of control, negative consequences (impaired relationships, negative academic or work performance), tolerance and withdrawal symptoms. Furthermore, it seems to be one of the first words that may come into one's mind when it comes to online-based activities like gaming. While it is rather easy to observe these criteria in people suffering from substance use disorders, it seems to be more difficult to define a behavioral condition like "being addicted to online-games". There are millions of people playing online-games without any serious effects on their lives; they are highly engaged rather than addicted. However, a minority of players seem to have problems with a healthy amount of gaming; therefore, the American Psychiatric Association (APA) introduced "Internet Gaming Disorder" (IGD) in the recent fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM). Nevertheless, it is still a condition that needs further research about classification criteria; the current pilot study analyses the APA-proposed classification criteria critically in respect of differences between engagement and addiction.

1.1. Internet gaming disorder

Excessive gaming results in a variety of negative outcomes like impaired academic performance or weakened social relationships outside the internet. This excessive use is comparable to a cluster of cognitive and behavioral symptoms of substance use disorders, but it is still unclear where to draw the line between a healthy and a pathological use of digital games. Therefore, the APA introduced "Internet Gaming Disorder" (IGD) in the recent fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) as a condition that needs further research (Petry & O'Brien, 2013).

A variety of studies revealed differences between gamers and non-gamers; there are similarities of IGD and substance use disorders when it comes to neuropsychological characteristics, such as impaired response inhibition, weakened cognitive flexibility and

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error processing (Ko et al., 2014; Littel et al., 2012; Pawlikowski & Brand, 2014; Zhou, Yuan, & Yao, 2012). For example, substance use disorder and IGD subjects share deficits in executive functioning, including problems with self-control and adaptive responding (Han et al., 2014). Conducting functional magnetic resonance imaging (fMRI), Lin, Zhou, Dong, and Du (2014) found people with IGD show impaired risk evaluation. They see their result as one reason why IGD subjects continue playing online games even if they suffer from negative consequences. Xing et al. (2014) confirmed impaired cognitive control abilities in adolescents suffering from IGD by using diffusion tensor imaging. Hence, Tonioni et al. (2014) found differences between a problematic use of the internet and other non-substance use disorders like gambling; internet addicts show a higher mental and behavioral disengagement. Compared to other non-substance use disorders, unique factors of IGD are immersion, motivation or specific gaming characteristics (Kuss & Griffiths, 2011). Dong and Potenza (2014) introduced a cognitive-behavioral model of internet gaming disorder. Their focus are aspects similar to drug addictions, such as elevated impulsivity, cognitive inflexibility, and attentional biases; however, they also state that pre-existing factors predisposing to IGD are not yet known. Similarly, King and Delfabbro (2014) found four cognitive factors that underlie IGD in their systematic review of 29 studies. These factors include (a) beliefs about game reward value and tangibility, (b) maladaptive and inflexible rules about gaming behavior, (c) over-reliance on gaming to meet self-esteem needs, and (d) gaming as a method of gaining social acceptance (King & Delfabbro, 2014). Furthermore, there are several studies about the factor immersion; PIU or IGD seem to be connected with higher scores in the factor immersion (Baños et al., 2004; Cao, Su, Liu, & Gao, 2007; Griffiths, 2003). Accordingly, Hsu, Wen, and Wu (2009) report that immersion is a predictor for MMORPG addiction. Other symptoms like tolerance (a player spend more and more time online) and negative consequences for the social life and academic performances for heavy players seem to be comparable to behavioral addiction (Blaszczynski, 2006; Blaszczynski & Nower, 2002; Lin et al., 2014). Furthermore, similar to substance use disorders, gamers report lower scores in quality of life related questionnaires than non-gamers. After one month spent with playing online-games, Smyth (2007) found that users report lower scores in quality of life and overall health. Other authors found similar results; the more people spend time online with playing games, the more they report health-related problems and a diminished quality of life (Floros, Siomos, Stogiannidou, Giouzepas, & Garyfallos, 2014; Leung & Lee, 2005; Smyth, 2007; Van Rooij, Schoenmakers, Vermulst, Van Den Eijnden, & Van De Mheen, 2011). Another similarity are comorbidities; the more time people spend online (either with playing games or other online activities), the more this behavior seems to be connected with higher risks of psychological problems such as depression or social anxieties and a diminished quality of life (Chen et al., 2011; LaRose, Lin, & Eastin, 2003; Lehenbauer, Kothgassner, Kryspin-Exner, & Stetina, 2013; Leung & Lee, 2005; Saunders & Chester, 2008; Selfhout, Branje, Delsing, ter Bogt, & Meeus, 2009; Stetina, Kothgassner, Lehenbauer, & Kryspin-Exner, 2011; Yen et al., 2012).

