

Association of Internet Gaming Disorder with Personality Traits among Indian Adolescents

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ABSTRACT

Internet gaming is very popular in India. Heavy gaming affects the mental and physical health of the gamers. An insight into the risk factors can provide a better understanding in the etiology of internet gaming disorder. This study aims to find out the association of Internet Gaming Disorder with Personality traits among Indian Adolescents.

Keywords: *Internet Gaming disorder, Personality*

India has the world largest gamers base of about 160 million players (Majumdar, 2020). According to report, gaming industry in India has grown from 2 million gamers in the year 2016 to 90 million gamers in the year 2019 (Gupta & Mathur, 2020). Annual growth of gaming industry is expected to be 38% (Farooqui, 2022). The amount paid for playing online games has reached approximately INR 160 billion (KPMG, 2020). Apart from the physical and mental health hazards, the gamers are facing legal and criminal proceedings (Kurian, 2021). The Indian Government has also started recognizing the seriousness of internet gaming addiction (Ministry of Education, 2021). There are various news stating suicidal attempt of youngsters due to financial loss during online gaming. (Sidhu, 2020; Bhat, 2022; Riza, 2022). There is also a recommendation to government that they should form a clear regulation for gaming sector (Hazarika, 2023). Heavy gamers tend to show symptoms like substance disorder (Young, 1998) having comorbid with various other mental health issues like depression, anxiety, sleep disturbances, poor interpersonal relationship, poor academic scores, loss of job etc. (Greydanus & Greydanus, 2012) (Huang et al., 2020). The diagnostic and statistical manual of mental health disorder (2013) has also included internet gaming disorder as a condition for further research (Petry et al., 2014). International classification of diseases (ICD-11), has also included it as a disease (WHO, 2018). The prevalence of internet gaming disorder in Asia ranges from 1.6% to 18.4% (King et al., 2020, Chia et al., 2020., Mak et al., 2014). The prevalence of IGD among college students in the state of Haryana in India is 12% (Ranga et al., 2023).

Personality plays an important role in the development of internet gaming disorder. Personality includes all characteristics and traits that a person possesses. Personality is relatively a stable trait that can't be changed overnight. There are different theories that talk

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about various personality traits. According to Cattell, there are 16 key personality traits which are present in all individuals varying in degrees. Cattell & Mead (2008) developed 16PF to measure personality. According to Sigmund Freud, personality depends upon basic instincts like food, sex, thirst. He talked about the unconscious aspect of mind which is majorly responsible for development of personality. Also, he emphasized on early childhood experiences (De Sousa, 2011). According to Eysenck, biological factors also determine personality. He proposed that personality revolves around different behavior that can be represented on two dimensions: Extroversion and Introversion, Neuroticism and Stability. Carl Jung also proposed the theory of personality. He talked about inherited factors that influence one's way of thinking which in turn help to develop the personality type. He talked about four functions which are sensing, intuition, feeling and thinking (Matthews & Gilliland, 1999). One of the recent theories of personality is popularly known as Big 5 proposed by J.M. Digman. This theory states that personality is built up of five major factors or traits which are popularly known as OCEAN which is Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism (McCrae & Costa, 1999).

Researchers are focusing on studying the personality traits that predict the problematic gaming behavior. Lai et al. (2013) concluded that adolescence is a very crucial part of human life and is more susceptible to internet attraction which results in negative health consequences. They also concluded that adolescents are facing time management problems, withdrawal symptoms, poor performance, social problems and they substitute the internet for reality. Internet addiction is negatively impacting Adolescents on both physical and psychosocial health aspects. Poor sleep patterns are reported by heavy internet users. The adolescents suffering from internet addiction also show signs of depression, ADHD and social anxiety. Burleigh et al. (2017) revealed the positive association between gaming avatar and depression. Further, the results show that depressed adolescents are more vulnerable to internet gaming disorder. Gervasi et al., (2017) published a literature reviewed Internet gaming disorder and personality traits relationship in last 10 years (2007-2016). Neuroticism is an important characteristic in developing internet gaming disorder. Low conscientiousness and low extraversion are considered as a predictor of internet gaming disorder (Müller et al., 2014) (Braun et al., 2015). Agreeableness and extraversion are negative predictors of gaming addiction (Peters & Malesky, 2008). Several other personality traits within the Big five model were also examined such as sociability, cooperativeness and self-directedness and found a negative correlation on all these three traits with internet gaming disorder. Also, it suggests a positive association between dysfunctional impulsivity, aggressiveness, low self-regulation and gaming addiction. Neuroticism seems to be a consistent factor among internet gamers as they use gaming as a coping strategy to keep themselves away from any kind of negative thoughts and stressful events (Wittek et al., 2015). As the person who is low on agreeableness and highly competitive can predict longer time to play games and achieve various levels of the game one by one (de Hessel, 2020).

