

Symptoms of Internet Gaming Disorder and Parenting Styles in Romanian Adolescents*

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Online video gaming has been endorsed as a potential addictive behavior with negative psychological and functional consequences and has been extensively studied among adolescents and young individuals. The aim of this cross-sectional study was to estimate the prevalence of symptoms of the Internet Gaming Disorder (IGD) in a sample of 278 Romanian early adolescents (aged 10 to 14, 52.5% females) and their parents, and to examine the role of parental styles of parents in predicting the symptoms of IGD in their children. Statistical analyses showed that 31 (22%) adolescents had clinically relevant symptoms of IGD. A logistic regression model revealed that a dominant permissive style of parents was substantially related to symptoms of IGD in their children. Findings highlight a strong correlation between parenting styles and symptoms of IGD, emphasizing the importance of parental involvement in both the prevention and development of IGD in early adolescence.

Key words: Internet gaming disorder, parenting style, problematic Internet use

Highlights:

- Permissive parental style of parents is linked to IGD in their children.
- Prevalence of symptoms of IGD is similar among boys and girls.
- Age was not a significant predictor of IGD symptoms in the current sample.

Although over two decades ago the existence of problematic Internet use (PIU) as an addiction disorder was a subject of debate (Griffiths, 2000), only pathological online video gaming has been included in the Section III of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorder (DSM–5, American Psychiatric Association [APA], 2013) as Internet Gaming Disorder

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(IGD), as a condition requiring further research. More recently, Gaming disorder (GD), either online or offline, has been introduced as a formal diagnostic entity in the 11th edition of the International Statistical Classification of Diseases and Related Health Problems (ICD–11; World Health Organization [WHO], 2018), drawing a rather clear distinction between IGD and hazardous gaming (Benarous et al., 2019).

In general, IGD is described as a persistent, uncontrollable, and recurrent use of the Internet to play video games, often with others, resulting in significant clinical discomfort (APA, 2013, p. 795) or impairment in important areas of functioning for at least 12 months (WHO, 2018). The DSM–5 proposed nine criteria with a threshold of five or more recommended as the main diagnostic requirement for IGD. These criteria indicate similar psychological symptoms with other behavioral and substance addictions such as withdrawal, tolerance, impairment in normal functioning and repeated unsuccessful attempts to quit or cut back (Tokunaga, 2017). In the ICD–11 (WHO, 2018) a patient must exhibit three symptoms (i.e., impaired control over gaming, increasing priority given to gaming, and escalation of gaming despite the negative consequences), to be clinically diagnosed with GD. Individuals with IGD typically play an extensive amount of time (APA, 2013) and they experience withdrawal symptoms such as recurring game-related thoughts and irritability when they stop playing (Kaptis, King, Delfabbro, & Gradisar, 2016). Internet gamers often spend long periods of time without any food or sleep, and they neglect their usual obligations, such as school or family (APA, 2013).

The reasons why IGD has generated a growing research interest are related to the multiple social, personal, and interpersonal consequences in everyday life, even if not everyone who plays Internet games shows problematic behaviors. Studies have documented the impact of IGD on both adults (e.g., Henchoz et al., 2016; Kim et al., 2016) and youth (e.g., Gentile et al., 2011; Liu et al., 2016). Adolescents at risk for problematic online gaming feel lonely and anxious in social situations (Kim, Namkoong, Ku, & Kim, 2008), have poor concentration and sleep quality (Cheung & Wong, 2011), are more depressed (King et al., 2013; Männikkö et al., 2015), and report more suicidal thoughts (Strittmatter et al., 2015). Commonly occurring comorbid psychiatric disorders are attention deficit/hyperactivity disorder (ADHD; Park et al., 2017), major depressive disorder (Youh et al., 2017), and self-harming behaviors (Liu et al., 2016). Problematic online gamers also experience a range of interpersonal problems, which lead to deteriorations in interpersonal relations (Cheng, Cheung, & Wang, 2018; Naskar et al., 2016). For instance, online gamers lack the necessary social skills to handle interpersonal conflicts (Leemmens, Valkenburg, & Peter, 2011), neglect or become distant from their parents (Liau et al., 2015; Wartberg, Kriston, & Thomasius, 2017), and frequently lie about their excessive gaming (Leemmens, Valkenburg, & Peter, 2011).