However, there are indecisive results when it comes to differences between gamers and non-gamers regarding personality traits. Collins, Freeman, and Chamarro-Premuzic (2012) did not find any differences between gamer and non-gamers in the Big-Five Personality factors. Contrary studies support the hypothesis that gamers have different personality traits than non-gamers (Charlton & Danforth, 2010; Peters & Malesky, 2008; Teng, 2008). Teng (2008) found highly relevant differences between gamers and non-gamers; the results indicate that online game players reported higher scores in openness, conscientiousness, and extraversion. Charlton and Danforth (2010) found high significant differences between engaged and addicted players. Addicted players score higher in all five relevant personality factors, the authors see their result as a support for distinctions between addiction and engagement.

Despite the large number of research studies, the field has been hindered by the use of non-standardized criteria to assess IGD; there is a heterogeneity of symptoms used to address the same phenomenon. However, based on their research studies, Ko et al. (2014) propose nine criteria for IGD, such as preoccupation, uncontrolled impulse, usage more than intended, tolerance, withdrawal, impairment of control, excessive time and effort spent on the internet, and continued excessive use despite psychosocial problems; they found that these criteria have a 79.3–85.9% accuracy. Similarly, as one of the first authors, Griffiths (1995, 1996) applied Brown's (1991, 1993) six criteria of a (behavioral) addiction to a heavy use of the internet. These criteria, according to Charlton and Danforth (2004, 2007) include (a) salience (domination of a person's life by the activity), (b) euphoria (a "buzz" or a "high" is derived from the activity, (c) tolerance (the activity has to be undertaken to a progressively greater extent to achieve the same "buzz"), (d) withdrawal symptoms (cessation of the activity leads to the occurrence of unpleasant emotions or physical effects), (e) conflict (the activity leads to conflict with others or self-conflict) and (f) relapse and reinstatement (resumption of the activity with the same vigor subsequent to attempts to abstain). The proposed criteria of IGD according to DSM-5 include 9 items, such as preoccupation, withdrawal, tolerance, unsuccessful attempts to control, loss of interests, continued excessive use despite psychosocial problems, deceiving, escape, and functional impairment (American Psychiatric Association., 2013).

As one of the first researchers, Charlton (2002) focused on IGD by using Brown's (1991, 1993) criteria. Following a nomothetic classification system, a person has to meet all of the six criteria (salience, euphoria, tolerance, withdrawal symptoms, conflict, relapse/reinstatement) for a positive diagnosis of IGD. Charlton (2002) developed an addiction questionnaire with items tapping the six criteria according to Brown (1991, 1993), most of them overlapping the criteria as suggested by Ko et al. (2014). Surprisingly, by conducting a factor analysis, Charlton (2002) found two different factors in his samples of internet users. An "addiction" factor loaded on items tapping core criteria of addiction (conflict, withdrawal symptoms, relapse and reinstatement, behavioral salience), while another factor labeled "engagement" loaded on items tapping peripheral criteria of addiction such as cognitive salience, tolerance and euphoria. Charlton and Danforth (2004, 2007) replicated this study with a sample of MMORPG (Massively Multi Online Roleplaying Games) players to examine differences between addiction and high engagement. They found high significant differences between engaged and addicted players. Typically, engaged players engage in the behavior in pursuit of enjoyment; high engagement is characterized by an absence of withdrawal symptoms, while addicted players seem to suffer from serious consequences in their educational and vocational life (Charlton, 2002; Charlton & Danforth, 2007). These results suggest that criteria like tolerance, euphoria and cognitive salience are of limited use when it comes to a classification of IGD similar to substance abuse disorder. In a recent study, Pontes, Király, Demetrovics, and Griffiths (2014) confirmed these results; they developed the IGD-20, a survey with 20 items reflecting the nine criteria of IGD according to the American Psychiatric Association (2013). The authors found that "low risk high engagement" gamers scored high on salience, mood modification and tolerance, while scoring low on core criteria of addiction (such as conflict, withdrawal and relapse); furthermore, they suggest the use of a "pattern analysis" to distinguish between low risk and high risk engagement players (Pontes et al., 2014). Additionally, Charlton and Danforth (2007) suggest