RESEARCH ARTICLE

▪ Vol. 4, No. 4 (Fall 2023)
▪ p-ISSN: 2791-0245
▪ e-ISSN: 2791-0229
▪ Pages: 248 – 259
▪ DOI: 10.55737/qjssh.849537145

Open Access

QLANTIC JOURNAL OF SOCIAL SCIENCES AND HUMANITIES

Internet Gaming Disorder and Competitiveness: A Cross-Sectional Study

Ambreen Fatima [1] Farhana Ambreen [2] Rizwana Amin [3]

Abstract: *Internet Gaming Disorder (IGD) and Competitiveness are growing challenges for adolescents. This cross-sectional study examines IGD and Competitiveness in adolescent boys (N = 220) and girls (N = 135) who play online games via a convenient sampling technique. The study also examines weekly game time. The results show that adolescent boys and girls differ in IGD and competitiveness scores with the evidence of the significance of the main effect for the assessment of IGD with F (1,353) = [9.569], p = .002 and Competitiveness with F (1,353) = [4.562], p = .033 respectively. Additionally, excessive internet gaming can increase IGD and competition in both male and female adolescents. It suggests that gaming for more than 20 hours per week may increase IGD symptoms and encourage Competitiveness in adolescents. The findings emphasize the importance of monitoring and regulating adolescents' gaming behaviours, especially excessive gaming. Parents, educators, and healthcare professionals can help identify adolescents at risk of IGD and provide appropriate support and therapies. Promoting appropriate gaming habits and preventing the detrimental effects of excessive gaming in adolescents is crucial.*

Key Words: Internet Gaming Disorder (IGD), Competitiveness, Adolescents

Introduction

In this age of technological advancement, the Internet is essential to daily life. However, adolescents and emerging adults may be at risk when using the Internet. Internet forums and other interactive elements have drawn a large global user base to numerous websites and mobile apps, including online game sites (Steven et al., 2021). Due to self-regulation issues, younger users may need help mastering the internet (Wong et al., 2020). The addictive nature of these apps has been linked to poor self-regulation in those with dysregulated and disordered internet usage habits, compounding the issues above (Agbaria et al., 2020; Gu, 2020). Technology and the internet have led adults and teens to spend their free time playing online games. Internet gaming is reaching its peak in modern society. It is important to remember that playing video games is not pathological. Disruption in daily life and functioning suggests a medical issue. Rising internet gaming is linked to more violent incidents and behavioural changes (Rettner, 2019; Imataka et al., 2022).

Gaming disorder is a medical condition recognized by the World Health Organization (WHO) due to its severe impact on personal, familial, social, educational, occupational, and other areas of life. When it lasts 12 months, this condition is recognized. Internet Gaming Disorder (IGD) was recognized as a distinct form of online addiction and classified as a medical disorder in the International Classification of Diseases (ICD-11) after considerable discussion and acrimonious debates (WHO, 2019). The nine APA diagnostic criteria for IGD in the current Diagnostic and Statistical Manual of Mental Disorders are used by healthcare providers. The American Psychological Association (APA, 2022) defines IGD as a distinct disorder defined by online gameplay.

According to DSM-5-TR persistent and recurring use of the internet to engage in games, typically with other players, resulting in clinically significant impairment or distress as indicated by five (or more) of the

[1] Senior Lecturer/In charge of WBC, Department of Professional Psychology, Bahria University, Islamabad Campus, Pakistan.
[2] MS/M.Phil. (Clinical Psychology), Department of Professional Psychology, Bahria University, Islamabad Campus, Pakistan.
[3] Assistant Professor, Psychology Department, Effat University, Jeddah, Saudi Arabia.

▪ **Corresponding Author:** Ambreen Fatima (afatima.buic@bahria.edu.pk)
▪ **To Cite:** Fatima, A., Ambreen, F., & Amin, R. (2023). Internet Gaming Disorder and Competitiveness: A Cross-Sectional Study. *Qlantic Journal of Social Sciences and Humanities*, 4(4), 248-259. https://doi.org/10.55737/qjssh.849537145

following in 12 months: (1) preoccupation with internet games; (2) withdrawal symptoms when internet gaming is removed; (3) tolerance- the need to spend an increasing amount of time engaged in internet games; (4) unsuccessful attempts to control internet game participation; (5) loss of interest in previous hobbies and entertainment as a result of, and the exception of, internet games; (6) continued excessive use of internet games despite knowledge of psychosocial problems; (7) has misled family members, therapists, or others about the quantity of time spent on the internet; (8) uses internet games to escape or relieve a bad mood; and (9) has jeopardized or lost a significant relationship, employment, or educational or career opportunity due to participation in internet games (APA, 2022).

IGD in Adolescents

Khalid and Mukhtar (2022) conducted a recent study to investigate the epidemiology and underlying factors of IGD among individuals aged 13-17 and older. For instance, empirical studies have demonstrated that the prevalence of IGD is comparatively higher among individuals belonging to younger age cohorts, specifically those aged between 16 and 21 years, in contrast to adults (Sun, 2023). Recent studies have indicated that adolescents exhibit a proclivity towards a specific aspect of the Internet, potentially leading to increased involvement in certain behaviours. This inclination may be attributed to their frequent dissatisfaction with their physical appearance and other internal concerns (Biswas et al., 2022; Zhu et al., 2022). The Internet provides adolescents with the ability to explore several identities to determine which ones align with their personal preferences and potentially fulfil unmet psychological or social needs. The ability of adolescents to construct virtual identities through the utilization of diverse platforms such as chat rooms and online role-playing games has been explored by scholars (Zhu et al., 2022; Sun, 2023).