Introverts are not inclined towards gaming activity rather than extroverts as they consider it to be the means of overcoming their loneliness (Braun et al., 2016). The people who score low on conscientiousness are more persistent towards gaming activity. Also, addictive gaming is influenced by openness to experience (Akbari et al., 2021). According to Cole & Hooley (2013) aims to check the clinical factors, personality correlates and motivational factors for problem internet gamers and confirmed non significance between problem and controlled group on two factors i.e., Openness to Experience and Agreeableness and significant correlation among problem gamers and high neuroticism, low extraversion, and low conscientiousness. Both neuroticism and anxiety are highly correlated with internet gaming,

but anxiety is the key factor in understanding the problem of internet users. The results confirmed that problem gamers were less conscientious, more introverted, and more neurotic. González-Bueso et.al (2018) tries to find out IGD symptoms and personality correlates of the adolescents. The patient group showed high scores on several personality correlates like Self-Devaluation, Introversion, Inhibition, Identity Confusion. The patient group, if compared with the controlled or healthy group showed higher scores on introversion, poor self-esteem, and more insecurity in relationships with friends and family. IGD group scored high on inhibition which reflects that the subjects are more anxious and avoid threatening situations. IGD group remain isolated from reality and remain engulfed in gaming activity and often try to build online social relations rather than real ones. Şalvarlı & Griffiths (2019) confirmed that Extraversion is negatively correlated with Internet Gaming Disorder. The individuals who score high in extraversion are having less chance to develop internet gaming disorder. On the contrary, the individuals who score high on introversion have more chances to develop internet gaming disorder. To overcome the feeling of loneliness and poor social relationships, they try to compensate for it by playing online games.

Individuals who scored low on conscientiousness are more likely to indulge in internet gaming activity (Chew, 2021). Such individuals are less competent, have poor self-discipline and they are more likely to indulge in virtual gaming activity. However, the individual who scores high on conscientiousness also sometimes indulge in gaming activity to improve their skills. In addition to these, no relationship was found between conscientiousness (Collins et al., 2012). Therefore, the trait conscientiousness showed contradictory findings. Neuroticism showed positive correlation with Internet Gaming Disorder (Evren et al., 2018) (Akbari et al., 2021). The individuals high on neuroticism are emotionally unstable. They tend to play more to overcome the feelings of insecurity and to escape the problems (Widiger & Oltmanns, 2017). Neuroticism is also associated with impulsivity (Valero et al., 2014) (Lee-Winn et al., 2016). The study has shown a positive correlation between negative valence (Charlton & Danforth, 2010), detachment, and negative emotionality with internet gaming disorder (Laier et al., 2018).

Adolescence period is a very crucial stage of human development (Christie, 2005) and is also termed a stage of storm and stress (Hall, 1904). Cognitive, emotional, and physical changes take place in this stage (Yurgelun-Todd, 2007). Adolescents are often very curious about their surroundings and want to explore. Adolescents of age 15-16 years are a vulnerable population to be affected by internet addiction (Karacic & Oreskovic, 2017). Predictive factors of internet gaming in adolescents include personality traits, low self-esteem (Sevelko et al., 2018), and temperament (Seong et al., 2019). Loneliness, self-esteem and social anxiety are not associated with gaming disorder (Kircaburun, et al., 2018). Internet addiction resulted in negative health consequences. Adolescents faced time management problems, withdrawal symptoms, poor performance, educational, social problems and other important aspects of life (WHO, 2022). Often, they substitute the internet for reality. Internet addiction is negatively impacting adolescents in both physical and psychosocial health aspects. Poor sleep patterns are reported by heavy internet users. Inactivity or less physical activity among internet users eventually results in health problems like obesity, etc. (Byeon et al., 2022). Personality traits are considered important factor in the development and sustaining online gaming (Mihara & Higuchi, 2017). Furthermore, many personality traits are highly associated with gaming addiction (Carbonell & Oberst, 2018).

