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Pathological Internet use among adolescents: Comparing gamers and non-gamers



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ABSTRACT

"Internet gaming disorder" was recently included in Section 3 of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). Non-gaming Internet activities were not considered because of a lack of evidence. This study examined whether gamers differ from non-gamers with respect to their psychological well-being among students who show pathological Internet use (PIU). This cross-sectional study was conducted within the project "Working in Europe to Stop Truancy Among Youth (WE-STAY)". A total of 8807 European representative students from randomly selected schools were included. The Young Diagnostic Questionnaire was applied to assess PIU, and students with this condition were divided into gamers (PIU-G) and non-gamers (PIU-NG). Overall, 3.62% and 3.11% of the students were classified as having PIU-G and PIU-NG, respectively. A multinomial logistic regression revealed that students with PIU-G and those with PIU-NG showed similarly increased risks for emotional symptoms, conduct disorder, hyperactivity/inattention, self-injurious behaviors, and suicidal ideation and behaviors. Students with PIU-G were more likely to be male and have a higher risk for peer problems than those with PIU-NG. Students with PIU-NG had a higher risk of depression than those with PIU-G. The significant psychological impairment of PIU-NG suggests that it should be considered in future diagnostic criteria.

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1. Introduction

Research has shown the potential harmful effects caused by pathological use of the Internet (Schimmenti et al., 2014a). In the past, different terms and concepts have been applied to pathological

Internet use (PIU). Many authors have investigated PIU in general (Durkee et al., 2012; Fu et al., 2010), which has also been referred to as "Internet addiction" (Young, 1998), "computer addiction" (Wieland, 2005), "compulsive Internet use" (Meerkerk et al., 2006) and "problematic Internet use" (Caplan, 2002). Some studies have even specially focused on Internet gaming (Ko et al., 2005). For this condition, terms such as "pathological video gaming" (King et al., 2013), "video game addiction" (Mößle and Rehbein, 2013), "problematic computer game use" (Festl et al., 2013) and "problematic online game use" (Kim and Kim, 2010) have been used. Though different terms and definitions have been used previously, the construct of PIU implies a pattern of uncontrolled Internet use resulting in clinical impairment or distress.

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In the Young Diagnostic Questionnaire (YDQ; Young, 1998), a widely used tool to investigate PIU (Bakken et al., 2009; Cao et al., 2007; Durkee et al., 2012), five out of eight criteria have to be met for a diagnosis of PIU. These criteria bear great similarity to the new DSM-5 criteria for "Internet gaming disorder" (see Table 1). This condition of increasing interest was recently included in Section 3 of the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) released in May 2013 (APA 2013), thus calling for additional research (Petry et al., 2014). According to the American Psychiatric Association (APA). Internet gaming disorder is based on 9 criteria: preoccupation with Internet games, withdrawal symptoms, tolerance, loss of control, loss of interests in previous hobbies and entertainment, continued excessive use despite knowledge of psychosocial problems, dissimulation, dysfunctional affect regulation, hazard and loss. Five of these 9 criteria must be present over a 12-month period for diagnosis. The meetings regarding the next version of the International Classification of Diseases (ICD-11; which is expected to be published in 2015) have discussed whether a new section called "behavioral addictions" with the subtopic "computer and Internet addiction" should be included (Mann et al., 2013).

Furthermore, the condition of an Internet gaming disorder requires that the symptoms should lead to clinically significant impairments or distress. Both general PIU and Internet gaming are significantly associated with comorbid psychopathologies, risk-taking and self-harming behaviors, and an overall reduction in psychological well-being (Caplan, 2002; Gentile et al., 2011; Ha et al., 2007; Kaess et al., 2014; Ko et al., 2009; Lemmens et al., 2011; Van Rooij et al., 2011). Nevertheless, a lack of studies exists regarding a specific focus on non-gaming Internet activities or comparisons with gaming activities.