Due to the inherent anonymity afforded by these platforms, adolescents possess the ability to assume screen identities or adopt alternative pseudonyms that deviate from their authentic personas in the offline realm. Although social networking site members may not have complete anonymity, they can selectively choose which aspects of their personalities to exhibit on their profiles and which photographs they believe accurately represent themselves. According to Musetti et al. (2022), individuals may exhibit increased astuteness and enhanced self-presentation capabilities.

Furthermore, there was apprehension regarding the potential delay in resolving an identity crisis that may arise from the adoption of many personas. As an adolescent's online identity undergoes development, there is a potential for the blurring of distinctions between their offline attributes and their digital persona. Some scholars have posited that the apprehension experienced by adults towards these emerging identities and behaviours may not be as substantiated as previously believed. There is a contention that these novel expressions of identity and behaviour could potentially serve as a secure and beneficial avenue for individuals to engage in experimentation and self-expression (Tovar et al., 2023).

Adolescents who engage in online identity deception are more inclined to persist in such behaviour to ridicule their peers rather than to explore a desired or prospective identity. The advent of the Internet has provided individuals with a novel means of establishing connections, a pursuit that resonates with the majority of individuals. Adolescents, because of their typical sense of isolation, may be particularly susceptible to the allure of the Internet. Consequently, the online relationships established assume heightened significance in the lives of adolescents. Regrettably, due to the potential existence of deceptive and easily severed links facilitated by a simple mouse click, the Internet may only be capable of creating the illusion of a close association (Caldera, 2022).

Gender and IGD

The majority of research about IGD is now in its formative stages, focusing mostly on examining the prevalence of the disorder and exploring potential gender disparities. A substantial body of research has been conducted on IGD in Pakistan. Research findings have revealed that computer gaming enjoys significant popularity among university students in Pakistan, irrespective of their gender. According to the findings of Zahra et al. (2019), male university students exhibited a higher frequency of online gaming compared to their female peers.

Subsequent investigations sought to assess the prevalence of problematic internet gaming among adolescents and young adults. The findings of the study indicated a higher prevalence of problematic

gamers compared to non-problematic gamers, with males exhibiting a greater tendency towards problematic gaming behaviour (Ghous, 2014). Furthermore, engaging in online gaming has demonstrated a stronger association with IGD compared to offline gaming. According to Gan et al. (2022), excessive gaming may be influenced by gender and game genre preferences.

Several studies have documented gender differences in IGD (Soares et al., 2019; Buono et al., 2020; Gomez et al., 2022). Gender disparities can also be observed in the incentives underlying participation in online gaming. Yang et al. (2023) found that there is a substantial difference in accomplishment motives between boys and girls while engaging in online gaming. Specifically, boys tend to have stronger accomplishment motives compared to girls. On the other hand, girls seem to have higher socialization reasons for participating in online gaming. Therefore, the study conducted by Yang et al. (2023) found that males are more prone to reporting elevated levels of IGD compared to females.

However, the study conducted by Gan et al. (2022) revealed that both boys and girls exhibit comparable socialization motives when engaging in gaming activities. Conversely, Xiang et al. (2022) observed a notable gender disparity, indicating that boys demonstrate a higher propensity than girls to participate in gaming for enjoyment, competitive purposes, achievement-oriented goals, cognitive stimulation, and various emotional factors such as excitement, relaxation, and anger management. Moreover, nearly equivalent numbers of male and female individuals have exhibited significant levels of motivation stemming from creativity and curiosity.

Kakul and Javed (2023) found a significant positive link between depression and anxiety symptoms and IGD. Additionally, the study revealed that males exhibited higher levels of both depression and anxiety compared to females. However, stress levels were found to be relatively similar across genders. A recent study conducted by Wang et al. (2022) revealed a notable disparity in the IGD between males and girls, with males exhibiting higher levels of IGD. Moreover, a separate investigation into Internet addiction revealed a significant association between IGD and individuals identifying as masculine (Yu et al., 2021).

Competitive Attitude and IGD

The correlation between a competitive attitude (CA) and IGD remains a subject of considerable scholarly attention. Recent research findings indicate that individuals exhibiting a heightened degree of Competitiveness demonstrate a stronger propensity to participate in online gaming activities, hence increasing their susceptibility to the development of IGD (Zhang et al., 2021; Li et al., 2021). Zhang et al. (2021) conducted a study that found a positive association between a competitive mindset and the development of excessive gaming activity, ultimately leading to IGD. The research revealed a positive correlation between higher scores on a competitiveness scale and increased participation in online gaming, indicating a heightened susceptibility to the development of IGD. In a similar vein, the study conducted by Li et al. (2021) revealed a positive association between competition and IGD among adolescents in China.

Furthermore, further recent research endeavours have undertaken an examination of the correlation between IGD and several psychological variables, including anxiety and depression. In a study conducted by Wang et al. (2021), it was discovered that there exists a positive correlation between symptoms of anxiety and depression and IGD among adolescents in China. Liu et al. (2021) conducted a study that revealed that social anxiety and sadness had a noteworthy capacity to forecast IGD among Chinese college students. These studies highlight the importance of understanding the psychological factors that contribute to IGD, including a propensity for competition.

