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College-Level Egyptian Students' Social Relations and Psychological Well-Being as Predictors of Internet Gaming Disorder: Across Gender Comparison

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ABSTRACT: *The primary objective of the present study was to investigate the effects of quality-of-life domains on internet gaming behavior, while also exploring the moderating role of gender in these effects. As part of a broader project, we conducted an analysis involving a sample of 56 college students who reported engaging in internet gaming. Our analysis focused on the disparities between male and female video game players in terms of their playing habits, motivations, satisfaction levels, and perceived impacts on their social and personal lives. Our study aimed to examine the differences in internet gaming disorder between groups using the IGD test. We also assessed the quality of life in four domains - physical, psychological, social relations, and environmental - using the WHOQoL-BREF scale. We expected that the quality-of-life domains, moderated by gender, would be significant predictors of internet gaming disorder. The results revealed that female players are slightly but significantly older than male players. Mor male players reported positive impacts on their personal and social lives compared to females. Also, male participants reported more positive impacts on their lives compared to the reported negative impacts. Male participants showed increased internet gaming disorder scores compared to female participants. They were more prone to develop at-risk and disordered internet gaming behavior. Both male and female participants had similar scores in quality-of-life domains. On the other hand, decreased social relation scores were associated with increased IGD across all participants. However, the association was found to be more significant within female group.In conclusion, Egyptian male students exhibit a higher occurrence of problematic internet gaming behavior compared to female students. Egyptian female players are more prone to developing problematic gaming behavior when their social relations are not satisfactory.*

KEYWORDS: College-level Egyptian students', social relations, psychological well-being, internet gaming disorder across gender comparison

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INTRODUCTION

Because of the significant increase in video game consumption, there is much curiosity about the implications that excessive video gaming behavior could have on individuals' lives, as reflected in the numerous media articles on the topic Recent research has suggested that certain types of video games, such as action games, can enhance attention, visual-spatial skills, and processing speed (Granic et al., 2014; Pallavicini et al., 2018). The impact of video gaming extends to individuals' overall quality of life. Video games can serve as a means of relaxation, social interaction, and self-expression, contributing positively to subjective well-being. Some studies have found that gaming can foster social connections, particularly in online multiplayer games, leading to enhanced social support and a sense of belonging. For instance, prosocial games increased helping behaviors and empathetic emotions, as exposure to prosocial acts has facilitated the approachability of prosocial thoughts in participants' minds (Bleakley et al., 2015; Pallavicini et al., 2018).

Other considerable amounts of research claim that excessive gaming among young individuals is linked to adverse outcomes, including detrimental effects on health, sleep disturbances, impaired development of life skills, low self-esteem, difficulties with concentration, deficiencies in communication skills, heightened social distress, weakened real-life relationships, feelings of loneliness, increased aggression, compromised academic or work performance, diminished impulse control, and a propensity towards psychopathology (Awadalla et al., 2017; Elnahas et al., 2018a; Ostinelli et al., 2021; Saquib et al., 2017).

In their 2022 meta-analysis, Bäcklund et al. found that out of 26 motivational factors, 23 showed a statistically significant relationship with symptoms of gaming disorder. The effect sizes pooled from these studies ranged from small to moderate. The analysis also revealed significant heterogeneity, indicating a wide range of effects across different populations and settings. The study particularly highlighted the strong association between motivations tied to emotional escape and symptoms of gaming disorder.(Bäcklund et al., 2022a).

Consistent with Backlund et al. 2020 findings, in a previous study conducted by El-Shaikh et al. (2022) in college-level Egyptian students, it was found that 43% of the participants who were video gamers played video games as a way to escape stressors, while 32% of them played to escape reality. These were the second and fourth most common reasons for playing video games, respectively, whereas the primary reason was for entertainment. Those findings shed light on the importance of understanding the link between players' motives to escape daily life stressors/ reality as well as the quality of life they have and their vulnerability to developing internet video gaming disorders.

In Addition, females are underrepresented in studies of video gaming in general and Internet gaming disorder (IGD) specifically, despite evidence showing minor gender disparities in online

gaming (Mukrimaa et al., 2016). For years, previous research indicated that the video gaming market was predominantly dominated by males. On the other hand, recent studies shed light on a remarkable change in that idea and illustrate that more females have started to get involved in video gaming. According to recent statistics from the Entertainment Software Association, the number of female online gamers increased by 12% since 2008 to 2016, with females comprising up to 45% of all online gamers (Mukrimaa et al., 2016).