There is a pertinent difference in personality traits of non-gamers and problematic gamers. Low scores on conscientiousness and openness to experience were also significantly linked

with gaming addiction (Wang et al., 2015). Wittek et al., (2016) Norwegian game players were also positively associated with neuroticism and negatively associated with conscientiousness. Hesselte et al., (2020) confirmed positive and negative links among different gaming motives and various personality traits. Agreeable, extroverted, conscientious gamers tend to play less. A low score on conscientiousness is a good predictor of pathological internet gaming (Reyes et al., 2019; Bouna-Pyrrou et al., 2018). Braun et al. (2016) compared the personality profile of addicted gamers, regular gamers, and non-gamers. Low level of neuroticism is found in regular gamers. Personality traits play a critical role in contributing to vulnerability of internet gaming addiction. Extraversion and openness to experience had a no or zero association with online gaming (Liao et al. 2020; Salvarh & Griffiths, 2019), and no significant differences were found in the dimensions of agreeableness between problematics and non- problematic gamers (Dieris- Hirche et al., 2020). Tolerance, Excessive Time Spent, Regulation Damage, Compulsive Use, and Continued Use despite Side Effects subfactor scores were also significantly higher among gamers than non-gamers (Kim et al., 2022).

Players with neurotic tendency behave violently after playing to violent video games (Markey et al., 2010) or vice versa as players exposed to violent games score high on neuroticism (Chory et al., 2010). Such players also score low on agreeableness and conscientiousness traits (Markey et al., 2010). Neurotics seems to be more addicted to online gaming (Lee-Winn et al., 2016). Neurotic people likely to use gaming as a defense mechanism of handling or controlling negative thoughts or mood (Mehroof et al., 2010) or avoiding a particular situation or problem (Wittek, 2016). Neuroticism is allied with impulsivity also (Costa & McCrae, 1992) which may further lead to the development of IGD (Sharma et al., 2020). Internet Gaming Addiction (Liao, 2020) was significantly and positively linked with neuroticism and negatively with conscientiousness and represents a general health risk factor. Personality traits like openness, agreeableness, and extraversion do not contribute to the development of. Highly educated married adults were more likely to have IGD which is contrary to many studies reporting high prevalence of IGD in single (Mallorquí-Bagué, 2017) due to loneliness. Highly neurotic individuals find the real world threatening, they feel safe and situation under control in digital world (Muller et.al, 2004). Neurotic traits are the predictors for smoking (Soldz et.al, 1993) and are associated positively with other psychological illnesses (Kotov et.al, 2017). Low conscientiousness indicates less commitment to personal goals, it is a predisposition to be disorganized, and trouble following schedule, hence, finds the digital environment more attractive. Consequently, keeping an eye on adolescents with high neuroticism or low conscientiousness may help prevent IGD (Muller et.al, 2014). Slightly significant correlation between low openness, agreeableness, and extraversion associated with Internet addiction (Wang, 2015). Gamers with low openness to experiences are less interested in exploring new activities. IGD patients spent more time and money on games than the non IGD group.

The individuals scoring low on conscientiousness are unable to control the amount of time and money they spent on gaming (Laio, et al., 2020). No linkage is found between marital status and education between the IGD and control group. IGD can also be predicted by time and money (Rho et al., 2017). Gamers are unable to control the gaming time. Rho et al. (2017) showed that money and time spent on gaming are risk factors for IGD. Spending more time playing games online increases the risk of addiction (Hussain, 2012). Neuroticism is an important characteristic in developing internet gaming disorder. Other personality types i.e., extraversion, conscientiousness, openness to experience, and agreeableness are less disposed to IGD (Gervasi et al., 2017). Cole & Hooley (2013) measured personality correlates and motivational factors among problematic and non-problematic internet gamers. Problematic internet gamers scored significantly high on neuroticism and low on extroversion and

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conscientiousness dimensions of personality than the non-problematic internet gamers. No statistically significant differences were found between the two groups of adolescents on the domains of openness to experiences (Terracciano et al., 2005). Low agreeableness is significant with violent game playing (Chory & Goodboy, 2011).