The existing body of literature has demonstrated a noteworthy association between IGD and the characteristic of Competitiveness among adolescent individuals in the context of Pakistan. In a recent study conducted by Riaz et al. (2021), it was found that adolescents diagnosed with IGD demonstrated higher levels of competition when compared to their peers. The research study also revealed a favourable association between competitive behaviour and increased levels of stress and anxiety in teenagers diagnosed with IGD. In a distinct inquiry carried out by Khawaja et al. (2020), it was observed that Pakistani adolescents who were diagnosed with IGD demonstrated a higher propensity for achievement and Competitiveness as compared to their counterparts who did not have IGD.

Competitive Attitude, IGD, and Duration of Gaming Activities

The presence of IGD has been linked to several adverse consequences, such as a decline in scholastic achievement, compromised social capabilities, and heightened levels of violence (Khan et al., 2021). competition has been identified as a contributing component to IGD, as indicated by empirical studies that propose a positive association between elevated levels of competition and the development of problematic gaming behaviours (Kim et al., 2021). Moreover, there is a notable association between the duration of gaming activities and the likelihood of acquiring IGD, as evidenced by research conducted by Zhao et al. (2022). Specifically, persons who allocate a greater amount of time to engaging in gaming activities are at a heightened susceptibility to developing this condition.

Recent research has also examined the influence of the COVID-19 pandemic on gaming behaviour and the emergence of IGD. Due to the ongoing pandemic, individuals have been compelled to allocate a greater portion of their time within their residences. Consequently, there has been a notable surge in the duration of engagement with video games. The observed rise in the prevalence of symptoms related to IGD is particularly prominent among the younger population, as noted by Li et al. (2021). Nevertheless, it is crucial to acknowledge that the development of IGD is not guaranteed for all individuals who engage in extensive gaming. Additional characteristics, including motivation and self-control, play significant roles in predicting the likelihood of IGD (Gao et al., 2021).

In short, the worldwide rise in online gaming has resulted in an increased investigation into its possible adverse effects, with IGD acknowledged as a noteworthy public health issue in adolescents. According to the Pakistan Demographic Survey (PDS) 2020 conducted by the Pakistan Bureau of Statistics (PBS), the percentage of adolescents in Pakistan aged between 10-19 years is 22.5% (Farooq et al., 2023). Adolescents in Pakistan and around the world are at high risk of IGD involvement. Studies also indicated higher levels of IGD among youth involved in online gaming in Pakistan (Zahra et al., 2019; Khalid & Mukhtar, 2022). Therefore, it is essential to explore this population that is at high risk of IGD.

Nevertheless, the current body of research primarily concentrates on Western populations, resulting in a significant knowledge vacuum about the frequency and patterns of IGD among non-Western adolescents, particularly those from Pakistan. Cultural variables exert a substantial influence on the actions of adolescents, particularly their attitudes and activities toward gaming (Kiyani et al., 2021). The frequency and appearance of IGD may be influenced by the specific values and norms of Pakistani society. Examining these cultural subtleties is crucial for customizing preventative and rehabilitative interventions that are culturally attuned and successful within the Pakistani setting.

Currently, there is a significant lack of scientific studies that explicitly investigate IGD in Pakistani adolescents. Recent literature frequently extrapolates conclusions from Western cultures, disregarding the possible cultural differences that could impact the frequency, intensity, and presentation of IGD. Hence, it is imperative to do research that fills this void and offers a context-specific understanding of the frequency and factors associated with IGD among adolescents in Pakistan. Moreover, while the impact of cultural influences on adolescent behaviours is acknowledged, there is a dearth of research investigating the role of culture in IGD among Pakistani adolescents. This study seeks to fill this void by methodically examining the cultural aspects that may either contribute to or alleviate the risk of IGD, thereby providing insights for interventions that are culturally responsive.

Although Competitiveness is a crucial element of adolescent growth, its connection with IGD remains insufficiently investigated, particularly within the Pakistani setting. Examining the relationship between Competitiveness in online gaming and IGD can offer useful insights into the psychological and social dynamics of adolescents who participate in online gaming (Tanveer et al., 2022). The objective of this study is to determine whether Competitiveness plays a role as a causative or preventive factor in the development of IGD among adolescents in Pakistan. The current body of research on Competitiveness mostly focuses on academic and sporting settings, resulting in a lack of knowledge regarding how Competitiveness is expressed in the realm of online gaming, specifically among adolescents. This study seeks to fill the existing empirical void by examining the intricate connection between Competitiveness and IGD, providing a more thorough comprehension of the psychological and social aspects that impact gaming habits.

Furthermore, the literature indicates that there is a dearth of evidence on the topics of Pakistani adolescents' IGD, competition, and game duration. The prevalence, Competitiveness, and length of gaming among Pakistani adolescents remain unknown despite the existence of global studies on IGD in this age group (Sarwar et al., 2021). The competitive mentality inherent in online games has the potential to result in addiction and IGD among adolescents. There is a scarcity of research on the relationship between competition and IGD in Pakistani adolescents, as indicated by Sarwar et al. (2021). Extended gaming length is an additional contributing factor to IGD. The gaming habits and IGD of Pakistani adolescents have not been investigated, as stated by Raza et al. (2021). A recent study found that a potential 18% of Pakistani adolescents could acquire IGD (Ahmed et al., 2020). This highlights the necessity for more research on the prevalence of Internet IGD, the level of Competitiveness among Pakistani adolescents, and the duration of their gaming sessions.

Therefore, it is crucial to do research on the indications of IGD, competitive attitude, and the amount of time Pakistani adolescents spend playing games. This research is necessary to develop effective ways of preventing and treating IGD. This research has the potential to influence the mental health and overall well-being of Pakistani adolescents, as well as contribute to the development of effective therapies to address the growing occurrence of IGD in this specific population.