Female players are more susceptible to psychological and social changes than males, but less likely to develop gaming disorders (Lopez-Fernandez et al., 2019).The current study examined the prevalence of Internet Gaming Disorder (IGD) among female and male Egyptian video games players. We were concerned with investigating the differences between female and male players in playing habits, motivations, perceived impacts on their personal and social life as well as their overall quality of life, and as it was represented by different domains (Physical, psychological, social, and environmental domains).

Supporting previous studies, we hypothesized that male participants would show an increased level of gaming addiction and would be more prone to develop gaming disorders compared to female participants. Additionally, this study aimed to explore the relationship between Internet Gaming Disorder (IGD) scores and Quality of Life (QoL) domains, including physical well-being, psychological well-being, social relationships, and environment. We expected participants' quality of life scores in all the QoL domains to be negatively linked to playing video games in female players, not male players.

METHODS

Study Design, Procedures, and Participants.

The current study is a part of a larger project. We conducted an exploratory survey study to gather a plethora of data regarding video gaming among college-level Egyptian students. We have utilized snowball sampling. An online link with the study questionnaires was shared on several social media platforms, including Reddit, Instagram, Facebook, and WhatsApp student groups at The British University in Egypt, Badr University, and Banha University. The survey was presented as a quality-of-life survey. Participants were recommended to share the link further with other college students interested in participating.

Participants. Participants were excluded if they had alcohol or drug abuse, past drug dependence, a current or past central nervous system disease or condition, a mental/medical condition or disease with likely significant central nervous system effects, a physical problem that would render study measures difficult or impossible to administer or interpret (e.g., blindness, hearing impairment, paralysis in upper extremities, etc.). All participants had normal or corrected-to-normal vision. The exclusion criteria items were placed at the start of the administered survey.

Data Collection Measures.

A bilingual (Arabic and English) survey was designed and administered online using "SurveyMonkey." It consisted of 2 sections. The first section was represented in Arabic and English. At the onset of the assessment, participants were presented with a comprehensive form containing a detailed description that underscored the significance of maintaining confidentiality, anonymity, and transparency throughout the study. Subsequently, participants were asked to consent by acknowledging and agreeing to the form's contents before starting the study. After obtaining consent from the participants, a series of confirmatory questions related to the inclusion and exclusion criteria were presented. Once the participants passed these inquiries, they were asked to respond to demographic questions. After this section, participants were given the choice to proceed in English or Arabic.

The second section was presented in Arabic or English and consisted of three parts. The first part included a validated version of the WHOQOL-BREF (World Health Organization Quality of Life-BREF), a standard quality-of-life questionnaire developed by the World Health Organization. It comprises 26 items in four domains: psychological well-being, social relationships, physical health, and the environment. Each item is scored on a Likert scale ranging from 1 to 5. Each domain was scored with values from 0 to 100, with higher scores indicating better QoL. This questionnaire has been translated into Arabic and validated for use in Arabic-speaking populations (Ohaeri & Awadalla, 2009). In the following segment of this section, a series of 24 questions were administered to explore the habits, motivations, and satisfaction of individuals who participate in video games. The questionnaire began by inquiring whether the participant is presently involved in playing video games. The participants were allowed to continue If the response was affirmative.

This part was followed by a validated brief questionnaire of the Internet Gaming Disorder IGDS9-SF (Finserås et al., 2019; Lemmens et al., 2015). The scale is based on the 9 DSM-V criteria for internet gaming disorder (American Psychiatric Association, 2013). The scale consists of 9 dichotomic questions. The Arabic version of the scale was validated on the Egyptian population (Baiumy et al., 2018). Furthermore, the scale can be used to differentiate among three categories of internet video gamers: Normal (0-2), at-risk (3-5), and addicted gamers (6-9), Baiumy et al., 2018. The estimated time to complete the survey is 20 minutes.

Pilot study.

A pilot study was carried out at the British University in Egypt, involving 25 students. The participants were provided with the survey through a shared link and were instructed to respond to all the questions. Notably, no changes were required based on the feedback.

Analyses Approach

Confirmatory and Descriptive Analyses.

Quantitative variables with normal distribution were described by mean and standard deviation. Categorical variables were described using frequencies and percentages. Then, we cross-tabulated

responses from different questions to examine relationships between variables to identify any patterns or associations between specific categories across different questions.

Between Groups analyses

Between-group analyses (Females vs. Males) and Chi-square Tests were conducted to determine whether there are significant differences between the female and male groups in the sociodemographic characteristics. After examining the WHOQoL- BREF scores in each domain and within each group of participants (females vs. males) for normality (Shapiro tests) and homogeneity (Levene's test), t-tests were employed to examine the differences between females vs. males.