The Big five model of personality is the commonly used classification method of personality. The five dimensions of personality i.e. Openness to Experiences, Conscientiousness, Extraversion, Agreeableness and Neuroticism have a significant effect on internet gaming disorder (Kayaş et al., 2016). Till now there has been very less studies to study the relationship of internet gaming disorder with personality (Hussain et al., 2012; Rho et al, 2108; Karaca et al., 2020). Moreover different tools were used to assess personality traits. Therefore, making the results difficult to compare. This study is an another attempt to investigate the relationship of internet gaming disorder with personality traits and further to evaluate the etiology of internet gaming disorder.

Hypothesis

The purpose of the study is to understand the association of casual factors of internet gaming disorder by studying its relationship with personality traits among urban males and females.

The hypothesis are as follows:

1. Is there statistical significant relationship between IGD and personality traits?
2. Among the personality traits, which personality traits have significant impact on IGD?

Sample

For present study, a sample 200 students will be selected from different colleges and universities of Haryana State. The sample is chosen using stratified random sampling which includes the following pattern:

Males	Females
100	100

Both males and females are included in the sample. The age of the sample is ranging from 17-20 years. The participants are assured that confidentiality will be maintained. Consent is taken from the participants.

Tools:

Internet Gaming Disorder scale, developed by Dr. Halley Pontes in 2015 is used for the study. It is the first standardized psychometric tool to assess the Internet Gaming Disorder, covering all the nine criterion of IGD. It is also known as IGDS9-SF. This test is extensively used for assessing Internet Gaming Disorder across different cultures. The test is found reliable and valid on Indian population (Pontes, 2017). The participants who scored more than 5 or more criterion out of nine would be considered having IGD.

For measuring personality, we used Big Five Inventory by John, O. P., & Srivastava, S. (1999). It was a 44-item inventory. It measures an individual on the Big Five Factors (Dimensions) of Personality named as Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A) and Conscientiousness (C).

Statistical Analysis:

Prevalence of IGD is calculated on the whole sample using IGD scale. Correlational analysis was done on the population. Multiple linear regression analysis is also done determine the risk

factors in respect to personality traits. The statistical significance is set at $p < 0.001$ level. SPSS 16 version is used for all statistical analysis.

Internet gaming measure relationship with personality (male and female)

To study the relationship between internet gaming disorder and other variables such as extraversion, agreeableness, conscientiousness, neuroticism, openness to experiences, correlation analysis was performed on whole sample. Intercorrelations among all 5 tested variables, separately for urban male and female were analysed.

RESULTS

Graphical Presentation of Intercorrelation between internet gaming disorder with personality among males

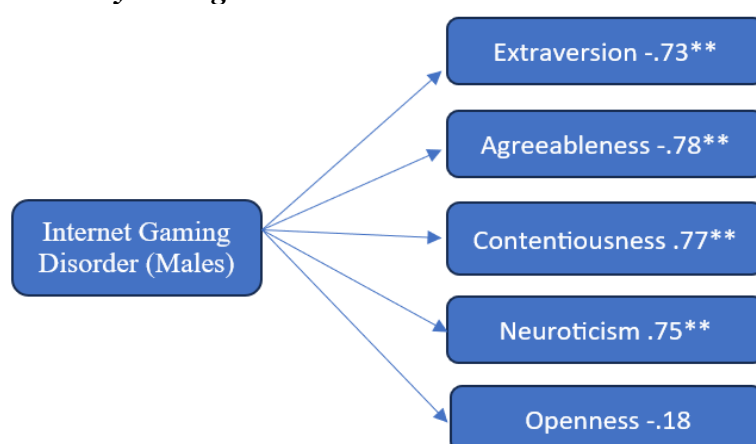


Figure represented that internet gaming disorder is positively correlated with all domains of temperament including negative affect ($r = .64$, $p < .01$), extraversion/surgency ($r = .58$, $p < .01$), effortful control ($r = .58$, $p < .01$) and orienting sensitivity ($r = .71$, $p < .01$) for the group of urban male adolescents. Value of correlation coefficient presented in the figure represented that internet gaming disorder is significantly negative correlated with negative affect ($r = -.27$, $p < .01$ level) and extraversion/surgency ($r = -.56$, $p < .01$ level), and non-significantly with two domains temperament i.e., effortful control and orienting sensitivity for the group of urban male adolescents.