Theoretical Framework

The theoretical framework for the study can be guided by relevant theories from psychology, sociology, and gaming studies. Two key theoretical perspectives that may inform the study are:

Self-Determination Theory (SDT)

SDT, developed by Deci and Ryan (2000), emphasizes the importance of autonomy, competence, and relatedness in human motivation. In the context of internet gaming, adolescents may engage in gaming activities to fulfil their need for autonomy, mastery of skills (competence), and social connection (relatedness). Understanding the role of these basic psychological needs can provide insights into the motivation behind gaming behaviours.

Social Cognitive Theory (SCT)

SCT, proposed by Bandura (1986), focuses on the reciprocal interaction between individual characteristics, behaviour, and the environment. In the context of internet gaming, SCT can help examine how adolescents learn and adopt gaming behaviours through observation, imitation, and reinforcement. The theory also highlights the role of self-regulation, which is crucial in understanding how adolescents manage their gaming habits.

Hypotheses

- Level of IGD and Competitiveness are higher in adolescent boys as compared to adolescent girls.
- Mean scores of IGD and Competitiveness would differ across time duration for gaming activities per week among adolescents.

Conceptual Model

Figure 1

Effect of IGD on Competitiveness

Method

Research Design & Participants

A cross-sectional study design has opted to explore the differences in the aforementioned hypotheses via a convenient sampling technique. The study included 355 participants (males = 220, females = 135) ranging

in age from 13-19, from various private schools and colleges of twin cities. The sample size was calculated by using G-Power. Only those participants who were willing to participate and who spoke English well enough to understand and fill out the forms were included in the study.

Measures

Participants were requested to respond on the demographic data sheet, which included basic data on sex, age, education, and so on. They also completed a couple of questionnaires, i.e., IGDS9-SF (IGD Scale-Short Form; Pontes & Griffiths, 2015) and Revised Competitiveness Index (RCI; Paul & John, 2002).

Demographic Variable Sheet

The demographic sheet contained information concerning age, gender, education, No. Hours per week, gameplay, and socio-economic status.

IGDS9-SF (Internet Gaming Disorder Scale – Short Form)

The IGDS9-SF (Internet Gaming Disorder Scale – Short Form) was created by Pontes and Griffiths in 2015. It was based on the criteria of IGD, as explained in DSM5 (2013). The overall score can be calculated by adding up participants' answers to the nine items from 9 to 45, and eventually, a higher score will lead to higher IGD. The authors reported adequate reliability of the scale after evaluating the results of additional analysis.

RCI (Revised Competitiveness Index)

Paul and John created RCI in 2002. The 14 items are answered on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree). There are nine reverse-scored items: 4, 6, 7, 8, 10, 11, 12, 13, and 14. RCI was highly consistent and correlated with the 1992 competitiveness index scale (John Houston, 2002).

Procedure

A sample consisting of 355 participants (males = 220, females = 135) with the age range of 13-19 were selected from different schools and colleges of twin cities (Rawalpindi & Islamabad). A convenient sampling technique was used to obtain the data from the participants. Data was collected in two phases; the first phase included data collection, and the second phase included analysis of data. Informed consent was collected from the sample, and after giving their consent, they filled the questionnaire. After the collection of the data, it was analyzed through the SPSS 25. Data was analyzed through two-way ANOVA in SPSS.

Ethical Consideration

The written consent was taken from the participants, in which ample information regarding the research was shared. They were assured that the results would be kept confidential. The participants participated voluntarily, and they were given full rights to back out from the research at any time. Lastly, participants were appreciated for participating in the research study.

Results

Table 1

Frequencies and percentages of the demographic characteristics of participants of the study (N = 355).

Characteristics of the participants	Categories	*f*	%
Age	13-15	53	14.9
	16-19	302	85.1
Gender	Males	220	62
	Females	135	38
Education	Secondary	52	13.8
	Matric	85	22.6
	F.Sc.	144	38.3
	Undergraduate student	74	19.7

Characteristics of the participants	Categories	*f*	%
No. of hours per week (Gameplay)	Less than 20 hours	177	47.1
	21-30 hours	80	21.3
	31-40 hours	41	10.9
	Above 40 hours	57	15.2

Note: f = Frequency, %= Percentage

The above table shows the descriptive statistics of demographic variables. Frequencies and percentages were calculated for categorical variables. This concludes that 53 (14.9%) participants are in the 13-15 age group and 302 (85.1%) are in the 16-19 age group. Additionally, 220 (62%) were males and 135 (38%) were females. Moreover, 52 (13.8%) participants were secondary, 85 (22.6%) were matric, 144 (38.3%) were F.Sc., and 74 (19.7%) were undergraduate students. Furthermore, 177 (47.1%) participants were involved in 20 hours, 80 (21.3%) in 21-30 hours, 41 (10.9%) in 31-40 hours, and 57 (15.2%) were involved in above 40 per week gameplay.

Table 2

Two-way (2x2) ANOVA for the assessment of IGD and competitiveness across male and female participants (N =355).

Variables	*Male (N=220)*		*Female (N= 135)*				
	M	*SD*	*M*	*SD*	*F(1,353)*	*p*	η^2
IGD	27.44	8.71	24.33	9.88	9.569	.002	.026
COMP	43.65	10.33	41.19	10.96	4.562	.033	.013

Note. M = mean, SD = Standard Deviation, η^2 = eta square

The results of two-way ANOVA illustrated that there is a significant *main effect* of IGD and Competitiveness across male and female participants. Results indicated evidence of the significance of the *main effect* for the assessment of IGD with *F (1,353) = [9.569], p = .002.* See Figure 1. Further results indicated evidence of the significance of the *main effect* for the assessment of Competitiveness with *F (1,353) = [4.562], p = .033.* See Figure 2.