Similarly, an independent t test was utilized to compare IGD scores between the female and the male participants. Shapiro teste were employed to check for the normality assumption of IGD scores in each group (Females vs. Males). Leven's test was used to check for heterogeneity.

QoL domains' relation with IGD. Multiple linear regression analyses were conducted to investigate the association between QoL domains and the IGD scores, including gender as a potential moderator.This will be followed by a descriptive analysis of the video gaming survey (24 questions) to understand the differences between the female and the male participants in video gaming habits, motivations, and perceived impacts on their personal and social lives and their satisfaction with playing video games.

RESULTS

The sample consists of 56 video gaming players. 56 players completed the WHOQoL-BREF scale but 47 players completed the IGD survey, whilst the remaining five participants exited the survey after completing the 24 general questions, including playing habits, motivations, satisfaction, and perceived impacts on players' personal and social lives. The study used independent t-tests and Mann-Whitney tests to compare the male and female participant groups. The results showed that there were no significant differences in any of the socio-demographic characteristics, except for age. Specifically, males (M=19.9, SD=1.89) were found to be slightly but significantly younger than female participants (M=20.91, SD=1.82) – Table1.

A series of Chi-square tests were conducted to explore the associations between gender and several factors related to video gaming. These factors included gaming habits, motivations for gaming, perceived impacts of gaming on personal and social life, and the level of satisfaction derived from video game involvement. Only 47 of the 56 participants answered the questions about habits, motivations, satisfaction (Table 2), and the perceived impacts on players' lives (Table 3).

Gender relationship to video playing habits: Chi-square test showed that 35% of male VG players play over 7 hours/week, compared to 8% of female players ($X^2 = 4.38$, $p= 0.036$). Similarly, 56.5% of male players used to play consecutively for more than 1 hour compared to 5 % of female players

(X^2 = 6.33, p= .01). Also, it was found that a majority of male players (69.5%) started playing video games for more than 8 years ago. The remaining male participants started playing video games more than 4 years ago. On the other hand, 37.5% of female players started playing video games less than 4 years ago, while another 37.5% started playing more than 4 years ago. Only 25% of female players have played video games for over 8 years; there was a significant difference between the two genders in terms of years played (X^2(2)= 13.78, P= .001). Also, 100% of female players reported playing at home, compared to 91.3% of male players playing at home, 4.35% playing at university, and 4.35% playing at internet cafés. There was no significant difference between the two female and male groups in terms of playing setting (X^2(1,47)= 2.18, p=.336), - see Table 2.

The motives for playing video games varied among the participants in the VG group. However, all females played for entertainment purposes. Among them, 33.3% played video games to escape stressors, 29.7% played to satisfy their cravings, 25% to escape reality, 25% to learn new skills, and 20% to connect with others. Similarly, 95% of males played for entertainment purposes, followed by 56.5% who played to connect with others, 52.17% to escape stressors, 39% of males played to escape reality, 30.34% to satisfy a craving, 26% to defeat others and only 8.7% of males played to learn new skills- see Table 2.

In terms of positive impact on players' personal and social lives, the percentage of male participants who reported positive impacts on personal life was significantly higher than that of female participants (X^2 (1,47) = 4.37, p = 0.036). Similarly, more portion of male participants reported positive impacts on their social life than female participants (X^2(1,47) = 4.78, p= 0.029)- Table 4. There was no significant difference between the percentages of males and females in terms of perceived negative impact on personal life (X^2(1,47) = 0.512, p=.47) or on social life (X^2(1,47) = 1.70, p=.19)- Table3 and Table 4.

Regardless of gender, only a small percentage of players were satisfied with playing video games. When asked to rate their satisfaction with playing, only 6.38% of all VG players (4.16% of females and 8.7% of males) answered with either satisfied or very satisfied, 29.79% (37.5% of females and 21.74% of males) were neither satisfied nor dissatisfied, 44.68% (45.83% of females and 43.47% of males) were dissatisfied, and 17.02% (12.5% of females and 21.74% of males) were very dissatisfied. There was no significant difference between the males and females in terms of the reported satisfaction (X^2(1) = 4.61, p=.329). Similarly, 37.5% of female players reported that they attempted to quit video games compared to 30.43% of males. No significant difference was found between males and females in terms of attempted quitting (X^2 (1,47) = .261, p=.609). see Table 3.