Studies in Germany showed that pathological gaming may range from 0.2% to 25.3% (Festl, Scharkow, & Quandt, 2013), while research in Asia

reported higher rates, like nearly 50% among Korean teenagers (Hur, 2006). A study conducted by Yang and Tung (2007) with teenagers in Taiwan found a 3:1 male to female ratio of PIU. Potential cultural differences, different conceptualizations, and different measures used (Kuss, 2013) are some of the possible explanations of the heterogeneous rates of PIU as well as pathological gaming prevalence (Ferguson, Coulson, & Barnett, 2011). According to the official data provided by the Romanian National Institute of Statistics (2018), 75.5% of the active Romanian users surf the Internet daily or almost daily. In Mihara and Higuchi's analyses (2017), IGD prevalence ranged between 0.7% and 27.5% indicating a higher frequency in males than in females, and tended to be higher among younger population than in adults.

People who have the greatest predisposition to develop PIU are young and socially isolated, with loneliness being a significant predisposing factor regardless of age (Gresle & Lejoyeux, 2011). Recently, Mihara and Higuchi (2017) conducted a systematic review of the literature, focusing on the criteria for the diagnosis, prevalence, risk factors and comorbidities of IGD. Numerous factors were found to be associated with IGD: demographic and family factors, interpersonal relationships, determinants of social and school functioning, personality factors, psychiatric comorbidities, and other medical conditions, such as ADHD.

Most previous studies have focused on PIU in adolescents, youth, and young adults, and there is still a scarcity of research investigating the family functioning in the understanding of addictive disorders (Collins et al., 2007), especially among early adolescents presenting with symptoms of IGD. Parenting styles, as theorized by Darling and Steinberg (1993), can be defined as the emotional surroundings in which a child is raised. Although there are many conceptualizations and theories on parenting styles and their characteristics, this research takes into account the parenting styles proposed by Baumrind (1966), which are classified as *permissive*, *authoritarian*, and *authoritative*. Permissive parenting is seen as the parent behaving in an affirmative and acceptant manner towards the child's actions, desires and impulses, allowing children to self-regulate their behavior (Baumrind, 1968). In contrast, an authoritarian parenting style refers to parents who control children's behavior through a high and rigid set of standards and rules. Therefore, authoritarian parents restrict their children's autonomy, emphasizing on order, rigor, and discipline. According to Soenens, Luyckx, Vansteenkiste, Durlez, and Goossens (2008), a psychologically controlling parent has manipulative and intrusive characteristics, which reflect Baumrind's authoritarian typology description. Finally, authoritative parenting is considered to be the exemplary parenting style or prototype (Baumrind, 1966) that yields the most positive outcome in a child (Hedstrom, 2016). Parents adopting an authoritative parenting style encourage and guide children in a firm, but warm manner.

Parenting style was found to have an impact on setting rules, restricting playing, and discussing program and game contents with their children (e.g.,

Rosen, Cheever, & Carrier, 2008). Parent and child characteristics also interact with and influence parenting styles. Studies have shown that mothers tend to adopt mainly an authoritative style related to Internet usage of their children, while fathers tend to adopt a dominant authoritarian style (e.g., Aunola, Stattin, & Nurmi, 2000). Furthermore, boys are approached differently compared to girls with parents imposing more computer/Internet rules on daughters than on their sons (van Rooji, 2011). Recently, Anderson, Steen, and Stavropoulos (2017) investigated the relation between IGD and parenting styles through a systematic review of longitudinal research trends in adolescence and emergent adulthood regarding the field of PIU. Their results indicated that less protective parenting (Chen, Chen, & Gau, 2015), low family functioning (Ko et al., 2007), and lower parental education are related to greater PIU (Willoughby, 2008). Therefore, adolescents with closer relationships with their parents showed decreased video game and PIU symptoms over time. Paradoxically, parental restriction of online gaming was not found to significantly impact PIU levels (Choo et al., 2015).

To our knowledge, no prior studies have examined the percentages of adolescents with symptoms of IGD and its correlates among Romanian adolescents. As shown by the Romanian National Institute of Statistics (2018), 65.5% of the Romanian population own a personal computer at home, 72.4% have home Internet access, and, amongst them, 62.9% live in an urban area. Our aims were to explore the percentages of adolescents with symptoms of IGD based on the DSM-5 criteria and to examine the relationship among age, gender, parenting style, and symptoms of IGD among early Romanian adolescents. In line with previous studies (Gentile et al., 2011; Liu et al., 2016; Mihara & Higuchi, 2017; Rosen, Cheever, & Carrier, 2008; Yang & Tung, 2007), we expected that age, gender, and parenting style would predict symptoms of IGD. We hypothesized that a permissive parenting style would be associated with more symptoms of IGD.