Graphical Presentation of Intercorrelation between internet gaming disorder with personality among females

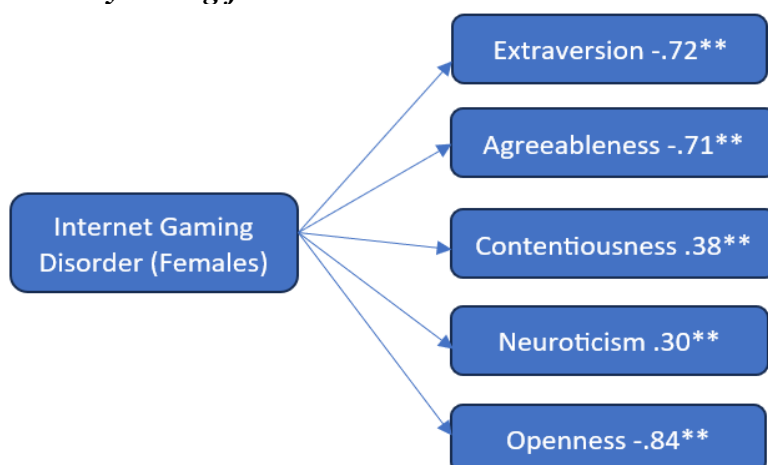


Figure depicted the coefficient values of interrelationship between internet gaming disorder and domains of personality for urban female participants. There is a statistically significant relationship was found between internet gaming disorder and domains of personality for urban female participants. Proneness to internet gaming is negatively correlated with extraversion ($r = -.72, p < .01$), agreeableness (personality) ($r = -.71, p < .01$) and conscientiousness ($r = -.38, p < .01$), openness (personality).

DISCUSSION

After Covid-19, Internet gaming disorder has become more prevalent among the youths worldwide. People didn't realise the potential side effects if internet gaming and fall prey to it. Excessive gaming leads to addiction-like symptoms among the gamers.

The findings of this study indicates that 100 participants were males and 100 were females from both urban and rural backgrounds. After analysis the correlation tables, it can be concluded that internet gaming disorder is positively correlated with neuroticism and conscientiousness and negatively correlated with agreeableness, extraversion and openness variables of personality for male participants of current study. For female subjects, internet gaming disorder is positively correlated with neuroticism and conscientiousness and negatively correlated with agreeableness, extraversion and openness dimensions of personality.

Therefore, we can fairly say for hypothesis no. 1 that internet gaming disorder is significantly related to personality traits. The personality traits like agreeableness, extraversion and openness are negatively related to internet gaming disorder. Also, the personality traits like neuroticism and conscientiousness are positively related to internet gaming disorder. The current study shows that there is a persistent relationship between personality traits and internet gaming disorder. The individuals with neurotic tendencies and low conscientiousness are more likely to develop risk factors for internet gaming disorder later.

Considering many studies these days related to personality traits and internet gaming disorder, we can fairly say that spending much time on gaming can lead to addiction. Further few specific personality traits have the propensity to cause internet gaming disorder.

Limitations of the study

The present study is based on small sample of 200 students. The study might not be generalised for the general population. The study does not include any other environmental factors that can lead to internet gaming disorder. The specific personality traits can be an indicator of internet gaming disorder but not the only factors. The current study only focuses on the personality traits and others factors are not taken into consideration.

CONCLUSION

In consistent to the findings of the study, specific combination of traits like neuroticism and conscientiousness are positively related to internet gaming disorder. The traits like agreeableness, extraversion and openness are negatively related to internet gaming disorder. The youth should be sensitized regarding the pros and cons of internet gaming disorder. They should be made aware of severe side effects and addictive nature. We should guide the youth to remain busy in some productive things rather than virtual world of gaming. Additionally, as we study the personality traits indicative of development of the disorder, we can use it as a primary or initial indicator for early detection of the disorder. As per the old saying, prevention is always better than the cure and we all should act before its too late.

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Conflict of Interest

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