Analyses were conducted to analyze the severity of internet gaming behavior. The prevalence of Internet Gaming Disorder (IGD) was determined by identifying individuals who responded "yes" to five or more items (Ali et al., 2022; Bäcklund et al., 2022b; Mukrimaa et al., 2016). The study found that 14.3% of the study participants were measured to have IGD as a disorder, while 31% showed risk for IGD. Most participants, 54.7%, were identified as average players. Further

analysis was conducted to investigate the prevalence of IGD among participants based on gender. There was a significant difference in IGD scores between male and female participants. (Mann-Whitney U = 133, p = .03), Female participants' IGD scores (M= 2.26, *SD*= 2.20*)* were significantly less than male participants' scores (M=3.37, *SD*= 2.06). It was shown that most of female players (70%) were on average players, and only (30%) were at-risk and disordered players, while only (37%) of male players were on average, and 67% were between at-risk and disordered, see Table 5.

A multivariate linear regression model was employed to investigate the impact of the quality-of-life domains on the IGD scores, considering gender as a potential moderator. The overall model was marginally significant ($F(9, 32) = 1.98$, $p = 0.075$, $R^2 = 0.178$), see Table 4. Among the main effects, only the social domain was found to significantly affect IGD scores ($\beta = -0.071$, $t(32) = -2.37$, $p = 0.024$). The interaction terms between the predictor variables and Gender were also not significant ($p > 0.05$) except for the social domain by Gender interaction effect ($\beta = .10$, $t(32) = 2.61$, $p = 0.013$). This indicates that the relationship between the social domain and IGD scores differs depending on gender – Table 6.

These findings suggest that both the social domain of the QoL test and its interaction with Gender play a role in predicting IGD scores. At the same time, the other variables do not significantly contribute to the prediction of IGD scores. Two simple linear regression models were utilized to examine the relationship between the social domain and IGD scores in each group (Female Players/ Male Players). The regression model for females indicated significant results ($F(1, 21) = 10.45$, $p = 0.003$, $R^2 = 0.30$). The Social domain variable had a significant negative association with IGD scores ($\beta = -0.068$, $t(21) = -3.23$, $p = 0.003$). However, the regression model for males was not statistically significant ($F(1, 17) = 0.025$, $p = 0.88$, $R^2 = -0.06$). The Social domain variable was not significantly associated with IGD scores ($\beta = 0.003$, $t(17) = 0.16$, $p = 0.88$). These findings altogether indicate that among female players, there was a significant negative association between the social domain and IGD scores. However, for male players, no significant relationship was found between the social domain and IGD scores (Figure 1).

DISCUSSION

The focus of the current study was to investigate the prevalence of IGD among male and female college-level students video gaming players in Egypt, as well as gender differences in gaming habits, motivations, satisfaction, and the perceived impacts on personal and social life. It also aimed to examine the impacts of QoL domains as measured by WHOQoL-BREF on the severity of players' gaming behavior (IGD scores) that was expected to vary with gender.

Global research has identified a prevalence of IGD ranging from 5.5% to 11.6%(Khrad et al., 2022; Liu et al., 2022; Shi et al., 2020). The current results showed that the prevalence of IGD among Egyptian college-level players was 14.3%, which is obviously higher than the reported global prevalence in other countries. Similarly, Elnahas et al. (2018) found a 9.3% prevalence rate of IGD

in Egyptian college students, which is lower than the current prevalence. While, recent a meta-analysis indicated that Egypt had the highest prevalence rate, followed by Saudi Arabia (Chiang et al., 2022). This noticeable surge in the incidence of Internet Gaming Disorder (IGD) in Egypt may be attributed to several factors, including the lockdown measures instituted during the COVID-19 pandemic and the rapid progression of technology.

The results of the study are consistent with a large body of previous research indicating that the prevalence of Internet Gaming Disorder (IGD) is significantly higher in male participants compared to female participants. This finding is in line with Elnahas et al. (2018) who also found that the disorder is more common in males (Elnahas et al., 2018b). However, this contradicts the results of previous studies in other countries by Khard et al. (2022) and Shi et al. (2020) which indicated similar prevalence rates of IGD among males and females (Khrad et al., 2022; Shi et al., 2020).

It has been observed that there is a considerable disparity between males and females when it comes to the amount of time spent playing video games per week, the duration of uninterrupted gaming sessions, and the number of years of experience playing games. Males tend to spend more hours playing video games per week, have longer gaming sessions, and have been playing games for a more extended period when compared to females. Previous studies have demonstrated a similar trend, where males reported engaging in gaming for extended durations and having a longer history of playing video games (Paaßen et al., 2017; Phan et al., 2012)

There was no notable difference between male and female players with regards to the location of playing video games. However, it is worth noting that the majority of players engaged in gaming from the comfort of their own homes. This observation aligns with Chang's (2019) argument that video games do not provide a strong incentive to play outdoors or leave the home .