Method

Participants

We selected a convenient sample from a regular, public, mass-education school, from a middle-class neighborhood. Our final sample consisted of 278 participants: 139 early adolescents (52.5% girls) and one of their parents (82% mothers). The mean age of adolescents was 12.1 years ($SD = 1.33$), range 10–14 years. The exclusion criteria were (a) students with special educational needs (e.g., dyslexia); (b) students with mental disorders (e.g., ADHD, oppositional defiant disorder, anxiety disorders, or mood disorders), (c) students with various medical conditions (e.g., visually impaired), and (d) no computer access at home. A total of 12 participants were excluded from the final sample, due to incomplete answers to the instruments. In addition, out of the 185 parent-student pairs that we have contacted, 21 (11.35%) parents declined participation in the study, while 13 (7%) adolescents met the exclusion criteria.

Instruments

Parenting style. Parenting styles were measured using a Likert-type scale from the Parenting Styles and Dimensions Questionnaire (PSDQ; Robinson, Mandleco, Olsen, & Hart, 2001). The instrument contains 62 items to assess parents' behaviors while they interact with their children. These behaviors are divided into three scales which assess the authoritative (e.g., "I tell our child that we appreciate what the child tries or accomplishes"), authoritarian (e.g., "I use physical punishment as a way of disciplining our child"), and permissive (e.g., "I bribe our child with rewards to bring about compliance") a parenting style. Studies show that the PSDQ has good reliability and validity, also in terms of cross-cultural validity (e.g., Robinson, Mandleco, Olsen, & Hart, 1995). The PSDQ was translated from English to Romanian using the back-translation method. No item was omitted, replaced or changed, except necessary linguistic changings. Cronbach's alpha was .81 for the authoritative scale, .75 for the authoritarian scale, and .71 for the permissive scale in the present study.

Internet Gaming Disorder. The Ten-Item Internet Gaming Disorder Test (IGDT-10; Kiraly et al., 2017) was used to measure symptoms of IGD. The IGDT-10 consists of simple items that focus on the diagnostic criteria of the DSM-5 and it was shown to be a valid and reliable instrument to assess IGD (Kiraly et al., 2017). Participants chose one of three response options: *never* (0), *sometimes* (0), and *often* (1). Only the response *often* (1) was scored to indicate the presence of specific IGD symptoms resembling the dichotomous structure of IGD in DSM-5 (APA, 2013). As pointed out by Kiraly et al. (2017), items 9 and 10 referred to the same criterion and thus responding with *often* to any or both of these items was considered as a symptom present. Cases were considered having clinically relevant IGD symptoms (meeting the criteria for IGD according to the DSM-5) when there were present five or more of the symptoms. The IGDT-10 was translated from English to Romanian using the back-translation method. No item was omitted, replaced or changed, except necessary linguistic changings. Cronbach's alpha was .69 in the present study.

Procedure

The schools authorized the study and parents completed consent forms prior to their children's participation. In order to obtain parents' and children's consent to participate in the research, invitation letters and consent forms were distributed to families. Children could volunteer to take part as long as their participating parent signed the informed consent form. Each student was tested individually, in the same time interval (12:00–1:00 pm), in a different class. Participating adults filled in a parental-style instrument individually, in a separate quite room provided by the school. The average testing time for each child was about 15 minutes, and about 12 minutes for parents. The instruments were administered to all students and parents by the same researcher who was familiar to them since she worked as a school psychologist. Parents were assured that their answers would definitely not have any impact on their children's grades or their relationship with the school. They were also assured of the confidentiality of their answers, and the procedure in general.

The Ethics Committee of the Faculty of Psychology and Educational Sciences, at the "Alexandru Ioan Cuza" University of Iași approved the study.

Statistical Analyses

A logistic regression analysis was conducted using age, gender, and parenting style as predictors of IGD. Parenting styles were entered as categorical variables in a logistic regression model and IGD was entered as dichotomous. The highest overall score on the three scales measuring either the authoritative, authoritarian or permissive way of interacting with their children was considered to reflect the parent's dominant parental style (Robinson,

Mandleco, Olsen, & Hart, 2001), and it was further used in our analyses. Two groups were formed based on the scores of the IGD instrument: adolescents without clinically relevant IGD symptoms and adolescents with clinically relevant IGD symptoms. Statistical significance was consistently evaluated using .05-level, 2-sided tests. All statistical analyses were performed using SPSS v. 24.0.