Figure 2

Mean Differences of IGD across Male and Female Participants

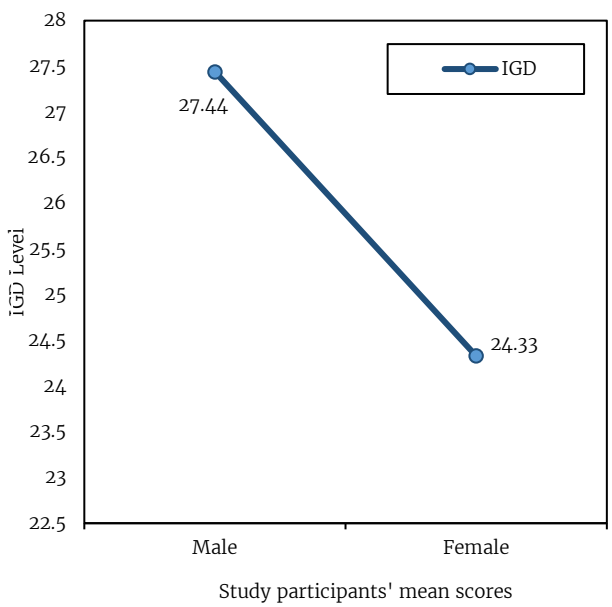


Figure 3

Mean Differences of IGD across Male and Female Participants

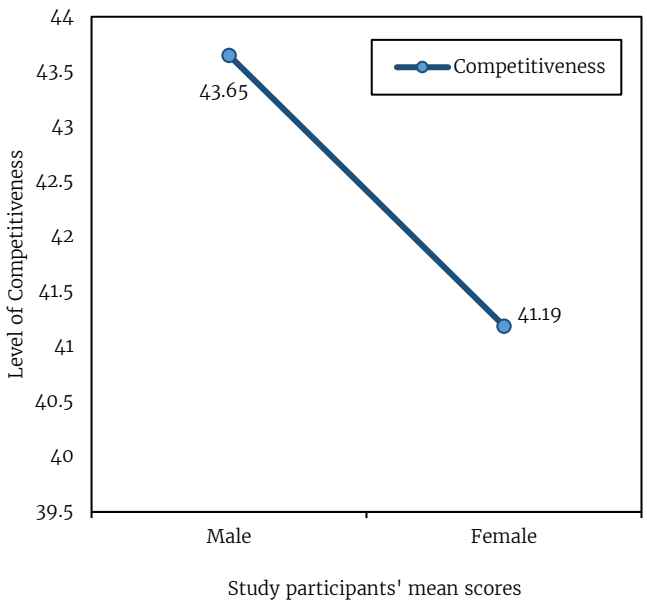


Table 3

Two-way (2x2) ANOVA for the assessment of IGD and competitiveness across 4 groups of playing games in hours per week (N =355)

	(A) Less than 20 (N= 177)		(B) 21-30 (N= 80)		(C) 31-40 (N= 41)		(D) Above 40 (N= 57)				
	M	*SD*	*M*	*SD*	*M*	*SD*	M	SD	*F(3,351)*	*p*	η^2
IGD	20.64	6.63	26.08	6.79	32.59	5.19	39.40	4.18	148.740	.001	.560
COMP	41.18	10.99	43.01	9.87	43.68	9.96	46.39	10.22	3.723	.012	.031

Note: M = mean, SD = Standard Deviation, η^2 = eta square

The results of two-way ANOVA showed that there is a significant main effect for IGD and Competitiveness across 4 Groups of playing games in hours per week (A, B, C, & D). Results indicated evidence of the significance of the *main effect* for the assessment of IGD between groups with *(F (3,351) = [148.740], p<.001)*. See Figure 3. Further results illustrated the evidence of the significance of the *main effect* for the assessment of Competitiveness between groups with *(F (3,351) = [3.723], p = .012)*. See Figure 4.

Figure 2

Mean differences of IGD across 4 groups of playing games in hours per week

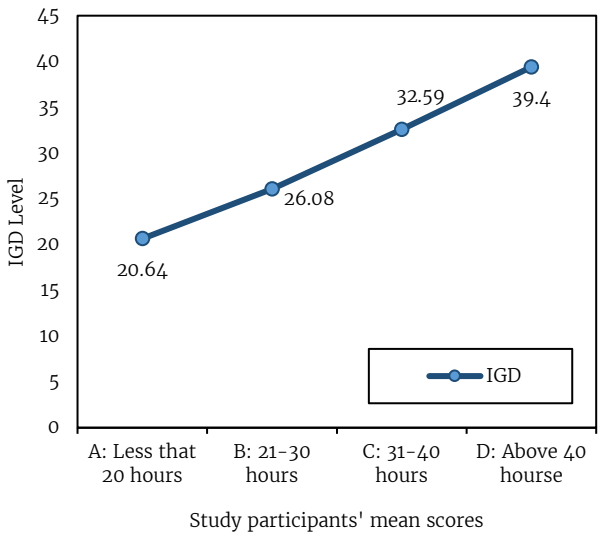
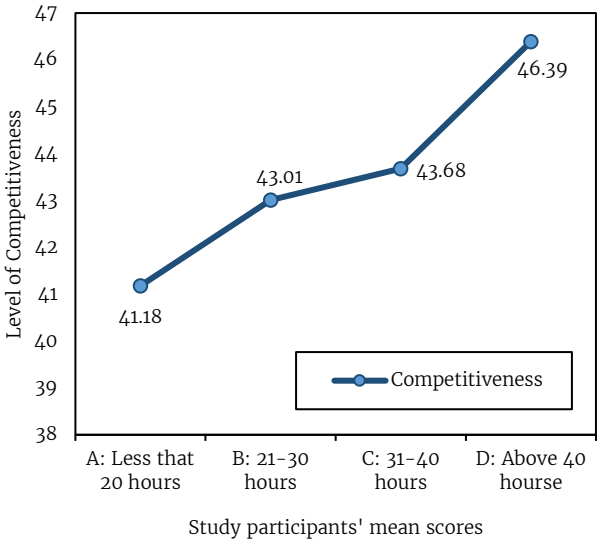