There was no significant difference in the motives for playing video games between male and female players. The four most commonly reported motives for playing video games were entertainment, escaping stressors, connecting with others, and escaping reality. This finding is consistent with previous research conducted on the Egyptian population (Eissa, 2021), as well as broader theories of motives for video gaming (Klug & Schell, 2012).

On the other hand, there was a significant difference between males and females in the perceived positive impacts of video gaming on their personal and social lives. More males reported positive effects than females. However, there was no significant difference between genders in terms of negative impacts on their social or personal lives. Those findings are consistent with Klimmt et al.'s (2009) findings. Male players tend to alter their perception of gaming outcomes to maintain positive experiences and avoid negative ones. Furthermore, there was no significant difference between males and females in terms of satisfaction with playing or attempted quitting. However, most players were dissatisfied with their gaming behavior, but only a small percentage attempted quitting.

After examining the influence of various domains of quality of life on internet gaming behavior, it was found that only social relationships had a detrimental effect on players' IGD scores. This implies that players with lower levels of social relationships are at a higher risk of developing problematic or disordered levels of internet gaming behavior. Gender played a significant role in moderating the impact. The impact of social relationships on female gaming behavior was more significant. Females are more likely to develop problematic video gaming behavior if they have lower social functioning. Those findings agree with previous research that indicates social well-being is negatively associated with gaming behavior in females (Cheng et al., 2018; Eissa, 2021; Paaßen et al., 2017)

In conclusion, Egyptian male students exhibit a higher occurrence of problematic internet gaming behavior compared to female students. In males, this behavior is not associated with any quality of life domains, whereas in females, it is linked to their social relationships. Egyptian female players are more prone to developing problematic gaming behavior when their social relations are not satisfactory.

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Institutional Review Board Statement
The Scientific Research Committee Board- The British University in Egypt approved the study.

Informed Consent Statement
All participants were provided with comprehensive information regarding the study's objectives, potential advantages, associated risks, the assurance of confidentiality, and their right to withdraw from the study at any stage. Every participant signed a consent form to indicate their informed consent. The consent forms were signed and collected before starting the study.

Data Availability Statement
The datasets generated and analyzed during the current study are available from the correspondin g author upon reasonable request (ansam.alshaikh@bue.deu.eg)

Conflicts of Interest
The authors declare no conflict of interest.

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Table 1. Demographic characteristics of female and male participants

Demographic Characteristics	**Female Participants N = (24), 51.04%**	**Male Participants N=(23), 48.94%**	**Statistics**	**Significancy**
Age	*20.92±1.863*	*19.52±1.831*	*U=151*	*p = .008*
Language	*Arabic =10 (41.67%)* *English = 14 (58.33%)*	*Arabic = 9 (39.13%)* *English = 14 (60.87%)*	*X^2= 0.031*	*p=.859*
Social status	*20 singles (83.33%)* *2 married (8.33%)* *2 In relationship (8.33%)*	*21 singles (91.3%)* *0 married* *2 In relationship (8.7%)*	*X^2= 2.004*	*P=.367*
High school Education	*National, n= 13 (54.17%)* *IGCSE, n= 2 (8.33%)* *American, n= 6 (25%)* *Azhar, n= 1 (4.167%)* *Other, n= 2 (8.33%)*	*National, n= 10 (43.48%)* *IGCSE, n= 1 (4.35%)* *American, n= 9 (39.13%)* *Azhar, n= 0* *Othe, n= 3 (13.04%)*	*X^2= 2.505*	*p= .664*

University Education	*Public, n=3 (12.5%)* *Public (credits, n) =5 (20.83%)* *International, n=0* *Private, n=15 (62.5%)* *Private (Civil), n=1 (4.167%)*	*Public, n = 7 (30.43%)* *Public (credits, n) = 3 (13.04%)* *International, n=2 (8.7%)* *Private, n= 11 (47.83%)* *Private (Civil), n=0*	*X^2= 5.7*	*p= .223*
Academic Grades	*A, n=7 (29.17%)* *B, n=11 (45.84%)* *C, n=6 (25%)* *D, n=0* *F, n=0*	*A, n= 8 (34.78%)* *B, n=12 (43.47%)* *C, n=2(8.70%)* *D, n=0* *F, n=1 (4.35%)*	*X^2= 5.95*	*p= .429*
Employment	*Seeking, n=4 (16.67%)* *Unemployed, n= 17 (70.83%)* *Full-time, n= 1 (4.167%)* *Part-time, n= 1 (4.167%)* *Other, n= 1 (4.167%)*	*Seeking, n= 2 (8.7%)* *Unemployed, n= 17 (73.91%)* *Full-time, n= 0* *Part-time, n= 2 (8.7%)* *Other, n= 2 (8.7%)*	*X^2= 2.313*	*p= .678*
Current Residence	*City, n= 20 (83.33%)* *Countryside, n= 4 (16.67%)*	*City, n=20 (86.96%)* *Countryside, n= 3 (13.04%)*	*X^2= 0.122*	*p= .727*