Currently, the new DSM-5 criteria for Internet gaming disorder refer exclusively to online (and offline) computer games. The debate is ongoing as to whether other forms of online activities have a similar addictive potential and might be associated with similar psychological impairments (Schimmenti et al., 2014a). The addictive potential of different Internet applications was recently assessed in a longitudinal study of 447 heavy Internet users (Meerkerk et al., 2006). Although the majority of time spent online included e-mailing, downloading, chatting and surfing, the authors found that gaming and searching for online sexual activities were the most important Internet applications associated with PIU. In contrast,

other studies suggest that applications involving social interactions may also abet the development of PIU (Caplan, 2002; van den Eijnden et al., 2008).Petry and O'Brien (2013) stated that additional research is needed to "identify the defining features of the condition" and to "determine prevalence rates in representative epidemiological samples in countries around the world".

The aim of the study was to empirically contribute to the ongoing debate if non-gaming Internet activities should also be included in a future diagnostic category (e.g. in the ICD-11) as this has important implications for both prevention and therapy. Thus, the primary focus of the present study was to examine a representative sample of European adolescents to identify individuals with PIU who engage in online gaming (PIU-G) and those with PIU who engage in online activities other than gaming (PIU-NG). Furthermore, any differences with regard to their comorbid psychopathologies, engagement in self-harming behaviors and psychological well-being were also assessed.

2. Methods

2.1. Procedures and sample

The present study was conducted within the framework of the "Working in Europe to Stop Truancy Among Youth (WE-STAY)" project funded by the 7th Framework Program (FP7) of the European Union. Representative samples were recruited in accordance with previously established and validated procedures from the "Saving and Empowering Young Lives in Europe" (SEYLE) study (Carli et al., 2013; Wasserman et al., 2010). In each country, a list of all eligible schools within the study sites was generated according to specific inclusion and exclusion criteria. Finally, 132 randomly selected schools were recruited from the following European countries: Estonia, Germany, Italy, Romania and Spain. Sweden served as the coordination center, and experts from Columbia University, New York, United States provided methodological consultation. Ethical approval was obtained from the local ethics committees at each study site. After a complete description of the study was provided to participants and their parents, their written informed consent was obtained. All questionnaires were administered at the schools and in the official language of the respective country.

Table 1Operationalization of the criteria for PIU assessed using the YDQ items and compared with the criteria for Internet gaming disorder in the DSM-5.

PIU (YDQ; (Young, 1998))	Internet gaming disorder (DSM-5)
Defined as: Time spent online for non-academic or non-job (i.e., recreational) purposes	Persistent and recurrent use of Internet games leading to clinically significant impairments or distress Note: Can involve non-Internet computerized games
Cut-off: ≥ 5	9 9
Questions	Criteria
Do you feel preoccupied with the Internet (i.e., do you think about previous online activities or anticipate your next online session)?	Preoccupation with Internet games
Do you feel restless, moody, depressed or irritable when you attempt to cut down or stop Internet use?	Withdrawal symptoms when Internet gaming is taken away
Do you feel the need to use the Internet in increasing amounts of time to achieve satisfaction?	Tolerance: the need to spend increasing amounts of time engaged in Internet games
Have you repeatedly made unsuccessful efforts to control, cut back or stop Internet use?	Unsuccessful attempts to control participation in Internet games
Do you stay online longer than you originally intended?	Loss of interest in previous hobbies and entertainment as a result of (and with the exception of) Internet games.
Have you jeopardized or risked the loss of significant relationships, jobs, or educational opportunities because of the Internet?	Continued excessive use of Internet games despite knowledge of psychosocial problems
	Has jeopardized or lost a significant relationships, jobs, or educational/career opportunities because of participation in Internet games
Have you lied to your family members, therapist or others to conceal the extent of your involvement with the Internet?	Has deceived family members, therapists, or others regarding amount of Internet gaming
Do you use the Internet as a way of escaping from problems or relieving dysphonic moods (e.g., feelings of helplessness, guilt, anxiety or depression)?	Use of Internet games to escape or relieve a negative mood

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