Figure 5

Mean Differences of Competitiveness across 4 Groups of playing games in hours per week



Discussion

IGD has become a topic of increasing research interest worldwide, but little research has been carried out in Pakistan. The present study aimed to assess the levels of IGD and Competitiveness in Pakistani adolescents. Two hypotheses have been formulated to assess the IGD and Competitiveness in Pakistani adolescent males and females. The first hypothesis stated that the level of IGD and competitiveness is higher in adolescent boys than in adolescent girls.

The results of two-way ANOVA showed that there is a significant main effect of IGD across genders (males & females). Results indicated the evidence of the significance of the *main effect* for the assessment of IGD with *F (1,353) = 9.569, p= .002*. Figure 2 illustrates a clear picture of IGD levels across adolescent boys and adolescent girls. Results also indicated the evidence of the significance of the *main effect* for the assessment of Competitiveness with *F (1,353) = 4.562, p= .033*. Figure 3 illustrates the Competitiveness levels across adolescent boys and girls. Results supported the hypothesis and concluded that adolescent males have higher IGD levels in contrast with adolescent females.

Recent research findings consistently provide evidence that male adolescents demonstrate a greater prevalence of IGD and a propensity toward Competitiveness compared to female adolescents. According to

a study conducted by Wang et al. (2021), it was observed that boys exhibited a notably greater prevalence of IGD in comparison to girls. This disparity was found to be linked to the higher levels of Competitiveness displayed by boys (Wang et al., 2021).

In another study conducted by Liu et al. (2021), it was observed that male individuals had a greater propensity for IGD in comparison to females. This disparity was found to be linked to the elevated levels of competition displayed by males, as well as their comparatively diminished levels of self-control. The research additionally revealed that male individuals exhibited a greater inclination towards participating in online games characterized by intense competition and strategic cognition, potentially contributing to their elevated susceptibility to IGD.

Furthermore, a recent investigation conducted by Zhang et al. (2022) revealed that male individuals exhibited a greater propensity for IGD in comparison to their female peers. This disparity was found to be linked to the males' heightened levels of Competitiveness and diminished levels of self-esteem. The research additionally discovered that male individuals exhibited a greater propensity to participate in online gaming activities characterized by intense competition, such as multiplayer online battle arena (MOBA) games. This inclination may potentially lead to their elevated susceptibility to IGD. In short, the present study provides evidence in favour of the proposition that male adolescents demonstrate a greater prevalence of IGD and Competitiveness compared to females.

The second hypothesis stated that the mean scores of IGD and Competitiveness would differ across time duration per week for gaming activities among adolescents. Results indicated the evidence of significance of the *main effect* for the assessment IGD with $F\ (3,351) = 148.740$, $p = .001$. Figure 4 illustrates a clear image of IGD levels across 4 Groups of playing games in hours per week. Results also indicated the evidence of the significance of the *main effect* for the assessment of Competitiveness with $F\ (3,351) = 3.723$, $p = .012$. Figure 5 illustrates the Competitiveness levels across 4 Groups of playing games in hours per week. Results supported the hypothesis and concluded that the mean scores of IGD and Competitiveness varied across time duration per week for gaming activities among adolescents.

Numerous studies investigated the correlation between the weekly time allocation for gaming activities, the presence of IGD, and the level of competition observed among adolescent individuals. Li et al. (2021) conducted a study that revealed significant variations in the average scores of IGD and Competitiveness across various weekly time durations dedicated to gaming activities. The study revealed that adolescents who allocated more than 28 hours per week to engage in gaming activities exhibited notably higher average scores in IGD and Competitiveness compared to their counterparts who spent less than 14 hours per week on such activities.

In another study conducted by Zhou et al. (2021), it was observed that a positive correlation exists between the average scores of IGD and Competitiveness and the weekly duration of gaming activities among adolescents. The study revealed a positive correlation between the amount of time adolescents spent on gaming activities and their scores on measures of IGD and Competitiveness. Specifically, adolescents who dedicated more than 21 hours per week to gaming exhibited significantly higher mean scores on these measures compared to those who spent less than 7 hours per week engaged in gaming activities.

Furthermore, a recent study conducted by Li et al. (2022) revealed that there was a positive correlation between the amount of time adolescents devoted to gaming activities during weekdays compared to weekends and their average scores on measures of IGD and Competitiveness. The research revealed that adolescents who dedicated more than 14 hours per week to gaming activities on weekdays exhibited notably higher average scores in IGD and Competitiveness compared to those who spent less than 7 hours per week.

In short, the present research indicates that there are variations in the average scores of IGD and Competitiveness among adolescents based on the duration of gaming activities each week. The excessive allocation of time towards gaming activities has been found to potentially increase the likelihood of developing IGD and foster a sense of Competitiveness among adolescents. This underscores the significance of actively monitoring and controlling gaming activities as a means to mitigate adverse outcomes.