Table 2. Video gaming behavior habits, motivations, and satisfaction scores among females and males

Habits	**Female Participants** **N= 24**	**Male Participants** **N= 23**	-	-
Weekly hours of playing.	*Less than 7-hour, n= 21(88%)* *More than 7 hours, n= 3(12%)*	*Less than 7 hours, n= 14 (61%)* *More than 7 hours, n= 9 (39%)*	*X^2(1,47) =4.38*	*p= 0.04*
Consecutive playing hours at a time.	*Less than 1 hour: 19 (79%)* *More than 1 hours: 5 (21%)*	*Less than 1 hour: 9 (39%)* *More than 1 hour: 14(61%)*	*X^2(1,47) =7.82*	*p= .005*
Years of playing	*Less than 4 years, n= 9* *4 years – 8 years, n= 9* *More than 8, n= 6*	*Less than 4 years, n= 0* *4 years – 8 years, n= 7* *More than 8, n= 16*	*X^2(2, 47) =13.78*	*p =.001*
Playing Setting	*At home, n= 24* *At school, n= 0* *Internet café, n= 0*	*At home, n= 21* *At school, n= 1* *Internet café, n= 1*	*X^2(2, 47) = 2.18*	*p= .34*
Used Device	*Mobile, n= 22* *Laptop/PC, n= 6* *PlayStation, n= 4* *Xbox, n= 4*	*Mobile, n= 12* *Laptop/PC, n= 16* *PlayStation, n= 12* *Xbox, n= 3*	*X^2(3, 47) = 11.37*	*p= .01*
Self-perception as a player	*Novice, n= 3* *Casual, n= 9* *Expert, n= 7* *Aspiring professional, n=4* *Professional, n= 0*	*Novice, n= 1* *Casual, n= 15* *Expert, n= 5* *Aspiring professional, n= 2* *Professional, n=1*	*X^2(4,47) = 4.48*	*p= .345*
Whom game mates	*Amateurs, n= 11* *Semi-professionals, n=12* *Professionals, n= 3*	*Amateurs, n=14* *Semi-professionals, n=16* *Professionals, n= 6*	*X^2(2,47) = .327*	*p= .85*

Motivations	*N= 24*	*N= 23*		
	Entertainment, n= 24 *Learning new skills, n= 6* *Income, n= 0* *Building relationships, n= 2* *Escaping stressors, n= 8* *Learning about other cultures, n= 0* *Improve second language, n= 1* *To beat others, n= 3* *To feel less lonely, n= 4* *Escape reality, n= 6* *Connect with friends, n= 5* *To satisfy a crave, n= 7*	*Entertainment, n= 22* *Learning new skills, n= 2* *Income, n= 2* *Building relationships, n= 3* *Escaping stressors, n= 12* *Learning about other cultures, n= 2* *Improve second language, n= 3* *To beat others, n= 6* *To feel less lonely, n= 4* *Escape reality, n= 9* *Connect with friends, n= 13* *To satisfy a crave, n= 7*	$X^2(11,47) = 11.03$	*p= .44*
Satisfaction				
Are you satisfied with playing video games?	***Satisfied, N=1 (4%):*** *Very satisfied, n= 1* *Satisfied, n= 0* ***Neither satisfied nor dissatisfied, N= 9 (37%)*** ***Dissatisfied, N=14(58 %)*** *Dissatisfied, n= 11* *Very dissatisfied, n= 3*	***Satisfied, N=3 (13%):*** *Very satisfied, n= 0* *Satisfied, n= 3* ***Neither satisfied nor dissatisfied, N= 5 (9%)*** ***Dissatisfied, N=15 (65%)*** *Dissatisfied, n= 10* *Very dissatisfied, n= 5*	$X^2(2,47) = 4.61$	*p= .33*
Have you tried to quit playing VG before?	*Yes, n= 9* *No, n= 15*	*Yes, n= 7* *No, n= 16*	$X^2(1,47) =0.261$	*p= .61*

Table 3 Video gaming's positive and negative impacts as perceived by female/ male players.