Results

Eleven (7.9%) parents reported a dominant permissive style, 105 (75.5%) authoritative, and 23 (16.5%) authoritarian. In overall, 31 adolescents (22%) had at least five symptoms according to the IGDT-10, out of which 14 were females (19.2% of the whole sample of females) and 17 males (25.8% of the whole sample of males).

Significant IGD symptoms were present among 5 (21.7%) adolescents with parents reporting predominantly authoritarian styles, among 18 (17.1%) adolescents with parents reporting authoritative style, and among 8 (72.7%) adolescents with parents reporting permissive style.

A logistic regression was performed to test the effects of age, gender, and parenting style on the likelihood that a participant would have clinically relevant symptoms of IGD. The data generated by our model did not differ significantly from the observed data (Hosmer and Lemeshow $p = .64$, $p > .05$) and the model was statistically significant ($\chi^2(4, 139) = 14.75$, $p < .05$). The Nagelkerke R Square value indicated that the logistic regression model explained 15.4% of the variance in IGD. In addition, the model correctly classified 82% of the subjects and it identified more successfully those who have clinically relevant symptoms of IGD (97.2% vs. 25.8%). The Wald criterion demonstrated that parenting style was a significant predictor ($p < .05$; see Table 1).

Regarding parenting styles, a significant difference was observed between the permissive style and the others ($p < .05$, $B = 2.2$). Significantly increased odds of having IGD were observed among adolescents with permissive parents; $OR = 9.3$, 95% CI [1.72, 49.92]. More specifically, the chances for IGD symptoms to appear were nine times higher in the case of a dominant permissive parenting style.

Table 1
Summary of logistic regression analysis

| Variables | <i>B</i> | <i>SE</i> | Wald | <i>p</i> | <i>OR</i> (Odd ratio) | 95% CI |
|---------------|----------|-----------|------|----------|--------------------------|--------------|
| Gender | -.26 | .43 | .36 | .54 | .76 | [.32–1.81] |
| Age | -.03 | .19 | .03 | .85 | .95 | [.66–1.40] |
| Authoritarian | | | | | | |
| Authoritative | -.30 | .57 | .27 | .59 | .73 | [.23–2.28] |
| Permissive | 2.22 | .85 | 671 | .01 | 9.27 | [1.72–49.92] |

Note. Parenting style predictors (i.e., authoritarian, authoritative, and permissive) were included as categorical variables. Authoritarian parenting style was the reference category. CI = confidence interval.

Discussion

The present results suggested that among early Romanian adolescents clinically relevant IGD symptoms could be high (22%). This result is in line with data presented by Mihara and Higuchi's analyses (2017), where IGD prevalence ranged from 0.7% (e.g., Australia) to 27.5% (e.g., Asian countries), and Festl et al. (2013), where IGD prevalence in German adolescents ranged from 0.2 to 25.3%. Our study also showed that parenting styles could be an important predictor of the present clinically relevant IGD symptoms, what is also in line with the previous data. For example, Durkee et al. (2012) found that students from 11 European countries (i.e., Austria, Estonia, France, Germany, Hungary, Ireland, Israel, Italy, Romania, Slovenia, and Spain) who did not live with a biological parent and experienced low parental involvement or parental unemployment, had the highest relative risks for PIU.

The findings of the current study are also consistent with those of Chen et al. (2015), Ko et al. (2007), and Willoughby (2008), who found that less protective parenting styles, lower family functioning, lower parental education, or divorced parents were associated to higher PIU rates. However, parental restriction of online gaming was not found to have a significant impact on PIU (Choo et al., 2015). Furthermore, our study showed that a dominant permissive parenting style may contribute to a higher possibility for having IGD in early adolescence. As previously showed (Bonnaire & Phan, 2017; Chiu, Lee, & Huang, 2004; Chien-Hsin et al., 2009), parental monitoring is considered to be a major contra measure for IGD for both males and females. One explanation is that a permissive type of parenting involves less control over the child's way of spending time, with less communication and discussions related to threats posed by Internet misuse or overuse. Therefore, a much closer monitoring process of early adolescent's online activity would decrease their risk of developing IGD.

Our data suggested that the excessive engagement in Internet gaming is similar in both early adolescent girls and boys, although the symptoms tend to be more frequent among boys. Kaess et al. (2016) showed that Internet use increased among Romanian adolescents of both genders from 2009 to 2012, thus it was not surprising early adolescent girls play online video games similarly to boys. Therefore, early adolescents, as well as younger children, could find comfort and company in online activities that sometimes substitute missing parent-related activities. Moreover, the increased access to Internet-connected smart-phones, which are very attractive to youth, may be another potential reason of this finding. The need for a constant connection to the online environment is also a consequence of parent's migration: in many cases, the Internet offers the main source of communication between children left in the country and their parents who left Romania to work abroad. Consequently, constant access to the Internet may be one of the factors supporting the addiction to the Internet and computer games.