Significance of the Study

The study on IGD, Competitiveness, and time duration per week in games has the potential to provide useful insights into the intricate interactions among these factors, making it a strong research endeavour. The study focuses on a pertinent and current subject, as computer gaming has emerged as a widespread and prominent recreational pursuit, particularly among adolescents. This amplifies the practical value of the study and its possible influence on comprehending behavioural patterns in the era of digital technology. The study provides a more comprehensive knowledge of how elements such as IGD, competition, and time spent in gameplay interact and influence each other. Implementing this comprehensive approach can enhance the depiction of internet gaming behaviour with subtle distinctions. This study aims to uncover risk variables linked to IGD, such as the excessive amount of time spent playing games. Comprehending these elements is crucial for formulating focused interventions and preventive tactics to tackle problematic gaming activities among teenagers. Examining the underlying reasons for engaging in gaming, such as the desire to win or outperform others, can offer a valuable understanding of the psychological factors contributing to IG. This information is vital for customizing interventions to target teenagers' individual requirements and incentives in internet gaming.

The generalizability of the findings to larger populations of adolescents is contingent upon the study's sample size and representativeness. These findings have the potential to offer insights that go beyond the unique sample. The cross-sectional design offers the advantage of obtaining a momentary depiction of the existing relationships between variables. Its utility in examining prevalence and correlations makes it highly suitable for this investigation. Gaining insight into the influence of Competitiveness and playtime duration on the development of IGD can have significant consequences for implementing early intervention measures. Early identification of these factors can aid in the development of preventive measures and focused interventions to alleviate the possible adverse effects of excessive gaming. The study has the potential to enhance the existing literature on IGD by examining the connection between IGD, Competitiveness, and the amount of time spent playing games. This research can offer fresh viewpoints and valuable insights to guide future studies and interventions.

Conclusion & Implementation

It's been suggested that there is a significant main effect between the weekly time spent on gaming activities, the presence of IGD, and the level of competition observed in adolescents. Engaging in prolonged durations of online gaming activities has the potential to contribute to elevated levels of IGD and a heightened sense of Competitiveness, hence leading to adverse effects on the mental health and overall well-being of adolescents.

The results of the research emphasize the significance of overseeing and controlling gaming behaviours among adolescents. The identification of adolescents who may be susceptible to developing IGD and the provision of suitable support and therapies can be significantly facilitated by the involvement of parents, educators, and healthcare experts. Parents can establish restrictions on the duration of their children's engagement in gaming activities while also motivating them to participate in alternative activities that foster physical and social well-being.

Educators can cultivate awareness regarding the possible hazards associated with excessive gaming and furnish students with pertinent knowledge and resources about the cultivation of healthy gaming practices. Healthcare professionals possess the capacity to conduct screenings on teenagers for IGD and administer evidence-based therapies, such as cognitive-behavioural therapy, to aid in their recovery from excessive engagement in online gaming.

In conclusion, the literature examined indicates that excessive engagement in gaming activities can potentially yield adverse effects on the mental health and overall well-being of adolescents. Monitoring and regulating gaming activities among adolescents, as well as providing them with suitable support and interventions, are crucial measures to prevent the emergence of IGD and foster the cultivation of good gaming habits.

Limitations & Recommendations

The current study was carried out in the cities of Islamabad and Rawalpindi, which might have been expanded to encompass a more diversified geographical area with a broader range of population demographics. If the same study were conducted in a hamlet or location characterized by a lower socioeconomic level in Pakistan, the results would likely have exhibited variations. Due to its status as an underdeveloped nation, Pakistan faces challenges in providing widespread access to electronic devices and internet connectivity, resulting in limited availability for its population. The generalization of our findings to the entire population is not feasible. This study had a limited number of demographic characteristics. If a greater number of demographic variables had been included, a more comprehensive dataset might have been obtained, allowing for a more nuanced understanding of the habits and behaviours of gamers.

There is a recommendation to exercise control or impose limitations on the duration of gaming activities among minors. Parents should monitor the preferred location or setting in which their children engage in gaming activities, such as the lounge or bedroom, to effectively regulate the amount of time spent on gaming. IGD has the potential to exacerbate behavioural and psychological issues, including but not limited to depression, anxiety, and stress. To mitigate the severity of symptoms associated with IGD, parents should promote increased engagement in outside activities among gamers. Consequently, parents should establish certain guidelines for their children, such as dedicating two hours to studying each day to earn an equivalent amount of time for gaming activities.

Additional research can be conducted with more comprehensive data to enhance the authenticity, validity, and reliability of the findings. Furthermore, the inclusion of a wider range of research approaches and tactics can contribute to a more robust and comprehensive investigation. The demographic sheet should be enriched with comprehensive information about IGD to obtain a more thorough understanding of gamers. Additional research can be conducted to explore the dynamics among individuals belonging to diverse ethnic groups, given the profound societal significance of these groups. The investigation of IGD can encompass several socio-economic contexts, including the examination of individuals residing in rural regions of Pakistan. It is important to note that rural populations in Pakistan often encounter limited exposure to electronic media and exhibit distinct lifestyle patterns compared to their urban counterparts. Conducting research on IGD with a greater number of variables and a larger sample size will enhance the generalizability of the findings.