Perceived Impacts on Players' personal and social life.	**Female Participants** **N= 24**	**Male Participants** **N= 23**	**Statistics**	**P values**
Positive Effects on Players' Personal life	***Yes, N= 13 (54%):*** *More focused, n= 9* *Can understand people better, n= 3* *More self-confident, n= 2* *More organized, n= 0* *Better problem solving, n= 10* *Calmer, n= 2* *Faster than before, n= 4* *Other, n= 0* ***Not at all, N= 11(46%)***	***Yes, N= 19 (83%):*** *More focused, n= 7* *Can understand people better, n= 6* *More self-confident, n= 1* *More organized, n= 5* *Better problem solving, n= 10* *Calmer, n= 5* *Faster than before, n= 6* *Other, n= 3* ***Not at all, N= 4 (17%)***	$X^2(1,47) = 4.37$	*p=0 .04*
Negative Effects on Players' personal life	***Yes, N=8 (33%):*** *Less focused, n= 2* *More isolated, n= 4* *Less organized, n= 3* *Slower than before, n= 2* *Harsher than before, n=2* *Other, n= 1*	***Yes, N= 10 (43%):*** *Less focused, n= 4* *More isolated, n= 5* *Less organized, n= 3* *Slower than before, n= 0* *Harsher than before, n=1* *Other, n= 0*	X^2 (1,47) =.51	*p=0.47*

	Not at all, N= 16 (67%)	***Not at all, N = 13 (57%)***		
Positive Effects on Players' social Life	***Yes, N= 8 (33%)*** *More friends, n= 3* *Improved language, n= 2* *More talkative, n= 6* *Improved relationship with family, n= 2* *Improved relationship with co-workers, n= 1* *More job opportunities, n= 0* ***Not at all, N= 16 (67%)***	***Yes, N= 15(65%)*** *More friends, n= 8* *Improved language, n= 7* *More talkative, n= 12* *Improved relationship with family, n= 0* *Improved relationship with co-workers, n= 0* *More job opportunities, n= 2* ***Not at all, N= 8 (35%)***	$X^2(1,47) = 4.78$	*p= 0.03*
Negative Effects on Players' Social Life	***Yes, N= 8 (33%):*** *Less time for studying n= 4* *Less time for socializing, n= 4* *Worsened relationship with family, n= 2* *Troubles with others, n= 4* *Other, n= 0* ***Not at all, N= 16 (66%)***	***Yes, N=12 (52%):*** *Less time for studying n= 5* *Less time for socializing, n= 6* *Worsened relationship with family, n= 0* *Troubles with others, n= 5* *Other, n= 1* ***Not at all, N= 11(48%)***	X^2 *(1,47) =1.70*	*p= 0.19*

Table 4. Video gaming's positive and negative impacts as perceived by female/ male players.

Perceived Impacts on personal life.				
	Positive Impacts	**Negative Impacts**	**Statistics**	**P values**
Males Participants	***Yes, N= 19 (83%):*** *More focused, n= 7* *Can understand people better, n= 6* *More self-confident, n= 1* *More organized, n= 5* *Better problem solving, n= 10* *Calmer, n= 5* *Faster than before, n= 6* *Other, n= 3* ***Not at all, N= 4 (17%)***	***Yes, N= 10 (43%):*** *Less focused, n= 4* *More isolated, n= 5* *Less organized, n= 3* *Slower than before, n= 0* *Harsher than before, n=1* *Other, n= 0* ***Not at all, N = 13 (57%)***	X^2 *(1,46) =7.56*	*p= 0.006*
Female Participants	***Yes, N= 13 (54%):*** *More focused, n= 9* *Can understand people better, n= 3* *More self-confident, n= 2* *More organized, n= 0* *Better problem solving, n= 10* *Calmer, n= 2* *Faster than before, n= 4* *Other, n= 0* ***Not at all, N= 11(46%)***	***Yes, N=8 (33%):*** *Less focused, n= 2* *More isolated, n= 4* *Less organized, n= 3* *Slower than before, n= 2* *Harsher than before, n=2* *Other, n= 1* ***Not at all, N= 16 (67%)***	X^2 *(1,48) =2.12*	*P= 0.15*
Perceived Impacts on social life.				
Males Participants	***Yes, N= 15(65%)*** *More friends, n= 8* *Improved language, n= 7*	***Yes, N=12 (52%):*** *Less time for studying n= 5* *Less time for socializing, n= 6*	$X^2(1,46) = 0.81$	*p= 0.37*