The assumption that age would be a significant predictor of IGD was not confirmed in our sample, suggesting that Internet access and usage rates are similar, regardless of the adolescent's developmental stage. It seems possible

that these results are due to the narrow age interval in this study. Therefore, future research may want to expand the range within late childhood and late adolescence (e.g., participants with an age-range from 10 to 18 years-old).

Limitations

Considering that our estimation is based on a very small sample of parents and their children, we should consider the present results as indicators for potential tendencies related to parental styles. It is also important to mention that our study's findings are not generalizable to other settings due to the use of a convenient sample of participants. As Crossman (2018) stated, the researcher is usually unable to control the representativeness of that particular group when using a convenient sample. Therefore, this lack of control may lower the external validity of the study (Etikan, 2016; Sedgwick, 2013). Future research on IGD prevalence should focus on large and representative samples to obtain reliable data. In addition, both the PDSQ and IGD are self-report measures, which can raise some issues regarding honesty, introspective ability, or understanding particular items in both parents and adolescents (Hoskin, 2012). Additionally, our results were based on the IGD-10 instrument only for assessing a possible clinically relevant symptoms, but the disorder can be only confirmed using an additional clinical diagnostic interview (Wichstrøm, Stenseng, Belsky, von Soest, & Hygen, 2019).

Future studies should address both parents' representations of parenting style in order to gather more detailed and conclusive information, as well as other important family-related variables, such as household income, the presence of related parental addictions or mental health issues, which may impact the mental health of their offspring and their relationships. Other important variables which future studies may consider are related to game-related factors such as gaming duration or game genre (Rho et al., 2017), the sense of presence (i.e., experiencing the gaming, virtual world as a real one; Stavropoulos, Burleigh, Beard, Gomez, & Griffiths, 2018), the use of an avatar and the bond created between the player and the avatar (Burleigh, Stavropoulos, Liew, Adams, & Griffiths, 2018; Liew, Stavropoulos, Adams, Burleigh, & Griffiths, 2018), and the cultural norms that might mediate addictive play patterns (Kuss, 2013; Snodgrass, Zhao, Lacy, Zhang, & Tate, 2019).

Conclusion

The present study showed that nearly every fifth Romanian early adolescent may have clinically relevant IGD symptoms and a dominant permissive parenting style may contribute to a higher possibility for having the symptoms in early adolescence. The excessive engagement in Internet gaming is similar in girls and boys, with no significant effects of their age. The high percentage of adolescents with IGD identified in this sample highlights not only the need for prevention programs and involvement of educational agents in promoting safe and healthy online behavior, but also the importance and role of the family environment. The evidence from this study suggests that future research on variation in and factors associated with IGD is required to understand risk factors, predisposing factors, or triggers of it.

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Simptomi poremećaja igranja kompjuterskih igara na Internetu (eng. Internet Gaming Disorder) i vaspitni stilovi roditelja kod rumunskih adolescenata

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Igranje onlajn video igara se smatra potencijalno zavisničkim ponašanjem sa negativnim posledicama po mentalno zdravlje i funkcionisanje, i dosta je proučavano kod adolescenata i mladih. Cilj ove transferzalne studije je bio da se proceni učestalost simptoma poremećaja igranja kompjuterskih igara na Internetu (eng. Internet gaming disorder, IGD) na uzorku od 278 rumunskih ranih adolescenata (uzrasta od 10 do 14 godina, 52.5% devojčica) i njihovih roditelja, te da se ispita uloga vaspitnih stilova roditelja u razvoju poremećaja igranja kompjuterskih igara na Internetu (kod njihove dece, prim. prev.). Statističke analize su pokazale da je 31 adolescent (22%) imao klinički relevantne simptome IGD. Logistička regresija je pokazala da je permisivni stil roditeljstva supstantivno povezan sa simptomima IGD (kod njihove dece, prim. prev.). Nalazi naglašavaju snažnu povezanost vaspitnih stilova roditelja i simptoma IGD, ističući važnost roditeljske uključenosti u prevenciji, ali i razvoju IGD u ranoj adolescenciji.

Ključne reči: poremećaj igranja kompjuterskih igara na Internetu, vaspitni stilovi roditelja, stilovi roditeljstva, problematična upotreba Interneta

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