References

Agbaria, Q. (2020). Internet addiction and aggression: The mediating roles of self-control and positive affect. *International Journal of Mental Health and Addiction*, *19*(4), 1227-1242. https://doi.org/10.1007/s11469-019-00220-z

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. *Prentice-Hall, Inc.*

Biswas, P. R., Ahammed, B., Rahman, M. S., Nirob, B. M., & Hossain, M. T. (2022). Prevalence and determinants of internet addiction among adults during the COVID-19 pandemic in Bangladesh: An online cross-sectional study. *Heliyon*, *8*(7), e09967. https://doi.org/10.1016/j.heliyon.2022.e09967

Caldera, K. (2022). *Is Social Media Prolonging Identity Commitment? The Effects of Social Media Use on Adolescent Identity Formation* (Doctoral dissertation, Arizona State University).

Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227-268. https://doi.org/10.1207/s15327965pli1104_01

Farooq, S., Yousaf, T., & Shahzad, S. (2023). PREVALENCE OF EMOTIONAL AND BEHAVIOURAL PROBLEMS AMONG ADOLESCENTS IN PAKISTAN: A CROSS-SECTIONAL STUDY. *Journal of Pakistan Psychiatric Society*, *20*(01). https://www.jpps.pk/index.php/journal/article/view/230

Ghous, A. K. (2014). Problematic Online Gaming in Pakistan. *International Journal of Science and Research, 3*, 22522.

Gu, M. (2020). A longitudinal study of daily hassles, internet expectancy, self-control, and problematic internet use in Chinese adolescents: A moderated mediation model. *Personality and Individual Differences*, *152*, 109571. https://doi.org/10.1016/j.paid.2019.109571

Imataka, G., Sakuta, R., Maehashi, A., & Yoshihara, S. (2022). Current status of internet gaming disorder (IGD) in Japan: New lifestyle-related disease in children and adolescents. *Journal of Clinical Medicine*, *11*(15), 4566. https://doi.org/10.3390/jcm11154566

Khalid, A., & Mukhtar, N. (2022). Internet gaming disorder and mental health in Pakistani youth: A path analysis with impulsivity and emotional intelligence. https://doi.org/10.21203/rs.3.rs-2296407/v1

Kiyani, T., Kayani, S., Kayani, S., Batool, I., Qi, S., & Biasutti, M. (2021). Individual, interpersonal, and organizational factors affecting physical activity of school adolescents in Pakistan. *International Journal of Environmental Research and Public Health*, *18*(13), 7011. https://doi.org/10.3390/ijerph18137011

Musetti, A., Manari, T., Billieux, J., Starcevic, V., & Schimmenti, A. (2022). Problematic social networking sites use and attachment: A systematic review. *Computers in Human Behavior*, *131*, 107199. https://doi.org/10.1016/j.chb.2022.107199

Pradhan, S. K., Heyn, H., & Knauss, E. (2023). Identifying and managing data quality requirements: A design science study in the field of automated driving. *Software Quality Journal*, 1-48. https://doi.org/10.1007/s11219-023-09622-8

Rettner, R. (2019). Video Game Addiction Becomes Official Mental Disorder in Controversial Decision by WHO. https://www.livescience.com/65580-video-game-addiction-mental-health-disorder.html

Singh, A. P., Vadakedath, S., & Kandi, V. (2023). Clinical research: A review of study designs, hypotheses, errors, sampling types, ethics, and informed consent. *Cureus*, *15*(1). https://doi.org/10.7759/cureus.33374

Stevens, M. W., Dorstyn, D., Delfabbro, P. H., & King, D. L. (2020). Global prevalence of gaming disorder: A systematic review and meta-analysis. *Australian & New Zealand Journal of Psychiatry*, *55*(6), 553-568. https://doi.org/10.1177/0004867420962851

Sun, Y. (2023). The role of family on internet addiction: A model analysis of Co-parenting effect. *Cogent Social Sciences*, *9*(1). https://doi.org/10.1080/23311886.2022.2163530

Tajik, O., Noor, S., & Golzar, J. (2023). Investigating differentiated instruction and the contributing factors to cater EFL students' needs at the collegial level. https://doi.org/10.21203/rs.3.rs-3513269/v1

Tanveer, M., Tanveer, U., Tanveer, N., Roy, N., Zeba, A., & Razzaq, F. A. (2022). Parental health attitudes and knowledge factors associated with body mass index among Pakistani school-aged adolescents. *Pakistan Journal of Medical and Health Sciences*, *16*(9), 479-482. https://doi.org/10.53350/pjmhs22169479

Tovar, M., Rosillo, M., & Spaniardi, A. (2023). Social Media's Influence on Identity Formation and Self Expression. In *Teens, Screens, and Social Connection: An Evidence-Based Guide to Key Problems and Solutions* (pp. 49-61). Cham: Springer International Publishing.

Wong, H. Y., Mo, H. Y., Potenza, M. N., Chan, M. N., Lau, W. M., Chui, T. K., Pakpour, A. H., & Lin, C. (2020). Relationships between severity of internet gaming disorder, severity of problematic social media use, sleep quality and psychological distress. *International Journal of Environmental Research and Public Health*, *17*(6), 1879. https://doi.org/10.3390/ijerph17061879

Zahra, S., Kiani, S., & Shahbaz, K. (2019). Internet gaming disorder: an emerging addiction among Pakistani university students. *NUST Journal of Social Sciences and Humanities*, *5*(1), 87-104. https://doi.org/10.51732/njssh.v5i1.40

Zhu, K., Xie, X., Liu, Q., Meng, H., & Song, R. (2022). Internet addiction: Prevalence and relationship with academic burnout among undergraduates during widespread online learning. *Perspectives in Psychiatric Care*, *58*(4), 2303-2309. https://doi.org/10.1111/ppc.13060