	More talkative, n= 12 *Improved relationship with family, n= 0* *Improved relationship with co-workers, n= 0* *More job opportunities, n= 2* ***Not at all, N= 8 (35%)***	*Worsened relationship with family, n= 0* *Troubles with others, n= 5* *Other, n= 1* ***Not at all, N= 11(48%)***		
Female Participants	***Yes, N= 8 (33%)*** *More friends, n= 3* *Improved language, n= 2* *More talkative, n= 6* *Improved relationship with family, n= 2* *Improved relationship with co-workers, n= 1* *More job opportunities, n= 0* ***Not at all, N= 16 (67%)***	***Yes, N= 8 (33%):*** *Less time for studying n= 4* *Less time for socializing, n= 4* *Worsened relationship with family, n= 2* *Troubles with others, n= 4* *Other, n= 0* ***Not at all, N= 16 (66%)***	X^2 *(1,48) =0*	*p= 1*

Table 5. Female vs. male participants in IGD and WHOQoL-BREF scales.

IGD	**Females, N= 23**	**Males, N= 19**	**Statistics**	**P values**
IGD Score	*2.26±2.20*	*3.37±2.06*	*U=133*	*p= .031*
IGD Category	*Normal: 16 (70%)* *At risk: 4 (17%)* *Disordered: 3(13%)*	*Normal: 7(37%)* *At risk:9 (47%)* *Disordered:3 (20%)*	X^2*(2,42) = 5.11*	*p= .078*
Physical well-being	*13.89±2.649*	*14.55±1.528*	*t(40)= -0.961*	*p= .342*
Psychological well-being	*11.77±2.932*	*13.08±3.273*	*t(40)= - 1.368*	*p= .179*
Social relationships	*12.75±2.601*	*12.351±3.871*	*t(40)= 0.4*	*p= .692*
Environment	*13.46±1.95*	*14.184±2.784*	*t(40)= -0.99*	*p= .33*
Total Qol	*14.78±3.4*	*14.842±3.01*	*t(40)= -0.0619*	*p=.95*

Table 6. The results of a multivariate linear regression to investigate the relations between WHOQoL-BREF domains and the Internet Gaming Addiction (IGD) scores considering gender as a potential moderator. Source IGD

	t (34)	*b Estimate*
Physical Domain	*0.22*	*0.004*
Psychological Domain	*-0.33*	*-0.005*
Social Relationship Domain	*-2.37***	*-0.04*
Environment Domain	*-0.67*	*-0.01*
Physical Domain by Gender	*-0.21*	*-0.01*
Psychological Domain by Gender	*-0.37*	*-0.01*
Social Relationship Domain by Gender	*2.61***	*0.05*
Environment Domain by Gender	*-0.36*	*-0.01*

Note: * p < .05; ** p < .01

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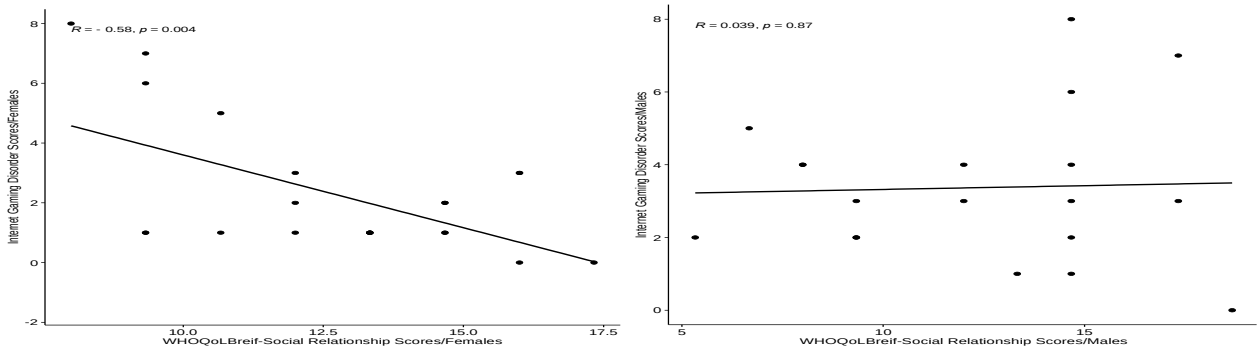

Figure 1. The association between the WHOQoL-Brief social domain scores and the Internet Gaming Disorder scores in male and female players.